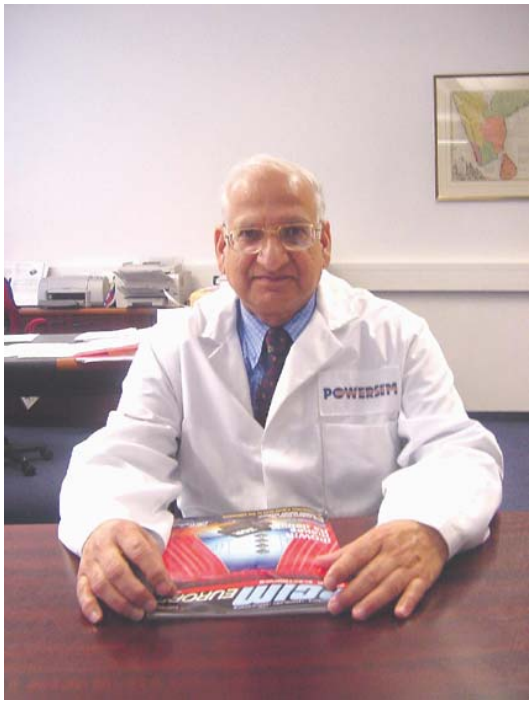
In Memoriam to
Madan Mohan Chadda

Founder of POWERSEM
a motor in progress of power electronics

*"**Madan** had realized his dreams building up a company in power electronics and finding the families home in Schwabach in Frankonia. His spirit and dreams are on continuity by his son Ashok."*



Mr. Madan Mohan Chadda (1939-2002) was born in Amritsar, India. He was a renowned physicist and scientist - B. Sc. (Hons.); M. Sc. (Math.); M. Sc. (Phys.) -, educated in India and England, and worked for many established corporations in India, England, Switzerland and Germany until he settled down with his family in Germany. For his work as a physicist, **Mr. Chadda** obtained over 40 patents in his lifetime.

Mr. Chadda founded **POWERSEM GmbH** in Germany in 1985. The pinnacle of his remarkable career was the opening of a brand new, state-of-the art facility in 2000 utilizing clean and efficient hydrogen power. **POWERSEM** designs, develops and manufactures multiple chip semiconductor modules. Today, **POWERSEM** is considered a world leader in designing and manufacturing isolated base packaged modules for standard, fast single, three phase, half and full controlled power semiconductor modules in a compact package. **POWERSEM** has offices and representation throughout the entire world, with a new manufacturing plant just being opened by his son Ashok in Bangalore, India.

Mr. Chadda was a very well respected CEO and president of **POWERSEM** and business leader not only in the German industrial and political landscape, but, internationally recognized, especially, in India, where he engaged in numerous projects and strategic alliances with large Indian companies. He was a philanthropist, always believing in giving back to his community and country by constantly funding charitable projects.

Mr. Madan Mohan Chadda was truly a devoted husband and father, whose relentless energy and passion for power electronics helped him realize his dreams in building up his company.

Mr. Chadda left us in 2002. He is survived by his wife, Mrs. Suman Chadda, his son Ashok Chadda and his daughter Kavita Soni.

POWERSEM GmbH is now managed and led in the spirit of **Mr. Chadda** by his son Ashok.

In 2005 **POWERSEM GmbH**, Germany, has formed its 100% EOU-Unit* „**POWERSEM Semiconductors Pvt. Ltd.**" in Bangalore, India.
In spirit of **Madan Mohan Chadda**, who always was a proud Indian, **POWERSEM Germany** and **POWERSEM India** wishes to serve its Indian customers with newest innovations and latest technologies. **POWERSEM** hopes to be an essential help for the industrial and economical growth of the Indian Semiconductor/Power Modules Manufacturing Market.

*** = Export Oriented Unit**

Ihr Vertriebspartner: HY-LINE® POWER COMPONENTS
Inselkammerstraße 10
D-82008 Unterhaching
Tel.: +49 (0)89 614503 10
Fax: +49 (0)89 614503 20
E-Mail: power@hy-line.de
URL: www.hy-line.de

POWERSEM Power-Pac™

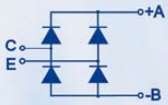
Multiple Chip Technology (MCT)

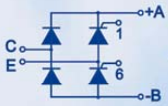
Rectifier Bridges, AC Controller and Power Modules
single, three phase, half & full controlled

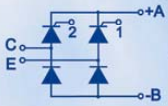
Features:
Package with fast on terminals - Isolation voltage 3000 V ~
Current ratings 30-70 A - Blocking voltage up to 1800 V
Low forward voltage drop - Offers wide choice of circuit configuration and integration of Diodes, Thyristors and FREDs
Planar glasspassivated chips and DCB Technology

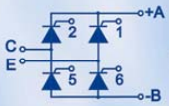
Applications:
Supplies for DC power equipment - Input rectifiers for PWM inverter - Battery DC power supplies - Softstart capacitor charging - Field supply for DC motors

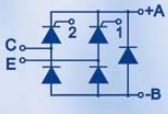
Advantages:
Easy to mount with two screws
Space and weight savings - Improved temperature and power cycling

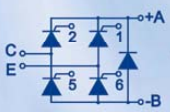


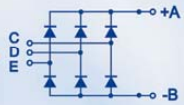


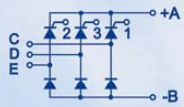


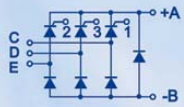


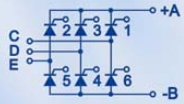


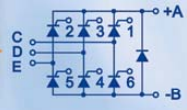


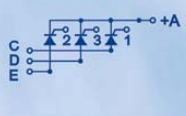


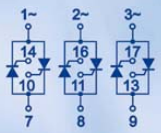












your power bridge to the connection future

Powersem GmbH
Walpersdorferstr. 53
Tel. +49 (0) 9122 - 9764 - 0

91126 Schwabach, Germany
Fax +49 (0) 9122 - 9764 - 20

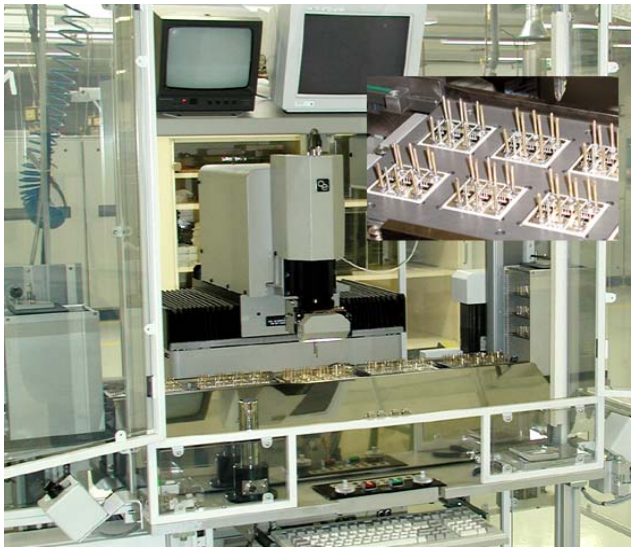
email: info@powersem.de
www.powersem.de

COMPANY PROFILE

POWERSEM GmbH, founded in Schwabach, Germany, in 1985 is a company devoted 100% to the design, development and automated production of **multiple chip semiconductor** modules. Today, **POWERSEM** is considered a world leader in supplying isolated base packaged modules for **standard, fast single**, **three phase**, **half and full controlled** power semiconductor modules including **solid state relays**.
POWERSEM GmbH has also successfully developed strategic alliances with high tech silicon foundries, showing a total commitment to serve its customers, now and in the future.

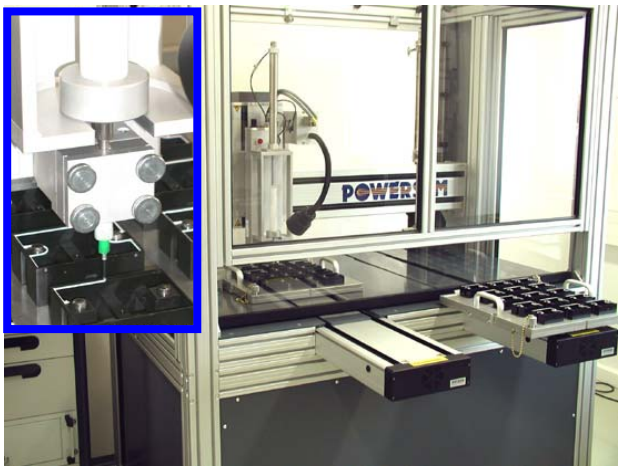
These small but thermal efficient mini circuit modules provide the 'SINGLE PACKAGE' concept, which can be used as single devices in series or parallel replacing SOT-227, TO-247 discretes as well as older standard dual multiple chip modules traditionally supplied by various competitors. Currents from 8 – 230 Amperes and voltages up to 1800 Volts are standard.

Recently, **POWERSEM**, building "Power Bridges to the Future", has introduced IGBT and MOSFET dices into its modules along with corresponding rectifiers. Further, to enhance performance, **POWERSEM** is offering these multiple integrated chips in the unique **POWERSEM** exclusively designed ECO-PAC module packages. ECO-PAC modules offer low profile, compact design and complete economical system solutions. These ECO-PAC modules include separate or embedded drive circuits for motor control/soft start, UPS power supplies, power factor correction, and other applications and are specifically dominant in automotive applications. Incorporating "application specific power circuits", these high quality ECO-PAC modules offer simple solutions for customer design with minimum electrical connections and **printed circuit board** with screw tops for high power applications.



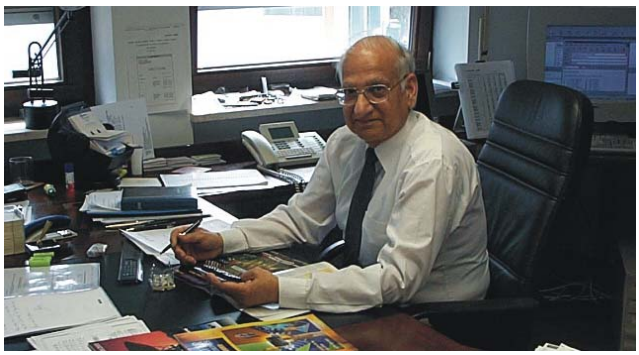
POWERSEM continues to innovate new modular power semiconductor solutions for the demanding requirements of the electronic industry and provides excellent quality and reliability. The basis for this **High-Tech** integrations, using **Multiple Chip Technology (MCT)** and a single package module, provides the customer with a complete solution. In order to achieve these goals, a continuous investment in automated production and quality control is being constantly made.

Due to an increasing power demanding world, manufacturers of many products are seeking higher power integrated multiple chip modules. Powersem is prepared to offer these 'value - added' products for markets ranging from **switch-mode power supplies**, **automation**, **motor drives**, **medical applications**, etc., including **hybrid/electric vehicles**.



100 % optical and electrical testing of the modules is installed to maintain the highest quality and reliability of all our products. All modules are **UL** certified and all processes are optimized according to **DIN ISO 9001: 2000**.

Continuing the business in the spirit of **Madan M. Chadda** - the founder of **POWERSEM GmbH** – his son **Ashok Chadda** and his highly qualified staff guarantee long term innovations and highest quality of power semiconductor modules.



Madan M. Chadda,
founder of **POWERSEM GmbH**

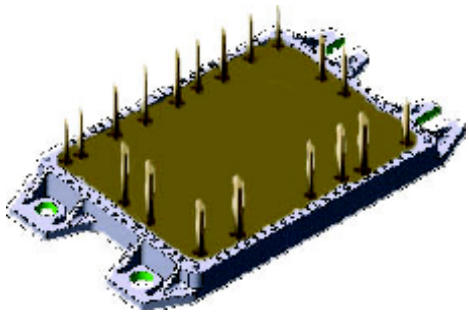
new --- new --- new --- new

Enlarging its Product Range **POWERSEM** offers its customers two **new** packages:

ECO-PAC™ 3 a **new** member of the ECO-PAC™ family

and

ECO-TOP™ 1 a **new** economical package



new --- new --- new --- new

POWERSEM GmbH confirms that all products manufactured by **POWERSEM** are compliant to the

DIRICTIVE 2002 / 95 /EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

of 27 January 2003
on the **r**estriction **o**f the use of certain **h**azardous **s**ubstances in electrical and electric equipment (**RoHS**).

CERTIFICATE

DQS GmbH

Deutsche Gesellschaft zur Zertifizierung von Managementsystemen

hereby certifies that the company

POWERSEM

Gesellschaft für Halbleiterbauelemente und Elektronik mbH

Walpersdorferstr. 53
D-91126 Schwabach

for the scope

Development and Production of:
Rectifier Bridges, Diode / Thyristor Modules,
IGBT, MOSFET Modules

has implemented and maintains a

Quality Management System.

An audit, documented in a report, has verified that this quality management system fulfills the requirements of the following standard:

DIN EN ISO 9001 : 2000
December 2000 edition

This certificate is valid until	2009-04-24
Certificate Registration No.	209348 QM
Frankfurt am Main	2006-04-25

Ass. iur. M. Drechsel

Dipl.-Ing. S. Heinloth

MANAGING DIRECTORS

D-60433 Frankfurt am Main, August-Schanz-Straße 21

DQS is member of IQNet – THE INTERNATIONAL CERTIFICATION NETWORK

Deutscher Akkreditierungs Rat DAR TGA-ZM-02-90

THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

IQNet and
DQS GmbH Deutsche Gesellschaft zur Zertifizierung von Managementsystemen
hereby certifies that the company

POWERSEM

Gesellschaft für Halbleiterbauelemente und Elektronik mbH

Walpersdorferstr. 53
D-91126 Schwabach

for the scope

Development and Production of:
Rectifier Bridges, Diode / Thyristor Modules,
IGBT, MOSFET Modules

has implemented and maintains a

Quality Management System.

An audit, documented in a report, has verified that
this quality management system fulfills the requirements
of the following standard:

ISO 9001 : 2000

This certificate is valid until 2009-04-24

Frankfurt am Main 2006-04-25

Registration Number: DE-209348 QM

Dr. Fabio Roversi
President of IQNet

Ass. iur. M. Drechsel *S. Heinloth*
Managing Directors of DQS GmbH

IQNet Partners*:

AENOR *Spain* AFAQ AFNOR *France* AIB-Vinçotte International *Belgium* ANCE *Mexico* APCER *Portugal* CISQ *Italy* CQC *China* CQM *China* CQS *Czech Republic* Cro Cert *Croatia* DQS *Germany* DS *Denmark* ELOT *Greece* FCAV *Brazil* FONDONORMA *Venezuela* HKQAA *China* ICONTEC *Colombia* IMNC *Mexico* IRAM *Argentina* JQA *Japan* KFQ *Korea* MSZT *Hungary* Nemko AS *Norway* NSAI *Ireland* PCBC *Poland* PSB Certification *Singapore* QMI *Canada* Quality Austria *Austria* RR *Russia* SAI Global *Australia* Inspecta Certification *Finland* SII *Israel* SIQ *Slovenia* SQS *Switzerland* SRAC *Romania* TEST St Petersburg *Russia* YUQS *Serbia and Montenegro*

IQNet is represented in the USA by: AFAQ AFNOR, AIB-Vinçotte International, CISQ, DQS, NSAI, QMI and SAI Global

* The list of IQNet partners is valid at the time of issue of this certificate. Updated information is available under www.iqnet-certification.com

Contents

Contents

Contents

Renaming of old part numbers

(already changed in this catalogue)

Old Part Number	New Part Number
1 ~ Rectifier Bridges	
1 ~ Half Controlled Rectifier Bridges	
PSBH 70/08-16	PSBH 50/08-16
PSBH 26/08-16	PSBH 55/08-16
PSBH 41/08-14	PSBH 75/08-14
PSBH 56/08-14	PSBH 85/08-14
PSBH 91/08-16	PSBH 125/08-16
PSBZ 70/08-16	PSBZ 50/08-16
PSBZ 26/08-16	PSBZ 55/08-16
PSBZ 41/08-14	PSBZ 75/08-14
PSBZ 56/08-14	PSBZ 85/08-14
PSBZ 91/08-16	PSBZ 125/08-16

Contents

Renaming of old part numbers

(already changed in this catalogue)

Old Part Number	New Part Number
1 ~ Rectifier Bridges	
1 ~ Half Controlled Rectifier Bridges	
PSBH 70/08-16	PSBH 50/08-16
PSBH 26/08-16	PSBH 55/08-16
PSBH 41/08-14	PSBH 75/08-14
PSBH 56/08-14	PSBH 85/08-14
PSBH 91/08-16	PSBH 125/08-16
PSBZ 70/08-16	PSBZ 50/08-16
PSBZ 26/08-16	PSBZ 55/08-16
PSBZ 41/08-14	PSBZ 75/08-14
PSBZ 56/08-14	PSBZ 85/08-14
PSBZ 91/08-16	PSBZ 125/08-16

Renaming of old part numbers

(already changed in this catalogue)

Old Part Number	New Part Number
1 ~ Half Controlled Rectifier Bridges with Freewheeling Diode	
PSCH 70/08-16	PSCH 50/08-16
PSCH 26/08-16	PSCH 55/08-16
PSCH 41/08-14	PSCH 75/08-14
PSCH 56/08-14	PSCH 85/08-14
PSCH 91/08-16	PSCH 125/08-16
1 ~ Full Controlled Rectifier Bridges	
PSBT 70/08-16	PSBT 50/08-16
PSBT 26/08-16	PSBT 55/08-16
PSBT 41/08-14	PSBT 75/08-14
PSBT 56/08-14	PSBT 85/08-14
PSBT 91/08-16	PSBT 125/08-16
1 ~ Full Controlled Rectifier Bridges with Freewheeling Diode	
PSCT 70/08-16	PSCT 50/08-16
PSCT 26/08-16	PSCT 55/08-16
PSCT 41/08-14	PSCT 75/08-14
PSCT 56/08-14	PSCT 85/08-14
PSCT 91/08-16	PSCT 125/08-16
3 ~ Rectifier Bridges	
3 ~ Half Controlled Rectifier Bridges	
PSDH 26/08-16	PSDH 75/08-16
PSDH 41/08-14	PSDH 90/08-14
PSDH 56/08-14	PSDH 110/08-14
PSDH 91/08-16	PSDH 175/08-16
3 ~ Full Controlled Rectifier Bridges	
PSDT 26/08-16	PSDT 75/08-16
PSDT 41/08-14	PSDT 90/08-14
PSDT 56/08-14	PSDT 110/08-14
PSDT 91/08-16	PSDT 175/08-16
Active Trigger Units for Thyristors	
AS 400-241	PSTT PC/20
AS 401-141	PSTT SC/20
AS 402-141	PSTT ZC/20
AS 400-251	PSTT PC/12
AS 401-151	PSTT SC/12
AS 402-151	PSTT ZC/12

di/dt	Rate of change of current
$(dv/dt)_c$	Critical rate of rise of forward voltage
E_{ts}	Total switching energy
f	Frequency range
I_C	Collector current
I_{Cpuls}	Pulsed collector current
Icm	Maximum collector current
I^2t	Fusing current
I_{DAV}	Average DC-output current
I_{DRM}	Off-state leakage current
$I_{D(cont)}$	Continuous drain current
I_F	Forward current
I_{FAV}	Maximum average forward current
I_{FRMS}	RMS forward current
I_{FSM}	Peak one cycle surge forward current
I_H	Holding current
I_R	Maximum reverse current
I_{RMS}	RMS current
I_{TAV}	Maximum average on-state current
I_{TRMS}	RMS forward current
I_{FSM} ,I_{TSM}	Maximum surge forward current
P_D	Power dissipation
P_N	Mains power
r_T	Slope resistance (for power loss calculations)
$R_{DS(on)}$	Static drain source on resistance
R_{thJS}	Thermal resistance junction to heatsink
R_{thCH}	Thermal resistance case to heatsink
R_{thJA}	Thermal resistance junction to ambient
R_{thJC}	Thermal resistance junction to case
R_{thJH}	Thermal resistance junction to heatsink
T_A	Ambient temperature or temperature of the cooling medium
T_C	Case temperature
T_J, T_{VJ}	Junction temperature
T_O	Operating temperature
T_{VJM}	Maximum junction temperature
$t_{d(off)}$	Turn-off delay time
$t_{d(on)}$	Turn-on delay time
t_f	Current fall time
t_q	Turn-off time
t_r	Current rise time
t_{rr}	Reverse recovery time
V_{CES}	Collector-emitter voltage (IGBT)
$V_{CE(sat)}$	Collector-emitter saturation voltage with I_B and I_C specified
V_{DRM}	Maximum repetitive off-state voltage
V_{DSS}	Drain source breakdown voltage
V_{FM}	Forward voltage drop
V_{vRMS}	Maximum allowed AC-voltage (RMS-value)
V_{RRM}	Maximum repetitive reverse voltage
V_{TM}	Zero turn-on voltage
V_{TO}	Threshold voltage (for power loss calculations only)

Symbols and Terms

DCB

DCB means **Direct Copper Bonding** and denotes a process in which copper and a ceramic material are directly bonded.

Properties of DCB ceramic substrates

- Good mechanical strength; mechanically stable shape, good adhesion and corrosion resistant
- excellent electrical isolation
- very good thermal conductivity
- superb thermal cycling stability
- the thermal expansion coefficient is close to that of silicon, so no interface layers are required
- good heat spreading
- may be structured just like printed circuit boards or „IMS substrates“
- environmentally clean

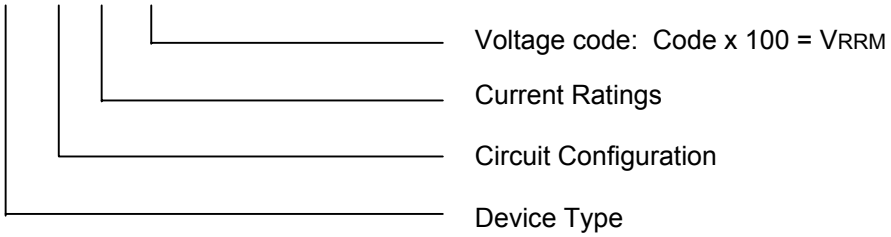
Advantages to the user

- The 0.3mm thick copper layer permits higher current loading for the same conductor width. Assuming the same copper cross-section the conductor needs to be only 12% of that of a normal printed circuit board.
- The excellent thermal conductivity provides the possibility of very close packaging of the chips. This translates into more power unit of volume and improved reliability of systems and equipment.
- The high insulation voltage results in improved personnel safety.
- DCB ceramic is the basic for the „chip-on-board“ technology which represents the packaging trend for the future.

DEVICE Ordering Instructions

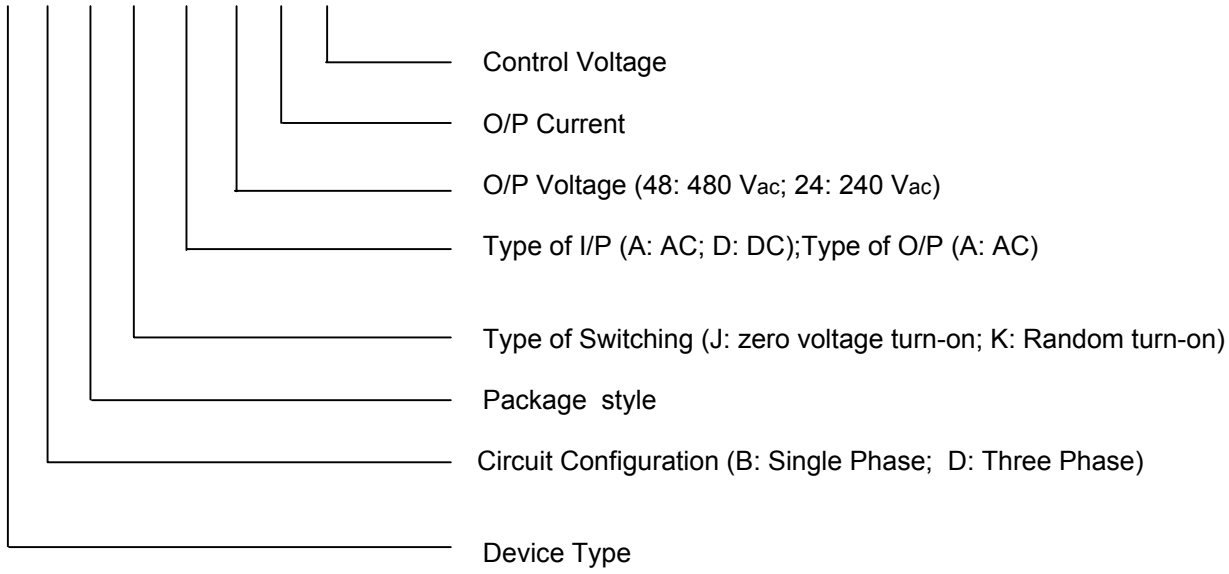
DEVICE CODE (Ordering Instructions)

PS DH 91 / 16



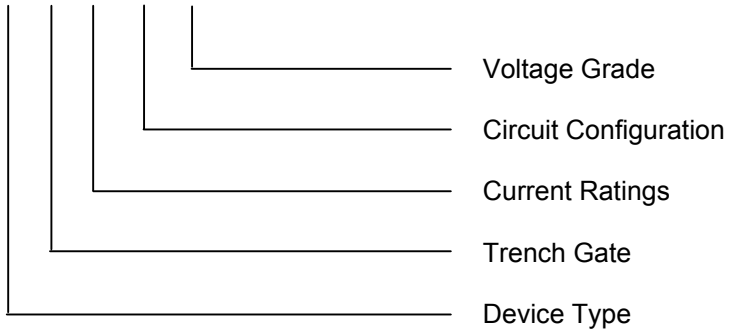
DEVICE CODE (Ordering Instructions for Solid State Relays)

PS B 20 SJ AA 48 25 28



DEVICE CODE (Ordering Instructions for Trench Gate IGBT ECOPAC™'s)

PS TG 25 HDT 12



Alphanumerical Index

Alphanumerical Index

Diodes for High Switching Frequencies

Fast Recovery Epitaxial Diodes (FRED)

Power switches (IGBT, MOSFET, BJT, GTO) for applications in electronics are only as good as their associated freewheeling diodes. At increasing switching frequencies, the proper functioning and efficiency of the power switch, aside from conduction losses, is determined by the turn-off behavior of the diode (characterized by Q_{rr}, I_{RM} and t_{rr} see fig.2). With optimized ultra-fast switching diodes, the development engineer has various possibilities: either higher pulse rate or higher current load or smaller heatsink or more conservative operation due to „cooler" chips.

The reverse current characteristic following the peak reverse current I_{RM} is another very important property. The slope of the decaying reverse current di_{rr}/dt results from design parameters (technology and diffusion of the diode chips). In a circuit this current slope, in conjunction with parasitic inductances (e.g. connecting leads), causes overvoltage spikes and high frequency interference voltages. The higher the di_{rr}/dt („hard recovery" or „snap-off" behavior) the higher is the resulting additional stress for both the diode and the parallel switch. A slow decay of the reverse current („soft recovery" behavior) is the most desirable characteristic, and this is designed into all diodes. The wide range of available blocking voltages makes it possible to apply these diodes as output rectifiers in switch-mode power supplies (SMPS) as well as protective and free-wheeling diodes for power switches in inverters.

Diodes for General Purpose Applications

Standard Recovery Diodes

Diodes are mainly used for rectifying 50 or 60 Hz main current and are available in different bridges for standard line voltages (from 110 to 600V).

Avalanche Diodes

Avalanche diodes or surge-voltage proof rectifier diodes differ from standard diodes in the following manner: the operation in avalanche breakdown above the normal reverse blocking voltage (V_{RRM}) can be tolerated as long as the power is within the specified permissible nonrepetitive reverse surge dissipation P_{RSM} at the specified pulse width. In order to have technologically good control of the avalanche breakdown, it is important to ensure homogeneous doping of the middle zone of the silicon chip and suitable junction termination and passivation at the edges where PN-junctions are exposed to the surface (high field strength at the edge). Because of this ruggedness against periodically occurring shortterm voltage surges in the blocking direction, the user frequently can do without protective overvoltage networks. In addition, if avalanche diodes are put in series for high voltage applications, the sharp avalanche breakdown of the blocking characteristic ensures static and dynamic voltage distribution uniformly across each device. Thus, in general, none of the series diodes will be overstressed by reverse voltages which are substantially above the avalanche voltage.

New Generation Silicon Chips

The figures 1a-c show the cross sections of the used thyristor and diode chips in the passivation area. All chips are designed by applying separation diffusion processes such that the zones responsible for the surface field strength are located at the upper chip side. This results in the capability of soldering the entire chip area onto the DCB ceramic substrate without a molybdenum strain buffer, which in turn leads to good stability of the chips as well to large area heat dissipation if a load is applied. All zones at the edges which are decisive for the blocking stability are coated with passivation glasses the coefficient of expansion of which match that of silicon. Silicon chips increasingly use planar technology with guard rings and channel stoppers to reduce electrical surface fields. This chip design supersedes the design of thyristor chips which were fabricated with passivation moats so that modules of the new series designed with the updated state-of-the-art utilize planar glasspassivated chips processed by separation diffusion techniques. The contact areas of the chips possess physical vapour deposited metal layers. For the user the improved properties are:

- Excellent long-term stability of blocking currents and blocking voltages,
- increased life time of the internal soldered connections,
- high power cycling capability (≥ 50.000).

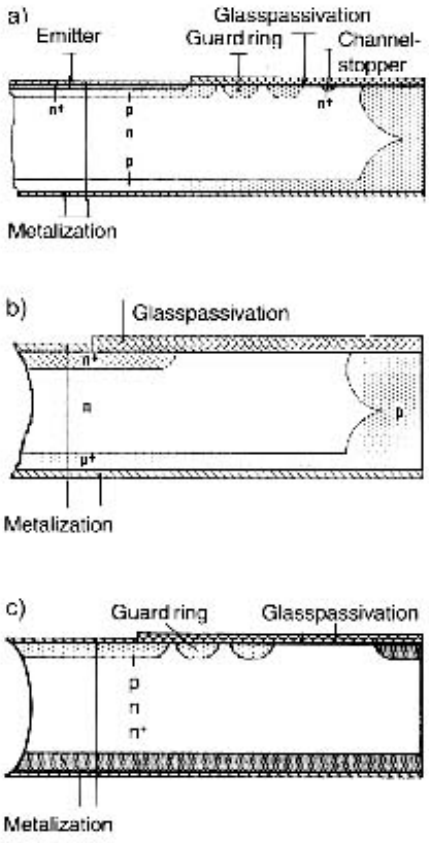


Fig. 1a-c: Cross section of thyristor and diode chips in the passivated area

a) glasspassivated planar thyristor chip with separation diffusion, type CWP

b) glasspassivated planar diode chip with separation diffusion, type DWN

c) glasspassivated planar diode chip type DWP (reverse polarity to b)

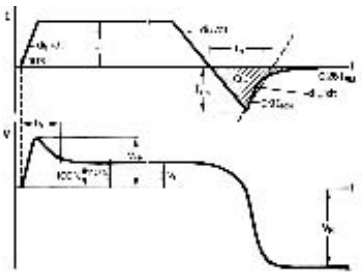


Fig.2: Current and voltage during turn-on and turn-off switching of fast diodes.

Trench Gate IGBT

IGBT switches based on DMOS structures are now reaching the point of diminishing returns insofar as performance is concerned.
Only minor improvements in key parameters, such as switching and conduction losses, can now be expected. For gains that are more dramatic, semiconductor device designers look towards more advanced structures.
The most promising of these new structures is the **trench-gate**.
Figure3 compares the standard DMOS and the new Trench-gate IGBT structure. Trench-gate structure derives its name from the trench shape **(see Figure 4)** etched into the surface of the silicon wafer. This trench houses the gate rather than placement of the gate on the surface as in the DMOS structure.
This allows a shrink in feature size and minimising the parasitic JFET effect dominant in the DMOS.
The trench gate IGBT can deliver major improvements in the on-state characteristics while maintaining a short circuit withstand capability comparable to that of the best planar IGBT structures. The trench structure allows greater flexibility in the engineering of the conductivity modulation, resulting in an improved trade-off between on state and switching losses. Table 1 shows the improvements in key parameters when compared with similarly rated 1200V 25A conventional IGBTs.

TABLE 1 : Key Parameters

Parameter	Trench Gate	DMOS
V_{CES} (V)	1200	1200
I_C dc (A)	25	25
$V_{CE(sat)}$ (V)	1.9	2.8
t_{ON} (ns)	175	125
t_{OFF} ((ns)	310	250
C_{ies} (pF)	4000	4385
E_{ON} (mJ)	1.5	2.2
E_{OFF} (mJ)	2.5	2.5

Figure 3: Comparison between standard DMOS and trench-gate IGBT structures (below)

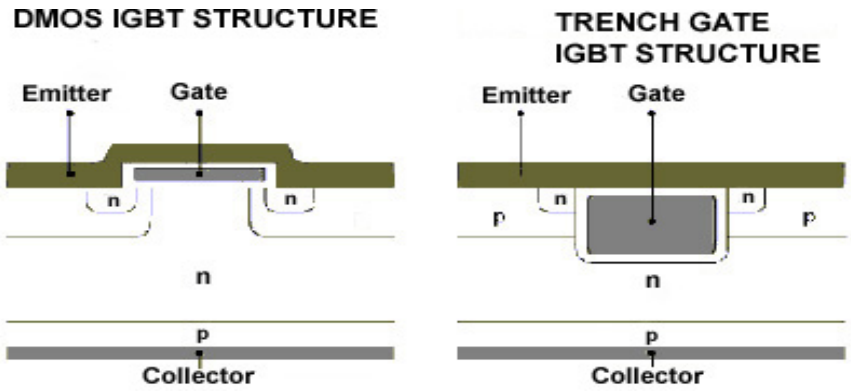
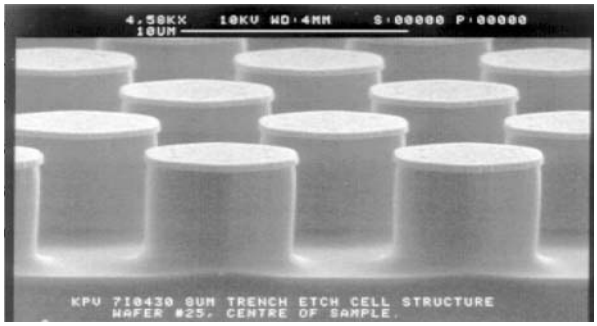


Figure 4: Trench shape etched into the surface of the silicon wafer (below)



ECO-PAC™ a Package Concept Developed by POWERSEM for Custom Designed Power Modules

Accomplishing and enlarging its product range **POWERSEM** has introduced IGBT and MOSFET dice into its power modules along with corresponding rectifiers. Further, to enhance performance, **POWERSEM** is offering these multiple integrated chips in the unique **POWERSEM** exclusively designed ECO-PAC™ 1 and ECO-PAC™ 2 module packages. ECO-PAC™ modules offer low profile, compact design and complete economical system solutions. Using a standard height of 9 mm, all circuit configurations in ECO-PAC™ 1 as well as in ECO-PAC™ 2 can be combined on the same printed circuit board as depicted in Fig. 1.

These small but thermal efficient mini circuit modules can be used as single devices in series or parallel replacing SOT-227, TO-247 discretes as well as older standard dual multiple chip modules traditionally supplied by various competitors. Currents from 6 – 230 Amperes and Voltages up to 1800 Volts are standard. More than 80 different circuit configurations either in ECO-PAC™ 1 or in ECO-PAC™ 2 offer **POWERSEM**'s customers a comprehensive choice of devices. Besides, the ECO-PAC™ package (1 and 2) is especially suited to realize customized solutions within a short time.

The ECO-PAC™ module is directly soldered by gold plated copper terminals on the pcb (printed circuit board). As the terminal positions are not fixed, the current leading connections from the ceramic substrate to the printed circuit board can be designed extremely short, hence reducing inductivities. On the other hand, the free choice of the pin configuration permits an optimal and effective exploitation of the substrate area.

Due to the small dimensions, ECO-PAC™ 1 and ECO-PAC™ 2 (see Fig. 2) offers a weight and space saving solution, reducing the consumption of materials and thus lowering the production costs and the price. Finally, a small package means a reduction of the demanded space for the power modules and consequently a decrease of the complete device dimensions.

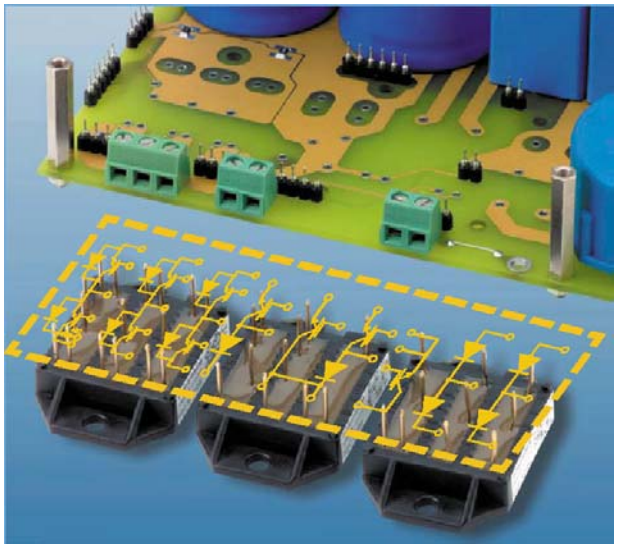


Fig. 1: Combination of different ECO-PAC™ modules on the same pcb.

Two insulating compounds, a soft one covering the dice with a 3mm thick layer and permitting a reduction of mechanical stresses caused by thermal tensions of the module and a hard epoxy encapsulating the module against all environal influences (e.g. humidity), are the prerequisites of the high quality of ECO-PAC™ 1 and ECO-PAC™ 2.

All products in ECO-PAC™ 1 and ECO-PAC™ 2 have got connection leads with expansion bends for stress relief (see Fig. 3).

The usage of dcb (direct copper bonded ceramic substrates) allows an optimum heat transfer and leads together with the used planar glass passivated chips to excellent long term reliability and thermal/load cycling capability.

Technical Explanations

Typical applications of ECO-PAC™ 1 and ECO-PAC™ 2 modules are: **supplies for DC power equipment, battery DC power supplies, AC/DC motor drives, motor control/soft start, UPS, pumps and fans, household appliances, air conditioning, frequency inverters, welding inverters, power factor correction, AC servo and robot drives**.

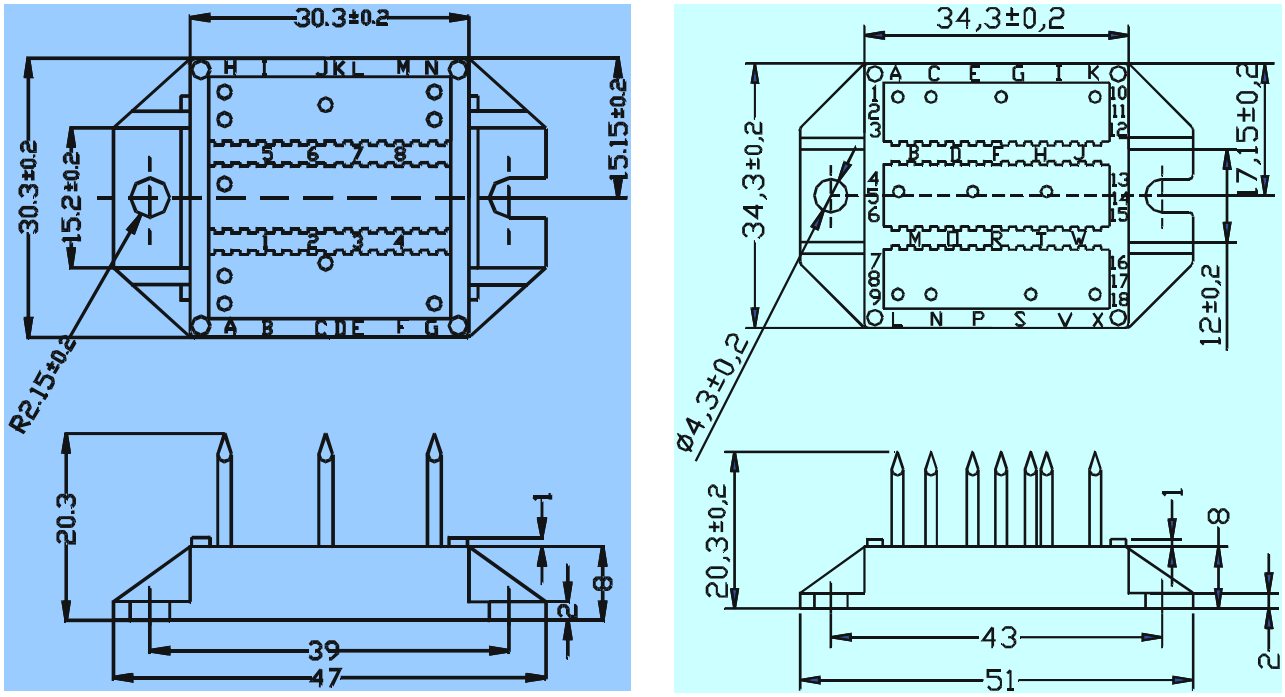


Fig. 2: outline drawings of ECO-PAC™ 1 (upper left) and ECO-PAC™ 2 (upper right). All dimensions are given in mm.

Fig. 3: Gold plated copper terminals with expansion bend

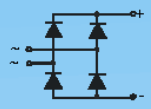
ECO-PAC™ 2

Lowest Profile Package
Highest Performance
Multifunctional

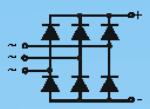
E C O - P A C ™ 2 from **POWERSEM** offers a wide choice of circuit configurations and integrations of diode, thyristor, MOSFET and IGBT chips within a single package, thereby reducing the number of external connections.
It provides isolation voltages **of over 3600 Vac RMS**, allows optimum heat transfer direct to the heat sink and is suitable for soldering on printed circuit boards. The usage of DCB technology and planar glasspassivated silicon diffused chips in ECO-PACs™ leads to excellent long term reliability and thermal/load cycling capability. A single packaging concept of **ECO-PAC™ 2** has been designed as an electrical replacement for 6-230 Amp Thyristor/ Diode modules, Isotops, SOT-227 and TO247, traditionally supplied by IR, EUPEC, Silicon Power Cube and other manufacturers. However, its low profile packaging enables compact design and economic system solutions.
Main applications for **ECO-PAC™ 2** are as supplies for **DC power equipment, AC/DC motor drives, soft start capacitor charging, UPS** and **Power Factor Correction**.

MULTIFUNCTIONALITY OF ECO-PAC™ 1 and 2

Rectifier Bridges (Ultra Fast)

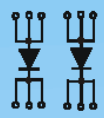


PSB



PSD

Fast Recovery Epitaxial Diode

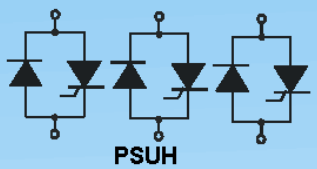


PSEI

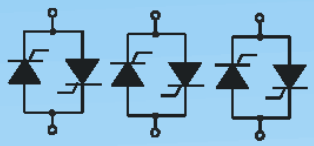
AC Controller Modules

PSW1C

PSW1H

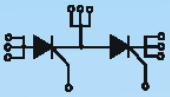


PSUH

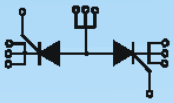


PSUT

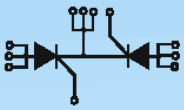
Thyristor/Thyristor and Thyristor/Diode Modules



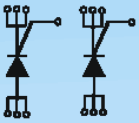
PSKT



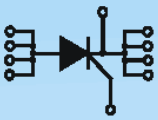
PSKA



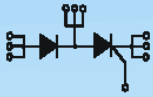
PSKC



PSKI

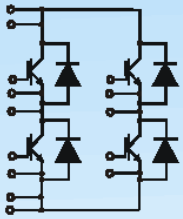


PSET



PSKH

IGBT Modules



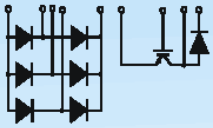
PSHI

PSI

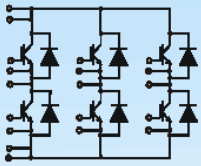
PSSI

PSIS

PSIG

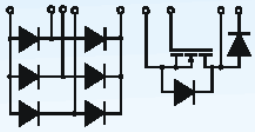


PSDI

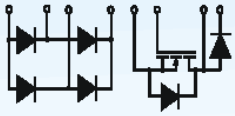


PSII

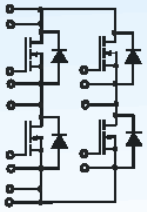
MOSFET Modules



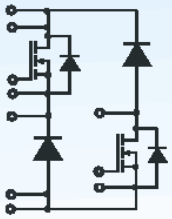
PSDM



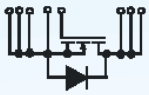
PSBM



PSHM



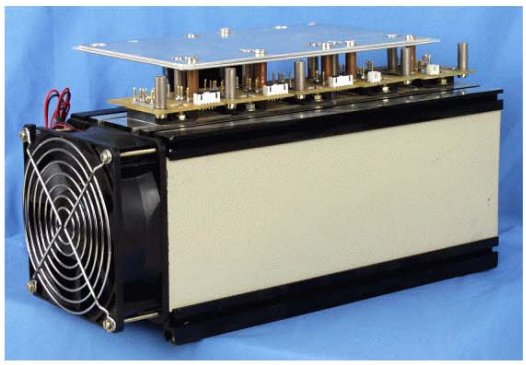
PSHMLD



PSMG

ECO-BLOCK™
B2CI-230/230-20F

GENERAL DESCRIPTION



The ECO-BLOCK™ consists of a Rectifier, Buck/Boost Converter and H-Bridge Inverter all mounted on a single force-cooled heatsink. The use of Powersem ECO-PAC™ modules for the Rectifier, Buck/Boost and Inverter stages offers a **weight** and **space saving** solution and an **improved power/weight ratio at a lower cost**. The DCB (Direct Copper Bonded) base of the Powersem ECO-PAC™ modules allows **optimum heat transfer** and makes the ECO-BLOCK™ highly efficient due to low thermal impedance, **reducing the heat sink size**.

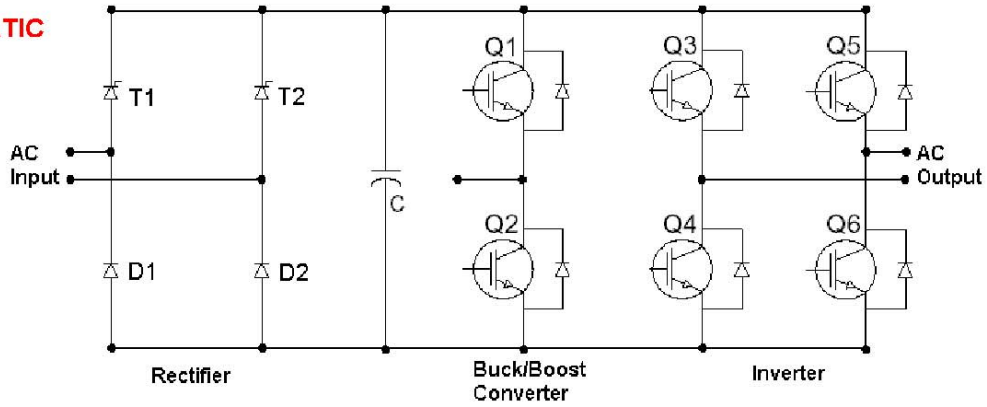
FEATURES

- Input parameters – 230 V / Single phase
- Output parameters – 230 V / 20A / Single phase
- Battery charger – 110V / 20A / Buck converter
- DC Link voltage – 400 V / Boost converter
- Crest factor – 1:2
- Improved power/weight ratio
- Low-Inductance sandwiched bus-bar arrangement for DC Link

APPLICATIONS

- UPS systems and Inverters
- AC Drives
- Power electronic Converters

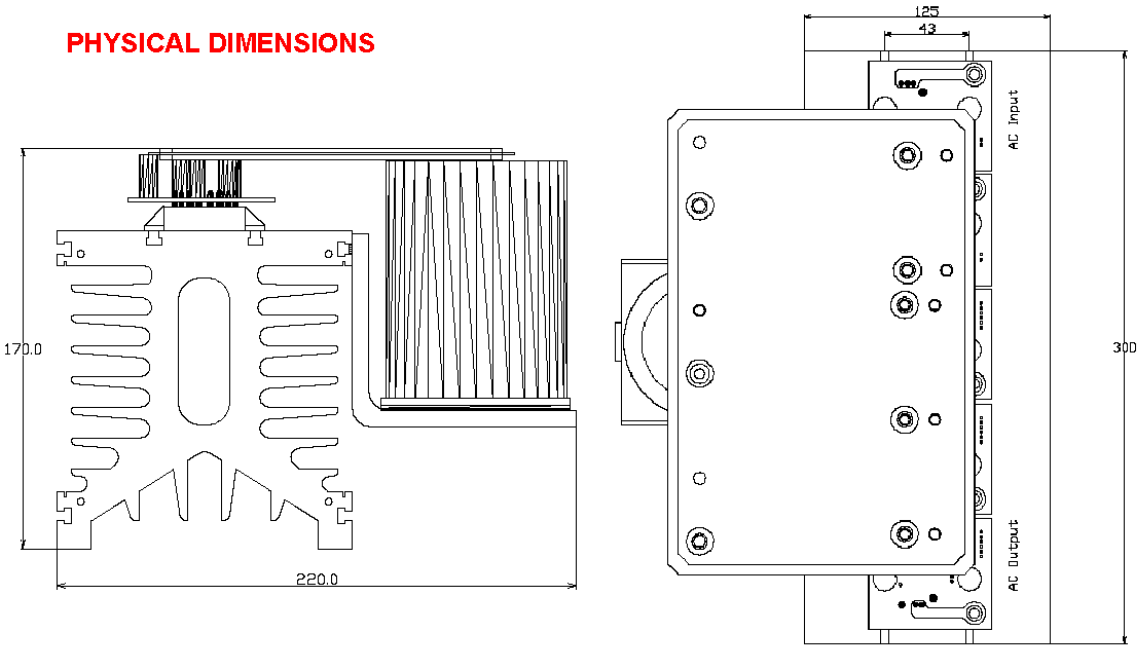
SCHEMATIC



MAXIMUM RATINGS

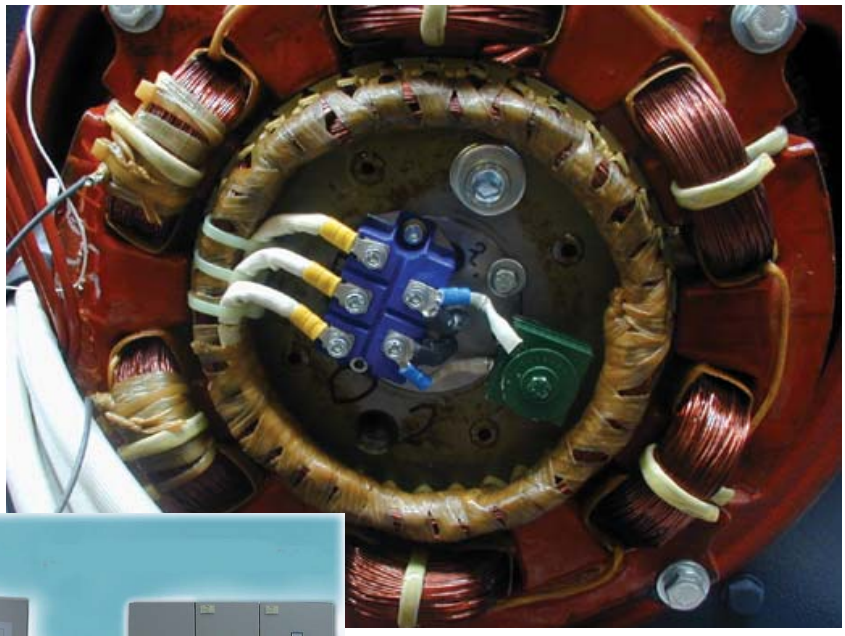
Symbol	Parameter	Condition	Value	Unit
V_{in}	Input Voltage	Maximum	280	V (ac)
I_{in}	Input Current	Maximum (Tc = 85ºC)	40	A (ac)
V_o	Output Voltage	Maximum	230	V (ac)
I_o	Output Current	Typical (Tc = 85ºC)	20	A(ac)
		Maximum (for 1 minute)	45	A (ac)
I_{ch}	Charger Current	Typical	10	A (dc)
V_{dc}	Charger Voltage	Typical	110	V (dc)

PHYSICAL DIMENSIONS

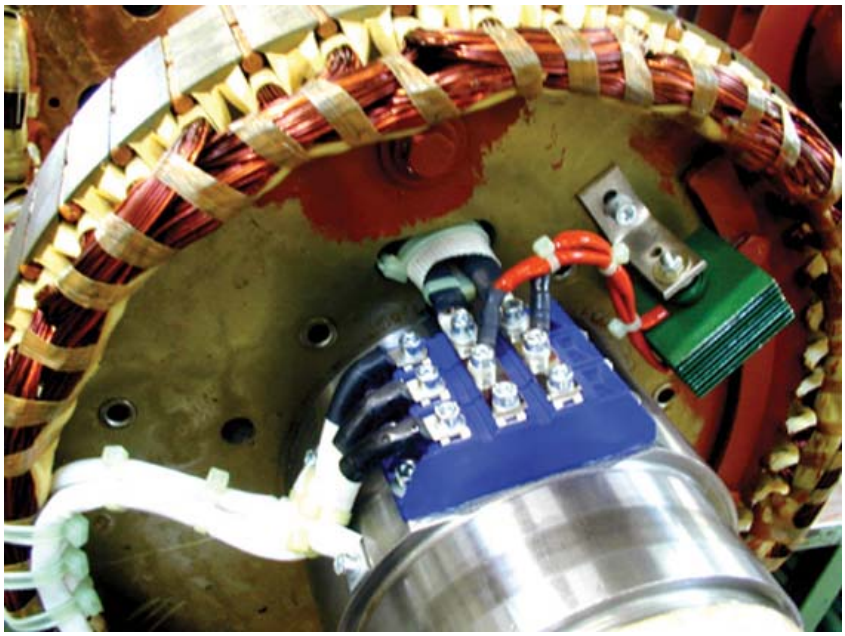


TRACTION-PAC™ - YOUR solution for high – speed – rotating systems:

Three phase rectifier bridge **PSTD 82** mounted on the high speed rotating shaft of an UPS System



APPLICATION:
Uninterrupted Power Supply (UPS) Systems



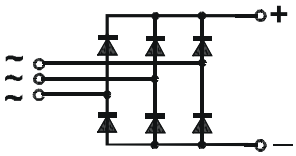
Three phase leg diode modules **PSTKD 82** mounted on the high speed rotating shaft of an UPS System

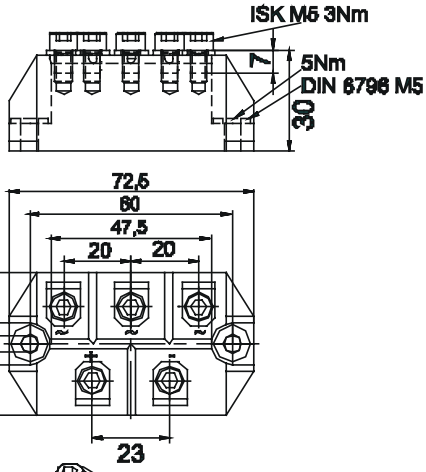
TRACTION-PAC™ - YOUR solution for high – speed – rotating systems:

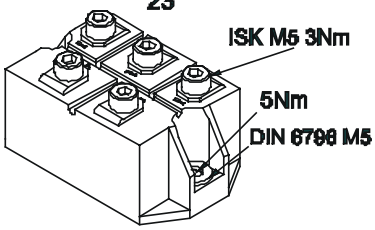
Three Phase Rectifier Bridge PSTD 82

PSTD 82

V_{RRM}: 600 - 1800 V
I_{DAV}: 88 A @ T_C = 110 °C
I_{FSM}: 750 A (10 ms, 45 °C)
V_{T0}: 0.8 V
r_T: 5 mΩ
T_{VJM}: 150 °C
R_{thJC}: 1.10 K/W
R_{thJH}: 1.52 K/W



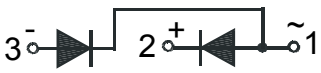


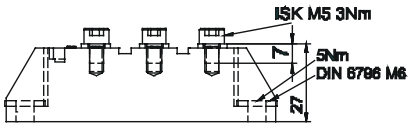


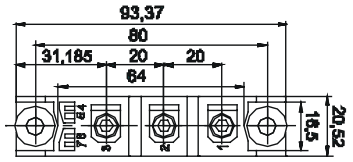
Diode Module PSTKD 82*

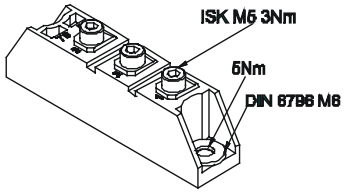
PSTKD 82

V_{RRM}: 600 - 1800 V
I_{DAV}: 80 A @ T_C = 110 °C
I_{FSM}: 1700 A (10 ms, 45 °C)
V_{T0}: 0.8 V
r_T: 2.7 mΩ
T_{VJM}: 150 °C
R_{thJC}: 0.35 K/W
R_{thJH}: 0.55 K/W

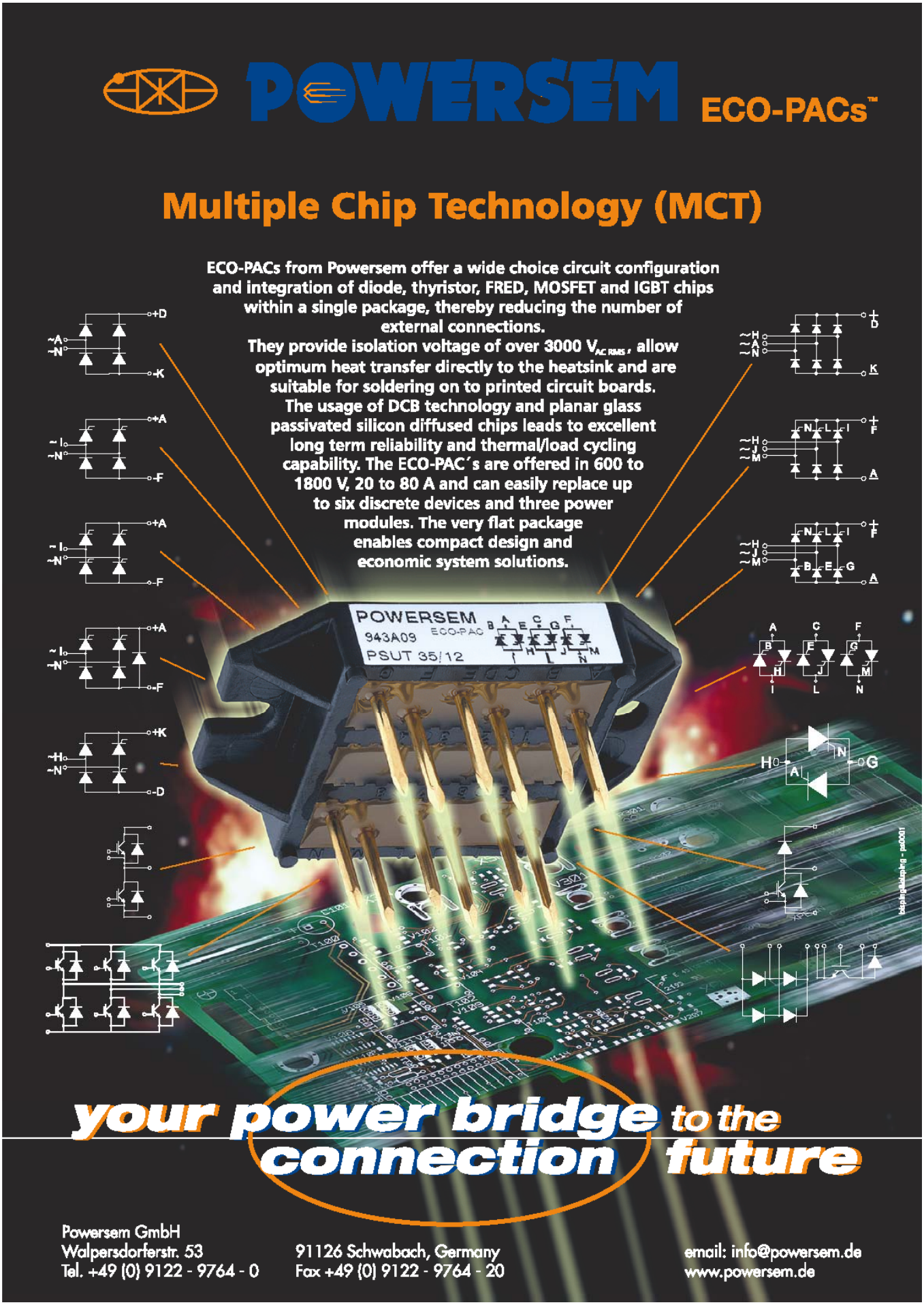






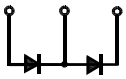


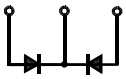
***also available as thyristor module**



Ultrafast Epitaxial Diode Modules

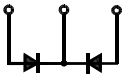
released, E 148688

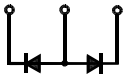

PSKD


PSMD

Type	V_{RRM} V	V_{VRMS} V	I_{FAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_F T_{VJ} 25°C V	I_F A	t_{rr} T_{VJ} 25°C ns	R_{thJC} per Diode/ per Modul K/W		R_{thJH} per Diode/ per Modul K/W		Figure	Package style see outlines starting at page 86
PSKD 30E/02	200	60	25	85	400	1.25	30	60	1.0	0.5	1.2	0.6	1	
PSKD 30E/04	400	125	25	85	400	1.25	30	60	1.0	0.5	1.2	0.6		
PSKD 30E/06	600	200	25	85	400	1.25	30	60	1.0	0.5	1.2	0.6		
PSKD 30E/08	800	250	25	85	300	2.00	30	100	1.0	0.5	1.2	0.6		
PSKD 30E/10	1000	312	25	85	300	2.00	30	100	1.0	0.5	1.2	0.6		
PSKD 30E/12	1200	400	25	85	300	2.00	30	100	1.0	0.5	1.2	0.6		
PSKD 50E/02	200	60	50	85	800	1.25	50	60	0.9	0.45	1.1	0.55		
PSKD 50E/04	400	125	50	85	800	1.25	50	60	0.9	0.45	1.1	0.55		
PSKD 50E/06	600	200	50	85	800	1.25	50	60	0.9	0.45	1.1	0.55		
PSKD 50E/08	800	250	50	85	600	2.00	50	100	0.9	0.45	1.1	0.55		
PSKD 50E/10	1000	312	50	85	600	2.00	50	100	0.9	0.45	1.1	0.55		
PSKD 50E/12	1200	400	50	85	600	2.00	50	100	0.9	0.45	1.1	0.55		
PSKD 75E/02	200	60	75	85	1400	1.25	75	60	0.85	0.43	1.0	0.5		Fig. 1
PSKD 75E/04	400	125	75	85	1400	1.25	75	60	0.85	0.43	1.0	0.5		Weight = 160 g
PSKD 75E/06	600	200	75	85	1400	1.25	75	60	0.85	0.43	1.0	0.5		
PSKD 75E/08	800	250	75	85	1000	2.00	75	100	0.85	0.43	1.0	0.5		
PSKD 75E/10	1000	312	75	85	1000	2.00	75	100	0.85	0.43	1.0	0.5		
PSKD 75E/12	1200	400	75	85	1000	2.00	75	100	0.85	0.43	1.0	0.5		
PSKD 100E/02	200	60	136	70	2000	1.25	100	60	0.65	0.33	0.84	0.42	2	
PSKD 100E/04	400	125	136	70	2000	1.25	100	60	0.65	0.33	0.84	0.42		
PSKD 100E/06	600	200	136	70	2000	1.25	100	60	0.65	0.33	0.84	0.42		
PSKD 100E/08	800	250	104	70	1500	1.55	100	100	0.65	0.33	0.84	0.42		
PSKD 100E/10	1000	312	104	70	1500	1.55	100	100	0.65	0.33	0.84	0.42		
PSKD 100E/12	1200	400	104	70	1500	1.55	100	100	0.65	0.33	0.84	0.42		
PSKD 150E/02	200	60	272	70	3000	1.25	150	60	0.42	0.21	0.57	0.28		
PSKD 150E/04	400	125	272	70	3000	1.25	150	60	0.42	0.21	0.57	0.28		
PSKD 150E/06	600	200	272	70	3000	1.25	150	60	0.42	0.21	0.57	0.28		
PSKD 150E/08	800	250	208	70	2500	1.55	150	100	0.42	0.21	0.57	0.28		
PSKD 150E/10	1000	312	208	70	2500	1.55	150	100	0.42	0.21	0.57	0.28		
PSKD 150E/12	1200	400	208	70	2500	1.55	150	100	0.42	0.21	0.57	0.28		
PSKD 200E/02	200	60	408	70	4000	1.25	200	60	0.28	0.14	0.38	0.19		
PSKD 200E/04	400	125	408	70	4000	1.25	200	60	0.28	0.14	0.38	0.19		
PSKD 200E/06	600	200	408	70	4000	1.25	200	60	0.28	0.14	0.38	0.19		
PSKD 200E/08	800	250	312	70	3200	1.55	200	100	0.28	0.14	0.38	0.19		
PSKD 200E/10	1000	312	312	70	3200	1.55	200	100	0.28	0.14	0.38	0.19		
PSKD 200E/12	1200	400	312	70	3200	1.55	200	100	0.28	0.14	0.38	0.19		
PSMD 30E/02	200	60	25	85	400	1.25	30	60	1.0	0.5	1.2	0.6	1	
PSMD 30E/04	400	125	25	85	400	1.25	30	60	1.0	0.5	1.2	0.6		
PSMD 30E/06	600	200	25	85	400	1.25	30	60	1.0	0.5	1.2	0.6		
PSMD 30E/08	800	250	25	85	300	2.00	30	100	1.0	0.5	1.2	0.6		
PSMD 30E/10	1000	312	25	85	300	2.00	30	100	1.0	0.5	1.2	0.6		Fig. 2
PSMD 30E/12	1200	400	25	85	300	2.00	30	100	1.0	0.5	1.2	0.6		Weight = 270 g
PSMD 50E/02	200	60	50	85	800	1.25	50	60	0.9	0.45	1.1	0.55		
PSMD 50E/04	400	125	50	85	800	1.25	50	60	0.9	0.45	1.1	0.55		
PSMD 50E/06	600	200	50	85	800	1.25	50	60	0.9	0.45	1.1	0.55		
PSMD 50E/08	800	250	50	85	600	2.00	50	100	0.9	0.45	1.1	0.55		
PSMD 50E/10	1000	312	50	85	600	2.00	50	100	0.9	0.45	1.1	0.55		
PSMD 50E/12	1200	400	50	85	600	2.00	50	100	0.9	0.45	1.1	0.55		
PSMD 75E/02	200	60	75	85	1400	1.25	75	60	0.85	0.43	1.0	0.5		
PSMD 75E/04	400	125	75	85	1400	1.25	75	60	0.85	0.43	1.0	0.5		
PSMD 75E/06	600	200	75	85	1400	1.25	75	60	0.85	0.43	1.0	0.5		
PSMD 75E/08	800	250	75	85	1000	2.00	75	100	0.85	0.43	1.0	0.5		
PSMD 75E/10	1000	312	75	85	1000	2.00	75	100	0.85	0.43	1.0	0.5		
PSMD 75E/12	1200	400	75	85	1000	2.00	75	100	0.85	0.43	1.0	0.5		
PSMD 100E/02	200	60	136	70	2000	1.25	100	60	0.65	0.33	0.84	0.42	2	
PSMD 100E/04	400	125	136	70	2000	1.25	100	60	0.65	0.33	0.84	0.42		
PSMD 100E/06	600	200	136	70	2000	1.25	100	60	0.65	0.33	0.84	0.42		
PSMD 100E/08	800	250	104	70	1500	1.55	100	100	0.65	0.33	0.84	0.42		
PSMD 100E/10	1000	312	104	70	1500	1.55	100	100	0.65	0.33	0.84	0.42		
PSMD 100E/12	1200	400	104	70	1500	1.55	100	100	0.65	0.33	0.84	0.42		

Ultrafast Epitaxial Diode Modules

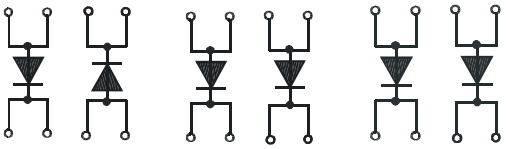

PSMD


PSND

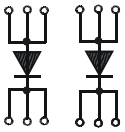
released, E 148688

Type	V_{RRM} V	V_{VRMS} V	I_{FAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_F T_{VJ} 25°C V	I_F A	t_{rr} T_{VJ} 25°C ns	R_{thJC} per Diode/ per Modul K/W		R_{thJH} per Diode/ per Modul K/W		Figure	Package style see outlines starting at page 86
PSMD 150E/02	200	60	272	70	3000	1.25	150	60	0.42	0.21	0.57	0.28	2	
PSMD 150E/04	400	125	272	70	3000	1.25	150	60	0.42	0.21	0.57	0.28		
PSMD 150E/06	600	200	272	70	3000	1.25	150	60	0.42	0.21	0.57	0.28		
PSMD 150E/08	800	250	208	70	2500	1.55	150	100	0.42	0.21	0.57	0.28		
PSMD 150E/10	1000	312	208	70	2500	1.55	150	100	0.42	0.21	0.57	0.28		
PSMD 150E/12	1200	400	208	70	2500	1.55	150	100	0.42	0.21	0.57	0.28		
PSMD 200E/02	200	60	408	70	4000	1.25	200	60	0.28	0.14	0.38	0.19		Fig. 2
PSMD 200E/04	400	125	408	70	4000	1.25	200	60	0.28	0.14	0.38	0.19		Weight = 270 g
PSMD 200E/06	600	200	408	70	4000	1.25	200	60	0.28	0.14	0.38	0.19		
PSMD 200E/08	800	250	312	70	3200	1.55	200	100	0.28	0.14	0.38	0.19		
PSMD 200E/10	1000	312	312	70	3200	1.55	200	100	0.28	0.14	0.38	0.19		
PSMD 200E/12	1200	400	312	70	3200	1.55	200	100	0.28	0.14	0.38	0.19		
PSND 30E/02	200	60	25	85	400	1.25	30	60	1.0	0.5	1.2	0.6	1	
PSND 30E/04	400	125	25	85	400	1.25	30	60	1.0	0.5	1.2	0.6		
PSND 30E/06	600	200	25	85	400	1.25	30	60	1.0	0.5	1.2	0.6		
PSND 30E/08	800	250	25	85	300	2.00	30	100	1.0	0.5	1.2	0.6		
PSND 30E/10	1000	312	25	85	300	2.00	30	100	1.0	0.5	1.2	0.6		
PSND 30E/12	1200	400	25	85	300	2.00	30	100	1.0	0.5	1.2	0.6		
PSND 50E/02	200	60	50	85	800	1.25	50	60	0.9	0.45	1.1	0.55		
PSND 50E/04	400	125	50	85	800	1.25	50	60	0.9	0.45	1.1	0.55		
PSND 50E/06	600	200	50	85	800	1.25	50	60	0.9	0.45	1.1	0.55		
PSND 50E/08	800	250	50	85	600	2.00	50	100	0.9	0.45	1.1	0.55		
PSND 50E/10	1000	312	50	85	600	2.00	50	100	0.9	0.45	1.1	0.55		
PSND 50E/12	1200	400	50	85	600	2.00	50	100	0.9	0.45	1.1	0.55		
PSND 75E/02	200	60	75	85	1400	1.25	75	60	0.85	0.43	1.0	0.5		
PSND 75E/04	400	125	75	85	1400	1.25	75	60	0.85	0.43	1.0	0.5		
PSND 75E/06	600	200	75	85	1400	1.25	75	60	0.85	0.43	1.0	0.5		Fig. 1
PSND 75E/08	800	250	75	85	1000	2.00	75	100	0.85	0.43	1.0	0.5		Weight = 160 g
PSND 75E/10	1000	312	75	85	1000	2.00	75	100	0.85	0.43	1.0	0.5		
PSND 75E/12	1200	400	75	85	1000	2.00	75	100	0.85	0.43	1.0	0.5		
PSND 100E/02	200	60	136	70	2000	1.25	100	60	0.65	0.33	0.84	0.42	2	
PSND 100E/04	400	125	136	70	2000	1.25	100	60	0.65	0.33	0.84	0.42		
PSND 100E/06	600	200	136	70	2000	1.25	100	60	0.65	0.33	0.84	0.42		
PSND 100E/08	800	250	104	70	1500	1.55	100	100	0.65	0.33	0.84	0.42		
PSND 100E/10	1000	312	104	70	1500	1.55	100	100	0.65	0.33	0.84	0.42		
PSND 100E/12	1200	400	104	70	1500	1.55	100	100	0.65	0.33	0.84	0.42		
PSND 150E/02	200	60	272	70	3000	1.25	150	60	0.42	0.21	0.57	0.28		
PSND 150E/04	400	125	272	70	3000	1.25	150	60	0.42	0.21	0.57	0.28		
PSND 150E/06	600	200	272	70	3000	1.25	150	60	0.42	0.21	0.57	0.28		
PSND 150E/08	800	250	208	70	2500	1.55	150	100	0.42	0.21	0.57	0.28		
PSND 150E/10	1000	312	208	70	2500	1.55	150	100	0.42	0.21	0.57	0.28		
PSND 150E/12	1200	400	208	70	2500	1.55	150	100	0.42	0.21	0.57	0.28		
PSND 200E/02	200	60	408	70	4000	1.25	200	60	0.28	0.14	0.38	0.19		
PSND 200E/04	400	125	408	70	4000	1.25	200	60	0.28	0.14	0.38	0.19		
PSND 200E/06	600	200	408	70	4000	1.25	200	60	0.28	0.14	0.38	0.19		
PSND 200E/08	800	250	312	70	3200	1.55	200	100	0.28	0.14	0.38	0.19		
PSND 200E/10	1000	312	312	70	3200	1.55	200	100	0.28	0.14	0.38	0.19		
PSND 200E/12	1200	400	312	70	3200	1.55	200	100	0.28	0.14	0.38	0.19		

Fast Recovery Epitaxial Diode (FRED) Modules



2 x 30 2 x 31 2 x 61

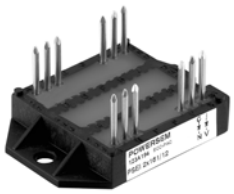


2 x 101/121/161

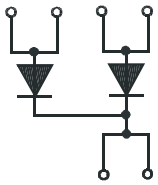
released, E 148688

Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	t_{rr} typ. ns	R_{thJC} Chip ------- Module K/W	R_{thJH} Chip ------- Module K/W	Figure	Package style see outlines starting at page 86
PSEI 2x30/04	400	125	30	85	300	1.01	7.10	35	1.25	1.3	3	Fig. 3
PSEI 2x30/06	600	200	30	85	300	1.01	7.10	35	-------	-------		Weight = 16 g
PSEI 2x30/10	1000	312	30	50	200	1.50	12.5	35	0.63	0.65		
PSEI 2x30/12	1200	400	28	50	200	1.65	18.2	40				
PSEI 2x31/04	400	125	30	85	300	1.01	7.10	35	1.25	1.3		
PSEI 2x31/06	600	200	30	85	300	1.01	7.10	35	-------	-------		
PSEI 2x31/10	1000	312	30	50	200	1.50	12.5	35	0.63	0.65		
PSEI 2x31/12	1200	400	28	50	200	1.65	18.2	40				
PSEI 2x61/02	200	60	71	85	950	0.70	3.00	35	0.7	0.75		
PSEI 2x61/04	400	125	60	70	550	1.13	4.70	35				
PSEI 2x61/06	600	200	60	70	550	1.13	4.70	35	-------	-------		
PSEI 2x61/10	1000	312	60	50	500	1.43	6.10	35	0.35	0.38		
PSEI 2x61/12	1200	400	52	50	450	1.65	8.30	40				
PSEI 2x101/06	600	200	96	70	1200	0.70	4.70	35	0.5	0.55	4	Fig. 4
PSEI 2x101/12	1200	400	91	50	900	1.01	6.10	40	0.25	0.28		Weight = 24 g
PSEI 2x121/02	200	60	123	70	1200	0.70	2.10	35	0.7	0.8		
PSEI 2x161/02	200	60	165	70	1200	0.53	2.6	35	0.29	0.49		
PSEI 2x161/06	600	200	147	70	1200	0.85	2.7	35	------	-------		
PSEI 2x161/12	1200	400	128	70	1200	1.16	3	40	0.15	0.25		

ECO-PAC™ 1



ECO-PAC™ 2

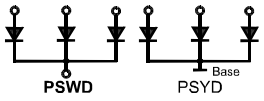


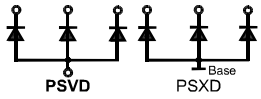
released, E 148688

Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45° 10ms A	V_{TO} V	r_T mΩ	t_{rr} ns	R_{thJC} Chip ------- Module K/W	R_{thJH} Chip ------- Module K/W	Figure	Package style see outlines starting at page 86
PSEK 60/02	200	60	34	100	325	0.72	4.20	35	1.25	1.3	5	Fig. 5
PSEK 60/06	600	200	30	70	300	1.01	7	35	--------	-------		Weight = 16 g
PSEK 60/12	1200	400	26	70	200	1.65	18.2	40	0.63	0.65		

ECO-PAC™ 1

Diode Modules



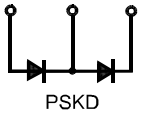


released, E 148688

Type	V_{RRM} V_{DRM} V	I_{TAVM} I_{FAVM} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thJH} K/W	Figure	Package style see outlines starting at page 86
PSVD 80/08 **PSVD 80/12** **PSVD 80/14** **PSVD 80/16** **PSVD 80/18**	800 1200 1400 1600 1800	50	85	1200	0.8	5	150	0.9	1.08	2	Fig. 2 Weight = 270 g
PSVD 120/08 **PSVD 120/12** **PSVD 120/14** **PSVD 120/16** **PSVD 120/18**	800 1200 1400 1600 1800	70	85	1800	0.8	3	150	0.65	0.83		
PSVD 175/08 **PSVD 175/12** **PSVD 175/14** **PSVD 175/16** **PSVD 175/18**	800 1200 1400 1600 1800	100	85	2800	0.8	2.2	150	0.45	0.6		
PSWD 80/08 **PSWD 80/12** **PSWD 80/14** **PSWD 80/16** **PSWD 80/18**	800 1200 1400 1600 1800	50	85	1200	0.8	5	150	0.9	1.08		
PSWD 120/08 **PSWD 120/12** **PSWD 120/14** **PSWD 120/16** **PSWD 120/18**	800 1200 1400 1600 1800	70	85	1800	0.8	3	150	0.65	0.83		
PSWD 175/08 **PSWD 175/12** **PSWD 175/14** **PSWD 175/16** **PSWD 175/18**	800 1200 1400 1600 1800	100	85	2800	0.8	2.2	150	0.45	0.6		

PSWD/PSVD 80/120/175 = isolated base
PSYD/PSXD 80/120/175 = non isolated base

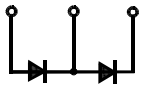
Diode Modules



released, E 148688

Type	V_{RRM} V_{DRM} V	I_{TAVM} I_{FAVM} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Diode DC Current K/W	R_{thJH} per Diode DC Current K/W	Figure	Package style see outlines starting at page 86
PSKD 26/08 **PSKD 26/12** **PSKD 26/14** **PSKD 26/16** **PSKD 26/18**	800 1200 1400 1600 1800	36	100	650	0.8	6.1	150	1.0	1.2	8	Fig. 8 Weight = 90 g
PSKD 44/08 **PSKD 44/12** **PSKD 44/14** **PSKD 44/16** **PSKD 44/18**	800 1200 1400 1600 1800	59	100	1150	0.8	4.3	150	0.59	0.79		
PSKD 56/08 **PSKD 56/12** **PSKD 56/14** **PSKD 56/16** **PSKD 56/18**	800 1200 1400 1600 1800	71	100	1400	0.8	3.0	150	0.51	0.71		
PSKD 72/08 **PSKD 72/12** **PSKD 72/14** **PSKD 72/16** **PSKD 72/18**	800 1200 1400 1600 1800	99	100	1700	0.8	2.3	150	0.35	0.55		Fig. 9 Weight = 125 g
PSKD 95/08 **PSKD 95/12** **PSKD 95/14** **PSKD 95/16** **PSKD 95/18**	800 1200 1400 1600 1800	120	105	2800	0.75	1.95	150	0.26	0.46		
PSKD 142/08 **PSKD 142/12** **PSKD 142/14** **PSKD 142/16** **PSKD 142/18**	800 1200 1400 1600 1800	165	100	4700	0.8	1.3	150	0.21	0.31	9	

Diode Modules



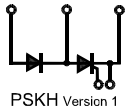
PSKD

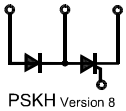
released, E 148688

Type	V_{RRM} V_{DRM} V	I_{FAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Diode DC Current K/W	R_{thJH} per Diode DC Current K/W	Figure	Package style see outlines starting at page 86
PSKD 172/08	800	190	100	6600	0.8	0.8	150	0.21	0.31	9	Fig. 10
PSKD 172/12	1200										Weight = 320 g
PSKD 172/14	1400										
PSKD 172/16	1600										
PSKD 172/18	1800										
PSKD 220/08	800	270	100	8500	0.75	0.9	150	0.129	0.169	10	
PSKD 220/12	1200										
PSKD 220/14	1400										
PSKD 220/16	1600										
PSKD 250/08	800	290	100	11000	0.75	0.75	150	0.129	0.169		
PSKD 250/12	1200										
PSKD 250/14	1400										
PSKD 250/16	1600										
PSKD 250/18	1800										
PSKD 255/12	1200	270	100	9500	0.8	0.6	150	0.14	0.18	11	
PSKD 255/14	1400										
PSKD 255/16	1600										
PSKD 255/18	1800										
PSKD 310/08	800	305	100	11500	0.75	0.63	150	0.129	0.169	10	
PSKD 310/12	1200										
PSKD 310/14	1400										
PSKD 310/16	1600										
PSKD 310/18	1800										
PSKD 312/12	1200	310	100	10500	0.8	0.68	150	0.12	0.16	11	
PSKD 312/14	1400										
PSKD 312/16	1600										
PSKD 312/18	1800										
PSKD 312/20	2000										
PSKD 312/22	2200										

Fig. 11
Weight = 750 g

Thyristor / Diode Modules

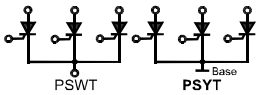

PSKH Version 1

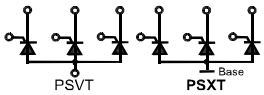

PSKH Version 8

released, E 148688

Type	V_{RRM} V_{DRM} V	I_{TAV} 180° sine A	T_C °C	I_{TRMS} I_{FRMS} T_{VJ} = T_{VJM} A	I_{TSM} I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip K/W	R_{thJH} per Chip K/W	Figure	Package style see outlines starting at page 86
PSKH 26/08io8 **PSKH 26/12io8** **PSKH 26/14io8** **PSKH 26/16io8**	800 1200 1400 1600	27	85	50	520	0.85	11	125	0.88	1.08	8	Fig. 8 Weight = 90 g
PSKH 44/08io8 **PSKH 44/12io8** **PSKH 44/14io8** **PSKH 44/16io8** **PSKH 44/18io8**	800 1200 1400 1600 1800	49	85	80	1150	0.85	5.3	125	0.53	0.73		
PSKH 56/08io8 **PSKH 56/12io8** **PSKH 56/14io8** **PSKH 56/16io8** **PSKH 56/18io8**	800 1200 1400 1600 1800	60	85	100	1500	0.85	3.7	125	0.45	0.65		
PSKH 72/08io8 **PSKH 72/12io8** **PSKH 72/14io8** **PSKH 72/16io8** **PSKH 72/18io8**	800 1200 1400 1600 1800	85	85	180	1700	0.85	3.2	125	0.3	0.5		Fig. 9 Weight = 125 g
PSKH 94/20io1 **PSKH 94/22io1**	2000 2200	104	85	180	1700	0.85	3.2	125	0.22	0.42		
PSKH 95/08io8 **PSKH 95/12io8** **PSKH 95/14io8** **PSKH 95/16io8** **PSKH 95/18io8**	800 1200 1400 1600 1800	116	85	180	2250	0.8	2.4	125	0.22	0.42		
PSKH 132/08io1 **PSKH 132/12io1** **PSKH 132/14io1** **PSKH 132/16io1** **PSKH 132/18io1**	800 1200 1400 1600 1800	130	85	300	4750	0.8	1.5	125	0.23	0.33	9	
PSKH 161/20io1 **PSKH 161/22io1**	2000 2200	165	85	300	6000	0.8	1.6	125	0.155	0.225		Fig. 10 Weight = 320 g
PSKH 162/08io1 **PSKH 162/12io1** **PSKH 162/14io1** **PSKH 162/16io1** **PSKH 162/18io1**	800 1200 1400 1600 1800	181	85	300	6000	0.88	1.15	125	0.155	0.225		
PSKH 220/08io1 **PSKH 220/12io1** **PSKH 220/14io1** **PSKH 220/16io1**	800 1200 1400 1600	250	85	400	8500	0.9	1.0	140	0.139	0.179	10	
PSKH 225/12io1 **PSKH 225/14io1** **PSKH 225/16io1** **PSKH 225/18io1**	1200 1400 1600 1800	221	85	400	8000	0.8	0.76	130	0.157	0.197	11	
PSKH 250/08io1 **PSKH 250/12io1** **PSKH 250/14io1** **PSKH 250/16io1**	800 1200 1400 1600	287	85	450	9000	0.85	0.82	140	0.129	0.169	10	Fig. 11 Weight = 750 g
PSKH 255/12io1 **PSKH 255/14io1** **PSKH 255/16io1** **PSKH 255/18io1**	1200 1400 1600 1800	250	85	450	9000	0.8	0.68	130	0.14	0.18	11	
PSKH 310/08io1 **PSKH 310/12io1** **PSKH 310/14io1** **PSKH 310/16io1**	800 1200 1400 1600	320	85	500	9200	0.8	0.82	140	0.112	0.152	10	
PSKH 312/12io1 **PSKH 312/14io1** **PSKH 312/16io1** **PSKH 312/18io1**	1200 1400 1600 1800	320	85	520	9200	0.8	0.68	140	0.12	0.16	11	

Thyristor Modules





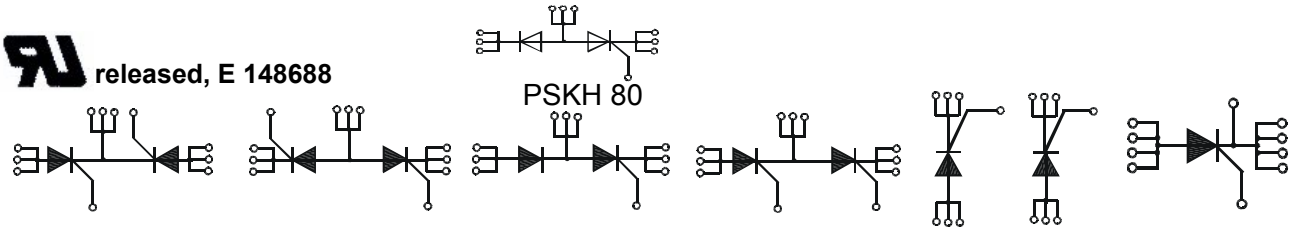
released, E 148688

Type	V_{RRM} V_{DRM} V	I_{TAV} A	T_C °C	I_{TSM} 45°C 10 ms per chip A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per chip K/W	R_{thJH} per chip K/W	Figure	Package style see outlines starting at page 86
PSVT 70/08 **PSVT 70/12** **PSVT 70/14** **PSVT 70/16**	800 1200 1400 1600	49	85	1150	0.85	5.3	125	0.35	0.55	2	Fig. 2 Weight = 270 g
PSVT 90/08 **PSVT 90/12** **PSVT 90/14** **PSVT 90/16**	800 1200 1400 1600	70	85	1200	0.85	4.3	125	0.31	0.51		
PSVT 160/08 **PSVT 160/12** **PSVT 160/14** **PSVT 160/16**	800 1200 1400 1600	85	85	1700	0.85	3.2	125	0.3	0.5		
PSWT 70/08 **PSWT 70/12** **PSWT 70/14** **PSWT 70/16**	800 1200 1400 1600	49	85	1150	0.85	5.3	125	0.35	0.55		
PSWT 90/08 **PSWT 90/12** **PSWT 90/14** **PSWT 90/16**	800 1200 1400 1600	70	85	1200	0.85	4.3	125	0.31	0.51		
PSWT 160/08 **PSWT 160/12** **PSWT 160/14** **PSWT 160/16**	800 1200 1400 1600	85	85	1700	0.85	3.2	125	0.3	0.5		

PSWT/ PSVT 70/90/160 = isolated base

PSXT/ PSYT 70/90/160 = non isolated base

released, E 148688



Type	V_{RRM} V	I_{TRMS} I_{FRMS} T_{VJ} = T_{VJM} A	I_{TAVM} I_{FAVM} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W	Figure	Package style see outlines starting at page 86
PSKH 80/06	600	140	80	85	550	0.8	2.95	125	0.36	0.56	78	
PSKH 80/08	800	140							---	---		
PSKH 80/12	1200	140							0.18	0.28		
PSKC 96/06	600	180	105	85	2250	0.8	2.4	125	0.26	0.46	12	
PSKC 96/08	800	180							---	---		
PSKC 96/12	1200	180										
PSKC 96/14	1400	180							0.13	0.23		
PSKC 96/16	1600	180										
PSKC 96/18	1800	180										
PSKA 96/06	600	180	105	85	2250	0.8	2.4	125	0.26	0.46	13	
PSKA 96/08	800	180							---	---		
PSKA 96/12	1200	180										
PSKA 96/14	1400	180							0.13	0.23		
PSKA 96/16	1600	180										
PSKA 96/18	1800	180										
PSKH 96/06	600	180	105	85	2250	0.8	2.4	125	0.26	0.46	14	
PSKH 96/08	800	180							---	---		
PSKH 96/12	1200	180										
PSKH 96/14	1400	180							0.13	0.23		
PSKH 96/16	1600	180										
PSKH 96/18	1800	180										
PSKT 96/06	600	180	105	85	2250	0.8	2.4	125	0.26	0.46	15	
PSKT 96/08	800	180							---	---		
PSKT 96/12	1200	180										
PSKT 96/14	1400	180							0.13	0.23		
PSKT 96/16	1600	180										
PSKT 96/18	1800	180										
PSKI 96/06	600	180	105	85	2250	0.8	2.4	125	0.26	0.46	16	
PSKI 96/08	800	180							---	---		
PSKI 96/12	1200	180										
PSKI 96/14	1400	180							0.13	0.23		
PSKI 96/16	1600	180										
PSKI 96/18	1800	180										
PSET 132/08	800	300	132	85	3600	0.8	1.65	150 for 10 s	0.25	0.35	50	
PSET 132/12	1200	300							---	---		
PSET 132/14	1400	300										
PSET 132/16	1600	300							0.13	0.18		
PSET 132/18	1800	300										
PSET 180/08	800	300	180	90	4500	0.75	1.23	150 for 10 s	0.17	0.23		
PSET 180/12	1200	300							---	---		
PSET 180/14	1400	300										
PSET 180/16	1600	300							0.09	0.12		
PSET 180/18	1800	300										

Fig. 12
Weight = 24 g

Fig. 13
Weight = 24 g

Fig. 14
Weight = 24 g

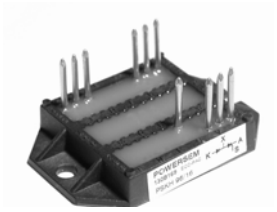
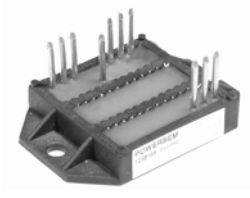


Fig. 15
Weight = 24 g

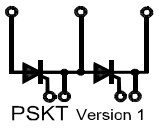
Fig. 16
Weight = 24 g

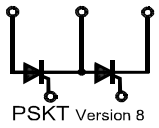
Fig. 50
Weight = 24 g

Fig. 78
Weight = 24 g



Thyristor Modules



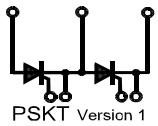


released, E 148688

Type	V_{RRM} V_{DRM} V	I_{TAV} 180° A	T_C sine °C	I_{TRMS} I_{FRMS} T_{VJ} = T_{VJM} A	I_{TSM} I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per chip K/W	R_{thJH} per chip K/W	Figure	Package style see outlines starting at page 86
PSKT 19/08io1	800	18	85	40	400	0.85	18	125	1.3	1.5	8	
PSKT 19/12io1	1200											
PSKT 19/14io1	1400											
PSKT 19/16io1	1600											
PSKT 19/08io8	800	18	85	40	400	0.85	18	125	1.3	1.5		
PSKT 19/12io8	1200											
PSKT 19/14io8	1400											
PSKT 19/16io8	1600											
PSKT 26/08io1	800	27	85	50	520	0.85	11	125	0.88	1.08		
PSKT 26/12io1	1200											
PSKT 26/14io1	1400											
PSKT 26/16io1	1600											
PSKT 26/08io8	800	27	85	50	520	0.85	11	125	0.88	1.08		
PSKT 26/12io8	1200											
PSKT 26/14io8	1400											
PSKT 26/16io8	1600											
PSKT 44/08io1	800	49	85	80	1150	0.85	5.3	125	0.53	0.73		
PSKT 44/12io1	1200											
PSKT 44/14io1	1400											
PSKT 44/16io1	1600											
PSKT 44/18io1	1800											
PSKT 44/08io8	800	49	85	80	1150	0.85	5.3	125	0.53	0.73		
PSKT 44/12io8	1200											
PSKT 44/14io8	1400											
PSKT 44/16io8	1600											
PSKT 44/18io8	1800											
PSKT 56/08io1	800	60	85	100	1500	0.85	3.7	125	0.45	0.65		
PSKT 56/12io1	1200											
PSKT 56/14io1	1400											
PSKT 56/16io1	1600											
PSKT 56/18io1	1800											
PSKT 56/08io8	800	60	85	100	1500	0.85	3.7	125	0.45	0.65		
PSKT 56/12io8	1200											
PSKT 56/14io8	1400											
PSKT 56/16io8	1600											
PSKT 56/18io8	1800											
PSKT 72/08io1	800	85	85	180	1700	0.85	3.2	125	0.3	0.5		
PSKT 72/12io1	1200											
PSKT 72/14io1	1400											
PSKT 72/16io1	1600											
PSKT 72/18io1	1800											
PSKT 72/08io8	800	85	85	180	1700	0.85	3.2	125	0.3	0.5		
PSKT 72/12io8	1200											
PSKT 72/14io8	1400											
PSKT 72/16io8	1600											
PSKT 72/18io8	1800											
PSKT 94/20io1	2000	104	85	180	1700	0.85	3.2	125	0.22	0.42		
PSKT 94/22io1	2200											
PSKT 95/08io1	800	116	85	180	2250	0.8	2.4	125	0.22	0.42		
PSKT 95/12io1	1200											
PSKT 95/14io1	1400											
PSKT 95/16io1	1600											
PSKT 95/18io1	1800											
PSKT 95/08io8	800	116	85	180	2250	0.8	2.4	125	0.22	0.42		
PSKT 95/12io8	1200											
PSKT 95/14io8	1400											
PSKT 95/16io8	1600											
PSKT 95/18io8	1800											

Fig. 8
Weight = 90 g

Thyristor Modules

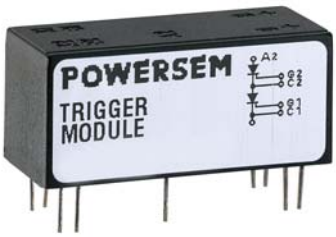


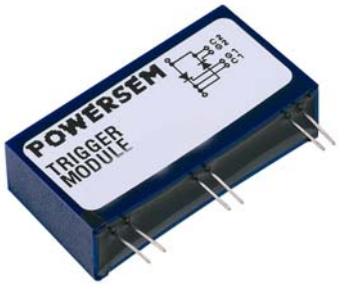
released, E 148688

Type	V_{RRM} V_{DRM} V	I_{TAV} 180° A	T_C sine °C	I_{TRMS} I_{FRMS} T_{VJ} = T_{VJM} A	I_{TSM} I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per chip K/W	R_{thJH} per chip K/W	Figure	Package style see outlines starting at page 86
PSKT 132/08io1	800	130	85	300	4750	0.8	1.5	125	0.23	0.33	9	Fig. 9
PSKT 132/12io1	1200											Weight = 125 g
PSKT 132/14io1	1400											
PSKT 132/16io1	1600											
PSKT 132/18io1	1800											
PSKT 161/20io1	2000	165	85	300	6000	0.8	1.6	125	0.155	0.225		
PSKT 161/22io1	2200											
PSKT 162/08io1	800	181	85	300	6000	0.88	1.15	125	0.155	0.225		
PSKT 162/12io1	1200											
PSKT 162/14io1	1400											
PSKT 162/16io1	1600											
PSKT 162/18io1	1800											
PSKT 170/12io1	1200	203	85	350	5400	0.8	1.0	130	0.164	0.204	11	
PSKT 170/14io1	1400											
PSKT 170/16io1	1600											
PSKT 170/18io1	1800											
PSKT 220/08io1	800	250	85	400	8500	0.9	1.0	140	0.139	0.179	10	Fig. 11
PSKT 220/12io1	1200											Weight = 750
PSKT 220/14io1	1400											
PSKT 220/16io1	1600											
PSKT 224/20io1	2000	240	85	400	8000	0.8	0.76	130	0.139	0.179	11	
PSKT 224/22io1	2200											
PSKT 225/12io1	1200	221	85	400	8000	0.8	0.76	130	0.157	0.197		
PSKT 225/14io1	1400											
PSKT 225/16io1	1600											
PSKT 225/18io1	1800											
PSKT 250/08io1	800	287	85	450	9000	0.85	0.82	140	0.129	0.169	10	
PSKT 250/12io1	1200											
PSKT 250/14io1	1400											
PSKT 250/16io1	1600											
PSKT 250/18io1	1800											
PSKT 255/12io1	1200	250	85	450	9000	0.8	0.68	130	0.14	0.18	11	Fig. 10
PSKT 255/14io1	1400											Weight = 320 g
PSKT 255/16io1	1600											
PSKT 255/18io1	1800											
PSKT 310/08io1	800	320	85	500	9200	0.8	0.82	140	0.112	0.152	10	
PSKT 310/12io1	1200											
PSKT 310/14io1	1400											
PSKT 310/16io1	1600											
PSKT 310/18io1	1800											
PSKT 312/12io1	1200	320	85	520	9200	0.8	0.68	140	0.12	0.16	11	
PSKT 312/14io1	1400											
PSKT 312/16io1	1600											
PSKT 312/18io1	1800											

Active Trigger Units for Thyristors

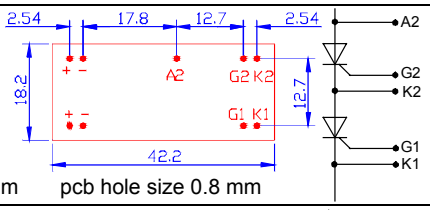
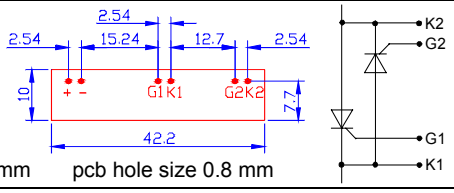
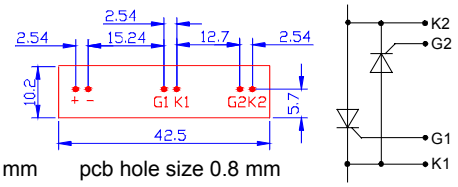
- DIRECT CONNECTION TO THE OUTPUTS OF MICRO-CONTROLLERS, MICROPROCESSORS, CPLD`S AND FPGA`S IS POSSIBLE
- NO ADDITIONAL COMPONENTS NEEDED
- SMALL SIZE
- LONG GATE LEADS ARE POSSIBLE
- SIMILAR COSTS WITH CONVENTIONAL TRIGGER CIRCUITS DUE TO SAVING IN BOARD SPACE, SIZE IN POWER SUPPLY, SIZE IN SNUBBER NETWORK, OTHER COMPONENTS, LABOR AND INVENTORY
- PROVEN RELIABILITY IN VERY HARSH ENVIRONMENT OVER MANY YEARS





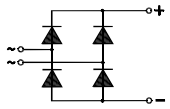
ELECTRICAL SPECIFICATIONS

Peak thyristor voltage	> 2000V (1200V or 2200V upon request)
Gate trigger current	> 1.2A with 2A/µs at 400V anode voltage typical
Control current	< 12 mA into optocoupler
Turn on delay	< 20 µs at 12 mA control current
Input-output insulation	> 800V peak continuous- 6KV 10s - according to VDE 0884
Temperature range	-25°C-+85°C

Types			**Dimensions (mm)** (top view)
V_{DRM}	2000Vpk	1200Vpk	
Phase control for two thyristors with two inputs (all applications) **Weight = 24 g**	PSTT PC/20	PSTT PC/12 upon request	 Height 19 mm pcb hole size 0.8 mm
Single control input for two thyristors (AC Controller) **Weight = 20 g**	PSTT SC/20	PSTT SC/12 upon request	 Height 23 mm pcb hole size 0.8 mm
Zero crossing for two thyristors **Weight = 20 g**	PSTT ZC/20	PSTT ZC/12 upon request	 Height 23 mm pcb hole size 0.8 mm

PC= Phase **C**ontrol
SC= Single **C**ontrol
ZC= Zero **C**rossing
12= 1200Vpk (V_{DRM})
20= 2000Vpk (V_{DRM})

Single Phase Rectifier Bridges



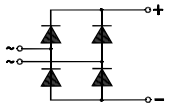
released, E 148688

1 ~ Rectifier Bridges, B2U

Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W	Figure	Package style see outlines starting at page 86
PSB 15/06	600	180	21	100	100	0.8	40	150	2.3 / 0.58	2.8 / 0.7	64	Fig. 64 Weight = 10 g "slimpac"
PSB 15/08	800	250										
PSB 15/12	1200	400										
PSB 21/08	800	250	21	100	100	0.8	40	150	2.3 / 0.58	2.8 / 0.7	17	
PSB 21/12	1200	400										
PSB 25/08	800	250	21	63	380	0.85	12	150	8.2 / 2.05	9.4 / 2.35	18	
PSB 25/12	1200	400										
PSB 25/14	1400	440										
PSB 25/16	1600	500										
PSB 25/18	1800	575										
PSB 31/08	800	250	38	100	450	0.8	10	150	1.55 / 0.388	2.1 / 0.525	6	Fig. 17 Weight = 16 g
PSB 31/12	1200	400										
PSB 31/14	1400	440										
PSB 31/16	1600	500										
PSB 31/18	1800	575										
PSB 35/08	800	250	35	85	400	0.85	12	150	2.8 / 0.7	3.4 / 0.85	19	**ECO-PAC™ 1**
PSB 35/12	1200	400										
PSB 35/14	1400	440										
PSB 35/16	1600	500										
PSB 35/18	1800	575										
PSB 36/08	800	250	30	62	550	0.8	5.8	150	6.2 / 1.55	7.4 / 1.85	18	Fig. 18 Weight = 20 g
PSB 36/12	1200	400										
PSB 36/14	1400	440										
PSB 36/16	1600	500										
PSB 36/18	1800	575										
PSB 41/08	800	250	45	100	550	0.8	8	150	1.45 / 0.363	1.9 / 0.475	6	Fig. 7 Weight = 220 g
PSB 41/12	1200	400										
PSB 41/14	1400	440										
PSB 41/16	1600	500										
PSB 41/18	1800	575										
PSB 50/08	800	250	72	100	675	0.8	5	150	1.1 / 0.275	1.52 / 0.38	7	
PSB 50/12	1200	400										
PSB 50/14	1400	440										
PSB 50/16	1600	500										
PSB 50/18	1800	575										
PSB 51/08	800	250	55	100	750	0.8	6	150	1.3 / 0.325	1.6 / 0.4	6	Fig. 19 Weight = 105 g
PSB 51/12	1200	400										
PSB 51/14	1400	440										
PSB 51/16	1600	500										
PSB 51/18	1800	575										
PSB 53/08	800	250	54	100	300	0.8	13	150	1.1 / 0.28	1.6 / 0.4	64	
PSB 53/12	1200	400										
PSB 53/14	1400	440										
PSB 53/16	1600	500										
PSB 53/18	1800	575										
PSB 54/08	800	250	54	100	300	0.8	13	150	1.1 / 0.28	1.6 / 0.4	17	Fig. 20 Weight = 200 g
PSB 54/12	1200	400										
PSB 54/14	1400	440										
PSB 54/16	1600	500										
PSB 54/18	1800	575										
PSB 55/08	800	250	50	64	750	0.85	8	150	2.6 / 0.65	2.84 / 0.71	20	
PSB 55/12	1200	400										
PSB 55/14	1400	440										
PSB 55/16	1600	500										
PSB 55/18	1800	575										
PSB 61/08	800	250	65	100	1000	0.8	5	150	1.12 / 0.28	1.5 / 0.375	6	Fig. 6 Weight = 100 g
PSB 61/12	1200	400										
PSB 61/14	1400	440										
PSB 61/16	1600	500										
PSB 61/18	1800	575										
PSB 62/08	800	250	52	100	550	0.8	8	150	1.45 / 0.36	1.87 / 0.47	1	
PSB 62/12	1200	400										
PSB 62/14	1400	440										
PSB 62/16	1600	500										
PSB 62/18	1800	575										

Single Phase Rectifier Bridges

released, E 148688



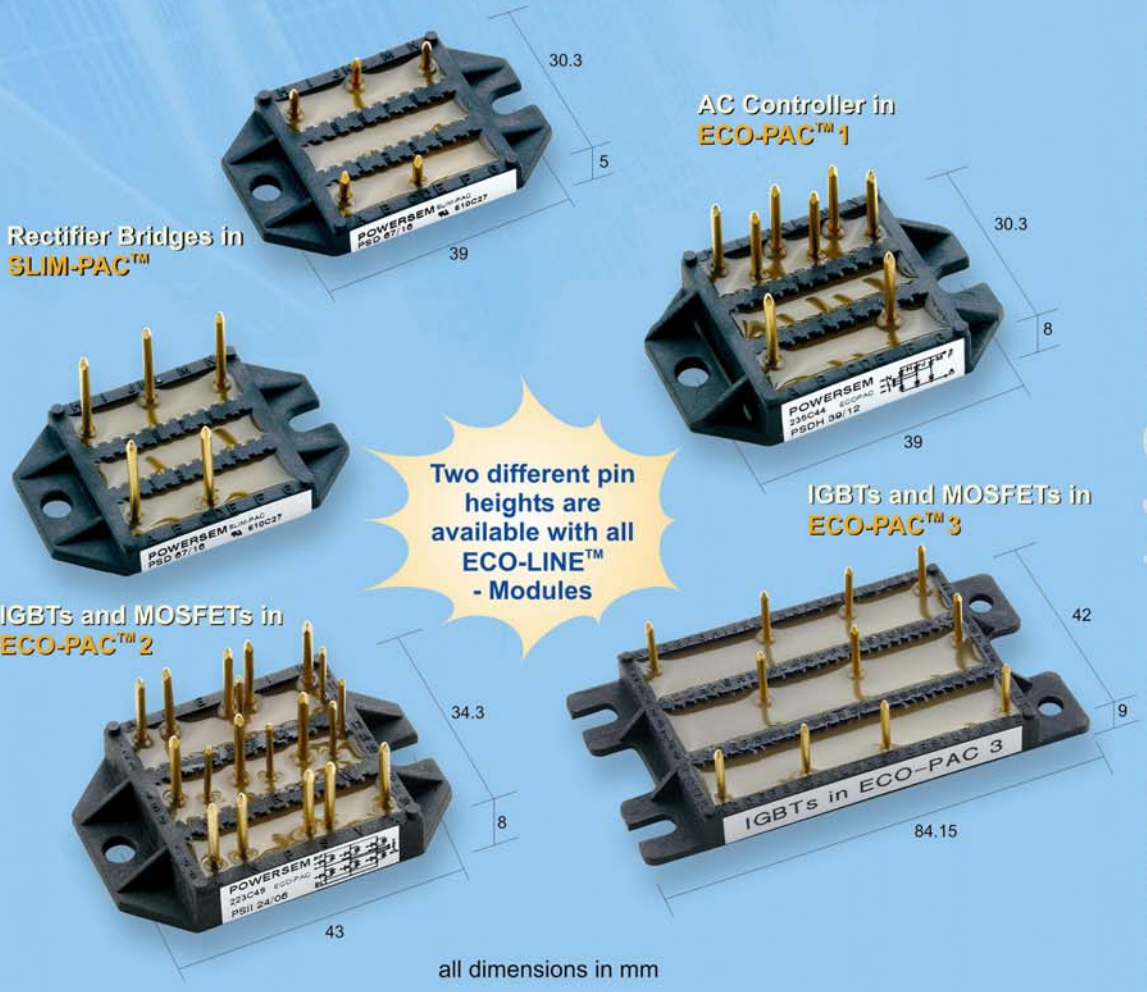
1 ~ Rectifier Bridges, B2U

Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W	Figure	Package style see outlines starting at page 86
PSB 63/08 **PSB 63/12** **PSB 63/14** **PSB 63/16** **PSB 63/18**	800 1200 1400 1600 1800	250 400 440 500 575	60	100	1000	0.8	8	150	0.58 --- 0.145	0.825 --- 0.206	1	Fig. 17 Weight = 16 g
PSB 68/08 **PSB 68/12** **PSB 68/14** **PSB 68/16** **PSB 68/18**	800 1200 1400 1600 1800	250 400 440 500 575	68	90	530	0.8	7.5	150	1.2 --- 0.3	1.5 --- 0.375	17	 **ECO-PAC™ 1**
PSB 75/08 **PSB 75/12** **PSB 75/14** **PSB 75/16** **PSB 75/18**	800 1200 1400 1600 1800	250 400 440 500 575	70	85	1000	0.8	6	150	1.28 --- 0.32	1.38 --- 0.345	21	
PSB 78/08 **PSB 78/12** **PSB 78/14** **PSB 78/16**	800 1200 1400 1600	250 400 440 500	78	100	750	0.8	6.0	150	1.2 --- 0.3	1.5 --- 0.375	67	Fig. 1 Weight = 160 g
PSB 82/08 **PSB 82/12** **PSB 82/14** **PSB 82/16** **PSB 82/18**	800 1200 1400 1600 1800	250 400 440 500 575	72	100	750	0.8	5	150	1.1 --- 0.28	1.52 --- 0.38	1	
PSB 83/08 **PSB 83/12** **PSB 83/14** **PSB 83/16** **PSB 83/18**	800 1200 1400 1600 1800	250 400 440 500 575	88	100	1200	0.8	5	150	0.58 --- 0.145	0.825 --- 0.206		
PSB 88/08 **PSB 88/12** **PSB 88/14** **PSB 88/16**	800 1200 1400 1600	250 400 440 500	92	100	900	0.8	4	150	0.85 --- 0.212	1.15 --- 0.288	67	Fig. 21 Weight = 235 g
PSB 95/08 **PSB 95/12** **PSB 95/14** **PSB 95/16** **PSB 95/18**	800 1200 1400 1600 1800	250 400 440 500 575	95	85	1200	0.8	5	150	0.9 --- 0.225	1.1 --- 0.275	7	
PSB 105/08 **PSB 105/12** **PSB 105/14** **PSB 105/16** **PSB 105/18**	800 1200 1400 1600 1800	250 400 440 500 575	107	85	1500	0.8	5	150	0.83 --- 0.21	1.13 --- 0.28	21	
PSB 112/08 **PSB 112/12** **PSB 112/14** **PSB 112/16** **PSB 112/18**	800 1200 1400 1600 1800	250 400 440 500 575	84	100	1200	0.8	5	150	0.85 --- 0.2125	1.05 --- 0.263	2	Fig. 2 Weight = 270 g
PSB 125/08 **PSB 125/12** **PSB 125/14** **PSB 125/16** **PSB 125/18**	800 1200 1400 1600 1800	250 400 440 500 575	124	85	1800	0.8	3	150	0.83 --- 0.21	1.13 --- 0.28	21	
PSB 162/08 **PSB 162/12** **PSB 162/14** **PSB 162/16** **PSB 162/18**	800 1200 1400 1600 1800	250 400 440 500 575	122	100	1800	0.8	3	150	0.65 --- 0.16	0.83 --- 0.21	2	
PSB 192/08 **PSB 192/12** **PSB 192/14** **PSB 192/16** **PSB 192/18**	800 1200 1400 1600 1800	250 400 440 500 575	174	100	2800	0.8	2.2	150	0.45 --- 0.11	0.6 --- 0.15		Fig. 67 Weight = 22 g

ECO-PAC™ 2

POWERSEM

Lowest Profile Package for Power Modules with Highest Performance and Widest Choice of Customized Circuit Configurations



- Customized choice of Circuit Configurations
- High - Tech Integrations of Diode, Thyristor, IGBT and MOSFET Chips
- One Package Concept for Current Ranges from 29A - 200 A and Blocking Voltages from 600 - 1800 V

www.powersem.com info@powersem.com

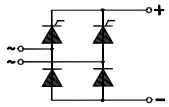
ECO-LINE™

www.powersem.com
info@powersem.com

innovation and reliability with DCB technology

Single Phase Half Controlled Rectifier Bridges

released. E 148688



1 ~ Half Controlled Rectifier Bridges, B2HK

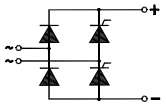
Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W	Figure	Package style see outlines starting at page 86
PSBH 25/08	800	250	32	85	200	0.85	27	125	1.3	1.8	22	Fig. 2
PSBH 25/12	1200	400							0.33	0.45		Weight = 270 g
PSBH 50/08	800	250	53	85	550	0.85	11	125	0.9	1.1	6	
PSBH 50/12	1200	400							---	---		
PSBH 50/14	1400	440							0.225	0.275		
PSBH 50/16	1600	500										
PSBH 54/08*	800	250	56	85	550	0.85	11	125	0.8	1.1	76	
PSBH 54/12*	1200	400							---	---		
PSBH 54/14*	1400	440							0.2	0.275		
PSBH 54/16*	1600	500										
PSBH 55/08	800	250	46	85	520	0.85	11	125	1.2	1.31	7	
PSBH 55/12	1200	400							---	---		
PSBH 55/14	1400	440							0.3	0.327		
PSBH 55/16	1600	500										
PSBH 75/08	800	250	74	85	1150	0.85	5.33	125	0.66	0.93		Fig. 6
PSBH 75/12	1200	400							---	---		Weight = 100 g
PSBH 75/14	1400	440							0.165	0.233		
PSBH 85/08	800	250	82	85	1150	0.85	3.7	125	0.65	0.8	2	
PSBH 85/12	1200	400							---	---		
PSBH 85/14	1400	440							0.163	0.2		
PSBH 125/08	800	250	123	85	1500	0.85	3.2	125	0.46	0.55		
PSBH 125/12	1200	400							---	---		
PSBH 125/14	1400	440							0.115	0.138		
PSBH 125/16	1600	500										

*** UL release applied**

Fig. 76

ECO-PAC™ 3

released, E 148688



1 ~ Half Controlled Rectifier Bridges, B2HZ

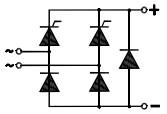
Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W	Figure	Package style see outlines starting at page 86
PSBZ 36/08	800	250	36	85	320	0.85	13	125	1.4	2.0	22	Fig. 7
PSBZ 36/12	1200	400							---	---		Weight = 220 g
PSBZ 36/14	1400	440							0.35	0.5		
PSBZ 36/16	1600	500										
PSBZ 50/08	800	250	53	85	550	0.85	11	125	0.9	1.1	6	
PSBZ 50/12	1200	400							---	---		
PSBZ 50/14	1400	440							0.225	0.275		
PSBZ 50/16	1600	500										
PSBZ 54/08*	800	250	56	85	550	0.85	11	125	0.8	1.1	76	
PSBZ 54/12*	1200	400							---	---		
PSBZ 54/14*	1400	440							0.2	0.275		
PSBZ 54/16*	1600	500										
PSBZ 55/08	800	250	46	85	520	0.85	11	125	1.2	1.31	7	
PSBZ 55/12	1200	400										
PSBZ 55/14	1400	440							---	---		
PSBZ 55/16	1600	500							0.3	0.327		
PSBZ 75/08	800	250	74	85	1150	0.85	5.33	125	0.66	0.93		
PSBZ 75/12	1200	400							---	---		
PSBZ 75/14	1400	440							0.165	0.233		

Fig. 22
Weight = 16

ECO-PAC™ 1

PSBZ 85/08	800	250	82	85	1150	0.85	3.7	125	0.65	0.8	2
PSBZ 85/12	1200	400							----------	----------	
PSBZ 85/14	1400	440							0.163	0.2	
PSBZ 125/08	800	250	123	85	1500	0.85	3.2	125	0.46	0.55	
PSBZ 125/12	1200	400							----------	----------	
PSBZ 125/14	1400	440							0.115	0.138	
PSBZ 125/16	1600	500									

Single Phase Half Controlled Rectifier Bridges

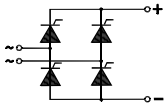


released, E 148688

1 ~ Half Controlled Rectifier Bridges with freewheeling diode, B2HKF

Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W	Figure	Package style see outlines starting at page 86
PSCH 25/08	800	250	32	85	200	0.85	27	125	1.3	1.8	22	Fig. 2
PSCH 25/12	1200	400							0.26	0.36		Weight = 270 g
PSCH 50/08	800	250	53	85	550	0.85	11	125	0.9	1.1	6	
PSCH 50/12	1200	400							----------	----------		
PSCH 50/14	1400	440							0.18	0.22		
PSCH 50/16	1600	500										
PSCH 55/08	800	250	46	85	520	0.85	11	125	1.2	1.31	7	
PSCH 55/12	1200	400							----------	----------		
PSCH 55/14	1400	440							0.24	0.262		
PSCH 55/16	1600	500										
PSCH 75/08	800	250	74	85	1150	0.85	5.33	125	0.66	0.93		
PSCH 75/12	1200	400							----------	----------		
PSCH 75/14	1400	440							0.132	0.186		
PSCH 85/08	800	250	82	85	1150	0.85	3.7	125	0.65	0.8	2	Fig. 6
PSCH 85/12	1200	400							----------	----------		Weight = 100 g
PSCH 85/14	1400	440							0.13	0.16		
PSCH 125/08	800	250	123	85	1500	0.85	3.2	125	0.46	0.55		
PSCH 125/12	1200	400							----------	----------		
PSCH 125/14	1400	440							0.092	0.11		
PSCH 125/16	1600	500										

released, E 148688



1 ~ Full Controlled Rectifier Bridges, B2C

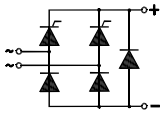
Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W		Package style see outlines starting at page 86
PSBT 25/08	800	250	32	85	200	0.85	27	125	1.3	1.8	23	Fig. 7
PSBT 25/12	1200	400							0.33	0.45		Weight = 220 g
PSBT 50/08	800	250	53	85	550	0.85	11	125	0.9	1.1	6	
PSBT 50/12	1200	400							----------	----------		
PSBT 50/14	1400	440							0.225	0.275		
PSBT 50/16	1600	500										
PSBT 54/08*	800	250	56	85	550	0.85	11	125	0.8	1.1	76	
PSBT 54/12*	1200	400							----------	----------		
PSBT 54/14*	1400	440							0.2	0.275		
PSBT 54/16*	1600	500										
PSBT 55/08	800	250	46	85	520	0.85	11	125	1.2	1.31	7	
PSBT 55/12	1200	400							----------	----------		
PSBT 55/14	1400	440							0.3	0.327		
PSBT 55/16	1600	500										
PSBT 75/08	800	250	74	85	1150	0.85	5.33	125	0.66	0.93		
PSBT 75/12	1200	400							----------	----------		
PSBT 75/14	1400	440							0.165	0.233		
PSBT 85/08	800	250	82	85	1150	0.85	3.7	125	0.65	0.8	2	
PSBT 85/12	1200	400							----------	----------		
PSBT 85/14	1400	440							0.162	0.2		

Fig. 23
Weight = 16 g

ECO-PAC™ 1

PSBZ 85/08	800	250	82	85	1150	0.85	3.7	125	0.65	0.8	2
PSBZ 85/12	1200	400							----------	----------	
PSBZ 85/14	1400	440							0.163	0.2	
PSBZ 125/08	800	250	123	85	1500	0.85	3.2	125	0.46	0.55	
PSBZ 125/12	1200	400							----------	----------	
PSBZ 125/14	1400	440							0.115	0.138	
PSBZ 125/16	1600	500									

Single Phase Half Controlled Rectifier Bridges

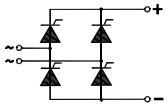


released, E 148688

1 ~ Half Controlled Rectifier Bridges with freewheeling diode, B2HKF

Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W	Figure	Package style see outlines starting at page 86
PSCH 25/08	800	250	32	85	200	0.85	27	125	1.3	1.8	22	Fig. 2
PSCH 25/12	1200	400							0.26	0.36		Weight = 270 g
PSCH 50/08	800	250	53	85	550	0.85	11	125	0.9	1.1	6	
PSCH 50/12	1200	400							----------	----------		
PSCH 50/14	1400	440							0.18	0.22		
PSCH 50/16	1600	500										
PSCH 55/08	800	250	46	85	520	0.85	11	125	1.2	1.31	7	
PSCH 55/12	1200	400							----------	----------		
PSCH 55/14	1400	440							0.24	0.262		
PSCH 55/16	1600	500										
PSCH 75/08	800	250	74	85	1150	0.85	5.33	125	0.66	0.93		
PSCH 75/12	1200	400							----------	----------		
PSCH 75/14	1400	440							0.132	0.186		
PSCH 85/08	800	250	82	85	1150	0.85	3.7	125	0.65	0.8	2	Fig. 6
PSCH 85/12	1200	400							----------	----------		Weight = 100 g
PSCH 85/14	1400	440							0.13	0.16		
PSCH 125/08	800	250	123	85	1500	0.85	3.2	125	0.46	0.55		
PSCH 125/12	1200	400							----------	----------		
PSCH 125/14	1400	440							0.092	0.11		
PSCH 125/16	1600	500										

released, E 148688



1 ~ Full Controlled Rectifier Bridges, B2C

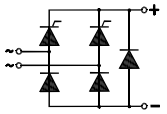
Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W		Package style see outlines starting at page 86
PSBT 25/08	800	250	32	85	200	0.85	27	125	1.3	1.8	23	Fig. 7
PSBT 25/12	1200	400							0.33	0.45		Weight = 220 g
PSBT 50/08	800	250	53	85	550	0.85	11	125	0.9	1.1	6	
PSBT 50/12	1200	400							----------	----------		
PSBT 50/14	1400	440							0.225	0.275		
PSBT 50/16	1600	500										
PSBT 54/08*	800	250	56	85	550	0.85	11	125	0.8	1.1	76	
PSBT 54/12*	1200	400							----------	----------		
PSBT 54/14*	1400	440							0.2	0.275		
PSBT 54/16*	1600	500										
PSBT 55/08	800	250	46	85	520	0.85	11	125	1.2	1.31	7	
PSBT 55/12	1200	400							----------	----------		
PSBT 55/14	1400	440							0.3	0.327		
PSBT 55/16	1600	500										
PSBT 75/08	800	250	74	85	1150	0.85	5.33	125	0.66	0.93		
PSBT 75/12	1200	400							----------	----------		
PSBT 75/14	1400	440							0.165	0.233		
PSBT 85/08	800	250	82	85	1150	0.85	3.7	125	0.65	0.8	2	
PSBT 85/12	1200	400							----------	----------		
PSBT 85/14	1400	440							0.162	0.2		

Fig. 23
Weight = 16 g

ECO-PAC™ 1

PSBZ 85/08	800	250	82	85	1150	0.85	3.7	125	0.65	0.8	2
PSBZ 85/12	1200	400							----------	----------	
PSBZ 85/14	1400	440							0.163	0.2	
PSBZ 125/08	800	250	123	85	1500	0.85	3.2	125	0.46	0.55	
PSBZ 125/12	1200	400							----------	----------	
PSBZ 125/14	1400	440							0.115	0.138	
PSBZ 125/16	1600	500									

Single Phase Half Controlled Rectifier Bridges

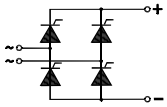


released, E 148688

1 ~ Half Controlled Rectifier Bridges with freewheeling diode, B2HKF

Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W	Figure	Package style see outlines starting at page 86
PSCH 25/08	800	250	32	85	200	0.85	27	125	1.3	1.8	22	Fig. 2
PSCH 25/12	1200	400							0.26	0.36		Weight = 270 g
PSCH 50/08	800	250	53	85	550	0.85	11	125	0.9	1.1	6	
PSCH 50/12	1200	400							----------	----------		
PSCH 50/14	1400	440							0.18	0.22		
PSCH 50/16	1600	500										
PSCH 55/08	800	250	46	85	520	0.85	11	125	1.2	1.31	7	
PSCH 55/12	1200	400							----------	----------		
PSCH 55/14	1400	440							0.24	0.262		
PSCH 55/16	1600	500										
PSCH 75/08	800	250	74	85	1150	0.85	5.33	125	0.66	0.93		
PSCH 75/12	1200	400							----------	----------		
PSCH 75/14	1400	440							0.132	0.186		
PSCH 85/08	800	250	82	85	1150	0.85	3.7	125	0.65	0.8	2	Fig. 6
PSCH 85/12	1200	400							----------	----------		Weight = 100 g
PSCH 85/14	1400	440							0.13	0.16		
PSCH 125/08	800	250	123	85	1500	0.85	3.2	125	0.46	0.55		
PSCH 125/12	1200	400							----------	----------		
PSCH 125/14	1400	440							0.092	0.11		
PSCH 125/16	1600	500										

released, E 148688



1 ~ Full Controlled Rectifier Bridges, B2C

Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W		Package style see outlines starting at page 86
PSBT 25/08	800	250	32	85	200	0.85	27	125	1.3	1.8	23	Fig. 7
PSBT 25/12	1200	400							0.33	0.45		Weight = 220 g
PSBT 50/08	800	250	53	85	550	0.85	11	125	0.9	1.1	6	
PSBT 50/12	1200	400							----------	----------		
PSBT 50/14	1400	440							0.225	0.275		
PSBT 50/16	1600	500										
PSBT 54/08*	800	250	56	85	550	0.85	11	125	0.8	1.1	76	
PSBT 54/12*	1200	400							----------	----------		
PSBT 54/14*	1400	440							0.2	0.275		
PSBT 54/16*	1600	500										
PSBT 55/08	800	250	46	85	520	0.85	11	125	1.2	1.31	7	
PSBT 55/12	1200	400							----------	----------		
PSBT 55/14	1400	440							0.3	0.327		
PSBT 55/16	1600	500										
PSBT 75/08	800	250	74	85	1150	0.85	5.33	125	0.66	0.93		
PSBT 75/12	1200	400							----------	----------		
PSBT 75/14	1400	440							0.165	0.233		
PSBT 85/08	800	250	82	85	1150	0.85	3.7	125	0.65	0.8	2	
PSBT 85/12	1200	400							----------	----------		
PSBT 85/14	1400	440							0.162	0.2		

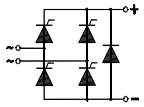
Fig. 23
Weight = 16 g

ECO-PAC™ 1

PSBT 125/08	800	250	123	85	1500	0.85	3.2	125	0.46	0.55	
PSBT 125/12	1200	400							----------	----------	
PSBT 125/14	1400	440							0.115	0.137	
PSBT 125/16	1600	500									

*** UL release applied**

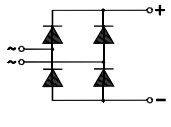
Single Phase Full Controlled Rectifier Bridges



released, E 148688

1 ~ Full Controlled Rectifier Bridges with freewheeling diode, B2CF

Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W	Figure	Package style see outlines starting at page 86
PSCT 50/08	800	250	53	85	550	0.85	11	125	0.9	1.1	6	Fig. 2
PSCT 50/12	1200	400							----------	----------		Weight = 270 g
PSCT 50/14	1400	440							0.18	0.22		
PSCT 50/16	1600	500										
PSCT 55/08	800	250	46	85	520	0.85	11	125	1.2	1.31	7	
PSCT 55/12	1200	400							----------	----------		
PSCT 55/14	1400	440							0.24	0.262		
PSCT 55/16	1600	500										
PSCT 75/08	800	250	74	85	1150	0.85	5.33	125	0.66	0.93		
PSCT 75/12	1200	400							----------	----------		
PSCT 75/14	1400	440							0.132	0.186		
PSCT 85/08	800	250	82	85	1150	0.85	3.7	125	0.65	0.8	2	Fig. 6
PSCT 85/12	1200	400							----------	----------		Weight = 100 g
PSCT 85/14	1400	440							0.13	0.16		
PSCT 125/08	800	250	123	85	1500	0.85	3.2	125	0.46	0.55		
PSCT 125/12	1200	400							----------	----------		
PSCT 125/14	1400	440							0.092	0.11		
PSCT 125/16	1600	500										



released, E 148688

1 ~ Rectifier Bridges with Fast Recovery Epitaxial Diodes, B2U

Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	t_{rr} ns	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W		Package style see outlines starting at page 86
PSB 19F/04	400	125	27	85	50	1.18	22	35	2.5	2.8	17	Fig. 17
PSB 19F/06	600	200							-------	-------		Weight = 16 g
PSB 19F/08	800	250	19	85	40	1.32	30	40	0.63	0.7		
PSB 19F/12	1200	400										
PSB 33F/04	400	125	44	85	110	1.13	13	35	1.6	1.9		
PSB 33F/06	600	200							-------	-------		
PSB 33F/08	800	250	32	85	90	1.32	30	40	0.4	0.48		
PSB 33F/12	1200	400										
PSB 71F/04	400	125	68	85	250	0.98	8	35	0.9	1.2		
PSB 71F/06	600	200							-------	-------		
PSB 71F/08	800	250	59	85	200	1.31	15	40	0.23	0.3		
PSB 71F/12	1200	400										
PSB 100F/04	400	125	100	85	600	1.09	4.3	35	0.85	1.0	67	Fig. 67
PSB 100F/06	600	200							-------	-------		Weight = 22 g
PSB 100F/08	800	250	100	75	500	1.12	5.7	40	0.21	0.25		
PSB 100F/12	1200	400										

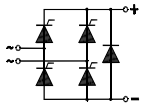
ECO-PAC™ 1

ECO-PAC™ 2

PSBT 125/08	800	250	123	85	1500	0.85	3.2	125	0.46	0.55	
PSBT 125/12	1200	400							----------	----------	
PSBT 125/14	1400	440							0.115	0.137	
PSBT 125/16	1600	500									

*** UL release applied**

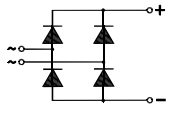
Single Phase Full Controlled Rectifier Bridges



released, E 148688

1 ~ Full Controlled Rectifier Bridges with freewheeling diode, B2CF

Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W	Figure	Package style see outlines starting at page 86
PSCT 50/08	800	250	53	85	550	0.85	11	125	0.9	1.1	6	Fig. 2
PSCT 50/12	1200	400							----------	----------		Weight = 270 g
PSCT 50/14	1400	440							0.18	0.22		
PSCT 50/16	1600	500										
PSCT 55/08	800	250	46	85	520	0.85	11	125	1.2	1.31	7	
PSCT 55/12	1200	400							----------	----------		
PSCT 55/14	1400	440							0.24	0.262		
PSCT 55/16	1600	500										
PSCT 75/08	800	250	74	85	1150	0.85	5.33	125	0.66	0.93		
PSCT 75/12	1200	400							----------	----------		
PSCT 75/14	1400	440							0.132	0.186		
PSCT 85/08	800	250	82	85	1150	0.85	3.7	125	0.65	0.8	2	Fig. 6
PSCT 85/12	1200	400							----------	----------		Weight = 100 g
PSCT 85/14	1400	440							0.13	0.16		
PSCT 125/08	800	250	123	85	1500	0.85	3.2	125	0.46	0.55		
PSCT 125/12	1200	400							----------	----------		
PSCT 125/14	1400	440							0.092	0.11		
PSCT 125/16	1600	500										



released, E 148688

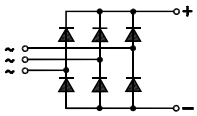
1 ~ Rectifier Bridges with Fast Recovery Epitaxial Diodes, B2U

Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	t_{rr} ns	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W		Package style see outlines starting at page 86
PSB 19F/04	400	125	27	85	50	1.18	22	35	2.5	2.8	17	Fig. 17
PSB 19F/06	600	200							-------	-------		Weight = 16 g
PSB 19F/08	800	250	19	85	40	1.32	30	40	0.63	0.7		
PSB 19F/12	1200	400										
PSB 33F/04	400	125	44	85	110	1.13	13	35	1.6	1.9		
PSB 33F/06	600	200							-------	-------		
PSB 33F/08	800	250	32	85	90	1.32	30	40	0.4	0.48		
PSB 33F/12	1200	400										
PSB 71F/04	400	125	68	85	250	0.98	8	35	0.9	1.2		
PSB 71F/06	600	200							-------	-------		
PSB 71F/08	800	250	59	85	200	1.31	15	40	0.23	0.3		
PSB 71F/12	1200	400										
PSB 100F/04	400	125	100	85	600	1.09	4.3	35	0.85	1.0	67	Fig. 67
PSB 100F/06	600	200							-------	-------		Weight = 22 g
PSB 100F/08	800	250	100	75	500	1.12	5.7	40	0.21	0.25		
PSB 100F/12	1200	400										

ECO-PAC™ 1

ECO-PAC™ 2

Three Phase Rectifier Bridges



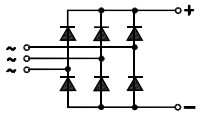
released, E 148688

3 ~ Rectifier Bridges, B6U

Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W	Figure	Package style see outlines starting at page 86
PSD 25/08	800	250	25	63	380	0.85	12	150	9.3	10.2	26	Fig. 25
PSD 25/12	1200	400							---	---		Weight = 16 g
PSD 25/14	1400	440							1.55	1.70		
PSD 25/16	1600	500										
PSD 25/18	1800	575										
PSD 27/06	600	180	28	100	100	0.8	40	150	2.3	2.8	24	
PSD 27/08	800	250							---	---		
PSD 27/12	1200	400							0.38	0.47		**ECO-PAC™ 1**
PSD 28/06	600	250	28	100	100	0.8	40	150	2.3	2.8	25	
PSD 28/08	800	400							---	---		
PSD 28/12	1200	440							0.38	0.47		
PSD 31/08	800	250	60	100	450	0.8	10	150	1.55	2.1	6	Fig. 24
PSD 31/12	1200	400							---	---		Weight = 10 g
PSD 31/14	1400	440							0.258	0.35		" **s l i m p a c** "
PSD 31/16	1600	500										
PSD 31/18	1800	575										
PSD 35/08	800	250	38	85	400	0.85	12	150	4.2	4.8	27	
PSD 35/12	1200	400							---	---		
PSD 35/14	1400	440							0.70	0.80		
PSD 35/16	1600	500										
PSD 35/18	1800	575										
PSD 36/08	800	250	35	62	550	0.8	7.4	150	7.5	8.4	26	Fig. 26
PSD 36/12	1200	400							---	---		Weight = 22 g
PSD 36/14	1400	440							1.25	1.40		
PSD 36/16	1600	500										
PSD 36/18	1800	575										
PSD 41/08	800	250	70	100	550	0.8	8	150	1.45	1.9	6	
PSD 41/12	1200	400							---	---		
PSD 41/14	1400	440							0.242	0.317		
PSD 41/16	1600	500										
PSD 41/18	1800	575										
PSD 50/08	800	250	80	110	675	0.8	5	150	1.1	1.52	7	Fig. 27
PSD 50/12	1200	400							---	---		Weight = 110 g
PSD 50/14	1400	440							0.183	0.253		
PSD 50/16	1600	500										
PSD 50/18	1800	575										
PSD 51/08	800	250	85	100	750	0.85	6	150	1.3	1.6	6	
PSD 51/12	1200	400							---	---		
PSD 51/14	1400	440							0.22	0.27		
PSD 51/16	1600	500										
PSD 51/18	1800	575										
PSD 55/08	800	250	58	85	750	0.85	8	150	2.7	3.06	28	Fig. 28
PSD 55/12	1200	400							---	---		Weight = 205 g
PSD 55/14	1400	440							0.45	0.51		
PSD 55/16	1600	500										
PSD 55/18	1800	575										
PSD 61/08	800	250	100	100	1000	0.80	5	150	1.12	1.5	6	
PSD 61/12	1200	400							---	---		
PSD 61/14	1400	440							0.187	0.25		
PSD 61/16	1600	500										
PSD 61/18	1800	575										
PSD 62/08	800	250	63	110	550	0.8	8	150	1.45	1.87	1	Fig. 6
PSD 62/12	1200	400							---	---		Weight = 100 g
PSD 62/14	1400	440							0.24	0.31		
PSD 62/16	1600	500										
PSD 62/18	1800	575										
PSD 63/08	800	250	75	100	1000	0.8	8	150	0.58	0.825		
PSD 63/12	1200	400							---	---		
PSD 63/14	1400	440							0.097	0.138		
PSD 63/16	1600	500										
PSD 63/18	1800	575										

Three Phase Rectifier Bridges

released, E 148688

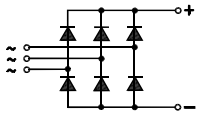


3 ~ Rectifier Bridges, B6U

Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W	Figure	Package style see outlines starting at page 86
PSD 67/06 **PSD 67/08** **PSD 67/12** **PSD 67/14** **PSD 67/16** **PSD 67/18**	600 800 1200 1400 1600 1800	180 250 400 440 500 575	68	100	300	0.8	13	150	1.1 --- 0.18	1.6 --- 0.27	24	Fig. 29 Weight = 240 g
PSD 68/06 **PSD 68/08** **PSD 68/12** **PSD 68/14** **PSD 68/16** **PSD 68/18**	600 800 1200 1400 1600 1800	180 250 400 440 500 575	68	100	300	0.8	13	150	1.1 --- 0.18	1.6 --- 0.27	25	
PSD 75/08 **PSD 75/12** **PSD 75/14** **PSD 75/16** **PSD 75/18**	800 1200 1400 1600 1800	250 400 440 500 575	95	85	1000	0.8	6	150	1.28 --- 0.213	1.38 --- 0.23	29	Fig. 1 Weight = 160 g
PSD 82/08 **PSD 82/12** **PSD 82/14** **PSD 82/16** **PSD 82/18**	800 1200 1400 1600 1800	250 400 440 500 575	88	110	750	0.8	5	150	1.1 --- 0.183	1.52 --- 0.253	1	
PSD 83/08 **PSD 83/12** **PSD 83/14** **PSD 83/16** **PSD 83/18**	800 1200 1400 1600 1800	250 400 440 500 575	100	100	1200	0.8	5	150	0.58 --- 0.097	0.825 --- 0.138		Fig. 25 Weight = 16 g
PSD 86/06 **PSD 86/08** **PSD 86/12** **PSD 86/14** **PSD 86/16** **PSD 86/18**	600 800 1200 1400 1600 1800	180 250 400 440 500 575	86	90	530	0.8	7.5	150	1.2 --- 0.2	1.5 --- 0.25	25	**ECO-PAC™ 1**
PSD 95/08 **PSD 95/12** **PSD 95/14** **PSD 95/16** **PSD 95/18**	800 1200 1400 1600 1800	250 400 440 500 575	140	85	1200	0.8	5	150	0.9 --- 0.15	1.1 --- 0.183	7	Fig. 7 Weight = 220 g
PSD 98/08 **PSD 98/12** **PSD 98/14** **PSD 98/16**	800 1200 1400 1600	250 400 440 500	100	85	750	0.8	6	150	1.2 --- 0.2	1.5 --- 0.25	68	
PSD 105/08 **PSD 105/12** **PSD 105/14** **PSD 105/16** **PSD 105/18**	800 1200 1400 1600 1800	250 400 440 500 575	160	85	1500	0.8	5	150	0.83 --- 0.138	1.13 --- 0.188	29	
PSD 108/08 **PSD 108/12** **PSD 108/14** **PSD 108/16**	800 1200 1400 1600	250 400 440 500	117	100	900	0.8	4	150	0.85 --- 0.142	1.15 --- 0.192	68	Fig. 68 Weight = 22 g
PSD 112/08 **PSD 112/12** **PSD 112/14** **PSD 112/16** **PSD 112/18**	800 1200 1400 1600 1800	250 400 440 500 575	127	90	1200	0.8	4	150	0.9 --- 0.15	1.08 --- 0.18	2	
PSD 125/08 **PSD 125/12** **PSD 125/14** **PSD 125/16** **PSD 125/18**	800 1200 1400 1600 1800	250 400 440 500 575	166	85	1800	0.8	3	150	0.83 --- 0.138	1.13 --- 0.188	29	**ECO-PAC™ 2**
PSD 162/08 **PSD 162/12** **PSD 162/14** **PSD 162/16** **PSD 162/18**	800 1200 1400 1600 1800	250 400 440 500 575	175	90	1800	0.8	3	150	0.65 --- 0.108	0.83 --- 0.138	2	
PSD 192/08 **PSD 192/12** **PSD 192/14**	800 1200 1400	250 400 440	248	90	2800	0.8	2.2	150	0.45 --- 0.075	0.6 --- 0.1		

Three Phase Rectifier Bridges

released, E 148688



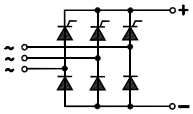
3 ~ Rectifier Bridges, B6U

Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W	Figure	Package style see outlines starting at page 86
PSD 67/06 **PSD 67/08** **PSD 67/12** **PSD 67/14** **PSD 67/16** **PSD 67/18**	600 800 1200 1400 1600 1800	180 250 400 440 500 575	68	100	300	0.8	13	150	1.1 --- 0.18	1.6 --- 0.27	24	Fig. 29 Weight = 240 g
PSD 68/06 **PSD 68/08** **PSD 68/12** **PSD 68/14** **PSD 68/16** **PSD 68/18**	600 800 1200 1400 1600 1800	180 250 400 440 500 575	68	100	300	0.8	13	150	1.1 --- 0.18	1.6 --- 0.27	25	
PSD 75/08 **PSD 75/12** **PSD 75/14** **PSD 75/16** **PSD 75/18**	800 1200 1400 1600 1800	250 400 440 500 575	95	85	1000	0.8	6	150	1.28 --- 0.213	1.38 --- 0.23	29	Fig. 1 Weight = 160 g
PSD 82/08 **PSD 82/12** **PSD 82/14** **PSD 82/16** **PSD 82/18**	800 1200 1400 1600 1800	250 400 440 500 575	88	110	750	0.8	5	150	1.1 --- 0.183	1.52 --- 0.253	1	
PSD 83/08 **PSD 83/12** **PSD 83/14** **PSD 83/16** **PSD 83/18**	800 1200 1400 1600 1800	250 400 440 500 575	100	100	1200	0.8	5	150	0.58 --- 0.097	0.825 --- 0.138		Fig. 25 Weight = 16 g
PSD 86/06 **PSD 86/08** **PSD 86/12** **PSD 86/14** **PSD 86/16** **PSD 86/18**	600 800 1200 1400 1600 1800	180 250 400 440 500 575	86	90	530	0.8	7.5	150	1.2 --- 0.2	1.5 --- 0.25	25	**ECO-PAC™ 1**
PSD 95/08 **PSD 95/12** **PSD 95/14** **PSD 95/16** **PSD 95/18**	800 1200 1400 1600 1800	250 400 440 500 575	140	85	1200	0.8	5	150	0.9 --- 0.15	1.1 --- 0.183	7	Fig. 7 Weight = 220 g
PSD 98/08 **PSD 98/12** **PSD 98/14** **PSD 98/16**	800 1200 1400 1600	250 400 440 500	100	85	750	0.8	6	150	1.2 --- 0.2	1.5 --- 0.25	68	
PSD 105/08 **PSD 105/12** **PSD 105/14** **PSD 105/16** **PSD 105/18**	800 1200 1400 1600 1800	250 400 440 500 575	160	85	1500	0.8	5	150	0.83 --- 0.138	1.13 --- 0.188	29	
PSD 108/08 **PSD 108/12** **PSD 108/14** **PSD 108/16**	800 1200 1400 1600	250 400 440 500	117	100	900	0.8	4	150	0.85 --- 0.142	1.15 --- 0.192	68	Fig. 68 Weight = 22 g
PSD 112/08 **PSD 112/12** **PSD 112/14** **PSD 112/16** **PSD 112/18**	800 1200 1400 1600 1800	250 400 440 500 575	127	90	1200	0.8	4	150	0.9 --- 0.15	1.08 --- 0.18	2	
PSD 125/08 **PSD 125/12** **PSD 125/14** **PSD 125/16** **PSD 125/18**	800 1200 1400 1600 1800	250 400 440 500 575	166	85	1800	0.8	3	150	0.83 --- 0.138	1.13 --- 0.188	29	**ECO-PAC™ 2**
PSD 162/08 **PSD 162/12** **PSD 162/14** **PSD 162/16** **PSD 162/18**	800 1200 1400 1600 1800	250 400 440 500 575	175	90	1800	0.8	3	150	0.65 --- 0.108	0.83 --- 0.138	2	
PSD 192/08 **PSD 192/12** **PSD 192/14**	800 1200 1400	250 400 440	248	90	2800	0.8	2.2	150	0.45 --- 0.075	0.6 --- 0.1		

PSD 192/16	1600	500								
PSD 192/18	1800	575								

Fig. 2
Weight = 270 g

Three Phase Rectifier Bridges



released, E 148688

3 ~ Half Controlled Rectifier Bridges, B6HK

Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W	Figure	Package style see outlines starting at page 86
PSDH 39/08	800	250	39	85	200	0.85	27	125	1.3 / 0.22	1.8 / 0.3	30	
PSDH 39/12	1200	400										
PSDH 70/08	800	250	70	85	550	0.85	11	125	0.9 / 0.15	1.1 / 0.183	6	
PSDH 70/12	1200	400										
PSDH 70/14	1400	440										
PSDH 70/16	1600	500										
PSDH 74/08*	800	250	74	85	550	0.85	11	125	0.8 / 0.2	1.1 / 0.275	76	
PSDH 74/12*	1200	400										
PSDH 74/14*	1400	440										
PSDH 74/16*	1600	500										
PSDH 75/08	800	250	75	85	520	0.85	11	125	0.9 / 0.15	1.1 / 0.183	7	
PSDH 75/12	1200	400										
PSDH 75/14	1400	440										
PSDH 75/16	1600	500										
PSDH 90/08	800	250	100	85	1150	0.85	5.33	125	0.6 / 0.1	0.8 / 0.133		
PSDH 90/12	1200	400										
PSDH 90/14	1400	440										
PSDH 110/08	800	250	110	85	1150	0.85	6	125	0.65 / 0.108	0.8 / 0.133	2	
PSDH 110/12	1200	400										
PSDH 110/14	1400	440										
PSDH 175/08	800	250	167	85	1500	0.85	3.5	125	0.46 / 0.077	0.55 / 0.092		
PSDH 175/12	1200	400										
PSDH 175/14	1400	440										
PSDH 175/16	1600	500										

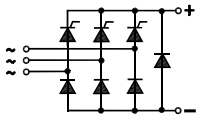
Fig. 30
Weight = 16 g

ECO-PAC™ 1

Fig. 6
Weight = 100 g

Fig. 76

ECO-PAC™ 3



released, E 148688

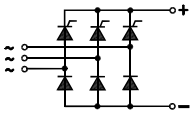
3 ~ Half Controlled Rectifier Bridges with Freewheeling Diode, B6HKF

Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W	Figure	Package style see outlines starting at page 86
PSFH 70/08	800	250	70	85	550	0.85	11	125	0.9 / 0.15	1.1 / 0.157	6	
PSFH 70/12	1200	400										
PSFH 70/14	1400	440										
PSFH 70/16	1600	500										

PSD 192/16	1600	500								
PSD 192/18	1800	575								

Fig. 2
Weight = 270 g

Three Phase Rectifier Bridges



released, E 148688

3 ~ Half Controlled Rectifier Bridges, B6HK

Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W	Figure	Package style see outlines starting at page 86
PSDH 39/08	800	250	39	85	200	0.85	27	125	1.3 / 0.22	1.8 / 0.3	30	
PSDH 39/12	1200	400										
PSDH 70/08	800	250	70	85	550	0.85	11	125	0.9 / 0.15	1.1 / 0.183	6	
PSDH 70/12	1200	400										
PSDH 70/14	1400	440										
PSDH 70/16	1600	500										
PSDH 74/08*	800	250	74	85	550	0.85	11	125	0.8 / 0.2	1.1 / 0.275	76	
PSDH 74/12*	1200	400										
PSDH 74/14*	1400	440										
PSDH 74/16*	1600	500										
PSDH 75/08	800	250	75	85	520	0.85	11	125	0.9 / 0.15	1.1 / 0.183	7	
PSDH 75/12	1200	400										
PSDH 75/14	1400	440										
PSDH 75/16	1600	500										
PSDH 90/08	800	250	100	85	1150	0.85	5.33	125	0.6 / 0.1	0.8 / 0.133		
PSDH 90/12	1200	400										
PSDH 90/14	1400	440										
PSDH 110/08	800	250	110	85	1150	0.85	6	125	0.65 / 0.108	0.8 / 0.133	2	
PSDH 110/12	1200	400										
PSDH 110/14	1400	440										
PSDH 175/08	800	250	167	85	1500	0.85	3.5	125	0.46 / 0.077	0.55 / 0.092		
PSDH 175/12	1200	400										
PSDH 175/14	1400	440										
PSDH 175/16	1600	500										

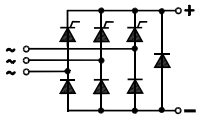
Fig. 30
Weight = 16 g

ECO-PAC™ 1

Fig. 6
Weight = 100 g

Fig. 76

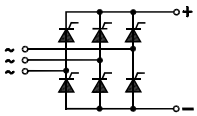
ECO-PAC™ 3



released, E 148688

3 ~ Half Controlled Rectifier Bridges with Freewheeling Diode, B6HKF

Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W	Figure	Package style see outlines starting at page 86
PSFH 70/08	800	250	70	85	550	0.85	11	125	0.9 / 0.15	1.1 / 0.157	6	
PSFH 70/12	1200	400										
PSFH 70/14	1400	440										
PSFH 70/16	1600	500										



released, E 148688

3 ~ Full Controlled Rectifier Bridges, B6C

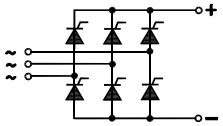
Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W		Package style see outlines starting at page 86
PSDT 39/08	800	250	39	85	200	0.85	27	125	1.3 / 0.22	1.8 / 0.3	51	Fig. 7 Weight = 220 g
PSDT 39/12	1200	400										
PSDT 70/08	800	250	70	85	520	0.85	11	125	0.9 / 0.15	1.1 / 0.183	6	
PSDT 70/12	1200	400										
PSDT 70/14	1400	440										
PSDT 70/16	1600	500										
PSDT 74/08*	800	250	74	85	550	0.85	11	125	0.8 / 0.2	1.1 / 0.275	76	
PSDT 74/12*	1200	400										
PSDT 74/14*	1400	440										
PSDT 74/16*	1600	500										

Fig. 51
Weight = 16 g

ECO-PAC™ 1

*** UL release applied**

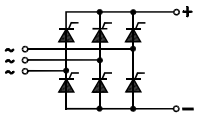
Three Phase Rectifier Bridges



released, E 148688

3 ~ Full Controlled Rectifier Bridges, B6C

Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W	Figure	Package style see outlines starting at page 86
PSDT 75/08	800	250	75	85	550	0.85	11	125	0.9 / 0.15	1.1 / 0.183	7	Fig. 2 Weight = 270 g
PSDT 75/12	1200	400										
PSDT 75/14	1400	440										
PSDT 75/16	1600	500										
PSDT 90/08	800	250	100	85	1150	0.85	5.33	125	0.6 / 0.10	0.8 / 0.133		
PSDT 90/12	1200	400										
PSDT 90/14	1400	440										
PSDT 110/08	800	250	110	85	1150	0.85	6	125	0.65 / 0.108	0.8 / 0.133	2	
PSDT 110/12	1200	400										
PSDT 110/14	1400	440										
PSDT 175/08	800	250	167	85	1500	0.85	3.5	125	0.46 / 0.077	0.55 / 0.092		
PSDT 175/12	1200	400										
PSDT 175/14	1400	440										
PSDT 175/16	1600	500										



released, E 148688

3 ~ Full Controlled Rectifier Bridges, B6C

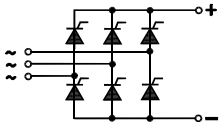
Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W		Package style see outlines starting at page 86
PSDT 39/08	800	250	39	85	200	0.85	27	125	1.3 / 0.22	1.8 / 0.3	51	Fig. 7 Weight = 220 g
PSDT 39/12	1200	400										
PSDT 70/08	800	250	70	85	520	0.85	11	125	0.9 / 0.15	1.1 / 0.183	6	
PSDT 70/12	1200	400										
PSDT 70/14	1400	440										
PSDT 70/16	1600	500										
PSDT 74/08*	800	250	74	85	550	0.85	11	125	0.8 / 0.2	1.1 / 0.275	76	
PSDT 74/12*	1200	400										
PSDT 74/14*	1400	440										
PSDT 74/16*	1600	500										

Fig. 51
Weight = 16 g

ECO-PAC™ 1

*** UL release applied**

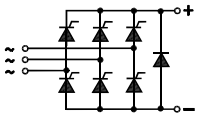
Three Phase Rectifier Bridges



released, E 148688

3 ~ Full Controlled Rectifier Bridges, B6C

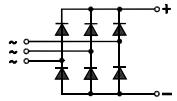
Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W	Figure	Package style see outlines starting at page 86
PSDT 75/08	800	250	75	85	550	0.85	11	125	0.9 / 0.15	1.1 / 0.183	7	Fig. 2 Weight = 270 g
PSDT 75/12	1200	400										
PSDT 75/14	1400	440										
PSDT 75/16	1600	500										
PSDT 90/08	800	250	100	85	1150	0.85	5.33	125	0.6 / 0.10	0.8 / 0.133		
PSDT 90/12	1200	400										
PSDT 90/14	1400	440										
PSDT 110/08	800	250	110	85	1150	0.85	6	125	0.65 / 0.108	0.8 / 0.133	2	
PSDT 110/12	1200	400										
PSDT 110/14	1400	440										
PSDT 175/08	800	250	167	85	1500	0.85	3.5	125	0.46 / 0.077	0.55 / 0.092		
PSDT 175/12	1200	400										
PSDT 175/14	1400	440										
PSDT 175/16	1600	500										



released, E 148688

3 ~ Full Controlled Rectifier Bridges with Freewheeling Diode, B6CF

Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W	Figure	Package style see outlines starting at page 86
PSFT 70/08	800	250	70	85	550	0.85	11	125	0.9 / 0.15	1.1 / 0.18	6	Fig. 6 Weight = 100 g
PSFT 70/12	1200	400										
PSFT 70/14	1400	440										
PSFT 70/16	1600	500										



released, E 148688

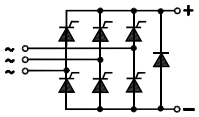
3 ~ Rectifier Bridges with Fast Recovery Epitaxial Diodes, B6U

Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	t_{rr} ns	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W		Package style see outlines starting at page 86
PSD 24F/04	400	125	34	85	50	1.18	22	35	2.5 / 0.42	2.8 / 0.47	25	Fig. 25 Weight = 16 g
PSD 24F/06	600	200										
PSD 24F/08	800	250	24	85	40	1.39	55	40				
PSD 24F/12	1200	400										
PSD 43F/04	400	125	56	85	110	1.13	13	35	1.6 / 0.27	1.9 / 0.32		
PSD 43F/06	600	200										
PSD 43F/08	800	250	40	85	90	1.32	30	40				
PSD 43F/12	1200	400										
PSD 91F/04	400	125	86	100	250	0.98	8	35	0.9 / 0.15	1.2 / 0.2		
PSD 91F/06	600	200										
PSD 91F/08	800	250	74	85	200	1.31	15	40				
PSD 91F/12	1200	400										
PSD 150F/04	400	125	130	85	600	1.09	4.3	35	0.85 / 0.14	1.0 / 0.17	68	
PSD 150F/06	600	200										
PSD 150F/08	800	250	130	75	500	1.12	5.7	40				
PSD 150F/12	1200	400										

ECO-PAC™ 1

Fig. 68
Weight = 22 g

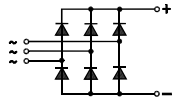
ECO-PAC™ 2



released, E 148688

3 ~ Full Controlled Rectifier Bridges with Freewheeling Diode, B6CF

Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W	Figure	Package style see outlines starting at page 86
PSFT 70/08	800	250	70	85	550	0.85	11	125	0.9 / 0.15	1.1 / 0.18	6	Fig. 6 Weight = 100 g
PSFT 70/12	1200	400										
PSFT 70/14	1400	440										
PSFT 70/16	1600	500										



released, E 148688

3 ~ Rectifier Bridges with Fast Recovery Epitaxial Diodes, B6U

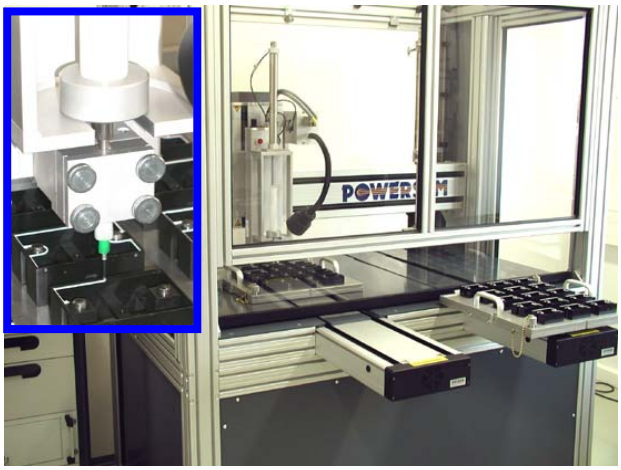
Type	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	t_{rr} ns	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W		Package style see outlines starting at page 86
PSD 24F/04	400	125	34	85	50	1.18	22	35	2.5 / 0.42	2.8 / 0.47	25	Fig. 25 Weight = 16 g
PSD 24F/06	600	200										
PSD 24F/08	800	250	24	85	40	1.39	55	40				
PSD 24F/12	1200	400										
PSD 43F/04	400	125	56	85	110	1.13	13	35	1.6 / 0.27	1.9 / 0.32		
PSD 43F/06	600	200										
PSD 43F/08	800	250	40	85	90	1.32	30	40				
PSD 43F/12	1200	400										
PSD 91F/04	400	125	86	100	250	0.98	8	35	0.9 / 0.15	1.2 / 0.2		
PSD 91F/06	600	200										
PSD 91F/08	800	250	74	85	200	1.31	15	40				
PSD 91F/12	1200	400										
PSD 150F/04	400	125	130	85	600	1.09	4.3	35	0.85 / 0.14	1.0 / 0.17	68	
PSD 150F/06	600	200										
PSD 150F/08	800	250	130	75	500	1.12	5.7	40				
PSD 150F/12	1200	400										

ECO-PAC™ 1

Fig. 68
Weight = 22 g

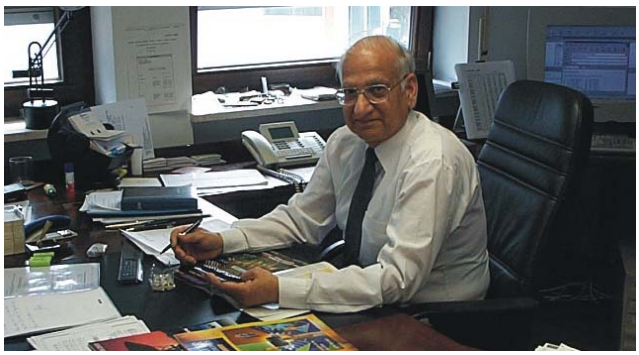
ECO-PAC™ 2

Due to an increasing power demanding world, manufacturers of many products are seeking higher power integrated multiple chip modules. Powersem is prepared to offer these 'value - added' products for markets ranging from **switch-mode power supplies**, **automation**, **motor drives**, **medical applications**, etc., including **hybrid/electric vehicles**.



100 % optical and electrical testing of the modules is installed to maintain the highest quality and reliability of all our products. All modules are **UL** certified and all processes are optimized according to **DIN ISO 9001: 2000**.

Continuing the business in the spirit of **Madan M. Chadda** - the founder of **POWERSEM GmbH** – his son **Ashok Chadda** and his highly qualified staff guarantee long term innovations and highest quality of power semiconductor modules.



Madan M. Chadda,
founder of **POWERSEM GmbH**

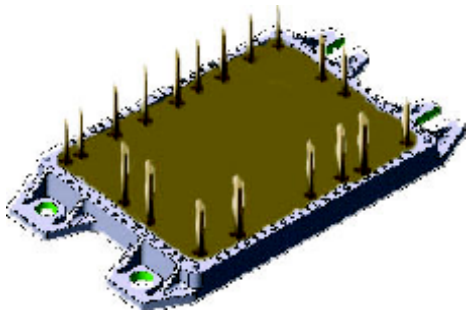
new --- new --- new --- new

Enlarging its Product Range **POWERSEM** offers its customers two **new** packages:

ECO-PAC™ 3 a **new** member of the ECO-PAC™ family

and

ECO-TOP™ 1 a **new** economical package



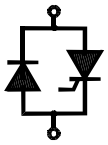
new --- new --- new --- new

POWERSEM GmbH confirms that all products manufactured by **POWERSEM** are compliant to the

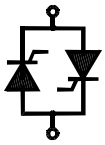
DIRICTIVE 2002 / 95 /EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

of 27 January 2003
on the **r**estriction **o**f the use of certain **h**azardous **s**ubstances in electrical and electric equipment (**RoHS**).

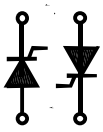
AC Controller Modules



PSW1H110,PSW1H140, PSW1H175, PSW1H205



PSW1C110, PSW1C140, PSW1C175, PSW1C205



PSW1C25,PSW1C40, PSW1C70, PSW1C100

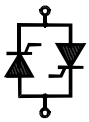
released, E 148688

Single Phase AC Controller Modules, W1H, W1C

Type	V_{RRM} V	I_{TAV} T_C 85°C A	I_{RMS} T_C 85°C A	I_{TSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} 10 s °C	∫i²dt @ 45°C 10ms A^2s	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W	Figure	Package style see outlines starting at page 86
PSW1H 110/08 **PSW1H 110/12** **PSW1H 110/14**	800 1200 1400	51	112	1000	0.85	5.6	150	5000	0.8 --- 0.4	0.9 --- 0.45	31	Fig. 31 Weight = 16 g
PSW1H 140/08 **PSW1H 140/12** **PSW1H 140/14** **PSW1H 140/16** **PSW1H 140/18**	800 1200 1400 1600 1800	58	130	1150	0.85	5.2	150	6600	0.7 --- 0.35	0.8 --- 0.4		
PSW1H 175/08 **PSW1H 175/12** **PSW1H 175/14** **PSW1H 175/16** **PSW1H 175/18**	800 1200 1400 1600 1800	80	175	1500	0.85	3.7	150	11200	0.5 --- 0.25	0.65 --- 0.33		**ECO-PAC™ 1**
PSW1H 205/08 **PSW1H 205/12** **PSW1H 205/14** **PSW1H 205/16** **PSW1H 205/18**	800 1200 1400 1600 1800	105	230	2250	0.85	2.4	125	25300	0.26 --- 0.13	0.46 --- 0.23	74	Fig. 74 Weight = 24
PSW1C 25/06 **PSW1C 25/08** **PSW1C 25/12**	600 800 1200	17	26	250	0.90	18	125	310	1.42 --- 0.71	1.75 --- 0.88	73	**ECO-PAC™ 2**
PSW1C 40/06 **PSW1C 40/08** **PSW1C 40/12** **PSW1C 40/14** **PSW1C 40/16**	600 800 1200 1400 1600	27	44	520	0.85	10.0	125	1350	0.88 --- 0.44	1.1 --- 0.55		Fig. 32 Weight = 16 g
PSW1C 70/06 **PSW1C 70/08** **PSW1C 70/12**	600 800 1200	45	72	1100	0.85	4.6	125	6050	0.62 --- 0.31	0.78 --- 0.39		
PSW1C 100/06 **PSW1C 100/08** **PSW1C 100/12** **PSW1C 100/14** **PSW1C 100/16**	600 800 1200 1400 1600	53	96	1200	0.85	4.0	125	7200	0.53 --- 0.27	0.73 --- 0.37		**ECO-PAC™ 1**
PSW1C 110/08 **PSW1C 110/12** **PSW1C 110/14**	800 1200 1400	51	112	1000	0.85	5.6	150	5000	0.8 --- 0.4	0.9 --- 0.45	32	Fig. 33 Weight = 24 g
PSW1C 140/08 **PSW1C 140/12** **PSW1C 140/14** **PSW1C 140/16** **PSW1C 140/18**	800 1200 1400 1600 1800	58	130	1150	0.85	5.2	150	6600	0.7 --- 0.35	0.8 --- 0.4		
PSW1C 175/08 **PSW1C 175/12** **PSW1C 175/14** **PSW1C 175/16** **PSW1C 175/18**	800 1200 1400 1600 1800	80	175	1500	0.8	3.7	150	11200	0.5 --- 0.25	0.65 --- 0.33		**ECO-PAC™ 2**
PSW1C 205/08 **PSW1C 205/12** **PSW1C 205/14** **PSW1C 205/16** **PSW1C 205/18**	800 1200 1400 1600 1800	105	230	2250	0.85	2.4	125	25300	0.26 --- 0.13	0.46 --- 0.23	33	Fig. 73 Weight = 18 g

ECO-PAC™ 1

AC Controller Subassemblies



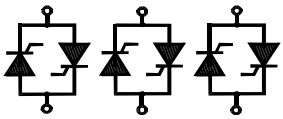
Single Phase AC Controller Subassemblies, W1C

Type	V_{RRM} V	I_{TAV} T_C 85°C A	I_{RMS} T_C 85°C A	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	$\int I^2dt$ @ 45°C 10ms A^2s	R_{thJC} Chip / Module K/W	Figure	Package style see outlines starting at page 86
PSW1C 50/08	800	23	50	520	0.85	11	150	1350	1.1 / 0.55	34	Fig. 34 Weight = 6 g
PSW1C 50/12	1200										
PSW1C 50/14	1400										
PSW1C 50/16	1600										
PSW1C 75/08	800	39	86	1000	0.85	4	125	5000	0.8 / 0.4	36	
PSW1C 75/12	1200										
PSW1C 75/14	1400										
PSW1C 112/08	800	51	112	1000	0.85	5.6	150	6000	0.8 / 0.4	37	
PSW1C 112/12	1200										
PSW1C 112/14	1400										
PSW1C 142/08	800	58	130	1150	0.85	5.2	150	6600	0.7 / 0.35		
PSW1C 142/12	1200										
PSW1C 142/14	1400										
PSW1C 142/16	1600										
PSW1C 142/18	1800										
PSW1C 176/08	800	80	175	1500	0.8	3.7	150	11200	0.5 / 0.25		Fig. 36 Weight = 9 g
PSW1C 176/12	1200										
PSW1C 176/14	1400										
PSW1C 176/16	1600										
PSW1C 176/18	1800										
PSW1C 206/08	800	105	230	2250	0.8	2.4	125	25300	0.26 / 0.13	38	
PSW1C 206/12	1200										
PSW1C 206/14	1400										
PSW1C 206/16	1600										
PSW1C 206/18	1800										

Fig. 37
Weight = 8 g

Fig. 38*
Weight = 18 g

*completely wire-bonded version also available



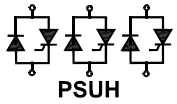
Three Phase AC Controller Subassemblies, W3C

Type	V_{RRM} V	I_{TAV} T_C 85°C A	I_{RMS} T_C 85°C A	I_{FSM} 25°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	$\int I^2dt$ @ 45°C 10ms A^2s	R_{thJC} Chip / Module K/W	Figure	Package style see outlines starting at page 86
PSW3C 95/08	800	44	96*	1150	0.85	4.8	125	6600	0.5 / 0.25	39	
PSW3C 95/12	1200										
PSW3C 95/14	1400										
PSW3C 95/16	1600										

*3x96

Fig. 39
Weight = 20 g

AC Controller Modules


PSUH

released, E 148688

Three Phase AC Controller Modules, W3H

Type	V_{RRM} V	I_{TAV} T_C 85°C A	I_{RMS} T_C 85°C A	I_{TSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W	Figure	Package style see outlines starting at page 86
PSUH 35/08	800	16	3x35	200	0.85	27	125	1.3	1.8	40	Fig. 40 Weight = 16 g
PSUH 35/12	1200							0.217	0.3		
PSUH 36/08	800	18	3x39	320	0.85	13	125	1.3	1.5	42	
PSUH 36/12	1200							---	---		
PSUH 36/14	1400							0.217	0.25		
PSUH 36/16	1600										
PSUH 40/08	800	18	3x40	400	0.85	15	125	1.43	1.53	7	
PSUH 40/12	1200							---	---		
PSUH 40/14	1400							0.238	0.255		
PSUH 40/16	1600										
PSUH 45/08*	800	20	3x44	320	0.85	13	125	1.3	1.5	76	
PSUH 45/12*	1200							---	---		
PSUH 45/14*	1400							0.217	0.25		
PSUH 45/16*	1600										
PSUH 50/08	800	23	3x50	520	0.85	11	125	1.20	1.31	7	
PSUH 50/12	1200							---	---		
PSUH 50/14	1400							0.20	0.218		
PSUH 50/16	1600										
PSUH 60/08	800	27	3x60	550	0.85	11	125	0.9	1.1	42	
PSUH 60/12	1200							---	---		
PSUH 60/14	1400							0.15	0.183		
PSUH 60/16	1600										
PSUH 65/08*	800	30	3x65	550	0,85	11	125	0.8	1.1	76	
PSUH 65/12*	1200							---	---		
PSUH 65/14*	1400							0.133	0.183		
PSUH 65/16*	1600										
PSUH 80/08	800	37	3x82	1000	0.85	5.2	125	0.81	1.0	7	
PSUH 80/12	1200							---	---		
PSUH 80/14	1400							0.135	0.167		
PSUH 85/08*	800	37	3x82	1000	0.85	5.0	125	0.8	0.9	76	
PSUH 85/12*	1200							0.133	0.15		
PSUH 90/08*	800	40	3x90	1000	0.85	5.0	125	0.73	0.82	75	
PSUH 90/12*	1200							---	---		
PSUH 90/14*	1400							0.122	0.137		
PSUH 90/16*	1600										
PSUH 90/18*	1800										
PSUH 95/08	800	44	3x96	1150	0.85	4.8	125	0.66	0.93	7	
PSUH 95/12	1200							---	---		
PSUH 95/14	1400							0.11	0.155		
PSUH 115/08	800	53	3x115	900	0.95	4.3	125	0.5	0.7	43	
PSUH 115/12	1200							---	---		
PSUH 115/14	1400							0.083	0.12		
PSUH 115/16	1600										
PSUH 130/08*	800	55	3x120	1300	0.8	3.9	125	0.55	0.7	75	
PSUH 130/12*	1200							---	---		
PSUH 130/14*	1400							0.092	0.117		
PSUH 130/16*	1600										
PSUH 130/18*	1800										
PSUH 230/08*	800	90	3x200	2250	0.85	2.5	125	0.3	0.49		
PSUH 230/12*	1200							---	---		
PSUH 230/14*	1400							0.05	0.082		
PSUH 230/16*	1600										
PSUH 230/18*	1800										

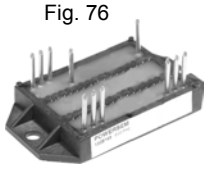
ECO-PAC™ 1

Fig. 42
Weight = 100 g

Fig. 7
Weight = 220 g

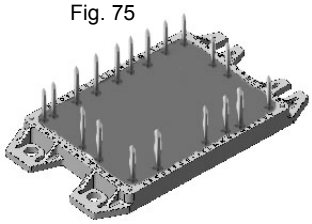
Fig. 43
Weight = 290 g

Fig. 76



ECO-PAC™ 3

Fig. 75

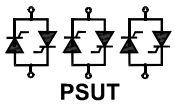


ECO-TOP™ 1

* UL release applied

AC Controller Modules

released, E 148688



PSUT

Three Phase AC Controller Modules, W3C

Type	V_{RRM} V	I_{TAV} T_C 85°C A	I_{RMS} T_C 85°C A	I_{TSM} 25°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} Chip / Module K/W	R_{thJH} Chip / Module K/W	Figure	Package style see outlines starting at page 86
PSUT 35/08	800	16	3x35	200	0.85	27	125	1.3	1.8	41	Fig. 41 Weight = 16
PSUT 35/12	1200							0.217	0.3		
PSUT 36/08	800	18	3x39	320	0.85	13	125	1.3	1.5	42	
PSUT 36/12	1200							---	---		
PSUT 36/14	1400							0.217	0.25		
PSUT 36/16	1600										
PSUT 40/08	800	18	3x40	400	0.85	15	125	1.43	1.53	7	
PSUT 40/12	1200							---	---		
PSUT 40/14	1400							0.238	0.255		
PSUT 40/16	1600										
PSUT 45/08*	800	20	3x44	320	0.85	13	125	1.3	1.5	76	
PSUT 45/12*	1200							---	---		
PSUT 45/14*	1400							0.217	0.25		
PSUT 45/16*	1600										
PSUT 50/08	800	23	3x50	520	0.85	11	125	1.20	1.31	7	
PSUT 50/12	1200							---	---		
PSUT 50/14	1400							0.20	0.218		
PSUT 50/16	1600										
PSUT 60/08	800	27	3x60	550	0.85	11	125	0.9	1.1	42	
PSUT 60/12	1200							---	---		
PSUT 60/14	1400							0.15	0.183		
PSUT 60/16	1600										
PSUT 65/08*	800	30	3x65	550	0,85	11	125	0.8	1.1	76	
PSUT 65/12*	1200							---	---		
PSUT 65/14*	1400							0.133	0.183		
PSUT 65/16*	1600										
PSUT 80/08	800	37	3x82	1000	0.85	5.2	125	0.81	1.0	7	
PSUT 80/12	1200							---	---		
PSUT 80/14	1400							0.135	0.167		
PSUT 85/08*	800	37	3x82	1000	0.85	5.0	125	0.8	0.9	76	
PSUT 85/12*	1200							0.133	0.15		
PSUT 90/08*	800	40	3x90	1000	0.85	5.0	125	0.73	0.82	75	
PSUT 90/12*	1200							---	---		
PSUT 90/14*	1400							0.122	0.137		
PSUT 90/16*	1600										
PSUT 90/18*	1800										
PSUT 95/08	800	44	3x96	1150	0.85	4.8	125	0.66	0.93	7	
PSUT 95/12	1200							---	---		
PSUT 95/14	1400							0.11	0.155		
PSUT 115/08	800	53	3x115	900	0.95	4.3	125	0.5	0.7	43	
PSUT 115/12	1200							---	---		
PSUT 115/14	1400							0.083	0.12		
PSUT 115/16	1600										
PSUT 130/08*	800	55	3x120	1300	0.8	3.9	125	0.55	0.7	75	
PSUT 130/12*	1200							---	---		
PSUT 130/14*	1400							0.092	0.117		
PSUT 130/16*	1600										
PSUT 130/18*	1800										
PSUT 145/08	800	67	3x145	1250	0.95	3.2	125	0.42	0.62	43	
PSUT 145/12	1200							---	---		
PSUT 145/14	1400							0.07	0.11		
PSUT 145/16	1600										
PSUT 230/08*	800	90	3x200	2250	0.85	2.5	125	0.3	0.49	75	
PSUT 230/12*	1200							---	---		
PSUT 230/14*	1400							0.05	0.082		
PSUT 230/16*	1600										
PSUT 230/18*	1800										

ECO-PAC™ 1

Fig. 42
Weight = 100 g

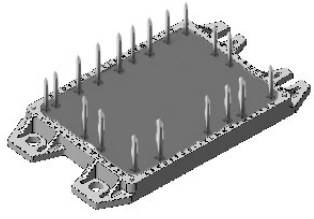
Fig. 7
Weight = 220 g

Fig. 43
Weight = 290 g

Fig. 76

ECO-PAC™ 3

Fig. 75



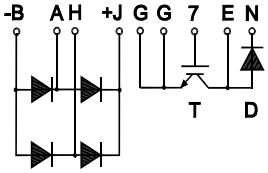
ECO-TOP™ 1

*** UL release applied**

Rectifier Bridges for Power Factor Correction (PFC)

Single Phase PFC

ECO-PAC™ 1



released, E 148688

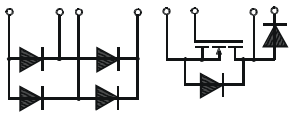
Boost Module with Ultra Fast IGBT and Boost Diode, Fast Rectifier Diodes

Type	V_{CES}	I_{C80} T_C 80°C IGBT	I_{F80} T_C 80°C boost diode	V_{RMM}	I_{C80} T_C 80°C rect. diodes	R_{thJC} IGBT per diode	R_{thJC} boost diode	R_{thJC} rectifier	Figure	Package style see outlines starting at page 86
	V	A	A	V	A	K/W	K/W	K/W		
PSBI 9/06	600	25	22	1200	10	0.96	1.15	2.5	44	
PSBI 33/06	600	30	19	600	22	0.96	1.15	2.5	79	

Fig. 44
Weight = 16

Fig. 79
Weight = 16

ECO-PAC™ 2

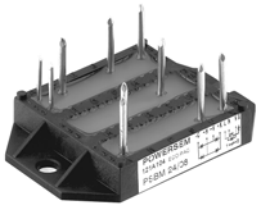


released, E 148688

Boost Module with MOSFET and Boost Diode, Fast Rectifier Diodes

Type	V_{DSS} max.	$I_{D(cont.)}$ T_s 25°C	$R_{DS(on)}$ T_C 80°C boost diode	R_{thJS} max.	P_D max. Ts= 25°C	V_{RRM} Boost Diode	V_{RRM} Rectifier Diode	Figure	Package style see outlines starting at page 86
	V	A	Ω	K/W	W	V	V		
PSBM 24/05	500	35	0.12	0.38	325	600	800	45	

Fig. 45
Weight = 24 g

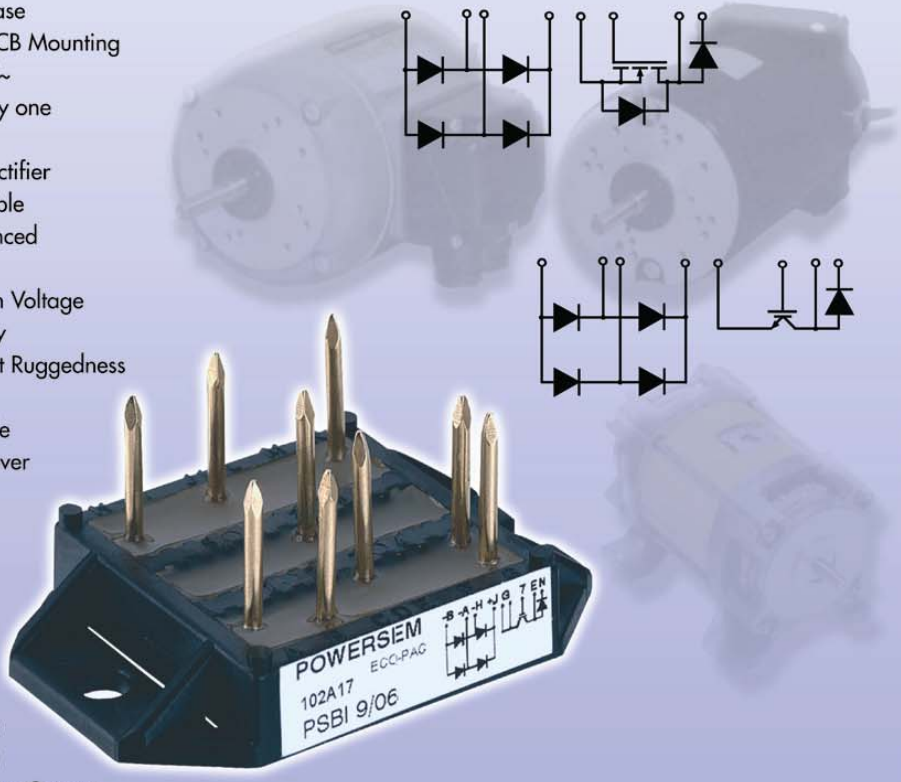


POWERSEM ECO-PACs™

Power Factor Correction Module in ECO-PAC™

Features

- Package with DCB Ceramic Base Plate and Soldering Pins for PCB Mounting
- Isolation Voltage over 3000 V~
- High Level of Integration – only one Power Semiconductor Module required for the whole PFC Rectifier
- Standard PFC Control ICs usable
- Fast Rectifier Diodes for Enhanced EMC behaviour
- NPT IGBT with Low Saturation Voltage
- Ultra Fast Switching Capability
- High RBSOA and Short Circuit Ruggedness
- Internally Series Connected
- HiPerFRED Freewheeling Diode for Fast and Soft Reverse Recover at High Switching Frequency



Applications

- Single Phase Rectification with Power Factor Correction (PFC)
- Low Harmonic Content of Mains Current
- Mains Current and Voltage in Phase
- Wide Input Voltage Range, controlled Output Voltage

your power bridge to the connection future

Powersem GmbH
Walpersdorferstr. 53
Tel. +49 (0) 9122 - 9764 - 0

91126 Schwabach, Germany
Fax +49 (0) 9122 - 9764 - 20

email: info@powersem.de
www.powersem.de

released, E 148688

Trench Gate IGBT Module

Type	V_{CES} Voltage Grade	I_C Current Rating @ 75°C	I_{CM} Maximum Current Rating	$V_{CE(SAT)}$ Saturation Voltage (Typical)	E_{ts} Total Switching Energy	V_{iso} Isolation Voltage	R_{thJC} per IGBT Chip	R_{thJC} per diode Chip	Figure	Package style see outlines starting at page 86
	V	A	A	V	mJ	kV	K/W	K/W		
PSTG 25 HDT 06	600	25	75	1,9	4	3,0	1,1	4,0	46	
PSTG 25 HDT 08	800	25	75	1,9	4	3,0	1,1	4,0		
PSTG 25 HDT 12	1200	25	75	1,9	4	3,0	1,1	4,0		
PSTG 25 HTT 06	600	25	75	1,9	4	3,0	1,1	4,0	47	
PSTG 25 HTT 08	800	25	75	1,9	4	3,0	1,1	4,0		
PSTG 25 HTT 12	1200	25	75	1,9	4	3,0	1,1	4,0		
PSTG 50 HST 06	600	50	150	1,9	8	3,0	0,83	2,0	48	
PSTG 50 HST 08	800	50	150	1,9	8	3,0	0,83	2,0		
PSTG 50 HST 12	1200	50	150	1,9	8	3,0	0,83	2,0		
PSTG 75 HST 06	600	75	225	1,9	12	3,0	0,55	1,33	49	
PSTG 75 HST 08	800	75	225	1,9	12	3,0	0,55	1,33		
PSTG 75 HST 12	1200	75	225	1,9	12	3,0	0,55	1,33		

Fig. 46
Weight = 16 g

Fig. 47
Weight = 16 g

Fig. 48
Weight = 16 g

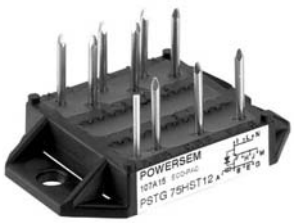
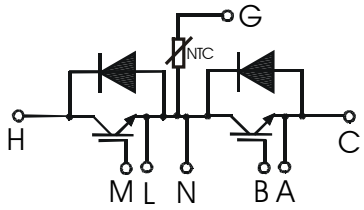
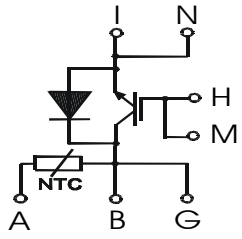
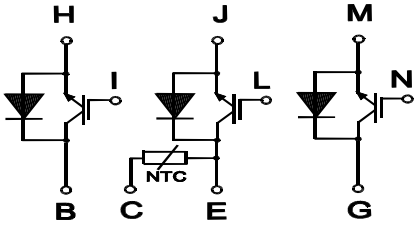
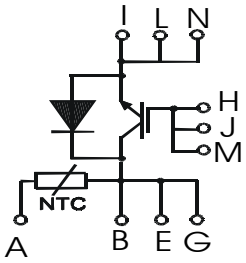


Fig. 49
Weight = 16 g

Circuit configurations for the Trench Gate IGBT Modules

PSTG 25 HDT **Half-Bridge ECO-PAC™**		**PSTG 50 HST** **Single Switch**	
PSTG 25 HTT **Triple Switch**		**PSTG 75 HST** **Single Switch**	

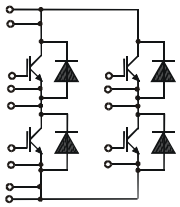
released, E 148688

IGBT Module (H - bridge configuration)

Type	V_{CES} Voltage Grade V	I_{C25} T_C= 25°C IGBT A	I_{C80} T_C= 80°C IGBT A	$V_{CE(sat)}$ Saturation Voltage (typical) T_j=25 °C V	E_{off} T_j=125 °C IGBT mJ	R_{thJC} IGBT K/W	I_{F25} T_C = 25 °C DIODE A	I_{F80} T_C = 80 °C DIODE A	Figure	Package style see outlines starting at page 86
PSHI 25/06*	600	24.5	17	2.4	0.5	1.52	18.5	12	52	
PSHI 25/12*	1200	30	21	2.6	2.1	0.96	26	17		
PSHI 50/06*	600	42.5	29	2.4	1.0	0.96	30	19		
PSHI 50/12*	1200	49	33	3.1	3.4	0.6	49	31		
PSHI 100/06*	600	69	48	2.3	1.4	0.6	56	35		

*NTC optional

Fig. 52
Weight = 24 g



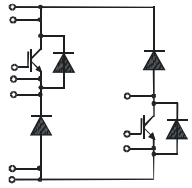
released, E 148688

IGBT Module (H - bridge configuration)

Type	V_{CES} Voltage Grade V	I_{C25} T_C= 25°C IGBT A	I_{C80} T_C= 80°C IGBT A	$V_{CE(sat)}$ Saturation Voltage (typical) T_j=25 °C V	E_{off} T_j=125 °C IGBT mJ	R_{thJC} IGBT K/W	I_{F25} T_C = 25 °C DIODE A	I_{F80} T_C = 80 °C DIODE A	Figure	Package style see outlines starting at page 86
PSHI 50D/06*	600	42.5	29	2.4	1.0	0.96	56	35	61	
PSHI 50D/12*	1200	49	33	3.1	3.4	0.6	49	31		
PSHI 75D/06*	600	69	48	2.3	1.4	0.6	56	35		

*NTC optional

Fig. 61
Weight = 24 g



released, E 148688

IGBT Module (phase leg)

Type	V_{CES} Voltage Grade V	I_{C25} T_C= 25°C IGBT A	I_{C80} T_C= 80°C IGBT A	$V_{CE(sat)}$ Saturation Voltage (typical) T_j=25 °C V	$t_{d(on)}$ $t_{d(off)}$ delay time Switching Characte-ristics ns	R_{thJC} IGBT K/W	I_{F25} T_C = 25 °C DIODE A	I_{F80} T_C = 80 °C DIODE A	R_{thJC} DIODE K/W	Figure	Package style see outlines starting at page 86
PSI 25/06*	600	24.5	17	2.4	30 270	1.52	18.5	12	3.5	54a	
PSI 25/12*	1200	30	21	2.6	100 500	0.96	26	17	2.3		
PSI 50/06*	600	42.5	29	2.4	50 270	0.96	30	19	2.3	54b	
PSI 50/12*	1200	49	33	3.1	100 500	0.6	49	31	1.3		
PSI 75/06*	600	69	48	2.3	50 300	0.6	56	35	1.3		
PSI 75/12*	1200	92	62	2.7	100 500	0.33	103	65	0.66		
PSI 100/06*	600	93	63	2.4	150 450	0.43	134	82	0.66		
PSI 130/06*	600	121	83	2.3	25 150	0.33	134	82.3	0.66		

*NTC optional

Fig. 54a
Weight = 24 g

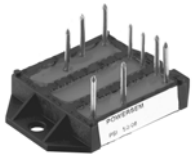
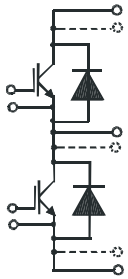


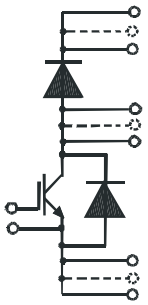
Fig. 54b
Weight = 24 g



released, E 148688

IGBT Module (boost chopper)

Type	V_{CES} Voltage Grade V	I_{C25} T_C= 25°C IGBT A	I_{C80} T_C= 80°C IGBT A	$V_{CE(sat)}$ Saturation Voltage (typical) T_j=25 °C V	$t_{d(on)}$ $t_{d(off)}$ delay time Switching Characte-ristics ns	R_{thJC} IGBT K/W	I_{F25} T_C = 25 °C DIODE A	I_{F80} T_C = 80 °C DIODE A	R_{thJC} DIODE K/W	Figure	Package style see outlines starting at page 86
PSSI 25/06*	600	24.5	17	2.4	30 270	1.52	18.5	12	3.5	57a	
PSSI 25/12*	1200	30	21	2.6	100 500	0.96	26	17	2.3		
PSSI 50/06*	600	42.5	29	2.4	50 270	0.96	30	19	2.3		
PSSI 50/12*	1200	49	33	3.1	100 500	0.6	49	31	1.3		
PSSI 75/06*	600	69	48	2.3	50 300	0.6	56	35	1.3	57b	
PSSI 75/12*	1200	92	62	2.7	100 500	0.33	103	65	0.66		
PSSI 100/06*	600	93	63	2.4	150 450	0.43	134	82	0.66		
PSSI 100/12*	1200	138	94	2.8	100 650	0.22	154	97	0.45		
PSSI 130/06*	600	121	83	2.3	25 150	0.33	134	82.3	0.66		
PSSI 160/12*	1200	169	117	2.9	100 600	0.18	154	97	0.45		



*NTC optional

Fig. 57a
Weight = 24 g

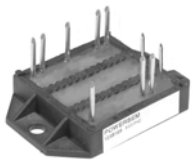


Fig. 57b
Weight = 24 g

released, E 148688

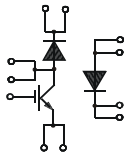
IGBT Module

Type	V_{CES} Voltage Grade V	I_{C25} T_C= 25°C IGBT A	I_{C80} T_C= 80°C IGBT A	$V_{CE(sat)}$ Saturation Voltage (typical) T_j=25 °C V	$t_{d(on)}$ $t_{d(off)}$ delay time Switching Characte-ristics ns	R_{thJC} IGBT K/W	I_{F25} T_C = 25 °C DIODE A	I_{F80} T_C = 80 °C DIODE A	R_{thJC} DIODE K/W	Figure	Package style see outlines starting at page 86
PSSI 45D/06	600	69	48	2.3	50 300	0.6	134	82	0.66	65	
PSSI 46D/06	600	69	48	2.3	50 300	0.6	134	82	0.66	66	

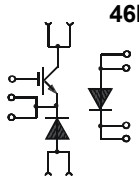
Fig. 65
Weight = 24 g

Fig. 66
Weight = 24 g

45D



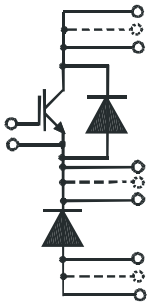
46D



released, E 148688

IGBT Module (buck chopper)

Type	V_{CES} Voltage Grade V	I_{C25} T_C= 25°C IGBT A	I_{C80} T_C= 80°C IGBT A	$V_{CE(sat)}$ Saturation Voltage (typical) T_j=25 °C V	$t_{d(on)}$ $t_{d(off)}$ delay time Switching Characte-ristics ns	R_{thJC} IGBT K/W	I_{F25} T_C = 25 °C DIODE A	I_{F80} T_C = 80 °C DIODE A	R_{thJC} DIODE K/W	Figure	Package style see outlines starting at page 86
PSIS 25/06*	600	24.5	17	2.4	30 270	1.52	18.5	12	3.5	62a	
PSIS 25/12*	1200	30	21	2.6	100 500	0.96	26	17	2.3		
PSIS 50/06*	600	42.5	29	2.4	50 270	0.96	30	19	2.3		
PSIS 50/12*	1200	49	33	3.1	100 500	0.6	49	31	1.3		
PSIS 75/06*	600	69	48	2.3	50 300	0.6	56	35	1.3	62b	
PSIS 75/12*	1200	92	62	2.7	100 500	0.33	103	65	0.66		
PSIS 100/06*	600	93	63	2.4	150 450	0.43	134	82	0.66		
PSIS 100/12*	1200	138	94	2.8	100 650	0.22	154	97	0.45		
PSIS 130/06*	600	121	83	2.3	25 150	0.33	134	82.3	0.66		
PSIS 160/12*	1200	169	117	2.9	100 600	0.18	154	97	0.45		



*NTC optional

Fig. 62a
Weight = 24 g

Fig. 62b
Weight = 24 g

IGBT Modules

released, E 148688

ECO-PAC™ 2

IGBT Sixpac Module

Type	V_{CES} Voltage Grade V	I_{C25} T_C= 25°C IGBT A	I_{C80} T_C= 80°C IGBT A	$V_{CE(sat)}$ Saturation Voltage (typical) T_j=25 °C V	E_{off} T_j=125 °C IGBT mJ	R_{thJC} IGBT K/W	I_{F25} T_C = 25 °C DIODE A	I_{F80} T_C = 80 °C DIODE A	Figure	Package style see outlines starting at page 86
PSII 6/12*	1200	6	4.1	3.9	0.2	3.1	12	8	63	
PSII 15/12*	1200	18	14	2.3	1.1	1.4	15	10		
PSII 24/06*	600	19	14	1.9	0.3	1.7	21	14		
PSII 35/06	600	31	21	1.9	0.7	1.3	35	22	35	

*NTC optional

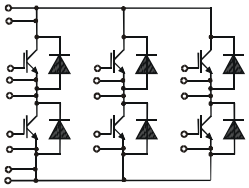


Fig. 63
Weight = 24 g

Fig. 35
Weight = 24 g

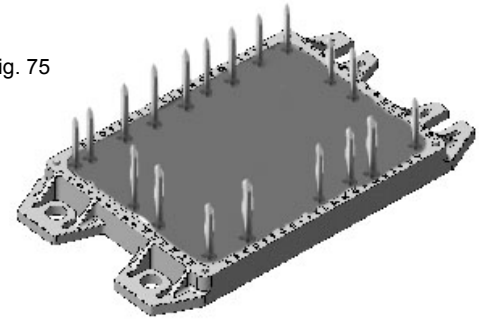
ECO-TOP™ 1

IGBT Sixpac Module, with Temperature Sensor

Type N E W	V_{CES} Voltage Grade V	I_{C25} T_C= 25°C IGBT A	I_{C80} T_C= 80°C IGBT A	$V_{CE(sat)}$ Saturation Voltage (typical) T_j=25 °C V	E_{off} T_j=125 °C IGBT mJ	R_{thJC} IGBT K/W	I_{F25} T_C = 25 °C DIODE A	I_{F80} T_C = 80 °C DIODE A	Figure	Package style see outlines starting at page 86
PSII 30/06	600	42.5	29	2.4	1.0	0.96	30	19	75	
PSII 30/12	1200	49	33	3.1	3.4	0.6	49	30		
PSII 50/06	600	69	48	2.3	1.4	0.6	56	35		
PSII 75/06	600	90	60	2.4	2.2	0.43	130	80		
PSII 75/12	1200	90	60	2.7	6.7	0.33	100	60		
PSII 100/06	600	120	80	2.3	2.3	0.33	130	80		
PSII 100/12	1200	130	90	2.8	10.5	0.22	150	100		

UL release applied

Fig. 75



ECO-TOP™ 1

Three Phase Rectifier Bridge, IGBT Brake Chopper, Three Phase IGBT Inverter, Temperature Sensor

Type	Rectifier 3~			Inverter 3~					Brake Chopper			Figure	Package style
N E W	V_{RRM} V	I_{FAV} T_C = 80°C A	R_{thJC} max K/W	V_{CES} V	I_{C25} T_C = 25°C A	I_{C80} T_C = 80°C A	$V_{CE(sat)}$ Saturation Voltage (typical) T_j = 25 °C V	R_{thJC} max K/W	V_{CES} V	I_{C80} T_C = 80°C A	R_{thJC} max K/W		see outlines starting at page 86
PSIPM 30/06	1600	68	1.1	600	42.5	29	2.4	0.96	600	17	1.5	75	
PSIPM 35/12	1600	68	1.1	1200	49	33	3.1	0.6	1200	21	0.96		
PSIPM 50/06	1600	68	1.1	600	69	48	2.3	0.6	600	29	0.96		
PSIPM 60/12	1600	68	1.1	1200	92	62	2.7	0.33	1200	33	0.6		
PSIPM 100/06	1600	68	1.1	600	121	83	2.3	0.33	600	48	0.6		

UL release applied

Rectifier Bridges for Braking Systems

ECO-PAC™ 2

released, E 148688

IGBT Module (single switch)

Type	V_{CES} Voltage Grade V	I_{C25} T_C= 25°C IGBT A	I_{C80} T_C= 80°C IGBT A	$V_{CE(sat)}$ Saturation Voltage (typical) T_j=25 °C V	$t_{d(on)}$ $t_{d(off)}$ delay time Switching Characte-ristics ns	R_{thJC} IGBT K/W	I_{F25} T_C = 25 °C DIODE A	I_{F80} T_C = 80 °C DIODE A	R_{thJC} DIODE K/W	Figure	Package style see outlines starting at page 86
PSIG 25/06	600	24.5	17	2.4	30 270	1.52	18.5	12	3.5	55a	
PSIG 25/12	1200	30	21	2.6	100 500	0.96	26	17	2.3		
PSIG 50/06	600	42.5	29	2.4	50 270	0.96	30	19	2.3		
PSIG 50/12	1200	49	33	3.1	100 500	0.6	49	31	1.3		
PSIG 75/06	600	69	48	2.3	50 300	0.6	56	35	1.3	55b	
PSIG 75/12	1200	92	62	2.7	100 500	0.33	103	65	0.66		
PSIG 100/06	600	93	63	2.4	150 450	0.43	134	82	0.66		
PSIG 100/12	1200	138	94	2.8	100 650	0.22	154	97	0.45		
PSIG 130/06	600	121	83	2.3	25 150	0.33	134	82.3	0.66		
PSIG 160/12	1200	169	117	2.9	100 600	0.18	154	97	0.45		

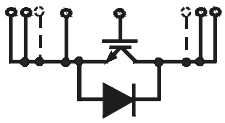


Fig. 55a
Weight = 24 g

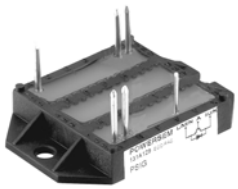
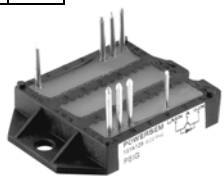


Fig. 55b
Weight = 24 g



released, E 148688

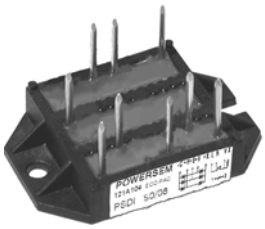
Three Phase Rectifier Bridge with IGBT and Fast Recovery Diode for Braking System

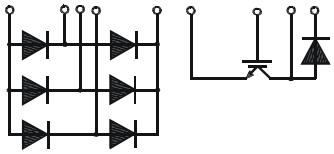
Type	Rectifier			IGBT		fast Diode			Figure	Package style see outlines starting at page 86
	V_{RRM} V	I_{dAV} @ T_H A	°C	V_{CES} V	I_{C80} A	V_{RRM} V	$I_{F(AV)}$ A	t_{rr} ns		
PSDI 33/06*	600	29	80	600	30	600	18	30	59	
PSDI 50/12	1600	56	T_C=100	1200	14	1200	10	110	53	

*NTC optional

Fig. 59
Weight = 24 g

Fig. 53
Weight = 24 g





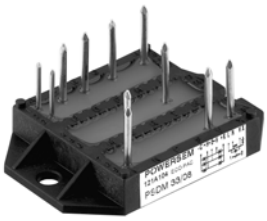
released, E 148688

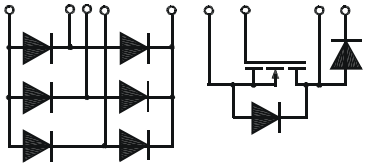
Three Phase Rectifier Bridge with MOSFET and Fast Recovery Diode for Braking System

Type	Rectifier			MOSFET		fast Diode			Figure	Package style see outlines starting at page 86
	V_{RRM} V	I_{dAV} @ T_C A	°C	V_{CES} V	I_{C80} A	V_{RRM} V	$I_{F(AV)}$ A	t_{rr} ns		
PSDM 33/05*	800	54	85	500	24	600	33	30	60	

*NTC optional

Fig. 60
Weight = 24 g





Rectifier Bridges for Braking Systems

ECO-PAC™ 2

released, E 148688

IGBT Module (single switch)

Type	V_{CES} Voltage Grade V	I_{C25} T_C= 25°C IGBT A	I_{C80} T_C= 80°C IGBT A	$V_{CE(sat)}$ Saturation Voltage (typical) T_j=25 °C V	$t_{d(on)}$ $t_{d(off)}$ delay time Switching Characte-ristics ns	R_{thJC} IGBT K/W	I_{F25} T_C = 25 °C DIODE A	I_{F80} T_C = 80 °C DIODE A	R_{thJC} DIODE K/W	Figure	Package style see outlines starting at page 86
PSIG 25/06	600	24.5	17	2.4	30 270	1.52	18.5	12	3.5	55a	
PSIG 25/12	1200	30	21	2.6	100 500	0.96	26	17	2.3		
PSIG 50/06	600	42.5	29	2.4	50 270	0.96	30	19	2.3		
PSIG 50/12	1200	49	33	3.1	100 500	0.6	49	31	1.3		
PSIG 75/06	600	69	48	2.3	50 300	0.6	56	35	1.3	55b	
PSIG 75/12	1200	92	62	2.7	100 500	0.33	103	65	0.66		
PSIG 100/06	600	93	63	2.4	150 450	0.43	134	82	0.66		
PSIG 100/12	1200	138	94	2.8	100 650	0.22	154	97	0.45		
PSIG 130/06	600	121	83	2.3	25 150	0.33	134	82.3	0.66		
PSIG 160/12	1200	169	117	2.9	100 600	0.18	154	97	0.45		

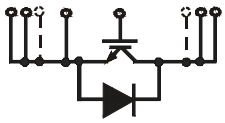


Fig. 55a
Weight = 24 g

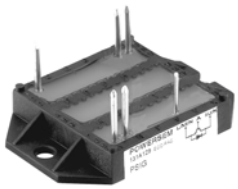
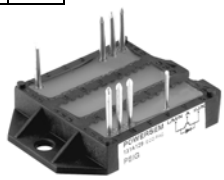


Fig. 55b
Weight = 24 g



released, E 148688

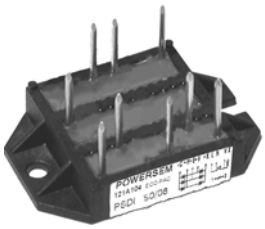
Three Phase Rectifier Bridge with IGBT and Fast Recovery Diode for Braking System

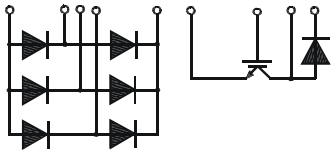
Type	Rectifier			IGBT		fast Diode			Figure	Package style see outlines starting at page 86
	V_{RRM} V	I_{dAV} @ T_H A	°C	V_{CES} V	I_{C80} A	V_{RRM} V	$I_{F(AV)}$ A	t_{rr} ns		
PSDI 33/06*	600	29	80	600	30	600	18	30	59	
PSDI 50/12	1600	56	T_C=100	1200	14	1200	10	110	53	

*NTC optional

Fig. 59
Weight = 24 g

Fig. 53
Weight = 24 g





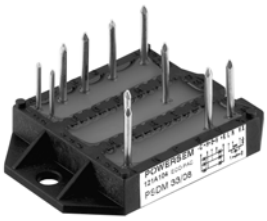
released, E 148688

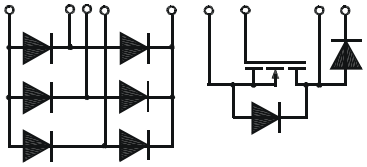
Three Phase Rectifier Bridge with MOSFET and Fast Recovery Diode for Braking System

Type	Rectifier			MOSFET		fast Diode			Figure	Package style see outlines starting at page 86
	V_{RRM} V	I_{dAV} @ T_C A	°C	V_{CES} V	I_{C80} A	V_{RRM} V	$I_{F(AV)}$ A	t_{rr} ns		
PSDM 33/05*	800	54	85	500	24	600	33	30	60	

*NTC optional

Fig. 60
Weight = 24 g





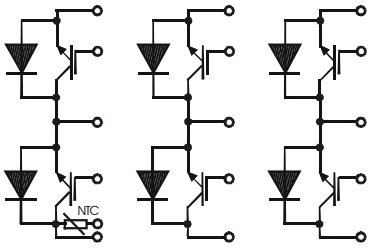
released, E 148688

IGBT Sixpac Module

Type	V_{CES} Voltage Grade V	I_{C25} T_C= 25°C IGBT A	I_{C80} T_C= 80°C IGBT A	$V_{CE(sat)}$ Saturation Voltage (typical) T_j=25 °C V	E_{off} T_j=125 °C IGBT mJ	R_{thJC} IGBT K/W	I_{F25} T_C = 25 °C DIODE A	I_{F80} T_C = 80 °C DIODE A	Figure	Package style see outlines starting at page 86
PSII 3x10/06*	600	19	14	1.9	0.3	1.7	21	14	69	

* with NTC

Fig. 69
Weight = 18 g

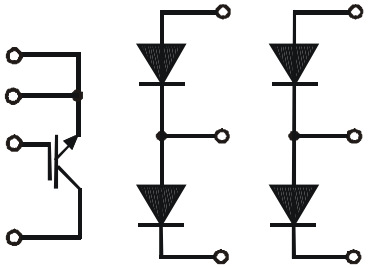


released, E 148688

START UP Module

Type	V_{CES} Voltage Grade V	I_{C25} T_C= 25°C IGBT A	I_{C80} T_C= 80°C IGBT A	$V_{CE(sat)}$ Saturation Voltage (typical) T_j=25 °C V	$t_{d(on)}$ $t_{d(off)}$ delay time Switching Characteristics IGBT ns	R_{thJC} IGBT K/W	I_{F25} T_C = 25 °C DIODE A	I_{F80} T_C = 80 °C DIODE A	Figure	Package style see outlines starting at page 86
PSBI 30/06	600	42	29	2.4	50 270	0.96	42	27	70	

Fig. 70
Weight = 18 g

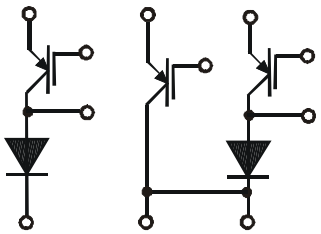


released, E 148688

Chopper Module

Type	V_{CES} Voltage Grade V	I_{C25} T_C= 25°C IGBT A	I_{C80} T_C= 80°C IGBT A	$V_{CE(sat)}$ Saturation Voltage (typical) T_j=25 °C V	$t_{d(on)}$ $t_{d(off)}$ delay time Switching Characte-ristics IGBT ns	R_{thJC} IGBT K/W	I_{F25} T_C = 25 °C DIODE A	I_{F80} T_C = 80 °C DIODE A	Figure	Package style see outlines starting at page 86
PSIC 30/06	600	42	29	2.4	50 270	0.96	72	45	71	

Fig. 71
Weight = 18 g



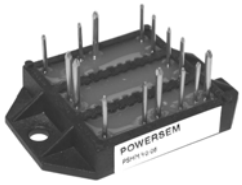
released, E 148688

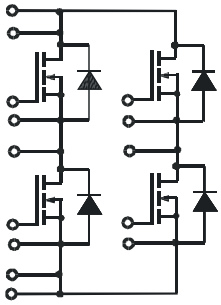
H - Bridge

Type	V_{DSS}	I_{D25} T_s = 25 °C	I_{D80} T_s = 80 °C	$R_{DS(on)}$ T_J = 25 °C	t_f	t_r	R_{thJC}	Figure	Package style see outlines starting at page 86
	V	A	A	mΩ	ns	ns	K/W		
PSHM 40/06*	600	38	25 (T_C=90°C)	70	10	95	0.45	56	
PSHM 120/01*	100	75	47	25	60	60	0.5		
PSHM 140/01*	100	70	52	20	TBD	TBD	0.45		

*NTC optional

Fig. 56
Weight = 24 g





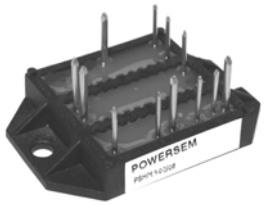
released, E 148688

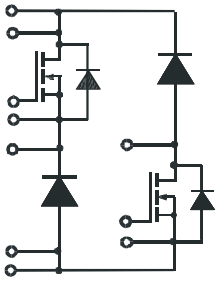
Forward Converter

Type	V_{DSS}	I_{D25} T_s = 25 °C	I_{D90} T_s = 80 °C	$R_{DS(on)}$ T_J = 25 °C	t_f	t_r	R_{thJC}	Figure	Package style see outlines starting at page 86
	V	A	A	mΩ	ns	ns	K/W		
PSHM 40D/06*	600	38	25 (T_C=90°C)	70	10	95	0.45	58	
PSHM 120D/01*	100	75	47	25	60	60	0.5		
PSHM 140D/01*	100	70	52	20	TBD	TBD	0.45		

*NTC optional

Fig. 58
Weight = 24 g



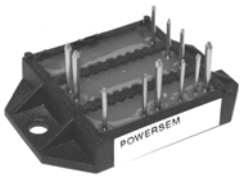


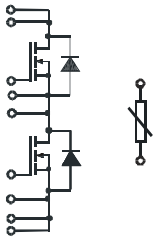
released, E 148688

Type	V_{DSS}	I_{D25} T_s = 25 °C	I_{D90} T_s = 80 °C	$R_{DS(on)}$ T_J = 25 °C	t_f	t_r	R_{thJC}	Figure	Package style see outlines starting at page 86
	V	A	A	mΩ	ns	ns	K/W		
PSMI 40/06*	600	38	25 (T_C=90°C)	70	10	95	0.45	77	

*NTC optional

Fig. 77
Weight = 24 g





released, E 148688

Type	V_{DSS}	I_{D25} T_s = 25 °C	I_{D80} T_s = 80 °C	$R_{DS(on)}$ T_J = 25 °C	t_f	t_r	R_{thJC}	Figure	Package style see outlines starting at page 86
	V	A	A	mΩ	ns	ns	K/W		
PSMG 50/05*	500	43	31	100	45	60	0.3	72a	
PSMG 60/08	800	60	tbd	0.12	40	45	0.45	72a	
PSMG 100/05*	500	82	62	50	45	60	0.16	72a	
PSMG 150/01*	100	150	110	8	65	90	0.3	72b	

*NTC optional

Fig. 72a
Weight = 24 g

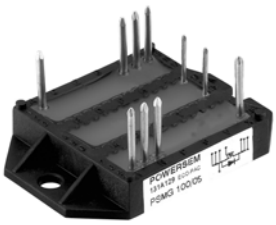
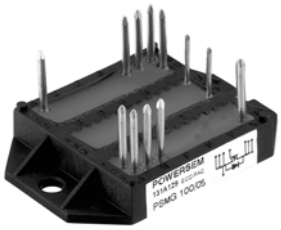
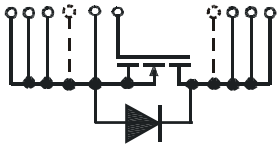


Fig. 72b
Weight = 24 g





SOLID STATE RELAYS

with

DIRECT COPPER BONDED TECHNOLOGY
PLANAR GLASS PASSIVATED CHIPS

Current Ratings: 40 - 205 AMPS
Blocking Voltage: upto 1800 Volts

registered, E197669

Weight = 146 g

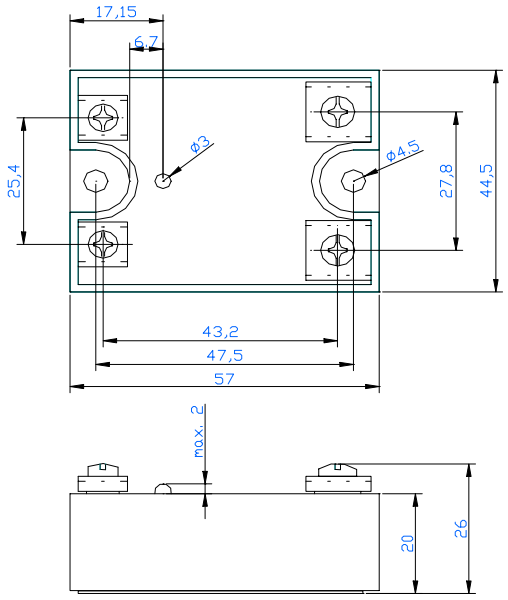
The SSR output is a back to back SCR configuration (two SCRs are connected antiparallel). These are direct copper bonded planar glass passivated thyristor chips. The DCBs offer very unique advantages like:

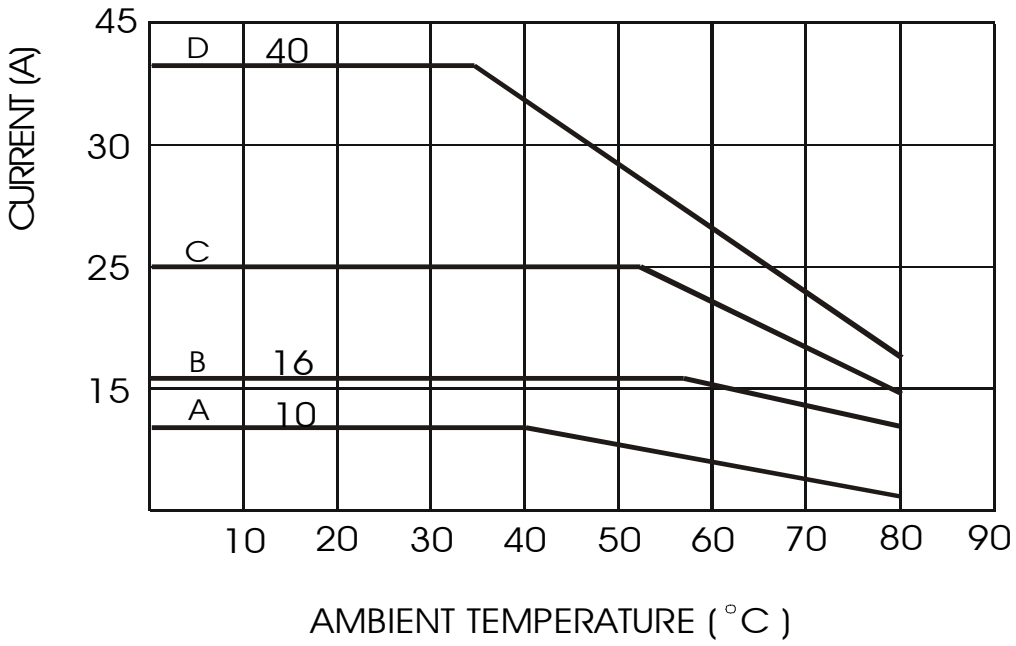
- **Much higher load cycle resistance due to very strong mechanical interconnection between copper and ceramic**
- **Lower thermal coefficient of expansion**
- **Ideal heat spreading without any hot spots**
- **Higher fusing current**
- **The life-time of the SSR is 10 to power of 9 load switchings compared to the 10 to the power of 6 mechanical switchings for an electromechanical relay**
- **The SSR features an isolation of 4000 volts (I/P and O/P) and 1500 volts between chassis and the terminals**
- **The I/P control is compatible to TTL logic (AC I/P control also available for control panel application)**
- **The I/P control is protected against reverse polarity**
- **Available in single and three phase versions**
- **Same casing right from 10-175 Amps and conformed to ``UL `` standards**
- **Safety cover available to protect against live terminals**
- **LED is standard**

Main applications for SSRs are M/C Tools, SPMs (SPL. Purpose M/Cs), Process Control Equipments, Traffic Controls, Vending M/Cs, Heating Applications, Textile Industries, Microprocessed Based Systems and Food Industry.

MECHANICAL SPECIFICATIONS

Dimensions in mm





EXTERNAL HEAT SINK THERMAL RESISTANCE:

A = 3,2 K/W

B = 1,0 K/W

C&D = 0,5 KW

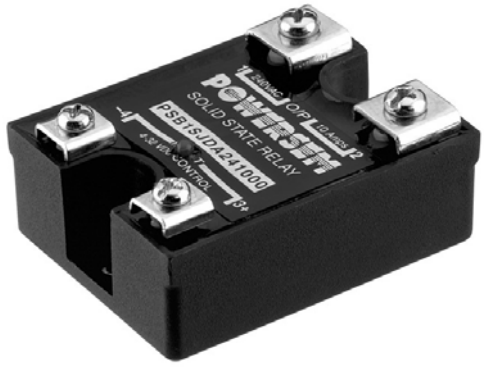
VALID FOR SERIES: PSB 1 SJK (10 A - 40 A)

Single Phase Solid State Relays

HIGHLIGHTS **Series: 1 SJ/K**

- INPUT: DC CONTROL (TTL or CMOS COMPATIBLE)
- OUTPUT: BACK-TO-BACK SCR
  (NO or NC CONFIGURATION)
- OPTO ISOLATION 2500 VAC (4000 V optional)
- ZERO VOLTAGE TURN-ON or RANDOM TURN-ON
- SAFETY COVER (optional)
- REVERSE VOLTAGE PROTECTION FOR DC/AC RELAYS
- BUILT IN SNUBBER
- CHASSIS MOUNTABLE
- LED INDICATOR SHOWING RELAY 'ON' STATUS
- Weight = 106 g

(J: Zero voltage turn-on; K: Random turn-on)



10 – 40 A

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Type				Unit
		PSB 1 SJDA 241000	PSB 1 SJDA 241600	PSB 1 SJDA 242500	PSB 1 SJDA 244000	
DC CONTROL						
Control voltage range		4-32	4-32	4-32	4-32	Vdc
Control current range		8-30	8-30	8-30	8-30	mA
Pick-up voltage		4-0	4-0	4-0	4-0	Vdc
Drop-out voltage		1-0	1-0	1-0	1-0	Vdc
Input resistance		Current regulator				
OUTPUT						
Mains control voltage	V_{RMS}	24-240	24-240	24-240	24-240	Vac
Repetitive peak off state voltage	V_{DRM}	600	600	600	600	Vpk
RMS on-state current	I_T	10	16	25	40	A
Zero turn-on voltage		35	35	35	35	Vac
On-state voltage drop	V_{TM}	1.6	1.6	1.6	1.6	Vac
Off-state leakage current @ rated voltage	I_{DRM}	10	10	10	10	mA
Peak one cycle surge current (non-rep)	I_{TSM}	100	160	500	500	A
Holding current	I_H	50	70	120	250	mA
Critical rate of rise of off-state voltage	dv/dt	200	200	200	200	V/μs
Thermal resistance (junction to case)	R_{thjc}	2.0	1.6	1.0	0.85	K/W
Frequency range	f	47-63	47-63	47-63	47-63	Hz
Operating temperature	T_O	-30 to +80	-30 to +80	-30 to +80	-30 to +80	°C
Turn-on time	T-on	10	10	10	10	ms
Turn-off time	T-off	10	10	10	10	ms
Fusing current	I^2t	50	128	1250	1250	A^2s

released, E 197669

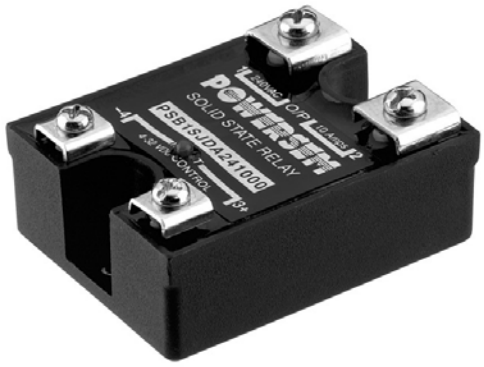
Single Phase Solid State Relays

HIGHLIGHTS

Series: 1 SJ/K

- INPUT: AC CONTROL
- OUTPUT: BACK-TO-BACK SCR
- OPTO ISOLATION 2500 VAC (4000 V optional)
- ZERO VOLTAGE TURN-ON or RANDOM TURN-ON
- SAFETY COVER (optional)
- BUILT IN SNUBBER
- CHASSIS MOUNTABLE
- LED INDICATOR SHOWING RELAY 'ON' STATUS
- Weight = 106 g

(J: Zero voltage turn-on; K: Random turn-on)



10 – 40 A

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Type				Unit
		PSB 1 SJAA 241028	PSB 1 SJAA 241628	PSB 1 SJAA 242528	PSB 1 SJAA 244028	
AC CONTROL						
Control voltage range		180-280	180-280	180-280	180-280	Vac
Control current range		9-18	9-18	9-18	9-18	mA
Pick-up voltage		180	180	180	180	Vac
Drop-out voltage		45	45	45	45	Vac
Input resistance		Current regulator				
OUTPUT						
Mains control voltage	V_{RMS}	24-240	24-240	24-240	24-240	Vac
Repetitive peak off state voltage	V_{DRM}	600	600	600	600	Vpk
RMS on-state current	I_T	10	16	25	40	A
Zero turn-on voltage		35	35	35	35	Vac
On-state voltage drop	V_{TM}	1.6	1.6	1.6	1.6	Vac
Off-state leakage current @ rated voltage	I_{DRM}	10	10	10	10	mA
Peak one cycle surge current (non-rep)	I_{TSM}	100	160	500	500	A
Holding current	I_H	50	70	120	250	mA
Critical rate of rise of off-state voltage	dv/dt	200	200	200	200	V/μs
Thermal resistance (junction to case)	R_{thjc}	2.0	1.6	1.0	0.85	K/W
Frequency range	f	47-63	47-63	47-63	47-63	Hz
Operating temperature	T_O	-30 to +80	-30 to +80	-30 to +80	-30 to +80	°C
Turn-on time	T-on	40	40	40	40	ms
Turn-off time	T-off	80	80	80	80	ms
Fusing current	I^2t	50	128	1250	1250	A^2s

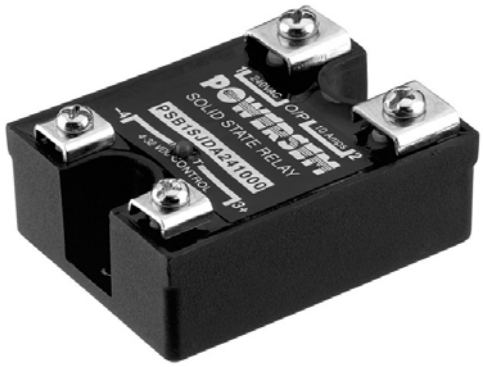
released, E 197669

Single Phase Solid State Relays

HIGHLIGHTS

Series: 1 SJ/K

- INPUT: DC CONTROL (TTL or CMOS COMPATIBLE)
- OUTPUT: BACK-TO-BACK SCR (NO or NC CONFIGURATION)
- OPTO ISOLATION 2500 VAC (4000 V optional)
- ZERO VOLTAGE TURN-ON or RANDOM TURN-ON
- SAFETY COVER (optional)
- REVERSE VOLTAGE PROTECTION FOR DC/AC RELAYS
- BUILT IN SNUBBER
- CHASSIS MOUNTABLE
- LED INDICATOR SHOWING RELAY 'ON' STATUS
- Weight = 106 g



10 – 40 A

(J: Zero voltage turn-on; K: Random turn-on)

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Type				Unit
		PSB 1 SJDA 481000	PSB 1 SJDA 481600	PSB 1 SJDA 482500	PSB 1 SJDA 484000	
DC CONTROL						
Control voltage range		4-32	4-32	4-32	4-32	Vdc
Control current range		8-30	8-30	8-30	8-30	mA
Pick-up voltage		4-0	4-0	4-0	4-0	Vdc
Drop-out voltage		1-0	1-0	1-0	1-0	Vdc
Input resistance		Current regulator				
OUTPUT						
Mains control voltage	V_{RMS}	50-480	50-480	50-480	50-480	Vac
Repetitive peak off state voltage	V_{DRM}	800	800	800	800	Vpk
RMS on-state current	I_T	10	16	25	40	A
Zero turn-on voltage		35	35	35	35	Vac
On-state voltage drop	V_{TM}	1.6	1.6	1.6	1.6	Vac
Off-state leakage current @ rated voltage	I_{DRM}	10	10	10	10	mA
Peak one cycle surge current (non-rep)	I_{TSM}	100	160	500	500	A
Holding current	I_H	50	70	120	250	mA
Critical rate of rise of off-state voltage	dv/dt	200	200	200	200	V/μs
Thermal resistance (junction to case)	R_{thjc}	2.0	1.6	1.0	0.85	K/W
Frequency range	f	47-63	47-63	47-63	47-63	Hz
Operating temperature	T_O	-30 to +80	-30 to +80	-30 to +80	-30 to +80	°C
Turn-on time	T-on	10	10	10	10	ms
Turn-off time	T-off	10	10	10	10	ms
Fusing current	I^2t	50	128	1250	1250	A^2s

released, E 197669

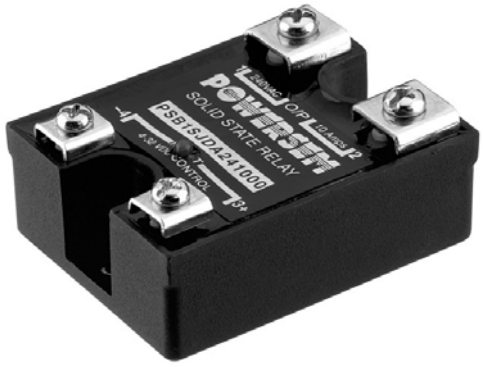
Single Phase Solid State Relays

HIGHLIGHTS

Series: 1 SJ/K

- INPUT: AC CONTROL
- OUTPUT: BACK-TO-BACK SCR
- OPTO ISOLATION 2500 VAC (4000 V optional)
- ZERO VOLTAGE TURN-ON/ RANDOM TURN-ON
- SAFETY COVER (optional)
- BUILT IN SNUBBER
- CHASSIS MOUNTABLE
- LED INDICATOR SHOWING RELAY 'ON' STATUS
- Weight = 106 g

(J: Zero voltage turn-on; K: Random turn-on)



10 – 40 A

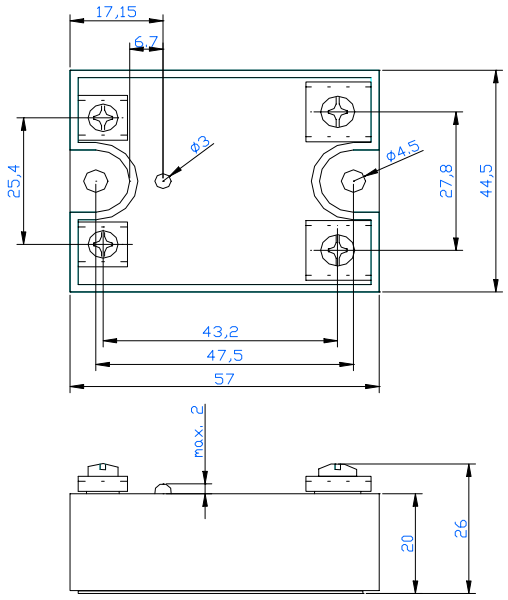
ELECTRICAL SPECIFICATIONS

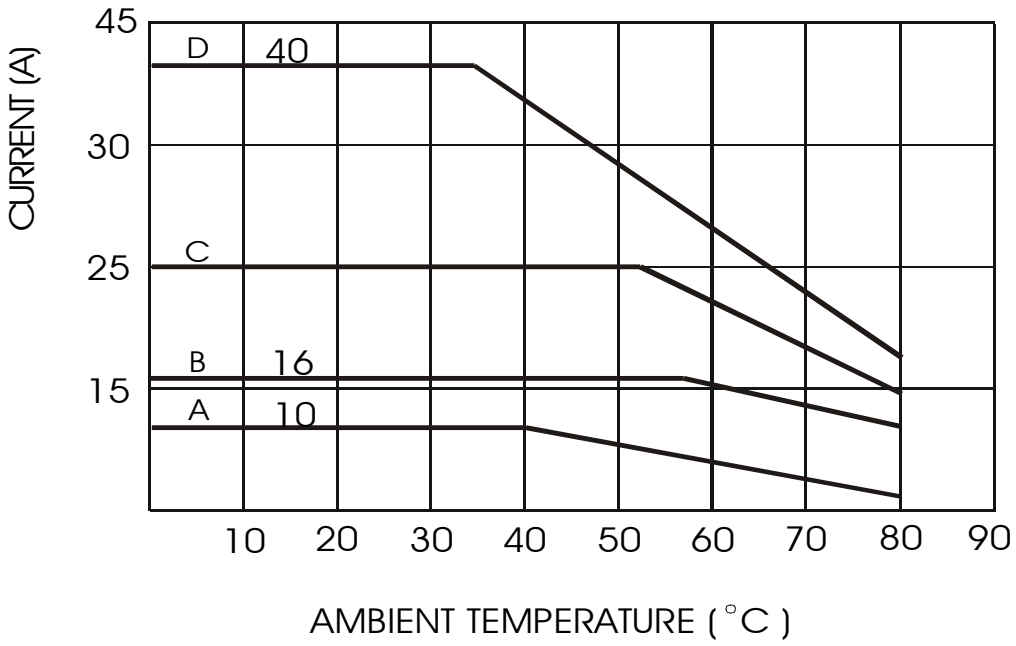
Parameter	Symbol	Type				Unit
		PSB 1 SJAA 481028	PSB 1 SJAA 481628	PSB 1 SJAA 482528	PSB 1 SJAA 484028	
AC CONTROL						
Control voltage range		180-280	180-280	180-280	180-280	Vac
Control current range		9-18	9-18	9-18	9-18	mA
Pick-up voltage		180	180	180	180	Vac
Drop-out voltage		45	45	45	45	Vac
Input resistance		Current regulator				
OUTPUT						
Mains control voltage	V_{RMS}	50-480	50-480	50-480	50-480	Vac
Repetitive peak off state voltage	V_{DRM}	800	800	800	800	Vpk
RMS on-state current	I_T	10	16	25	40	A
Zero turn-on voltage		35	35	35	35	Vac
On-state voltage drop	V_{TM}	1.6	2.0	2.0	2.0	Vac
Off-state leakage current @ rated voltage	I_{DRM}	10	10	10	10	mA
Peak one cycle surge current (non-rep)	I_{TSM}	100	160	500	500	A
Holding current	I_H	50	70	120	250	mA
Critical rate of rise of off-state voltage	dv/dt	200	200	200	200	V/μs
Thermal resistance (junction to case)	R_{thjc}	2.0	1.6	1.0	0.85	K/W
Frequency range	f	47-63	47-63	47-63	47-63	Hz
Operating temperature	T_O	-30 to +80	-30 to +80	-30 to +80	-30 to +80	°C
Turn-on time	T-on	40	40	40	40	ms
Turn-off time	T-off	80	80	80	80	ms
Fusing current	I^2t	50	128	1250	1250	A^2s

released, E 197669

MECHANICAL SPECIFICATIONS

Dimensions in mm





EXTERNAL HEAT SINK THERMAL RESISTANCE:

A = 3,2 K/W

B = 1,0 K/W

C&D = 0,5 KW

VALID FOR SERIES: PSB 1 SJK (10 A - 40 A)

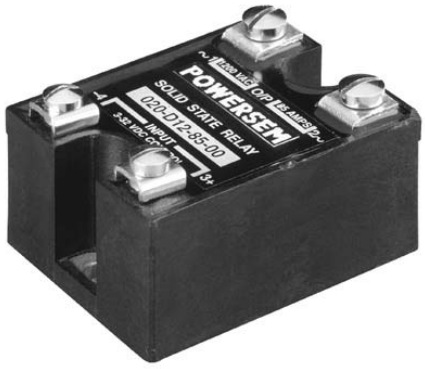
Single Phase Solid State Relays

HIGHLIGHTS

- INPUT: DC CONTROL
  (TTL or CMOS COMPATIBLE)
- OUTPUT: DIRECT COPPER BONDED
  BACK-TO-BACK SCR
  (NO or NC CONFIGURATION)
- OPTO ISOLATION 2500 VAC (4000 V optional)
- HIGH DV/DT
- ZERO VOLTAGE TURN-ON or RANDOM
  TURN-ON
- SAFETY COVER (optional)
- REVERSE VOLTAGE PROTECTION FOR DC/AC
  RELAYS
- BUILT IN SNUBBER
- CHASSIS MOUNTABLE
- LED INDICATOR SHOWING RELAY 'ON' STATUS
- Weight = 106 g

(J: Zero voltage turn-on; K: Random turn-on)

Series: 20 SJ/K



25 – 90 A

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Type				Unit
		PSB 20 D 122500	PSB 20 D 125000	PSB 20 D 127500	PSB 20 D 129000	
DC CONTROL						
Control voltage range		4-32	4-32	4-32	4-32	Vdc
Control current range		8-30	8-30	8-30	8-30	mA
Pick-up voltage		4-0	4-0	4-0	4-0	Vdc
Drop-out voltage		1-0	1-0	1-0	1-0	Vdc
Input resistance		Current regulator				
OUTPUT						
Mains control voltage	V_{RMS}	100-480	100-480	100-480	100-480	Vac
Repetitive peak off state voltage	V_{DRM}	1200-1600	1200-1600	1200-1600	1200-1600	Vpk
RMS on-state current	I_T	25	50	75	90	A
Zero turn-on voltage		35	35	35	35	Vac
On-state voltage drop	V_{TM}	1.6	2.0	2.0	2.0	Vac
Off-state leakage current @ rated voltage	I_{DRM}	10	10	10	10	mA
Peak one cycle surge current (non-rep)	I_{TSM}	400	500	1150	1350	A
Holding current	I_{HO}	250	250	250	250	mA
Critical rate of rise of off-state voltage	dv/dt	1000	1000	1000	1000	V/μs
Thermal resistance (junction to case)	R_{thjc}	1.38	0.7	0.6	0.56	K/W
Frequency range	f	47-63	47-63	47-63	47-63	Hz
Operating temperature	T_O	-30 to +80	-30 to +80	-30 to +80	-30 to +80	°C
Turn-on time	T-on	10	10	10	10	ms
Turn-off time	T-off	10	10	10	10	ms
Fusing current	I^2t	600	1250	5000	5000	A^2s

released, E 197669

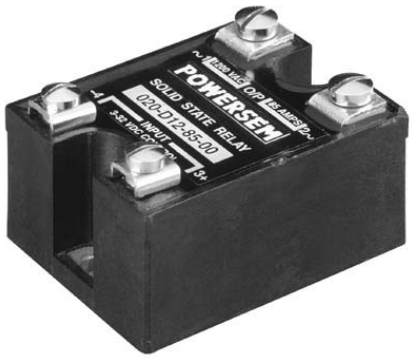
Single Phase Solid State Relays

HIGHLIGHTS

- INPUT: AC CONTROL
- OUTPUT: DIRECT COPPER BONDED BACK-TO-BACK SCR
- OPTO ISOLATION 2500 VAC (4000 V optional)
- ZERO VOLTAGE TURN-ON or RANDOM TURN-ON
- HIGH DV/DT
- SAFETY COVER (optional)
- BUILT IN SNUBBER
- CHASSIS MOUNTABLE
- LED INDICATOR SHOWING RELAY 'ON' STATUS
- Weight = 106 g

(J: Zero voltage turn-on; K: Random turn-on)

Series: 20 SJ/K



25 – 90 A

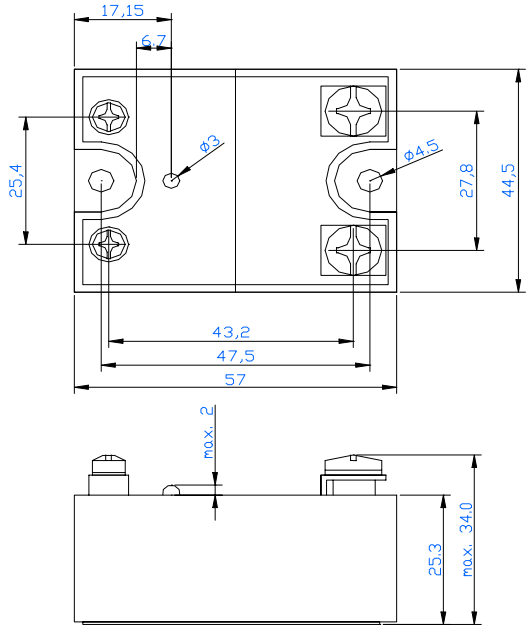
ELECTRICAL SPECIFICATIONS

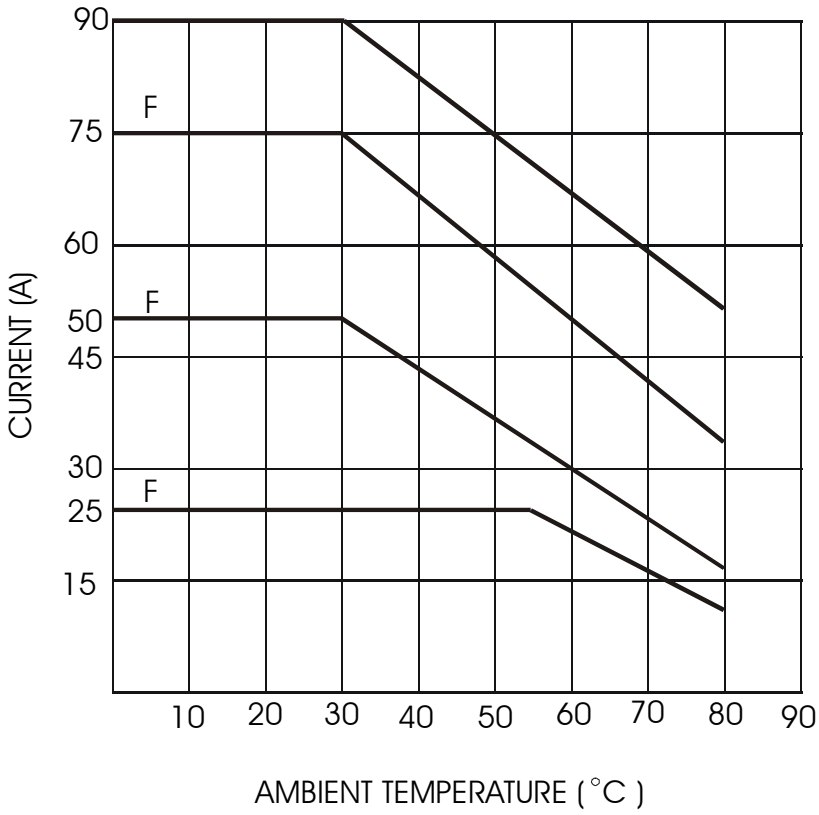
Parameter	Symbol	Type				Unit
		PSB 20 A 122528	PSB 20 A 125028	PSB 20 A 127528	PSB 20 A 129028	
AC CONTROL						
Control voltage range		90-280	90-280	90-280	90-280	Vac
Control current range		4-25	4-25	4-25	4-10	mA
Pick-up voltage		90	90	90	90	Vac
Drop-out voltage		10	10	10	10	Vac
Input resistance		Current regulator				
OUTPUT						
Mains control voltage	V_{RMS}	100-480	100-480	100-480	100-480	Vac
Repetitive peak off state voltage	V_{DRM}	1200-1600	1200-1600	1200-1600	1200-1600	Vpk
RMS on-state current	I_T	25	50	75	90	A
Zero turn-on voltage		35	35	35	35	Vac
On-state voltage drop	V_{TM}	1.6	2.0	2.0	2.0	Vac
Off-state leakage current @ rated voltage	I_{DRM}	10	10	10	10	mA
Peak one cycle surge current (non-rep)	I_{TSM}	400	500	1150	1350	A
Holding current	I_H	250	250	250	250	mA
Critical rate of rise of off-state voltage	dv/dt	1000	1000	1000	1000	V/μs
Thermal resistance (junction to case)	R_{thjc}	1.38	0.7	0.6	0.56	K/W
Frequency range	f	47-63	47-63	47-63	47-63	Hz
Operating temperature	T_O	-30 to +80	-30 to +80	-30 to +80	-30 to +80	°C
Turn-on time	T-on	40	40	40	40	ms
Turn-off time	T-off	80	80	80	80	ms
Fusing current	I^2t	600	1250	5000	5000	A^2s

released, E 197669

MECHANICAL SPECIFICATIONS

Dimensions in mm





EXTERNAL HEATSINK THERMAL RESISTANCE: 0,14 K/W

VALID FOR SERIES: PSB 20 SJK (25 - 90 A)

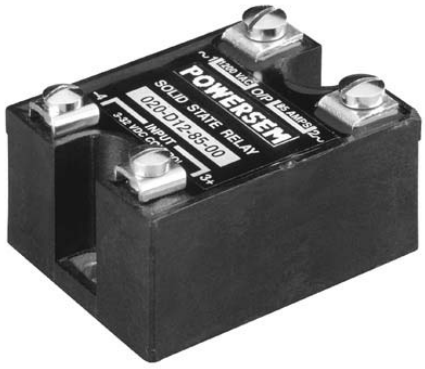
Single Phase Solid State Relays

HIGHLIGHTS

- INPUT: DC CONTROL
- OUTPUT: DIRECT COPPER BONDED BACK-TO-BACK SCR
- OPTO ISOLATION 2500 VAC (4000 V optional)
- ZERO VOLTAGE TURN-ON or RANDOM TURN-ON
- HIGH DV/DT
- SAFETY COVER (optional)
- REVERSE VOLTAGE PROTECTION FOR DC/AC RELAYS
- BUILT IN SNUBBER
- CHASSIS MOUNTABLE
- LED INDICATOR SHOWING RELAY 'ON' STATUS
- Weight = 106 g

(J: Zero voltage turn-on; K: Random turn-on)

Series: 20 SJ/K



125 – 205 A

ELECTRICAL SPECIFICATIONS

	Symbol	Type				Unit
		PSB 20 D 1212500	PSB 20 D 1215000	PSB 20 D 1217500	PSB 20 D 1220500	
DC CONTROL						
Control voltage range		4-32	4-32	4-32	4-32	Vdc
Control current range		18-30	18-30	18-30	18-30	mA
Pick-up voltage		4.0	4.0	4.0	4.0	Vdc
Input impedance			Current	regulator		
Drop out voltage		1.0	1.0	1.0	1.0	Vdc
OUTPUT						
Main voltage range	V_{RMS}	48-660	48-660	48-660	48-660	Vac
Repetitive peak off state voltage	V_{DRM}	1200/1600	1200/1600	1200/1600	1200/1600	Vpk
Rated Load current	I_T	125	150	175	205	A
Zero turn-on voltage		35	35	35	35	Vac
Off-state leakage current @ rated voltage	I_{DRM}	1	1	1	1	mA
Peak one cycle surge current (non-rep)	I_{TSM}	1250	1350	1500	2250	A
Holding current	I_H	250	250	250	250	mA
Critical rate of rise of off-state voltage	dv/dt	1000	1000	1000	1000	V/μs
Thermal resistance (junction to case)	R_{thjc}	0.35	0.35	0.25	0.1	K/W
Frequency range	f	47-63	47-63	47-63	47-63	Hz
Operating temperature	To	-25 to +80	-25 to +80	-25 to +80	-25 to +80	°C
Turn-on time	T-on	10	10	10	10	ms
Turn-off time	T-off	10	10	10	10	ms
Fusing current @ 25°C (8.3ms)	I^2t	5000	8000	15000	25000	A^2s

released, E 197669

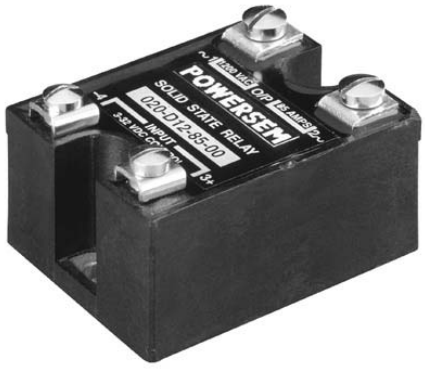
Single Phase Solid State Relays

HIGHLIGHTS

- INPUT: AC CONTROL
- OUTPUT: DIRECT COPPER BONDED BACK-TO-BACK SCR
- OPTO ISOLATION 2500 VAC (4000 V optional)
- ZERO VOLTAGE TURN-ON or RANDOM TURN-ON
- HIGH DV/DT
- SAFETY COVER (optional)
- REVERSE VOLTAGE PROTECTION FOR DC/AC RELAYS
- BUILT IN SNUBBER
- CHASSIS MOUNTABLE
- LED INDICATOR SHOWING RELAY 'ON' STATUS
- Weight = 106 g

(J: Zero voltage turn-on; K: Random turn-on)

Series: 20 SJ/K



125 – 205 A

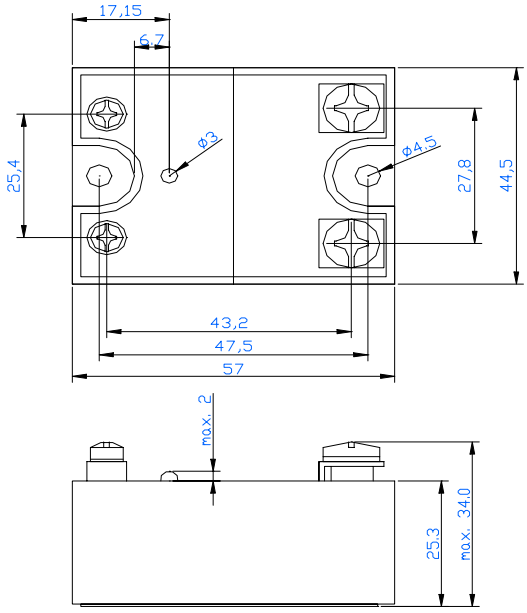
ELECTRICAL SPECIFICATIONS

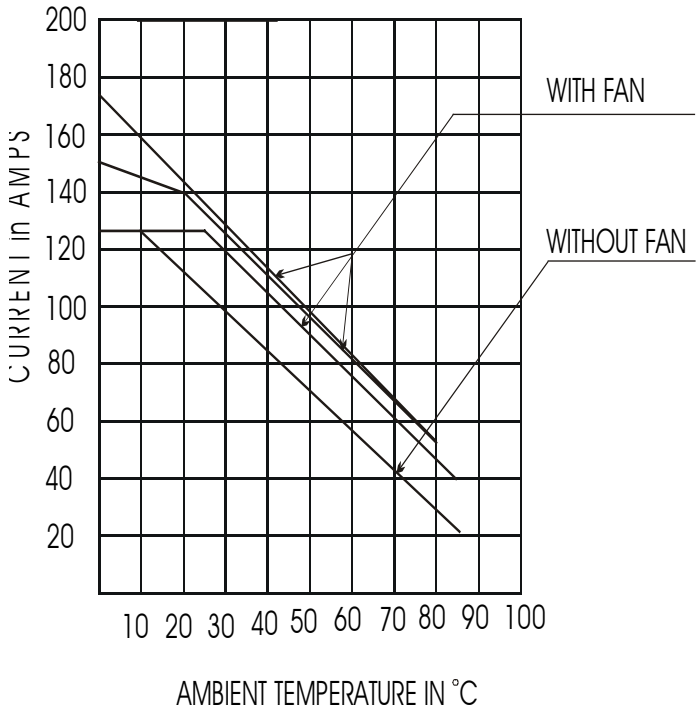
Parameter	Symbol	Type				Unit
		PSB 20 A 1212528	PSB 20 A 1215028	PSB 20 A 1217528	PSB 20 A 1220528	
AC CONTROL						
Control voltage range		90-280	90-280	90-280	90-280	Vac
Control current range		4-10	4-10	4-10	4-10	mA
Pick-up voltage		90	90	90	90	Vac
Drop out voltage		10	10	10	10	Vac
Input impedance		25	20-26	20-26	20-26	K Ohms
OUTPUT						
Main voltage range	V_{RMS}	48-660	48-660	48-660	48-660	Vac
Repetitive peak off state voltage	V_{DRM}	1200/1600	1200/1600	1200/1600	1200/1600	Vpk
RMS on-state current	I_T	125	150	175	205	A
Zero turn-on voltage		35	35	35	35	Vac
Off-state leakage current @ rated voltage	I_{DRM}	1	1	1	1	mA
Peak one cycle surge current (non-rep)	I_{TSM}	1250	1350	1500	2250	A
Holding current	I_H	250	250	250	250	mA
Critical rate of rise of off-state voltage	dv/dt	1000	1000	1000	1000	V/μs
Thermal resistance (junction to case)	R_{thjc}	0.35	0.35	0.25	0.1	K/W
Frequency range	f	47-63	47-63	47-63	47-63	Hz
Operating temperature		-25 to +80	-25 to +80	-25 to +80	-25 to +80	°C
Turn-on time	T-on	40	40	40	40	ms
Turn-off time	T-off	80	80	80	80	ms
Fusing current @ 25°C (8.3ms)	I^2t	5000	8000	15000	25000	A^2s

released, E 197669

MECHANICAL SPECIFICATIONS

Dimensions in mm



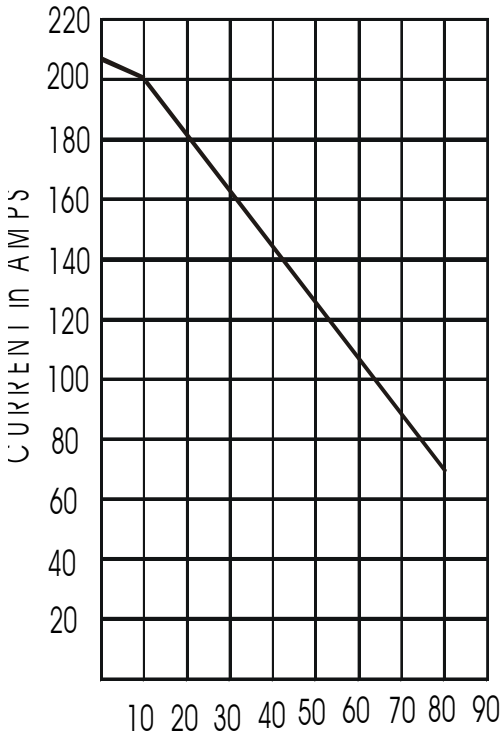


HEAT SINK USED: 0,14 K/W

FAN USED: 70 CFM FOR 125 A

FAN USED: 100 CFM FOR 150 A - 175 A

VALID FOR SERIES: PSB 20 SJK (125 A - 175 A)



HEAT SINK USED: 0,1 K/W

FAN USED: 100 CFM FOR 205 A

Three Phase Solid State Relays

HIGHLIGHTS

Series: 12 SJ/K

- INPUT: DC CONTROL
- HIGH DV/DT
- OUTPUT: DIRECT COPPER BONDED BACK-TO-BACK SCR
- OPTO ISOLATION 2500 VAC (4000 V optional)
- VOLTAGE RANGE 100 TO 660 VAC
- LOAD CURRENT 3x25A / 50A / 75A / 90A
- REVERSE POLARITY PROTECTION FOR DC INPUT CONTROL
- Weight = 344 g

(J: Zero voltage turn-on; K: Random turn-on)

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Type				Unit
		PSD 12 D 122500	PSD 12 D 125000	PSD 12 D 127500	PSD 12 D 129000	
DC CONTROL						
Control voltage range		4-32	4-32	4-32	4-32	Vdc
Control current range		8-80	8-80	8-80	8-80	mA
Pick-up voltage		4-0	4-0	4-0	4-0	Vdc
Drop-out voltage		1-0	1-0	1-0	1-0	Vdc
Input resistance		Current regulator				
OUTPUT						
Mains control voltage	V_{RMS}	100-660	100-660	100-660	100-660	Vac
Repetitive peak off state voltage	V_{DRM}	800-1600	800-1600	800-1600	800-1600	Vpk
RMS on-state current (per phase)	I_T	25	50	75	90	A
Zero turn-on voltage		35	35	35	35	Vac
On-state voltage drop	V_{TM}	1.8	2.0	2.0	2.0	Vac
Off-state leakage current @ rated voltage	I_{DRM}	1	1	1	1	mA
Peak one cycle surge current (non-rep)	I_{TSM}	400	500	1150	1150	A
Holding current	I_H	250	250	250	250	mA
Critical rate of rise of off-state voltage	dv/dt	1000	1000	1000	1000	V/µs
Thermal resistance (junction to case)	R_{thjc}	1.38	0.7	0.6	0.56	K/W
Frequency range	f	47-63	47-63	47-63	47-63	Hz
Operating temperature	T_O	-30 to +80	-30 to +80	-30 to +80	-30 to +80	°C
Turn-on time	T-on	10	10	10	10	ms
Turn-off time	T-off	10	10	10	10	ms
Fusing current	I^2t	600	1250	5000	5000	A^2s

released, E 197669

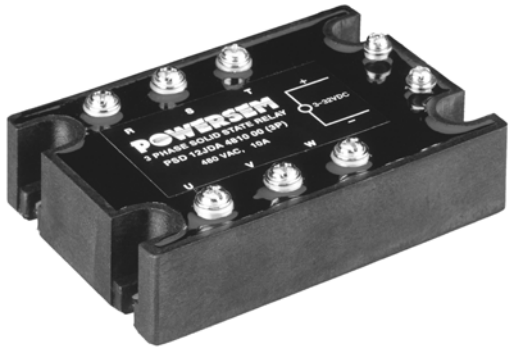
Three Phase Solid State Relays

HIGHLIGHTS

Series: 12 SJ/K

- INPUT: AC CONTROL
- OUTPUT: DIRECT COPPER BONDED BACK-TO-BACK SCR
- OPTO ISOLATION 2500 VAC (4000 V optional)
- VOLTAGE RANGE 100 TO 660 VAC
- LOAD CURRENT 3x25A / 50A / 75A / 90A
- HIGH DV/DT
- Weight = 344 g

(J: Zero voltage turn-on; K: Random turn-on)



ELECTRICAL SPECIFICATIONS

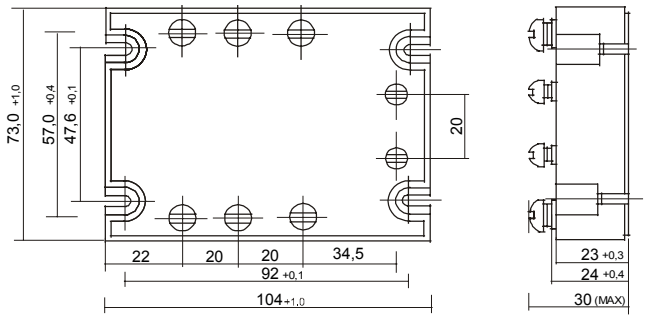
Parameter	Symbol	Type				Unit
		PSD 12 A 122528	PSD 12 A 125028	PSD 12 A 127528	PSD 12 A 129028	
AC CONTROL						
Control voltage range		90-280	90-280	90-280	90-280	Vac
Control current range		8-80	8-80	8-80	8-80	mA
Pick-up voltage		90	90	90	90	Vac
Drop-out voltage		10	10	10	10	Vac
Input resistance		Current regulator				
OUTPUT						
Mains control voltage	V_{RMS}	100-660	100-660	100-660	100-660	Vac
Repetitive peak off state voltage	V_{DRM}	800-1600	800-1600	800-1600	800-1600	Vpk
RMS on-state current	I_T	25	50	75	90	A
Zero turn-on voltage		35	35	35	35	Vac
On-state voltage drop	V_{TM}	1.6	2.0	2.0	2.0	Vac
Off-state leakage current @ rated voltage	I_{DRM}	1	1	1	1	mA
Peak one cycle surge current (non-rep)	I_{TSM}	400	500	1150	1150	A
Holding current	I_H	250	250	250	250	mA
Critical rate of rise of off-state voltage	dv/dt	1000	1000	1000	1000	V/μs
Thermal resistance (junction to case)	R_{thjc}	1.38	0.7	0.6	0.56	K/W
Frequency range	f	47-63	47-63	47-63	47-63	Hz
Operating temperature	T_O	-30 to +80	-30 to +80	-30 to +80	-30 to +80	°C
Turn-on time	T-on	40	40	40	40	ms
Turn-off time	T-off	80	80	80	80	ms
Fusing current	I^2t	600	1250	5000	5000	A^2s

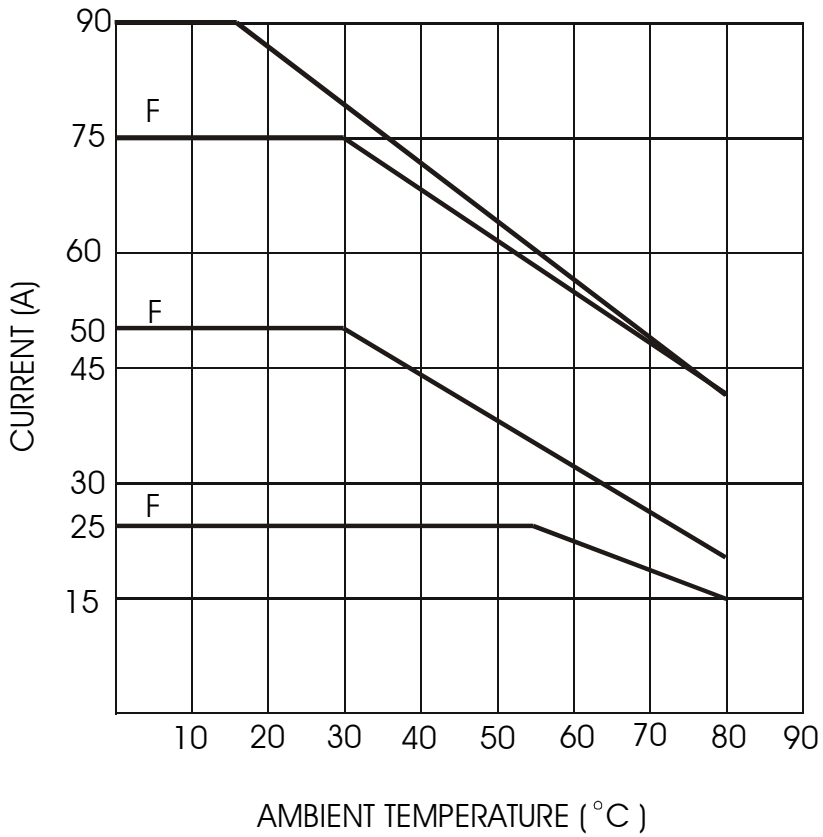
released, E 197669

MECHANICAL SPECIFICATIONS

Dimensions in mm

Three Phase Solid State Relay





HEAT SINK USED: 0,14 K/W

FAN USED: 70 CFM

VALIED FOR SERIES: PSD 12 SJK

DIN Ready Solid State Relay

HIGHLIGHTS

- INPUT: DC CONTROL (TTL or CMOS COMPATIBLE)
- OUTPUT: BACK-TO-BACK SCR
- OPTO ISOLATION 2500 VAC (4000 V optional)
- ZERO VOLTAGE TURN-ON or RANDOM TURN-ON
- BUILT IN SAFETY COVER
- REVERSE VOLTAGE PROTECTION FOR DC/AC RELAYS
- BUILT IN SNUBBER FOR HIGH DV/DT
- DIN MOUNT OR BACK PLATE MOUNTING
- LED INDICATOR SHOWING RELAY 'ON' STATUS

(J: Zero voltage turn-on; K: Random turn-on)

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Type				Unit
		PSB DIN 30D 661000	PSB DIN 30D 661600	PSB DIN 30D 662500	PSB DIN 30D 664000	
DC CONTROL						
Control voltage range		4-32	4-32	4-32	4-32	Vdc
Control current range		8-30	8-30	8-30	8-30	mA
Pick-up voltage		3.0	3.0	3.0	3.0	Vdc
Drop-out voltage		1.0	1.0	1.0	1.0	Vdc
Input resistance		Current regulator				
OUTPUT						
Mains control voltage	V_{RMS}	48-660	48-660	48-660	48-660	Vac
Repetitive peak off state voltage	V_{DRM}	1200	1200	1200	1200	Vpk
RMS on-state current	I_T	10	16	25	40	A
Zero turn-on voltage		35	35	35	35	Vac
On-state voltage drop	V_{TM}	1.6	1.6	1.8	1.8	Vac
Off-state leakage current @ rated voltage	I_{DRM}	5	5	5	5	mA
Peak one cycle surge current (non-Rrep)	I_{TSM}	100	250	1000	1000	A
Holding current	I_H	75	120	250	250	mA
Critical rate of rise of off-state voltage	dv/dt	200	200	700	700	V/μs
Thermal resistance (junction to case)	R_{thic}	1.8	1.3	0.43	0.43	K/W
Frequency range	f	47-63	47-63	47-63	47-63	Hz
Storage temperature	To	-30 to +100	-30 to +100	-30 to +100	-30 to +100	°C
Operating temperature	T_O	-30 to +80	-30 to +80	-30 to +80	-30 to +80	°C
Turn-on time	T-on	10	10	10	10	ms
Turn-off time	T-off	10	10	10	10	ms
Fusing current	I^2t	72	128	3700	5000	A^2s

ALL ELECTRICAL PARAMETERS MEASURED @ T_A= 25 DEG C

released, E 197669

DIN Ready Solid State Relay

HIGHLIGHTS

- INPUT: AC CONTROL
- OUTPUT: BACK-TO-BACK SCR
- OPTO ISOLATION 2500 VAC (4000 V optional)
- ZERO VOLTAGE TURN-ON or RANDOM TURN-ON
- BUILT IN SAFETY COVER
- REVERSE VOLTAGE PROTECTION FOR DC/AC RELAYS
- BUILT IN SNUBBER FOR HIGH DV/DT
- DIN MOUNT OR BACK PLATE MOUNTING
- LED INDICATOR SHOWING RELAY 'ON' STATUS

(J: Zero voltage turn-on; K: Random turn-on)

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Type				Unit
		PSB DIN 30A 661028	PSB DIN 30A 661628	PSB DIN 30A 662528	PSB DIN 30A 664028	
AC CONTROL						
Control voltage range		90-280	90-280	90-280	90-280	Vac
Control current range		4-25	4-25	4-25	4-25	mA
Pick-up voltage		90	90	90	90	Vac
Drop-out voltage		10	10	10	10	Vac
Input resistance		16-25	16-25	16-25	16-25	K
OUTPUT						
Mains control voltage	V_{RMS}	48-660	48-660	48-660	48-660	Vac
Repetitive peak off state voltage	V_{DRM}	1200	1200	1200	1200	Vpk
RMS on-state current	I_T	10	16	25	40	A
Zero turn-on voltage		35	35	35	35	Vac
On-state voltage drop	V_{TM}	1.6	1.6	1.8	1.8	Vac
Off-state leakage current @ rated voltage	I_{DRM}	5	5	5	5	mA
Peak one cycle surge current (non-Rrep)	I_{TSM}	100	250	1000	1000	A
Holding current	I_H	75	120	250	250	mA
Critical rate of rise of off-state voltage	dv/dt	200	200	700	700	V/μs
Thermal resistance (junction to case)	R_{thic}	1.8	1.3	0.43	0.43	K/W
Frequency range	f	47-63	47-63	47-63	47-63	Hz
Storage temperature	Ts	-30 to +100	-30 to +100	-30 to +100	-30 to +100	°C
Operating temperature	T_O	-30 to +80	-30 to +80	-30 to +80	-30 to +80	°C
Turn-on time	T-on	40	40	40	40	ms
Turn-off time	T-off	80	80	80	80	ms
Fusing current	I^2t	72	128	3700	5000	A^2s

ALL ELECTRICAL PARAMETERS MEASURED @ T_A= 25 DEG C

released, E 197669

DIN Ready Solid State Relay

HIGHLIGHTS

- INPUT: DC CONTROL (TTL or CMOS COMPATIBLE)
- OUTPUT: BACK-TO-BACK SCR
- OPTO ISOLATION 2500 VAC (4000 V optional)
- ZERO VOLTAGE TURN-ON or RANDOM TURN-ON
- BUILT IN SAFETY COVER
- REVERSE VOLTAGE PROTECTION FOR DC/AC RELAYS
- BUILT IN SNUBBER FOR HIGH DV/DT
- DIN MOUNT OR BACK PLATE MOUNTING
- LED INDICATOR SHOWING RELAY 'ON' STATUS

(J: Zero voltage turn-on; K: Random turn-on)

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Type				Unit
		PSB DIN 30D 241000	PSB DIN 30D 241600	PSB DIN 30D 242500	PSB DIN 30D 244000	
DC CONTROL						
Control voltage range		3-32	3-32	3-32	3-32	Vdc
Control current range		8-30	8-30	8-30	8-30	mA
Pick-up voltage		3.0	3.0	3.0	3.0	Vdc
Drop-out voltage		1.0	1.0	1.0	1.0	Vdc
Input resistance		Current regulator				
OUTPUT						
Mains control voltage	V_{RMS}	24-240	24-240	24-240	24-240	Vac
Repetitive peak off state voltage	V_{DRM}	600	600	600	600	Vpk
RMS on-state current	I_T	10	16	25	40	A
Zero turn-on voltage		35	35	35	35	Vac
On-state voltage drop	V_{TM}	1.6	1.6	1.8	1.8	Vac
Off-state leakage current @ rated voltage	I_{DRM}	5	5	5	5	mA
Peak one cycle surge current (non-Rrep)	I_{TSM}	100	250	800	800	A
Holding current	I_H	75	120	250	250	mA
Critical rate of rise of off-state voltage	dv/dt	200	250	500	500	V/μs
Thermal resistance (junction to case)	R_{thjc}	1.5	1.3	0.43	0.43	K/W
Frequency range	f	47-63	47-63	47-63	47-63	Hz
Storage temperature	Ts	-30 to +100	-30 to +100	-30 to +100	-30 to +100	°C
Operating temperature	T_O	-30 to +80	-30 to +80	-30 to +80	-30 to +80	°C
Turn-on time	T-on	10	10	10	10	ms
Turn-off time	T-off	10	10	10	10	ms
Fusing current	I^2t	72	128	3700	3700	A^2s

ALL ELECTRICAL PARAMETERS MEASURED @ T_A= 25 DEG C

released, E 197669

DIN Ready Solid State Relay

HIGHLIGHTS

- INPUT: AC CONTROL
- OUTPUT: BACK-TO-BACK SCR
- OPTO ISOLATION 2500 VAC (4000 V optional)
- ZERO VOLTAGE TURN-ON or RANDOM TURN-ON
- BUILT IN SAFETY COVER
- REVERSE VOLTAGE PROTECTION FOR DC/AC RELAYS
- BUILT IN SNUBBER FOR HIGH DV/DT
- DIN MOUNT OR BACK PLATE MOUNTING
- LED INDICATOR SHOWING RELAY 'ON' STATUS

(J: Zero voltage turn-on; K: Random turn-on)

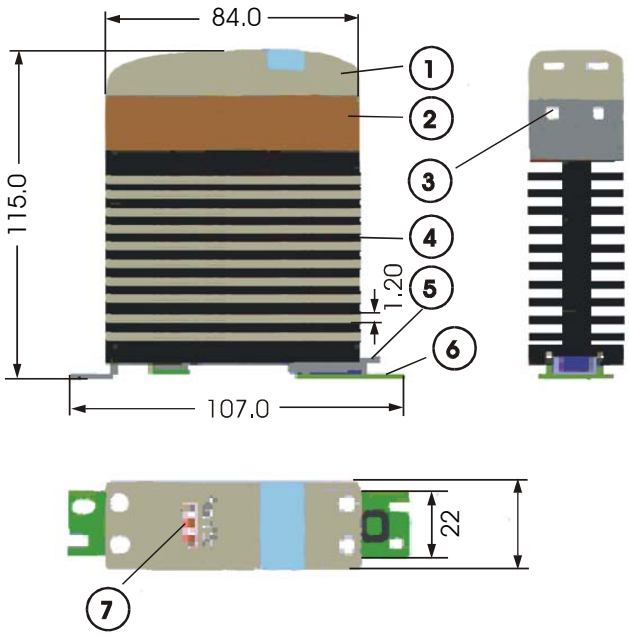
ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Type				Unit
		PSB DIN 30A 241028	PSB DIN 30A 241628	PSB DIN 30A 242528	PSB DIN 30A 244028	
AC CONTROL						
Control voltage range		90-280	90-280	90-280	90-280	Vac
Control current range		4-25	4-25	4-25	4-25	mA
Pick-up voltage		90	90	90	90	Vac
Drop-out voltage		10	10	10	10	Vac
Input resistance		16-25	16-25	16-25	16-25	K ohm
OUTPUT						
Mains control voltage	V_{RMS}	24-240	24-240	24-240	24-240	Vac
Repetitive peak off state voltage	V_{DRM}	600	600	600	600	Vpk
RMS on-state current	I_T	10	16	25	40	A
Zero turn-on voltage		35	35	35	35	Vac
On-state voltage drop	V_{TM}	1.6	1.6	1.8	1.8	Vac
Off-state leakage current @ rated voltage	I_{DRM}	5	5	5	5	mA
Peak one cycle surge current (non-Rrep)	I_{TSM}	100	250	1000	1000	A
Holding current	I_H	75	120	250	250	mA
Critical rate of rise of off-state voltage	dv/dt	200	500	500	500	V/μs
Thermal resistance (junction to case)	R_{thjc}	1.5	1.3	0.43	0.43	K/W
Frequency range	f	47-63	47-63	47-63	47-63	Hz
Storage temperature	Ts	-30 to +100	-30 to +100	-30 to +100	-30 to +100	°C
Operating temperature	T_O	-30 to +80	-30 to +80	-30 to +80	-30 to +80	°C
Turn-on time	T-on	40	40	40	40	ms
Turn-off time	T-off	80	80	80	80	ms
Fusing current	I^2t	72	128	3700	3700	A^2s

ALL ELECTRICAL PARAMETERS MEASURED @ T_A= 25 DEG C

released, E 197669

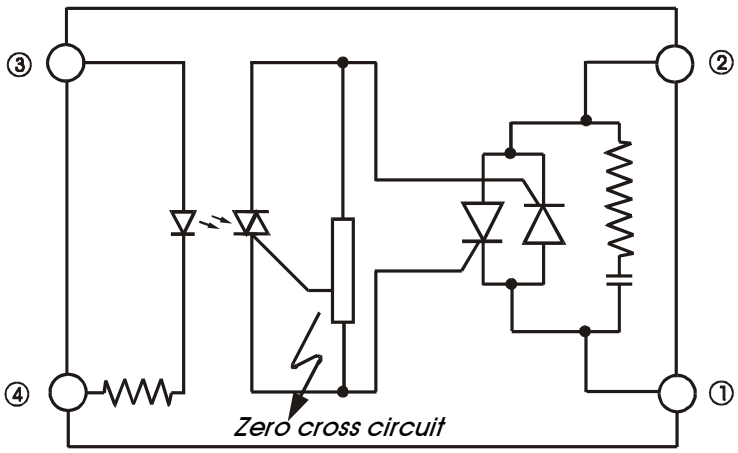
DIN Ready Solid State Relay



1. COVER
2. CASE
3. SPACER
4. HEAT SINK
5. CLIP ASSEMBLY
6. CLAMP
7. LED LOCATION

Features of DIN Ready SSR

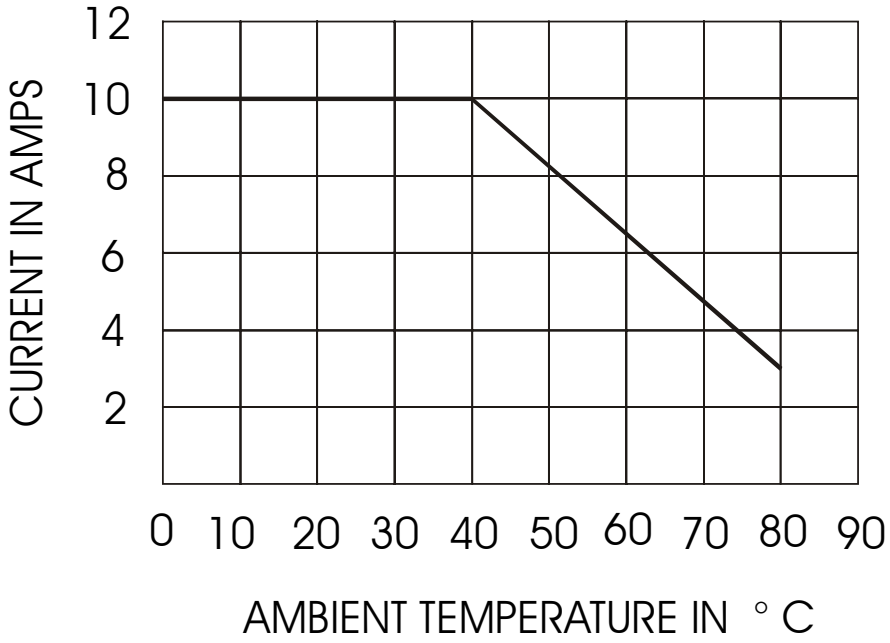
- AC SOLID STATE CONTRACTOR IN 30 mm HOUSING
- ZERO SWTICHING FOR HEATING AND MOTOR APPLICATIONS/RANDOM SWITICHING
- RATED OPERATIONAL CURRENT 10 A, 16 A & 25 A (40 A WITH FORCED COOLING
- RATED OPERATIONAL VOLTAGE 120/230 VAC, 400/480/660
- TRANSIENT OVER VOLTAGE PROTECTION (OPTICAL)
  LED INDICATOR SHOWING RELAY ''ON'' STATUS
- IP 20 PROTECTION
- DIN – RAIL AND BACK PLATE MPONTABLE
- CONNECTING TERMINALS LAYOUT AS CONTRACTOR OR SSR STANDARD
- OPTO-ISOLATION > 400 V
- BUILT IN SNUBBER



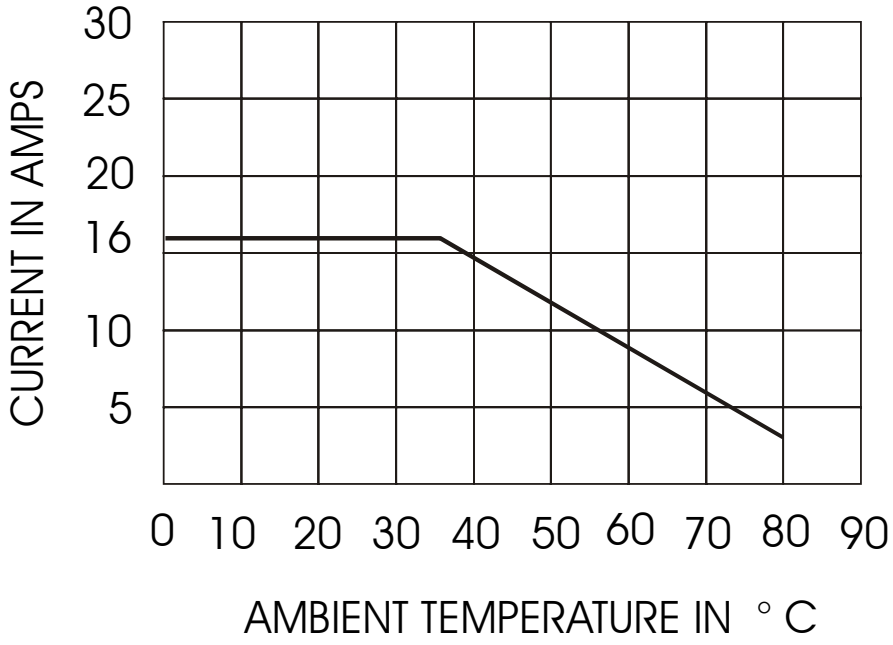
1 Output 3 Input (+)
2 Output 4 Input (-)

SCHEMATIC OF J & K SERIES
DC / AC RELAYS *DIN SSR's*

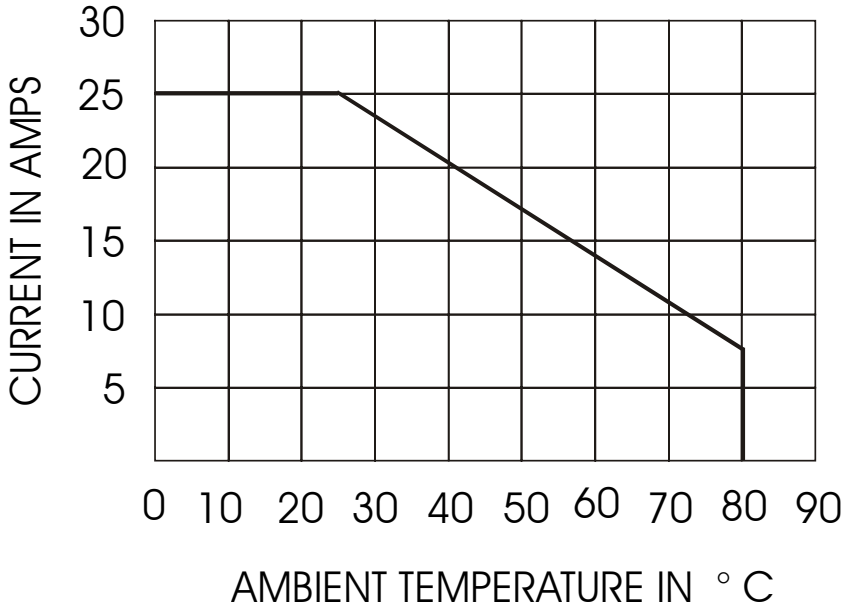
DERATING CURVE FOR 10 A DIN SSR



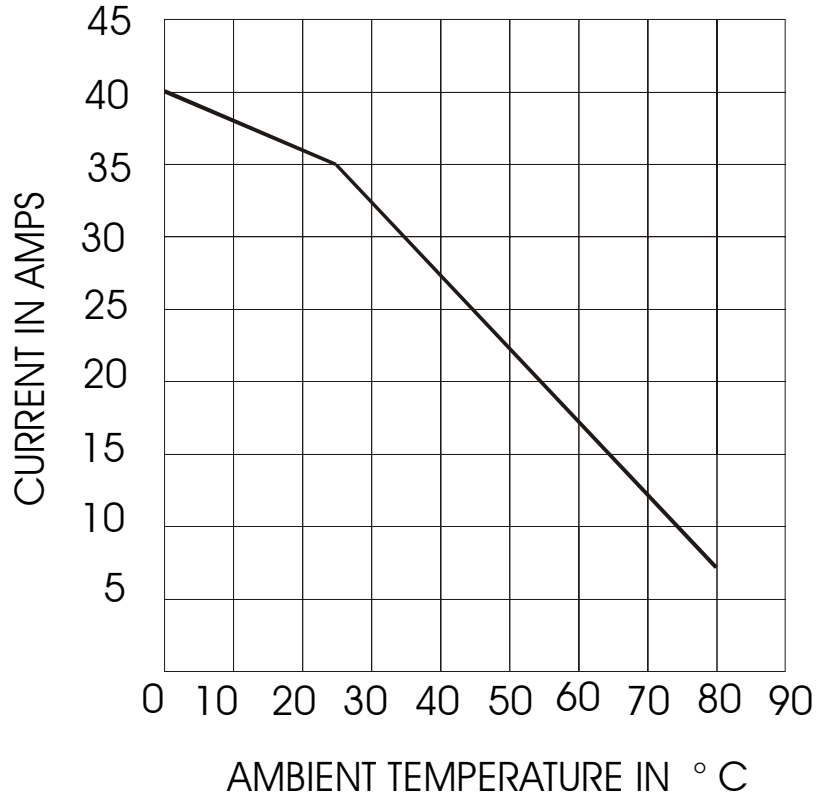
DERATING CURVE FOR 16 A DIN SSR



DERATING CURVE FOR 25 A DIN SSR



DERATING CURVE FOR 40 A DIN SSR

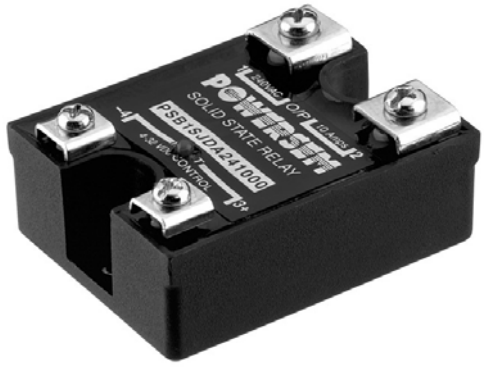


Single Phase Solid State Relays

HIGHLIGHTS **Series: 1 SJ/K**

- INPUT: DC CONTROL (TTL or CMOS COMPATIBLE)
- OUTPUT: BACK-TO-BACK SCR
  (NO or NC CONFIGURATION)
- OPTO ISOLATION 2500 VAC (4000 V optional)
- ZERO VOLTAGE TURN-ON or RANDOM TURN-ON
- SAFETY COVER (optional)
- REVERSE VOLTAGE PROTECTION FOR DC/AC RELAYS
- BUILT IN SNUBBER
- CHASSIS MOUNTABLE
- LED INDICATOR SHOWING RELAY 'ON' STATUS
- Weight = 106 g

(J: Zero voltage turn-on; K: Random turn-on)



10 – 40 A

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Type				Unit
		PSB 1 SJDA 241000	PSB 1 SJDA 241600	PSB 1 SJDA 242500	PSB 1 SJDA 244000	
DC CONTROL						
Control voltage range		4-32	4-32	4-32	4-32	Vdc
Control current range		8-30	8-30	8-30	8-30	mA
Pick-up voltage		4-0	4-0	4-0	4-0	Vdc
Drop-out voltage		1-0	1-0	1-0	1-0	Vdc
Input resistance		Current regulator				
OUTPUT						
Mains control voltage	V_{RMS}	24-240	24-240	24-240	24-240	Vac
Repetitive peak off state voltage	V_{DRM}	600	600	600	600	Vpk
RMS on-state current	I_T	10	16	25	40	A
Zero turn-on voltage		35	35	35	35	Vac
On-state voltage drop	V_{TM}	1.6	1.6	1.6	1.6	Vac
Off-state leakage current @ rated voltage	I_{DRM}	10	10	10	10	mA
Peak one cycle surge current (non-rep)	I_{TSM}	100	160	500	500	A
Holding current	I_H	50	70	120	250	mA
Critical rate of rise of off-state voltage	dv/dt	200	200	200	200	V/μs
Thermal resistance (junction to case)	R_{thjc}	2.0	1.6	1.0	0.85	K/W
Frequency range	f	47-63	47-63	47-63	47-63	Hz
Operating temperature	T_O	-30 to +80	-30 to +80	-30 to +80	-30 to +80	°C
Turn-on time	T-on	10	10	10	10	ms
Turn-off time	T-off	10	10	10	10	ms
Fusing current	I^2t	50	128	1250	1250	A^2s

released, E 197669

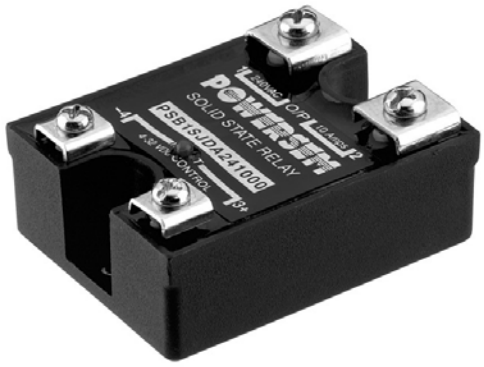
Single Phase Solid State Relays

HIGHLIGHTS

Series: 1 SJ/K

- INPUT: AC CONTROL
- OUTPUT: BACK-TO-BACK SCR
- OPTO ISOLATION 2500 VAC (4000 V optional)
- ZERO VOLTAGE TURN-ON or RANDOM TURN-ON
- SAFETY COVER (optional)
- BUILT IN SNUBBER
- CHASSIS MOUNTABLE
- LED INDICATOR SHOWING RELAY 'ON' STATUS
- Weight = 106 g

(J: Zero voltage turn-on; K: Random turn-on)



10 – 40 A

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Type				Unit
		PSB 1 SJAA 241028	PSB 1 SJAA 241628	PSB 1 SJAA 242528	PSB 1 SJAA 244028	
AC CONTROL						
Control voltage range		180-280	180-280	180-280	180-280	Vac
Control current range		9-18	9-18	9-18	9-18	mA
Pick-up voltage		180	180	180	180	Vac
Drop-out voltage		45	45	45	45	Vac
Input resistance		Current regulator				
OUTPUT						
Mains control voltage	V_{RMS}	24-240	24-240	24-240	24-240	Vac
Repetitive peak off state voltage	V_{DRM}	600	600	600	600	Vpk
RMS on-state current	I_T	10	16	25	40	A
Zero turn-on voltage		35	35	35	35	Vac
On-state voltage drop	V_{TM}	1.6	1.6	1.6	1.6	Vac
Off-state leakage current @ rated voltage	I_{DRM}	10	10	10	10	mA
Peak one cycle surge current (non-rep)	I_{TSM}	100	160	500	500	A
Holding current	I_H	50	70	120	250	mA
Critical rate of rise of off-state voltage	dv/dt	200	200	200	200	V/μs
Thermal resistance (junction to case)	R_{thjc}	2.0	1.6	1.0	0.85	K/W
Frequency range	f	47-63	47-63	47-63	47-63	Hz
Operating temperature	T_O	-30 to +80	-30 to +80	-30 to +80	-30 to +80	°C
Turn-on time	T-on	40	40	40	40	ms
Turn-off time	T-off	80	80	80	80	ms
Fusing current	I^2t	50	128	1250	1250	A^2s

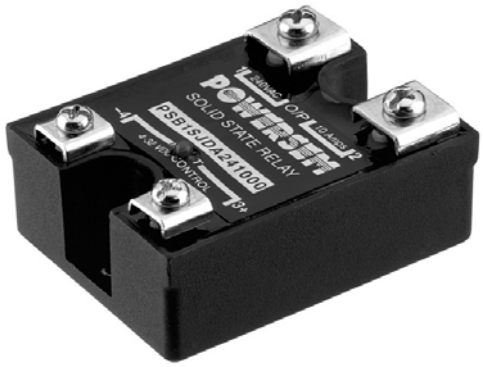
released, E 197669

Single Phase Solid State Relays

HIGHLIGHTS

Series: 1 SJ/K

- INPUT: DC CONTROL (TTL or CMOS COMPATIBLE)
- OUTPUT: BACK-TO-BACK SCR (NO or NC CONFIGURATION)
- OPTO ISOLATION 2500 VAC (4000 V optional)
- ZERO VOLTAGE TURN-ON or RANDOM TURN-ON
- SAFETY COVER (optional)
- REVERSE VOLTAGE PROTECTION FOR DC/AC RELAYS
- BUILT IN SNUBBER
- CHASSIS MOUNTABLE
- LED INDICATOR SHOWING RELAY 'ON' STATUS
- Weight = 106 g



10 – 40 A

(J: Zero voltage turn-on; K: Random turn-on)

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Type				Unit
		PSB 1 SJDA 481000	PSB 1 SJDA 481600	PSB 1 SJDA 482500	PSB 1 SJDA 484000	
DC CONTROL						
Control voltage range		4-32	4-32	4-32	4-32	Vdc
Control current range		8-30	8-30	8-30	8-30	mA
Pick-up voltage		4-0	4-0	4-0	4-0	Vdc
Drop-out voltage		1-0	1-0	1-0	1-0	Vdc
Input resistance		Current regulator				
OUTPUT						
Mains control voltage	V_{RMS}	50-480	50-480	50-480	50-480	Vac
Repetitive peak off state voltage	V_{DRM}	800	800	800	800	Vpk
RMS on-state current	I_T	10	16	25	40	A
Zero turn-on voltage		35	35	35	35	Vac
On-state voltage drop	V_{TM}	1.6	1.6	1.6	1.6	Vac
Off-state leakage current @ rated voltage	I_{DRM}	10	10	10	10	mA
Peak one cycle surge current (non-rep)	I_{TSM}	100	160	500	500	A
Holding current	I_H	50	70	120	250	mA
Critical rate of rise of off-state voltage	dv/dt	200	200	200	200	V/μs
Thermal resistance (junction to case)	R_{thjc}	2.0	1.6	1.0	0.85	K/W
Frequency range	f	47-63	47-63	47-63	47-63	Hz
Operating temperature	T_O	-30 to +80	-30 to +80	-30 to +80	-30 to +80	°C
Turn-on time	T-on	10	10	10	10	ms
Turn-off time	T-off	10	10	10	10	ms
Fusing current	I^2t	50	128	1250	1250	A^2s

released, E 197669

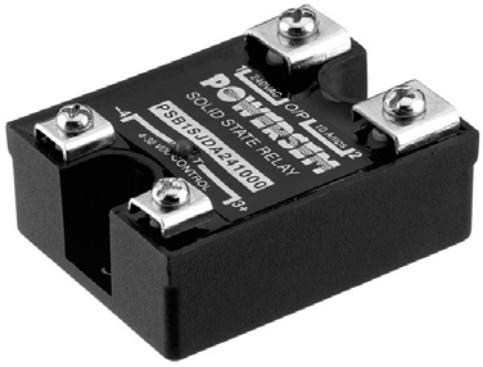
Single Phase Solid State Relays

HIGHLIGHTS

Series: 1 SJ/K

- INPUT: AC CONTROL
- OUTPUT: BACK-TO-BACK SCR
- OPTO ISOLATION 2500 VAC (4000 V optional)
- ZERO VOLTAGE TURN-ON/ RANDOM TURN-ON
- SAFETY COVER (optional)
- BUILT IN SNUBBER
- CHASSIS MOUNTABLE
- LED INDICATOR SHOWING RELAY 'ON' STATUS
- Weight = 106 g

(J: Zero voltage turn-on; K: Random turn-on)



10 – 40 A

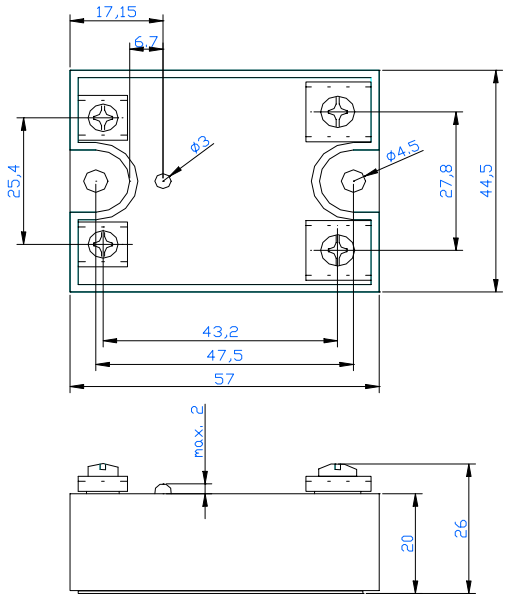
ELECTRICAL SPECIFICATIONS

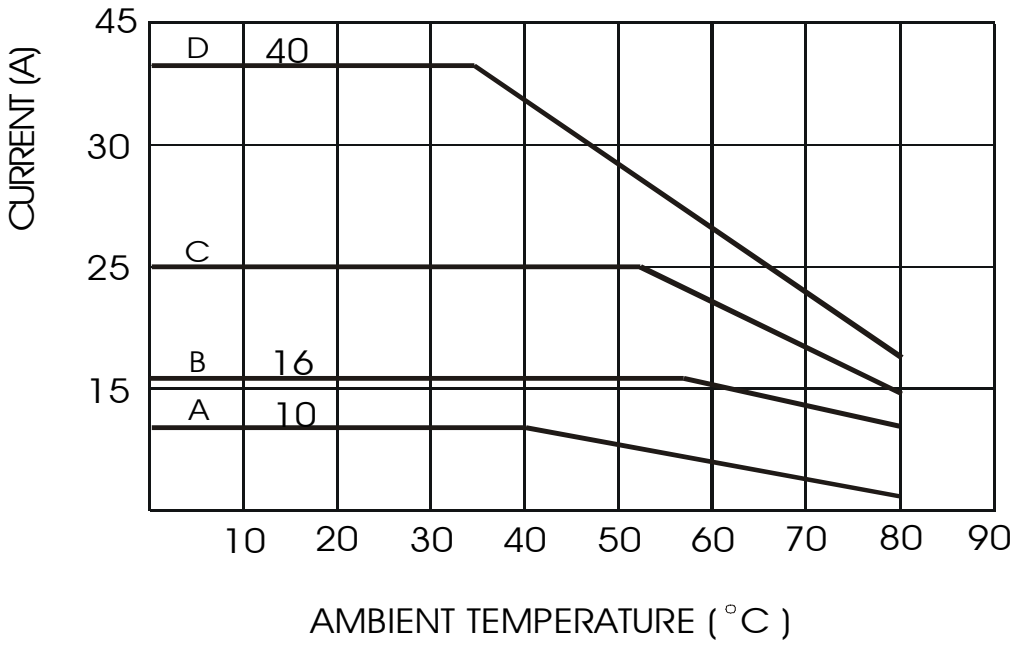
Parameter	Symbol	Type				Unit
		PSB 1 SJAA 481028	PSB 1 SJAA 481628	PSB 1 SJAA 482528	PSB 1 SJAA 484028	
AC CONTROL						
Control voltage range		180-280	180-280	180-280	180-280	Vac
Control current range		9-18	9-18	9-18	9-18	mA
Pick-up voltage		180	180	180	180	Vac
Drop-out voltage		45	45	45	45	Vac
Input resistance		Current regulator				
OUTPUT						
Mains control voltage	V_{RMS}	50-480	50-480	50-480	50-480	Vac
Repetitive peak off state voltage	V_{DRM}	800	800	800	800	Vpk
RMS on-state current	I_T	10	16	25	40	A
Zero turn-on voltage		35	35	35	35	Vac
On-state voltage drop	V_{TM}	1.6	2.0	2.0	2.0	Vac
Off-state leakage current @ rated voltage	I_{DRM}	10	10	10	10	mA
Peak one cycle surge current (non-rep)	I_{TSM}	100	160	500	500	A
Holding current	I_H	50	70	120	250	mA
Critical rate of rise of off-state voltage	dv/dt	200	200	200	200	V/μs
Thermal resistance (junction to case)	R_{thjc}	2.0	1.6	1.0	0.85	K/W
Frequency range	f	47-63	47-63	47-63	47-63	Hz
Operating temperature	T_O	-30 to +80	-30 to +80	-30 to +80	-30 to +80	°C
Turn-on time	T-on	40	40	40	40	ms
Turn-off time	T-off	80	80	80	80	ms
Fusing current	I^2t	50	128	1250	1250	A^2s

released, E 197669

MECHANICAL SPECIFICATIONS

Dimensions in mm





EXTERNAL HEAT SINK THERMAL RESISTANCE:

A = 3,2 K/W

B = 1,0 K/W

C&D = 0,5 KW

VALID FOR SERIES: PSB 1 SJK (10 A - 40 A)

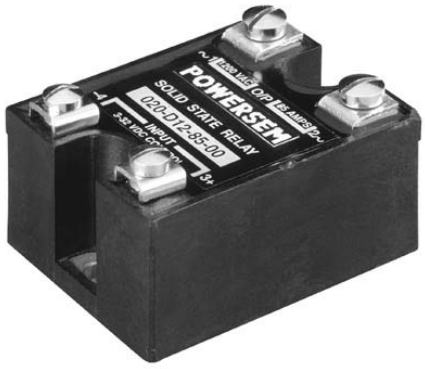
Single Phase Solid State Relays

HIGHLIGHTS

- INPUT: DC CONTROL
  (TTL or CMOS COMPATIBLE)
- OUTPUT: DIRECT COPPER BONDED
  BACK-TO-BACK SCR
  (NO or NC CONFIGURATION)
- OPTO ISOLATION 2500 VAC (4000 V optional)
- HIGH DV/DT
- ZERO VOLTAGE TURN-ON or RANDOM
  TURN-ON
- SAFETY COVER (optional)
- REVERSE VOLTAGE PROTECTION FOR DC/AC
  RELAYS
-
- CHASSIS MOUNTABLE
- LED INDICATOR SHOWING RELAY 'ON' STATUS
- Weight = 106 g

(J: Zero voltage turn-on; K: Random turn-on)

Series: 20 SJ/K



25 – 90 A

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Type				Unit
		PSB 20 D 122500	PSB 20 D 125000	PSB 20 D 127500	PSB 20 D 129000	
DC CONTROL						
Control voltage range		4-32	4-32	4-32	4-32	Vdc
Control current range		8-30	8-30	8-30	8-30	mA
Pick-up voltage		4-0	4-0	4-0	4-0	Vdc
Drop-out voltage		1-0	1-0	1-0	1-0	Vdc
Input resistance		Current regulator				
OUTPUT						
Mains control voltage	V_{RMS}	100-480	100-480	100-480	100-480	Vac
Repetitive peak off state voltage	V_{DRM}	1200-1600	1200-1600	1200-1600	1200-1600	Vpk
RMS on-state current	I_T	25	50	75	90	A
Zero turn-on voltage		35	35	35	35	Vac
On-state voltage drop	V_{TM}	1.6	2.0	2.0	2.0	Vac
Off-state leakage current @ rated voltage	I_{DRM}	10	10	10	10	mA
Peak one cycle surge current (non-rep)	I_{TSM}	400	500	1150	1350	A
Holding current	I_{HO}	250	250	250	250	mA
Critical rate of rise of off-state voltage	dv/dt	1000	1000	1000	1000	V/μs
Thermal resistance (junction to case)	R_{thjc}	1.38	0.7	0.6	0.56	K/W
Frequency range	f	47-63	47-63	47-63	47-63	Hz
Operating temperature	T_O	-30 to +80	-30 to +80	-30 to +80	-30 to +80	°C
Turn-on time	T-on	10	10	10	10	ms
Turn-off time	T-off	10	10	10	10	ms
Fusing current	I^2t	600	1250	5000	5000	A^2s

released, E 197669

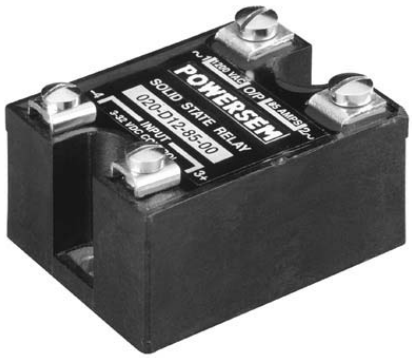
Single Phase Solid State Relays

HIGHLIGHTS

- INPUT: AC CONTROL
- OUTPUT: DIRECT COPPER BONDED BACK-TO-BACK SCR
- OPTO ISOLATION 2500 VAC (4000 V optional)
- ZERO VOLTAGE TURN-ON or RANDOM TURN-ON
- HIGH DV/DT
- SAFETY COVER (optional)
-
- CHASSIS MOUNTABLE
- LED INDICATOR SHOWING RELAY 'ON' STATUS
- Weight = 106 g

(J: Zero voltage turn-on; K: Random turn-on)

Series: 20 SJ/K



25 – 90 A

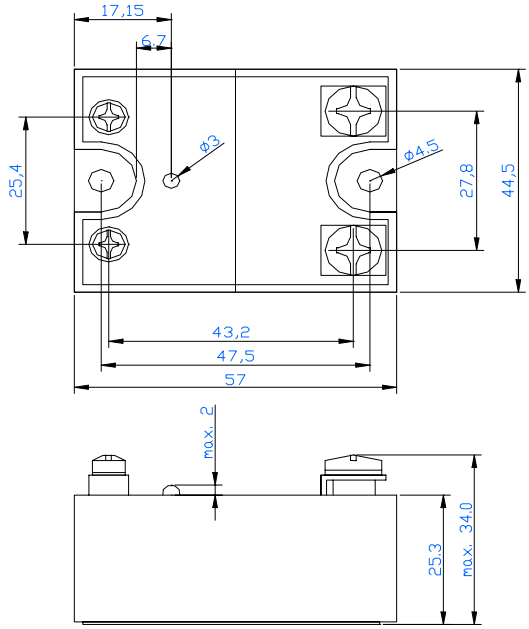
ELECTRICAL SPECIFICATIONS

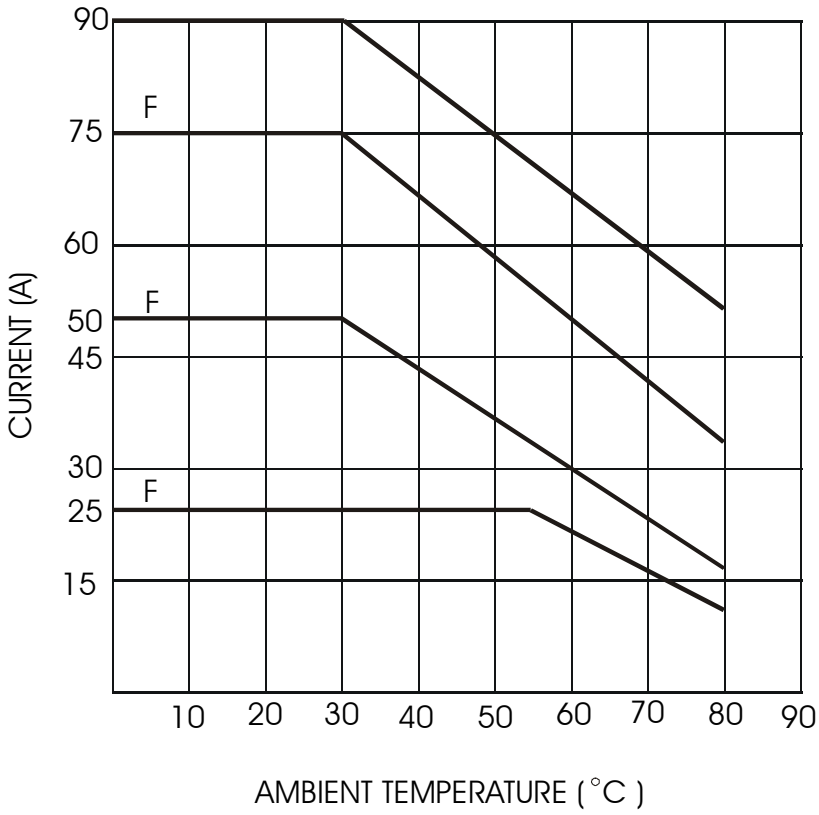
Parameter	Symbol	Type				Unit
		PSB 20 A 122528	PSB 20 A 125028	PSB 20 A 127528	PSB 20 A 129028	
AC CONTROL						
Control voltage range		90-280	90-280	90-280	90-280	Vac
Control current range		4-25	4-25	4-25	4-10	mA
Pick-up voltage		90	90	90	90	Vac
Drop-out voltage		10	10	10	10	Vac
Input resistance		Current regulator				
OUTPUT						
Mains control voltage	V_{RMS}	100-480	100-480	100-480	100-480	Vac
Repetitive peak off state voltage	V_{DRM}	1200-1600	1200-1600	1200-1600	1200-1600	Vpk
RMS on-state current	I_T	25	50	75	90	A
Zero turn-on voltage		35	35	35	35	Vac
On-state voltage drop	V_{TM}	1.6	2.0	2.0	2.0	Vac
Off-state leakage current @ rated voltage	I_{DRM}	10	10	10	10	mA
Peak one cycle surge current (non-rep)	I_{TSM}	400	500	1150	1350	A
Holding current	I_H	250	250	250	250	mA
Critical rate of rise of off-state voltage	dv/dt	1000	1000	1000	1000	V/μs
Thermal resistance (junction to case)	R_{thjc}	1.38	0.7	0.6	0.56	K/W
Frequency range	f	47-63	47-63	47-63	47-63	Hz
Operating temperature	T_O	-30 to +80	-30 to +80	-30 to +80	-30 to +80	°C
Turn-on time	T-on	40	40	40	40	ms
Turn-off time	T-off	80	80	80	80	ms
Fusing current	I^2t	600	1250	5000	5000	A^2s

released, E 197669

MECHANICAL SPECIFICATIONS

Dimensions in mm





EXTERNAL HEATSINK THERMAL RESISTANCE: 0,14 K/W

VALID FOR SERIES: PSB 20 SJK (25 - 90 A)

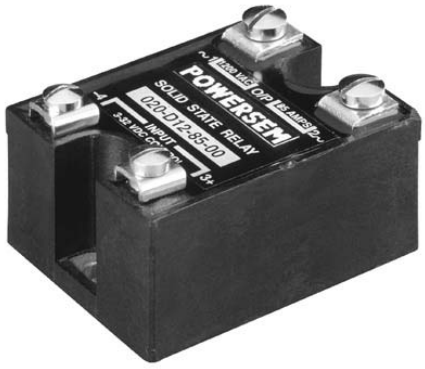
Single Phase Solid State Relays

HIGHLIGHTS

- INPUT: DC CONTROL
- OUTPUT: DIRECT COPPER BONDED BACK-TO-BACK SCR
- OPTO ISOLATION 2500 VAC (4000 V optional)
- ZERO VOLTAGE TURN-ON or RANDOM TURN-ON
- HIGH DV/DT
- SAFETY COVER (optional)
- REVERSE VOLTAGE PROTECTION FOR DC/AC RELAYS
-
- CHASSIS MOUNTABLE
- LED INDICATOR SHOWING RELAY 'ON' STATUS
- Weight = 106 g

(J: Zero voltage turn-on; K: Random turn-on)

Series: 20 SJ/K



125 – 205 A

ELECTRICAL SPECIFICATIONS

	Symbol	Type				Unit
		PSB 20 D 1212500	PSB 20 D 1215000	PSB 20 D 1217500	PSB 20 D 1220500	
DC CONTROL						
Control voltage range		4-32	4-32	4-32	4-32	Vdc
Control current range		18-30	18-30	18-30	18-30	mA
Pick-up voltage		4.0	4.0	4.0	4.0	Vdc
Input impedance			Current	regulator		
Drop out voltage		1.0	1.0	1.0	1.0	Vdc
OUTPUT						
Main voltage range	V_{RMS}	48-660	48-660	48-660	48-660	Vac
Repetitive peak off state voltage	V_{DRM}	1200/1600	1200/1600	1200/1600	1200/1600	Vpk
Rated Load current	I_T	125	150	175	205	A
Zero turn-on voltage		35	35	35	35	Vac
Off-state leakage current @ rated voltage	I_{DRM}	1	1	1	1	mA
Peak one cycle surge current (non-rep)	I_{TSM}	1250	1350	1500	2250	A
Holding current	I_H	250	250	250	250	mA
Critical rate of rise of off-state voltage	dv/dt	1000	1000	1000	1000	V/μs
Thermal resistance (junction to case)	R_{thjc}	0.35	0.35	0.25	0.1	K/W
Frequency range	f	47-63	47-63	47-63	47-63	Hz
Operating temperature	To	-25 to +80	-25 to +80	-25 to +80	-25 to +80	°C
Turn-on time	T-on	10	10	10	10	ms
Turn-off time	T-off	10	10	10	10	ms
Fusing current @ 25°C (8.3ms)	I^2t	5000	8000	15000	25000	A^2s

released, E 197669

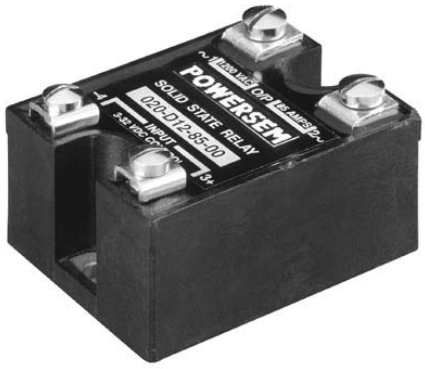
Single Phase Solid State Relays

HIGHLIGHTS

- INPUT: AC CONTROL
- OUTPUT: DIRECT COPPER BONDED BACK-TO-BACK SCR
- OPTO ISOLATION 2500 VAC (4000 V optional)
- ZERO VOLTAGE TURN-ON or RANDOM TURN-ON
- HIGH DV/DT
- SAFETY COVER (optional)
- REVERSE VOLTAGE PROTECTION FOR DC/AC RELAYS
-
- CHASSIS MOUNTABLE
- LED INDICATOR SHOWING RELAY 'ON' STATUS
- Weight = 106 g

(J: Zero voltage turn-on; K: Random turn-on)

Series: 20 SJ/K



125 – 205 A

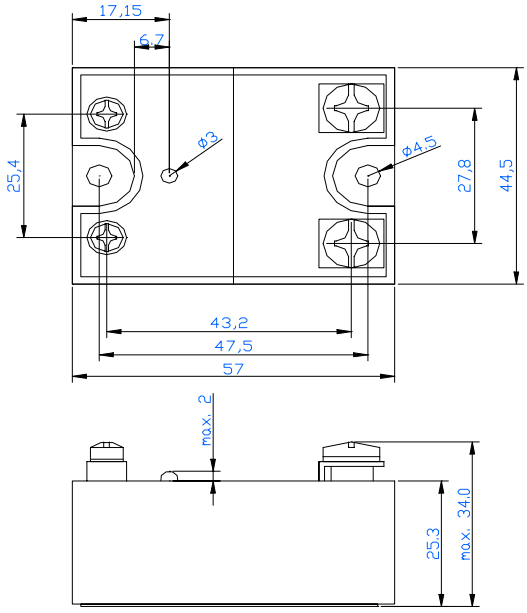
ELECTRICAL SPECIFICATIONS

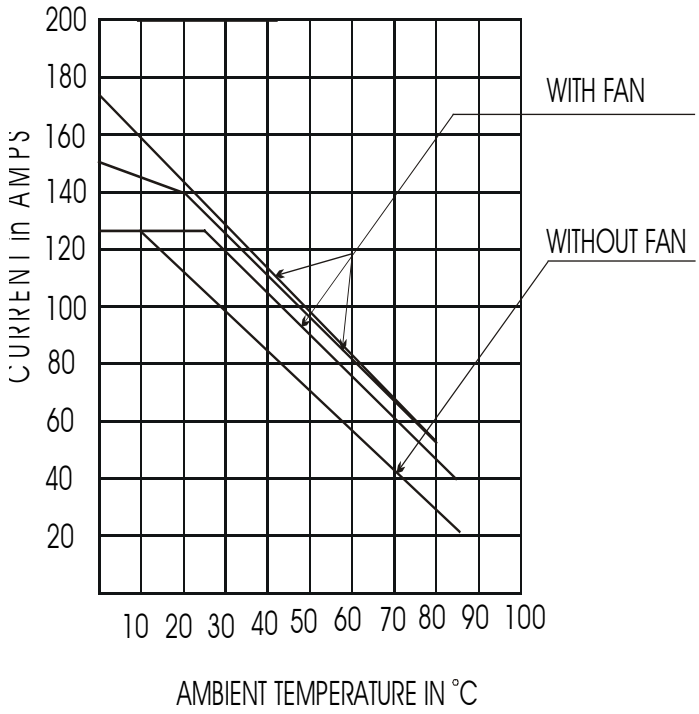
Parameter	Symbol	Type				Unit
		PSB 20 A 1212528	PSB 20 A 1215028	PSB 20 A 1217528	PSB 20 A 1220528	
AC CONTROL						
Control voltage range		90-280	90-280	90-280	90-280	Vac
Control current range		4-10	4-10	4-10	4-10	mA
Pick-up voltage		90	90	90	90	Vac
Drop out voltage		10	10	10	10	Vac
Input impedance		25	20-26	20-26	20-26	K Ohms
OUTPUT						
Main voltage range	V_{RMS}	48-660	48-660	48-660	48-660	Vac
Repetitive peak off state voltage	V_{DRM}	1200/1600	1200/1600	1200/1600	1200/1600	Vpk
RMS on-state current	I_T	125	150	175	205	A
Zero turn-on voltage		35	35	35	35	Vac
Off-state leakage current @ rated voltage	I_{DRM}	1	1	1	1	mA
Peak one cycle surge current (non-rep)	I_{TSM}	1250	1350	1500	2250	A
Holding current	I_H	250	250	250	250	mA
Critical rate of rise of off-state voltage	dv/dt	1000	1000	1000	1000	V/μs
Thermal resistance (junction to case)	R_{thjc}	0.35	0.35	0.25	0.1	K/W
Frequency range	f	47-63	47-63	47-63	47-63	Hz
Operating temperature		-25 to +80	-25 to +80	-25 to +80	-25 to +80	°C
Turn-on time	T-on	40	40	40	40	ms
Turn-off time	T-off	80	80	80	80	ms
Fusing current @ 25°C (8.3ms)	I^2t	5000	8000	15000	25000	A^2s

released, E 197669

MECHANICAL SPECIFICATIONS

Dimensions in mm



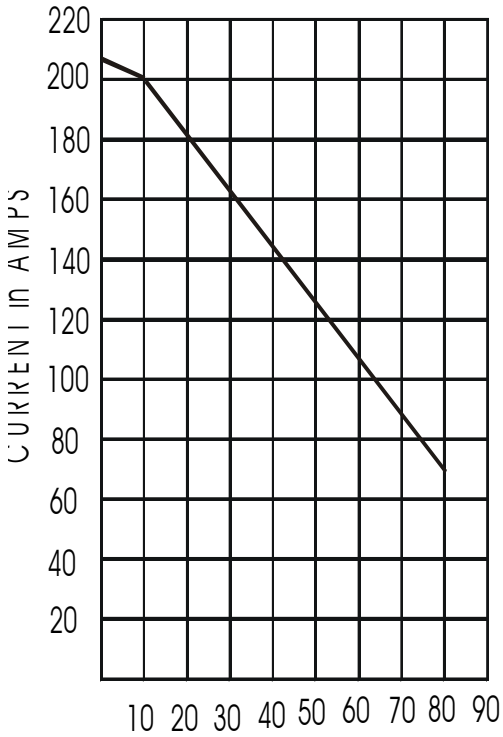


HEAT SINK USED: 0,14 K/W

FAN USED: 70 CFM FOR 125 A

FAN USED: 100 CFM FOR 150 A - 175 A

VALID FOR SERIES: PSB 20 SJK (125 A - 175 A)



HEAT SINK USED: 0,1 K/W

FAN USED: 100 CFM FOR 205 A

Three Phase Solid State Relays

HIGHLIGHTS

Series: 12 SJ/K

- INPUT: DC CONTROL
- HIGH DV/DT
- OUTPUT: DIRECT COPPER BONDED BACK-TO-BACK SCR
- OPTO ISOLATION 2500 VAC (4000 V optional)
- VOLTAGE RANGE 100 TO 660 VAC
- LOAD CURRENT 3x25A / 50A / 75A / 90A
- REVERSE POLARITY PROTECTION FOR DC INPUT CONTROL
- Weight = 344 g

(J: Zero voltage turn-on; K: Random turn-on)

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Type				Unit
		PSD 12 D 122500	PSD 12 D 125000	PSD 12 D 127500	PSD 12 D 129000	
DC CONTROL						
Control voltage range		4-32	4-32	4-32	4-32	Vdc
Control current range		8-80	8-80	8-80	8-80	mA
Pick-up voltage		4-0	4-0	4-0	4-0	Vdc
Drop-out voltage		1-0	1-0	1-0	1-0	Vdc
Input resistance		Current regulator				
OUTPUT						
Mains control voltage	V_{RMS}	100-660	100-660	100-660	100-660	Vac
Repetitive peak off state voltage	V_{DRM}	800-1600	800-1600	800-1600	800-1600	Vpk
RMS on-state current (per phase)	I_T	25	50	75	90	A
Zero turn-on voltage		35	35	35	35	Vac
On-state voltage drop	V_{TM}	1.8	2.0	2.0	2.0	Vac
Off-state leakage current @ rated voltage	I_{DRM}	1	1	1	1	mA
Peak one cycle surge current (non-rep)	I_{TSM}	400	500	1150	1150	A
Holding current	I_H	250	250	250	250	mA
Critical rate of rise of off-state voltage	dv/dt	1000	1000	1000	1000	V/µs
Thermal resistance (junction to case)	R_{thjc}	1.38	0.7	0.6	0.56	K/W
Frequency range	f	47-63	47-63	47-63	47-63	Hz
Operating temperature	T_O	-30 to +80	-30 to +80	-30 to +80	-30 to +80	°C
Turn-on time	T-on	10	10	10	10	ms
Turn-off time	T-off	10	10	10	10	ms
Fusing current	I^2t	600	1250	5000	5000	A^2s

released, E 197669

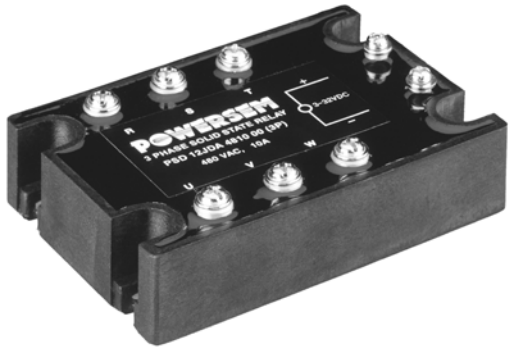
Three Phase Solid State Relays

HIGHLIGHTS

Series: 12 SJ/K

- INPUT: AC CONTROL
- OUTPUT: DIRECT COPPER BONDED BACK-TO-BACK SCR
- OPTO ISOLATION 2500 VAC (4000 V optional)
- VOLTAGE RANGE 100 TO 660 VAC
- LOAD CURRENT 3x25A / 50A / 75A / 90A
- HIGH DV/DT
- Weight = 344 g

(J: Zero voltage turn-on; K: Random turn-on)



ELECTRICAL SPECIFICATIONS

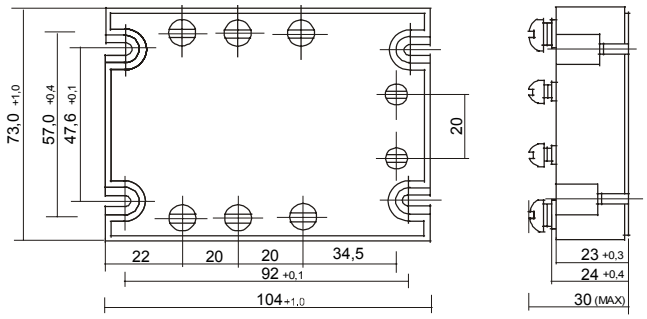
Parameter	Symbol	Type				Unit
		PSD 12 A 122528	PSD 12 A 125028	PSD 12 A 127528	PSD 12 A 129028	
AC CONTROL						
Control voltage range		90-280	90-280	90-280	90-280	Vac
Control current range		8-80	8-80	8-80	8-80	mA
Pick-up voltage		90	90	90	90	Vac
Drop-out voltage		10	10	10	10	Vac
Input resistance		Current regulator				
OUTPUT						
Mains control voltage	V_{RMS}	100-660	100-660	100-660	100-660	Vac
Repetitive peak off state voltage	V_{DRM}	800-1600	800-1600	800-1600	800-1600	Vpk
RMS on-state current	I_T	25	50	75	90	A
Zero turn-on voltage		35	35	35	35	Vac
On-state voltage drop	V_{TM}	1.6	2.0	2.0	2.0	Vac
Off-state leakage current @ rated voltage	I_{DRM}	1	1	1	1	mA
Peak one cycle surge current (non-rep)	I_{TSM}	400	500	1150	1150	A
Holding current	I_H	250	250	250	250	mA
Critical rate of rise of off-state voltage	dv/dt	1000	1000	1000	1000	V/μs
Thermal resistance (junction to case)	R_{thjc}	1.38	0.7	0.6	0.56	K/W
Frequency range	f	47-63	47-63	47-63	47-63	Hz
Operating temperature	T_O	-30 to +80	-30 to +80	-30 to +80	-30 to +80	°C
Turn-on time	T-on	40	40	40	40	ms
Turn-off time	T-off	80	80	80	80	ms
Fusing current	I^2t	600	1250	5000	5000	A^2s

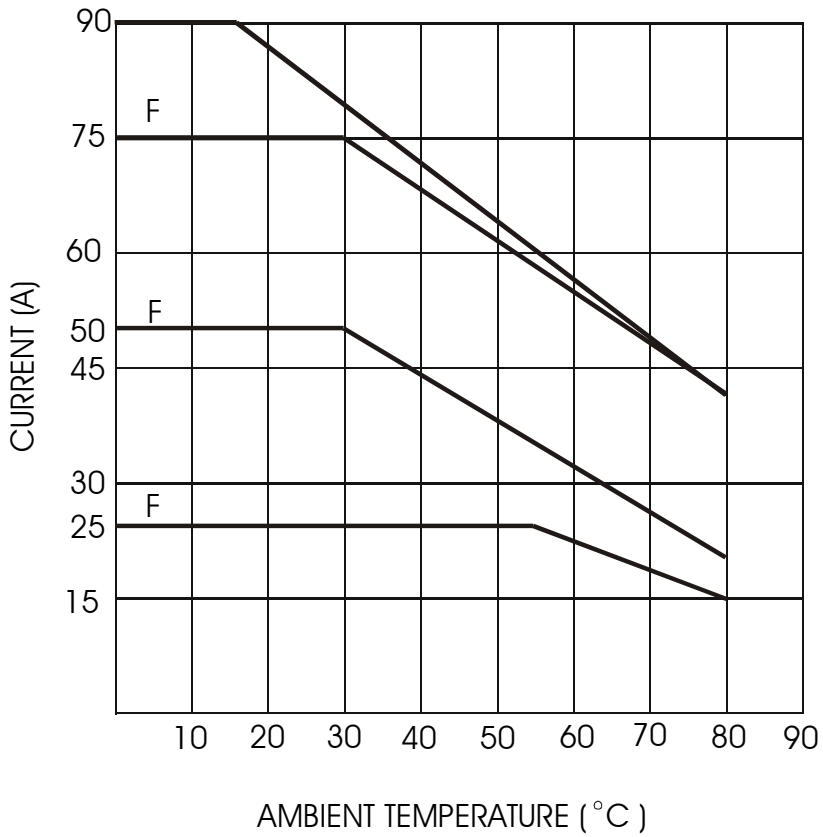
released, E 197669

MECHANICAL SPECIFICATIONS

Dimensions in mm

Three Phase Solid State Relay





HEAT SINK USED: 0,14 K/W

FAN USED: 70 CFM

VALIED FOR SERIES: PSD 12 SJK

DIN Ready Solid State Relay

HIGHLIGHTS

- INPUT: DC CONTROL (TTL or CMOS COMPATIBLE)
- OUTPUT: BACK-TO-BACK SCR
- OPTO ISOLATION 2500 VAC (4000 V optional)
- ZERO VOLTAGE TURN-ON or RANDOM TURN-ON
- BUILT IN SAFETY COVER
- REVERSE VOLTAGE PROTECTION FOR DC/AC RELAYS
- BUILT IN SNUBBER FOR HIGH DV/DT
- DIN MOUNT OR BACK PLATE MOUNTING
- LED INDICATOR SHOWING RELAY 'ON' STATUS

(J: Zero voltage turn-on; K: Random turn-on)

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Type				Unit
		PSB DIN 30D 661000	PSB DIN 30D 661600	PSB DIN 30D 662500	PSB DIN 30D 664000	
DC CONTROL						
Control voltage range		4-32	4-32	4-32	4-32	Vdc
Control current range		8-30	8-30	8-30	8-30	mA
Pick-up voltage		3.0	3.0	3.0	3.0	Vdc
Drop-out voltage		1.0	1.0	1.0	1.0	Vdc
Input resistance		Current regulator				
OUTPUT						
Mains control voltage	V_{RMS}	48-660	48-660	48-660	48-660	Vac
Repetitive peak off state voltage	V_{DRM}	1200	1200	1200	1200	Vpk
RMS on-state current	I_T	10	16	25	40	A
Zero turn-on voltage		35	35	35	35	Vac
On-state voltage drop	V_{TM}	1.6	1.6	1.8	1.8	Vac
Off-state leakage current @ rated voltage	I_{DRM}	5	5	5	5	mA
Peak one cycle surge current (non-Rrep)	I_{TSM}	100	250	1000	1000	A
Holding current	I_H	75	120	250	250	mA
Critical rate of rise of off-state voltage	dv/dt	200	200	700	700	V/μs
Thermal resistance (junction to case)	R_{thic}	1.8	1.3	0.43	0.43	K/W
Frequency range	f	47-63	47-63	47-63	47-63	Hz
Storage temperature	To	-30 to +100	-30 to +100	-30 to +100	-30 to +100	°C
Operating temperature	T_O	-30 to +80	-30 to +80	-30 to +80	-30 to +80	°C
Turn-on time	T-on	10	10	10	10	ms
Turn-off time	T-off	10	10	10	10	ms
Fusing current	I^2t	72	128	3700	5000	A^2s

ALL ELECTRICAL PARAMETERS MEASURED @ T_A= 25 DEG C

released, E 197669

DIN Ready Solid State Relay

HIGHLIGHTS

- INPUT: AC CONTROL
- OUTPUT: BACK-TO-BACK SCR
- OPTO ISOLATION 2500 VAC (4000 V optional)
- ZERO VOLTAGE TURN-ON or RANDOM TURN-ON
- BUILT IN SAFETY COVER
- REVERSE VOLTAGE PROTECTION FOR DC/AC RELAYS
- BUILT IN SNUBBER FOR HIGH DV/DT
- DIN MOUNT OR BACK PLATE MOUNTING
- LED INDICATOR SHOWING RELAY 'ON' STATUS

(J: Zero voltage turn-on; K: Random turn-on)

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Type				Unit
		PSB DIN 30A 661028	PSB DIN 30A 661628	PSB DIN 30A 662528	PSB DIN 30A 664028	
AC CONTROL						
Control voltage range		90-280	90-280	90-280	90-280	Vac
Control current range		4-25	4-25	4-25	4-25	mA
Pick-up voltage		90	90	90	90	Vac
Drop-out voltage		10	10	10	10	Vac
Input resistance		16-25	16-25	16-25	16-25	K
OUTPUT						
Mains control voltage	V_{RMS}	48-660	48-660	48-660	48-660	Vac
Repetitive peak off state voltage	V_{DRM}	1200	1200	1200	1200	Vpk
RMS on-state current	I_T	10	16	25	40	A
Zero turn-on voltage		35	35	35	35	Vac
On-state voltage drop	V_{TM}	1.6	1.6	1.8	1.8	Vac
Off-state leakage current @ rated voltage	I_{DRM}	5	5	5	5	mA
Peak one cycle surge current (non-Rrep)	I_{TSM}	100	250	1000	1000	A
Holding current	I_H	75	120	250	250	mA
Critical rate of rise of off-state voltage	dv/dt	200	200	700	700	V/μs
Thermal resistance (junction to case)	R_{thic}	1.8	1.3	0.43	0.43	K/W
Frequency range	f	47-63	47-63	47-63	47-63	Hz
Storage temperature	Ts	-30 to +100	-30 to +100	-30 to +100	-30 to +100	°C
Operating temperature	T_O	-30 to +80	-30 to +80	-30 to +80	-30 to +80	°C
Turn-on time	T-on	40	40	40	40	ms
Turn-off time	T-off	80	80	80	80	ms
Fusing current	I^2t	72	128	3700	5000	A^2s

ALL ELECTRICAL PARAMETERS MEASURED @ T_A= 25 DEG C

released, E 197669

DIN Ready Solid State Relay

HIGHLIGHTS

- INPUT: DC CONTROL (TTL or CMOS COMPATIBLE)
- OUTPUT: BACK-TO-BACK SCR
- OPTO ISOLATION 2500 VAC (4000 V optional)
- ZERO VOLTAGE TURN-ON or RANDOM TURN-ON
- BUILT IN SAFETY COVER
- REVERSE VOLTAGE PROTECTION FOR DC/AC RELAYS
- BUILT IN SNUBBER FOR HIGH DV/DT
- DIN MOUNT OR BACK PLATE MOUNTING
- LED INDICATOR SHOWING RELAY 'ON' STATUS

(J: Zero voltage turn-on; K: Random turn-on)

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Type				Unit
		PSB DIN 30D 241000	PSB DIN 30D 241600	PSB DIN 30D 242500	PSB DIN 30D 244000	
DC CONTROL						
Control voltage range		3-32	3-32	3-32	3-32	Vdc
Control current range		8-30	8-30	8-30	8-30	mA
Pick-up voltage		3.0	3.0	3.0	3.0	Vdc
Drop-out voltage		1.0	1.0	1.0	1.0	Vdc
Input resistance		Current regulator				
OUTPUT						
Mains control voltage	V_{RMS}	24-240	24-240	24-240	24-240	Vac
Repetitive peak off state voltage	V_{DRM}	600	600	600	600	Vpk
RMS on-state current	I_T	10	16	25	40	A
Zero turn-on voltage		35	35	35	35	Vac
On-state voltage drop	V_{TM}	1.6	1.6	1.8	1.8	Vac
Off-state leakage current @ rated voltage	I_{DRM}	5	5	5	5	mA
Peak one cycle surge current (non-Rrep)	I_{TSM}	100	250	800	800	A
Holding current	I_H	75	120	250	250	mA
Critical rate of rise of off-state voltage	dv/dt	200	250	500	500	V/μs
Thermal resistance (junction to case)	R_{thjc}	1.5	1.3	0.43	0.43	K/W
Frequency range	f	47-63	47-63	47-63	47-63	Hz
Storage temperature	Ts	-30 to +100	-30 to +100	-30 to +100	-30 to +100	°C
Operating temperature	T_O	-30 to +80	-30 to +80	-30 to +80	-30 to +80	°C
Turn-on time	T-on	10	10	10	10	ms
Turn-off time	T-off	10	10	10	10	ms
Fusing current	I^2t	72	128	3700	3700	A^2s

ALL ELECTRICAL PARAMETERS MEASURED @ T_A= 25 DEG C

released, E 197669

DIN Ready Solid State Relay

HIGHLIGHTS

- INPUT: AC CONTROL
- OUTPUT: BACK-TO-BACK SCR
- OPTO ISOLATION 2500 VAC (4000 V optional)
- ZERO VOLTAGE TURN-ON or RANDOM TURN-ON
- BUILT IN SAFETY COVER
- REVERSE VOLTAGE PROTECTION FOR DC/AC RELAYS
- BUILT IN SNUBBER FOR HIGH DV/DT
- DIN MOUNT OR BACK PLATE MOUNTING
- LED INDICATOR SHOWING RELAY 'ON' STATUS

(J: Zero voltage turn-on; K: Random turn-on)

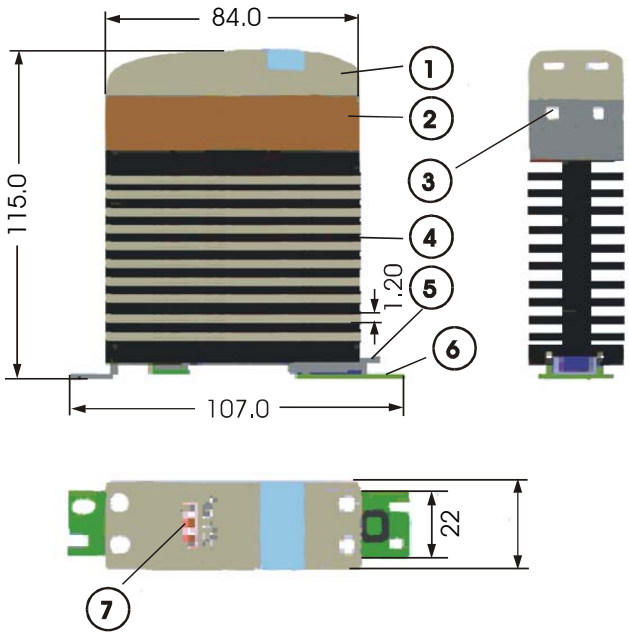
ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Type				Unit
		PSB DIN 30A 241028	PSB DIN 30A 241628	PSB DIN 30A 242528	PSB DIN 30A 244028	
AC CONTROL						
Control voltage range		90-280	90-280	90-280	90-280	Vac
Control current range		4-25	4-25	4-25	4-25	mA
Pick-up voltage		90	90	90	90	Vac
Drop-out voltage		10	10	10	10	Vac
Input resistance		16-25	16-25	16-25	16-25	K ohm
OUTPUT						
Mains control voltage	V_{RMS}	24-240	24-240	24-240	24-240	Vac
Repetitive peak off state voltage	V_{DRM}	600	600	600	600	Vpk
RMS on-state current	I_T	10	16	25	40	A
Zero turn-on voltage		35	35	35	35	Vac
On-state voltage drop	V_{TM}	1.6	1.6	1.8	1.8	Vac
Off-state leakage current @ rated voltage	I_{DRM}	5	5	5	5	mA
Peak one cycle surge current (non-Rrep)	I_{TSM}	100	250	1000	1000	A
Holding current	I_H	75	120	250	250	mA
Critical rate of rise of off-state voltage	dv/dt	200	500	500	500	V/μs
Thermal resistance (junction to case)	R_{thjc}	1.5	1.3	0.43	0.43	K/W
Frequency range	f	47-63	47-63	47-63	47-63	Hz
Storage temperature	Ts	-30 to +100	-30 to +100	-30 to +100	-30 to +100	°C
Operating temperature	T_O	-30 to +80	-30 to +80	-30 to +80	-30 to +80	°C
Turn-on time	T-on	40	40	40	40	ms
Turn-off time	T-off	80	80	80	80	ms
Fusing current	I^2t	72	128	3700	3700	A^2s

ALL ELECTRICAL PARAMETERS MEASURED @ T_A= 25 DEG C

released, E 197669

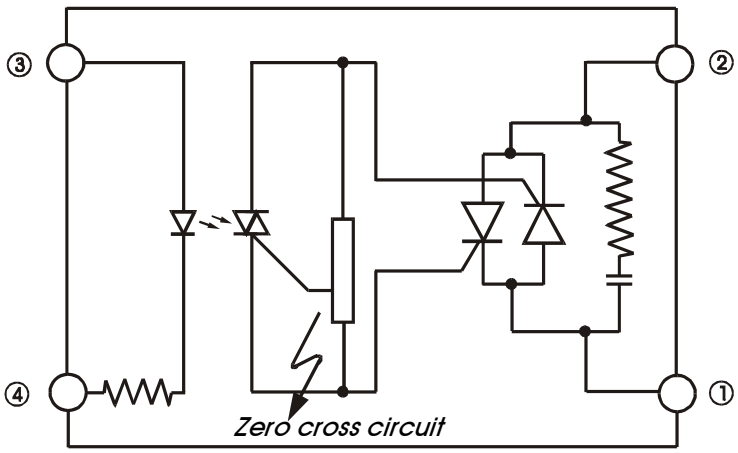
DIN Ready Solid State Relay



1. COVER
2. CASE
3. SPACER
4. HEAT SINK
5. CLIP ASSEMBLY
6. CLAMP
7. LED LOCATION

Features of DIN Ready SSR

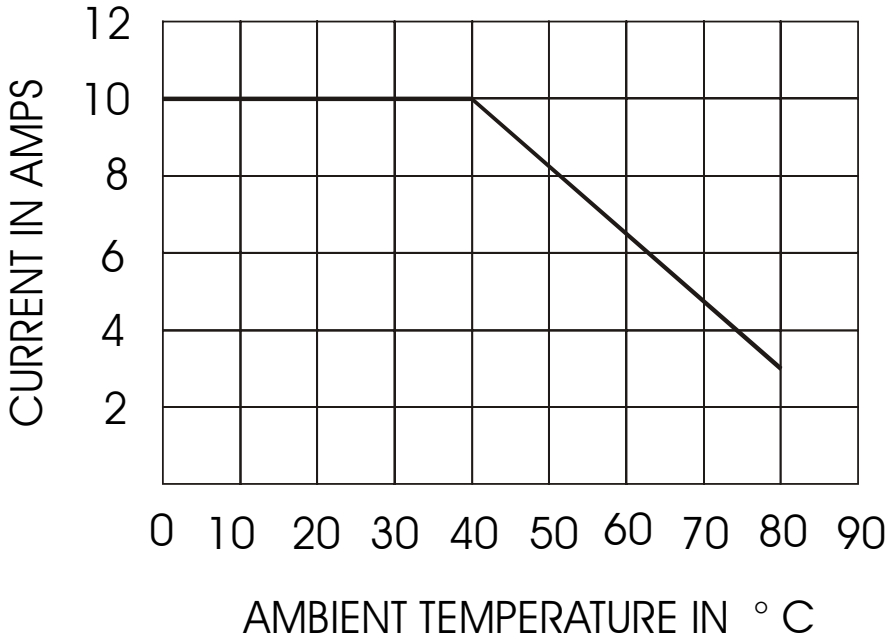
- AC SOLID STATE CONTRACTOR IN 30 mm HOUSING
- ZERO SWTICHING FOR HEATING AND MOTOR APPLICATIONS/RANDOM SWITICHING
- RATED OPERATIONAL CURRENT 10 A, 16 A & 25 A (40 A WITH FORCED COOLING
- RATED OPERATIONAL VOLTAGE 120/230 VAC, 400/480/660
- TRANSIENT OVER VOLTAGE PROTECTION (OPTICAL)
  LED INDICATOR SHOWING RELAY ''ON'' STATUS
- IP 20 PROTECTION
- DIN – RAIL AND BACK PLATE MPONTABLE
- CONNECTING TERMINALS LAYOUT AS CONTRACTOR OR SSR STANDARD
- OPTO-ISOLATION > 400 V
- BUILT IN SNUBBER



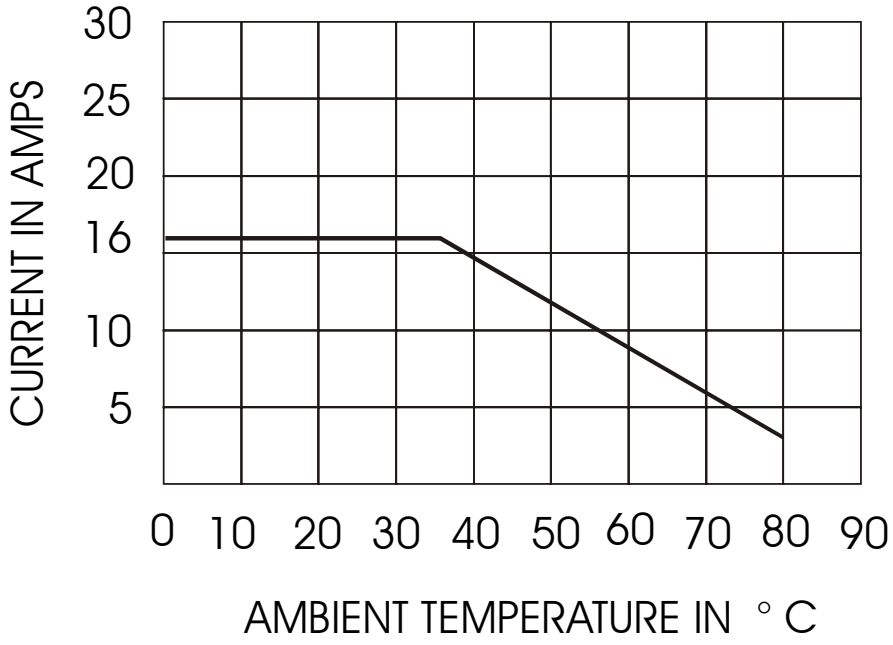
1 Output 3 Input (+)
2 Output 4 Input (-)

SCHEMATIC OF J & K SERIES
DC / AC RELAYS *DIN SSR's*

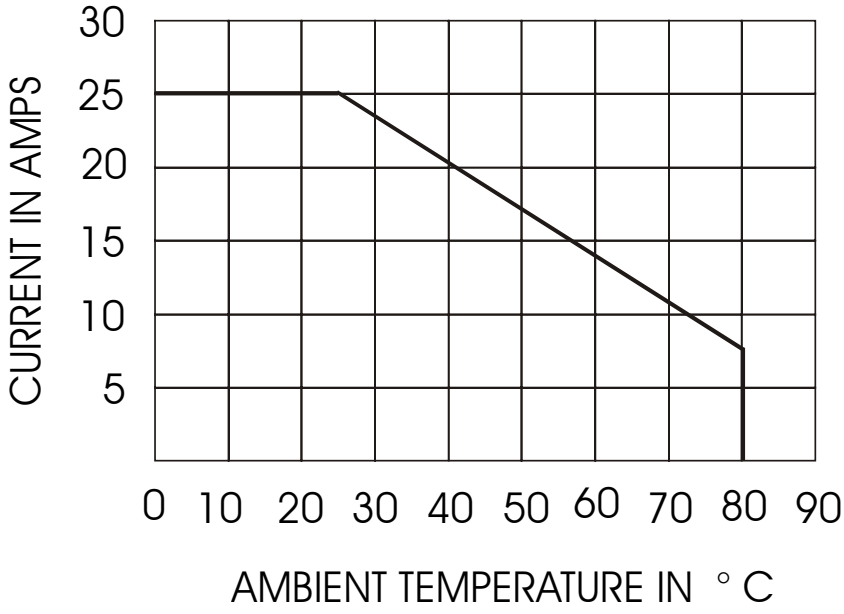
DERATING CURVE FOR 10 A DIN SSR



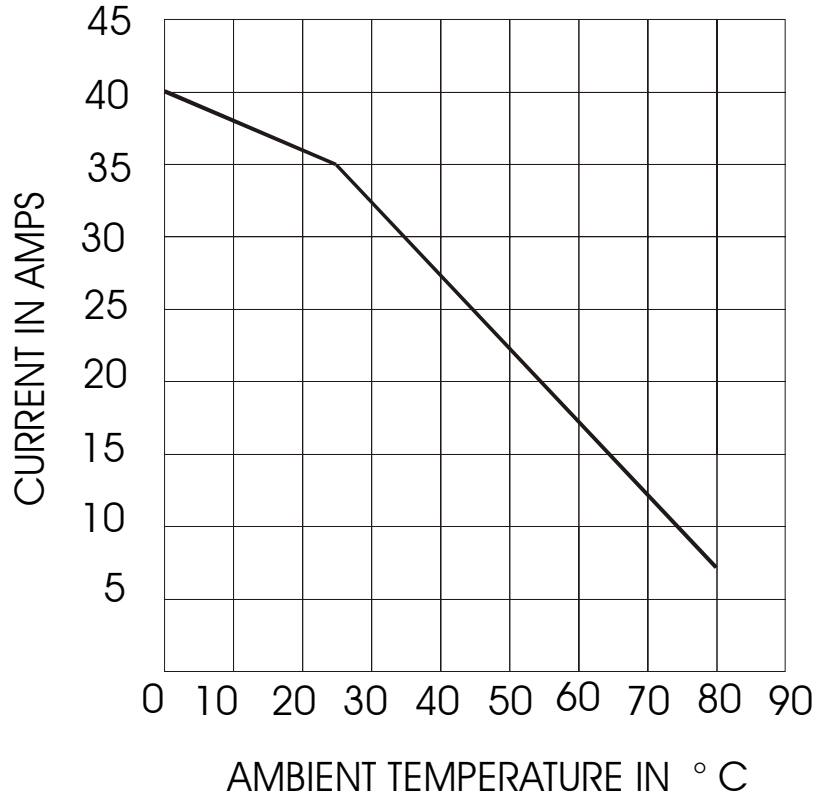
DERATING CURVE FOR 16 A DIN SSR



DERATING CURVE FOR 25 A DIN SSR



DERATING CURVE FOR 40 A DIN SSR



Outline Drawings

Dimensions in mm (1mm = 0.0394“)

Figure 1

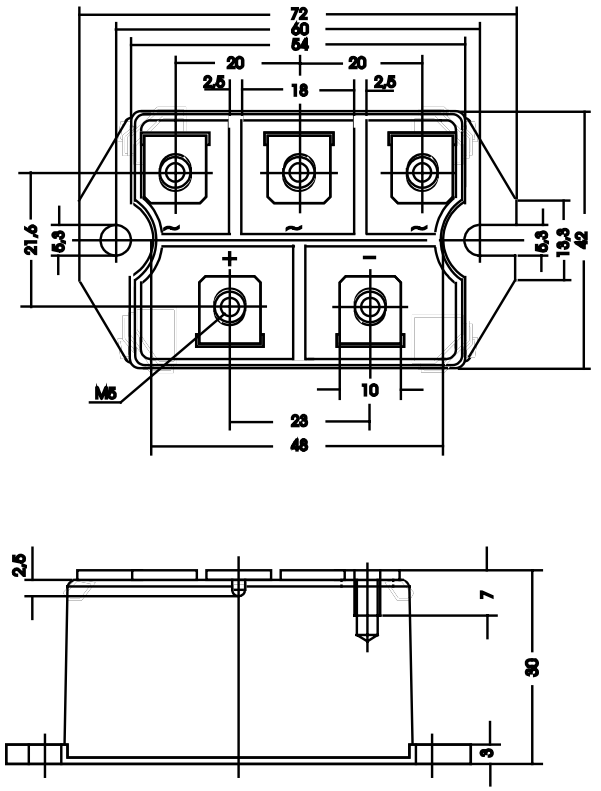


Figure 2

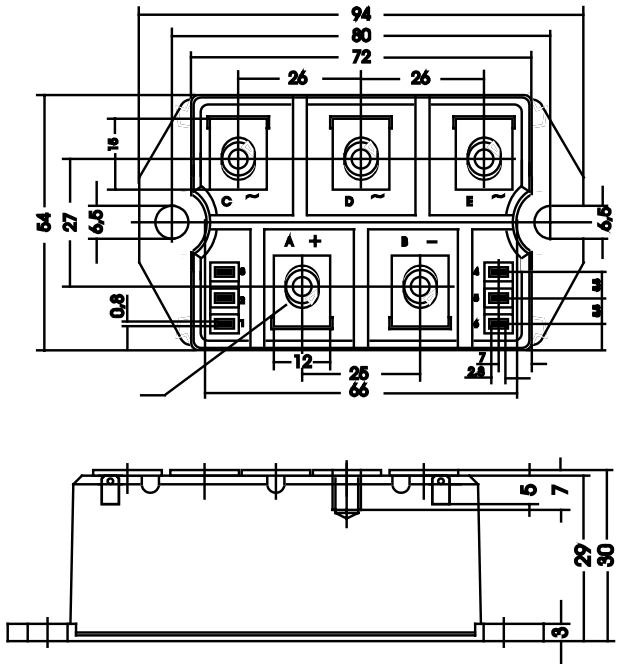


Figure 3

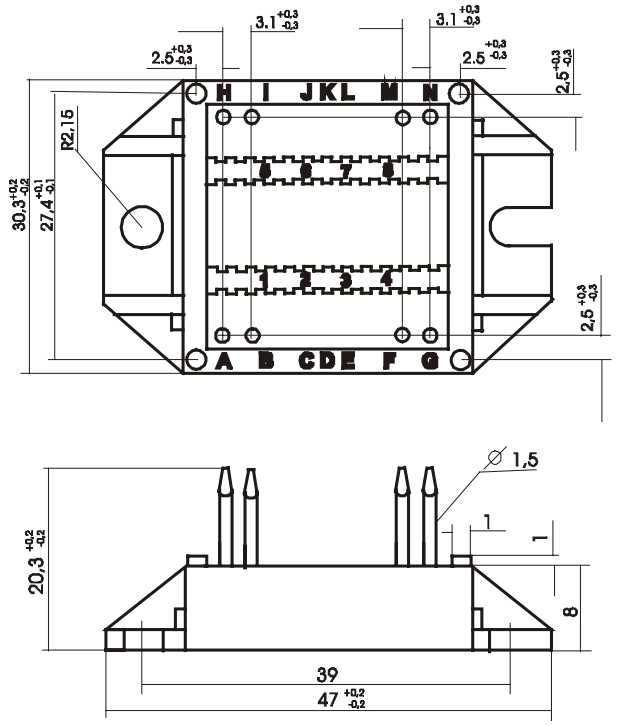
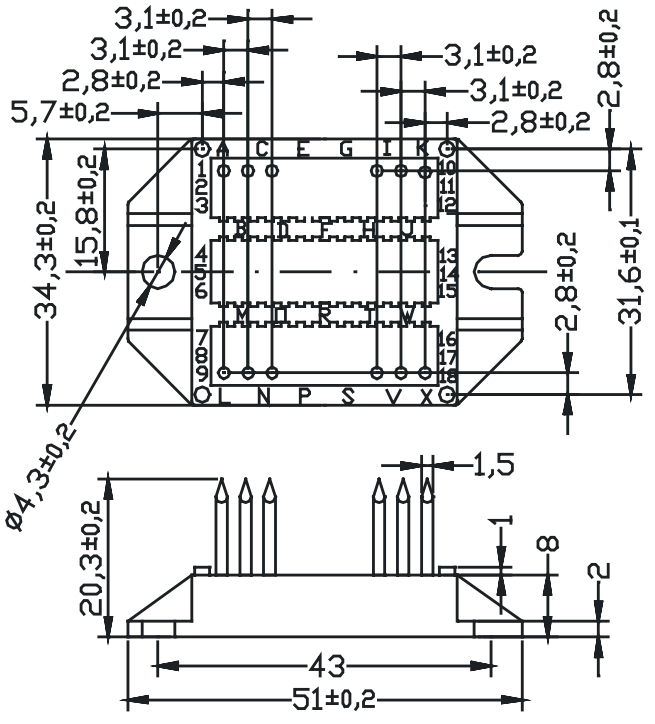


Figure 4



Outline Drawings

Dimensions in mm (1mm = 0.0394“)

Figure 5

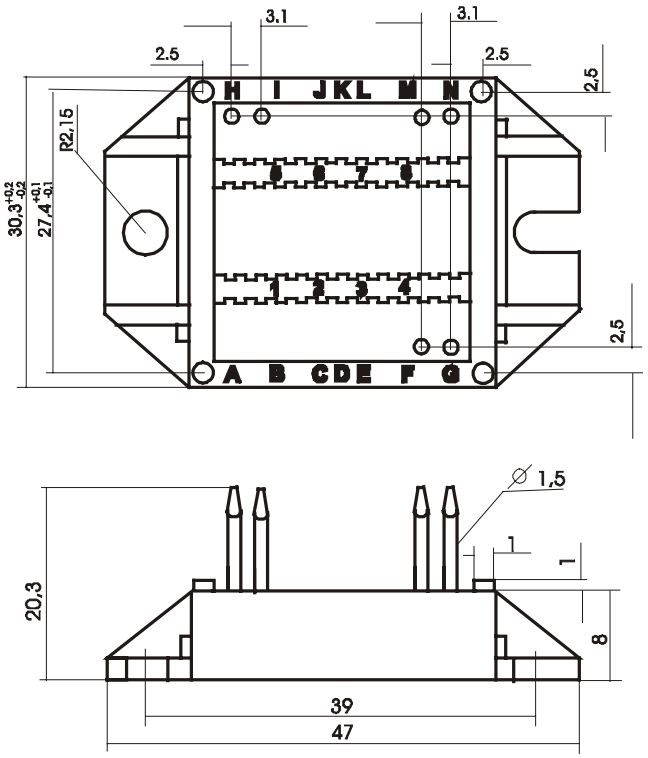


Figure 6

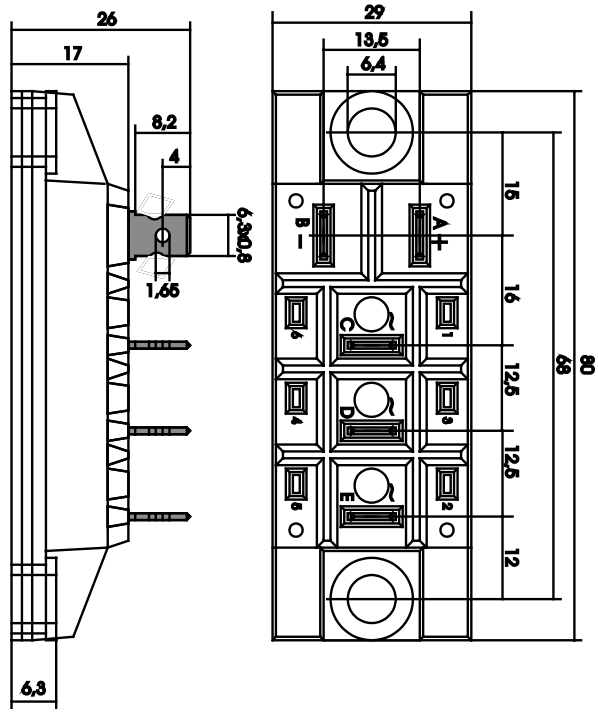


Figure 7

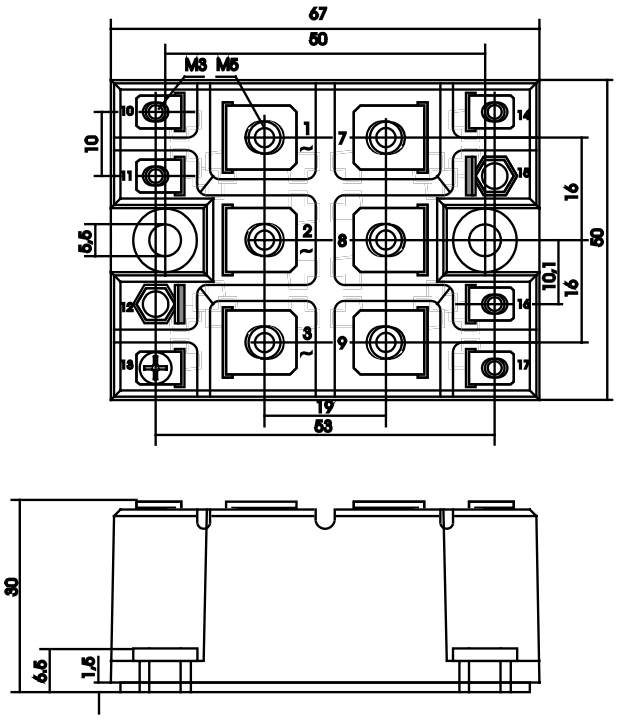
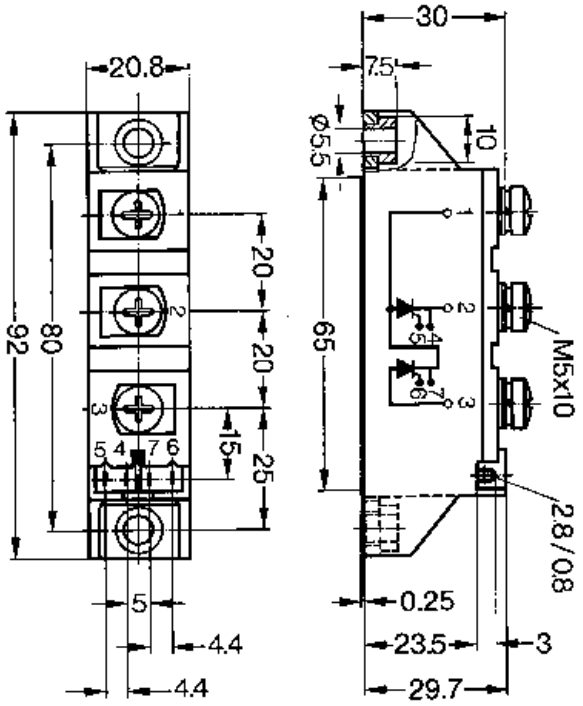


Figure 8



Outline Drawings

Dimensions in mm (1mm = 0.0394“)

Figure 9

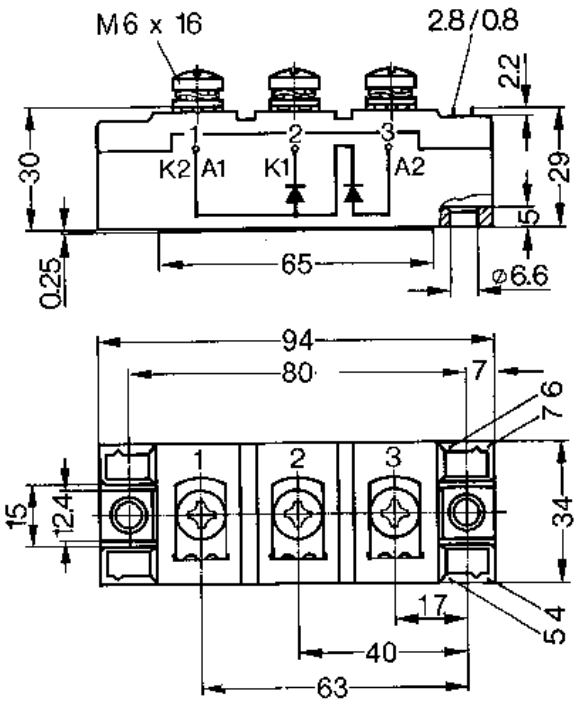


Figure 10

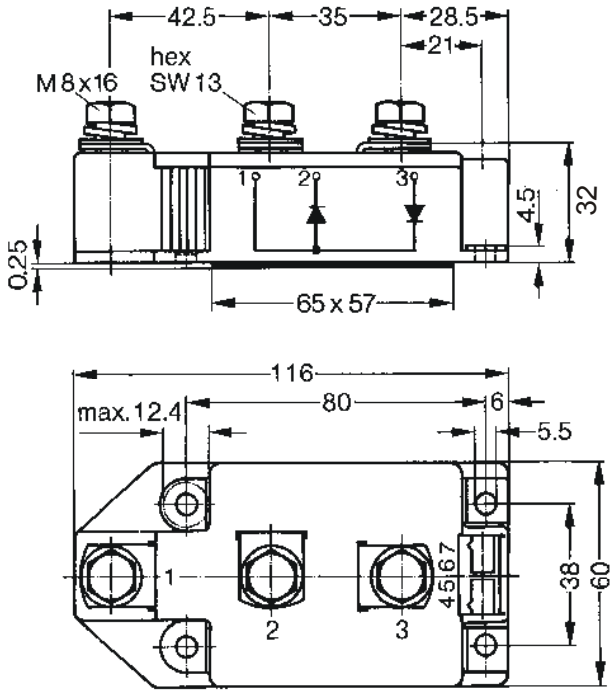


Figure 11

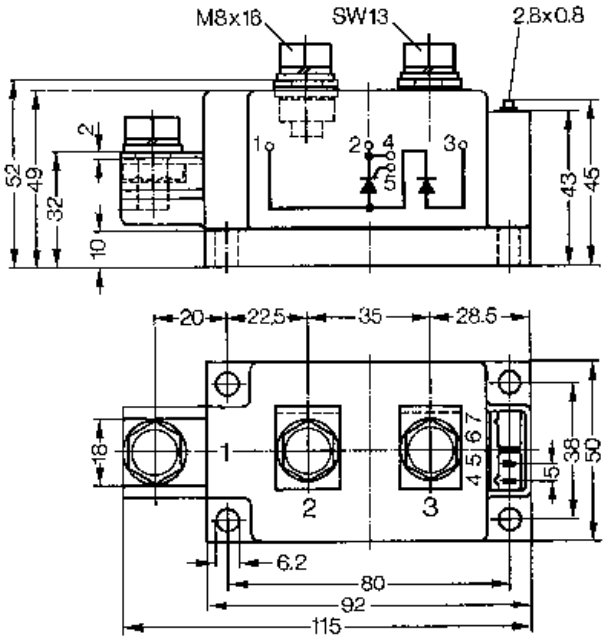
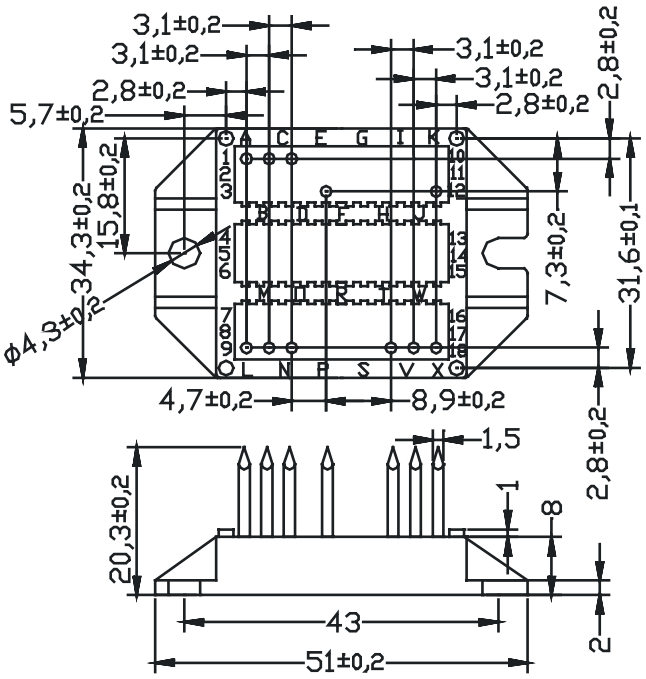


Figure 12



Outline Drawings

Dimensions in mm (1mm = 0.0394“)

Figure 13

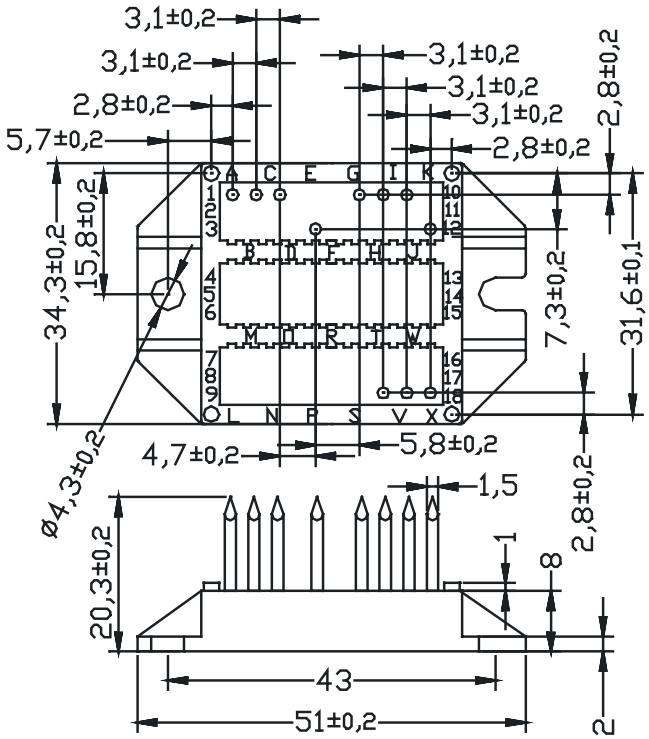


Figure 14

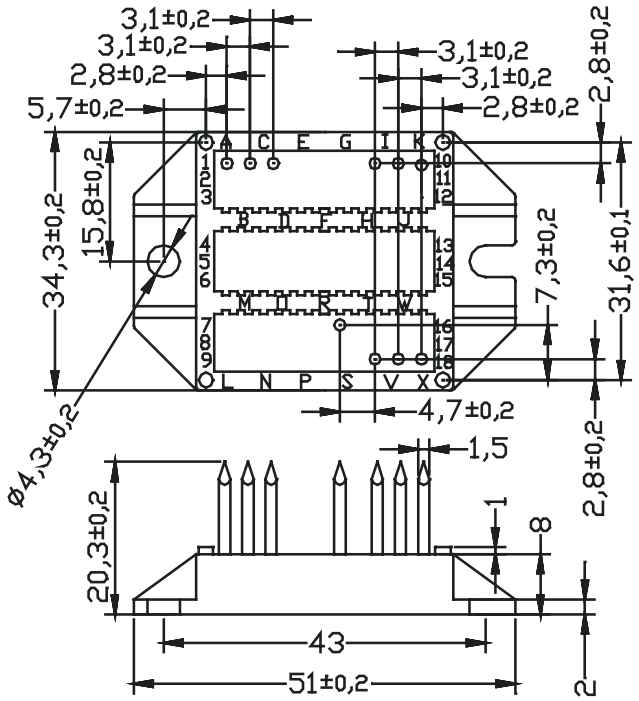


Figure 15

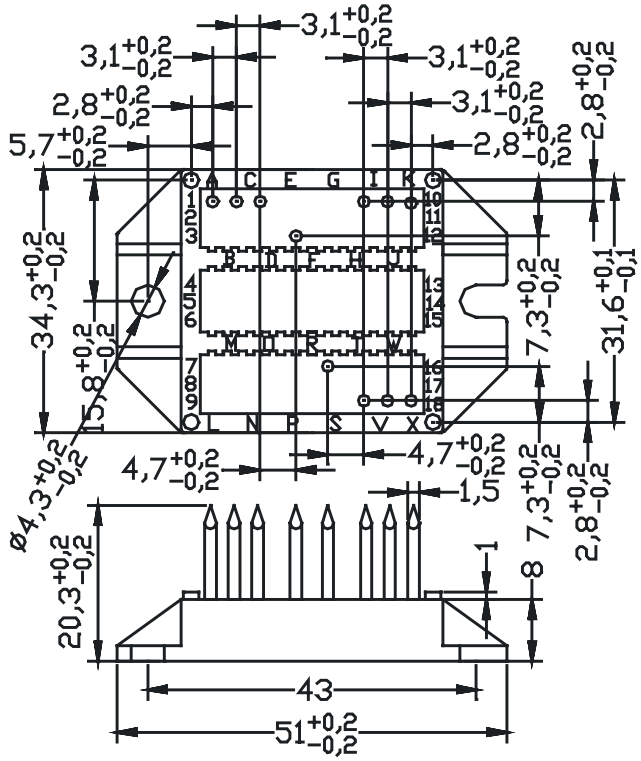
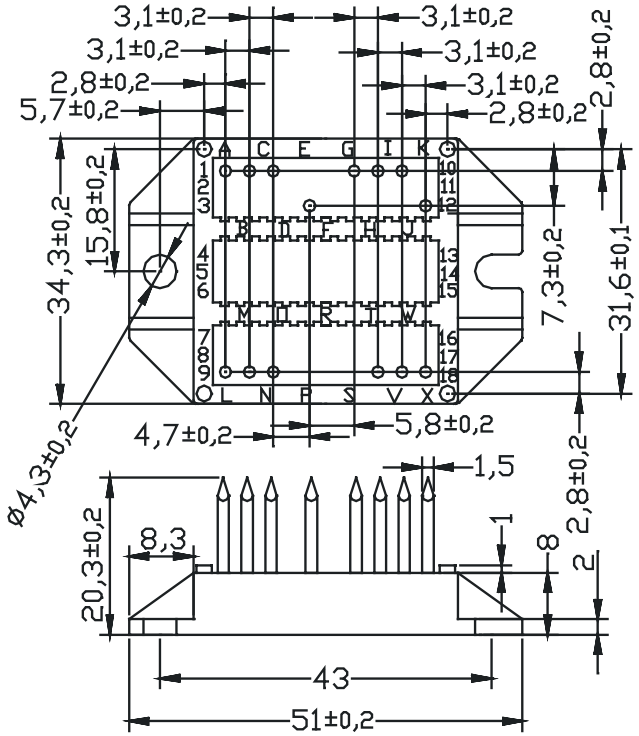


Figure 16



Outline Drawings

Dimensions in mm (1mm = 0.0394“)

Figure 17

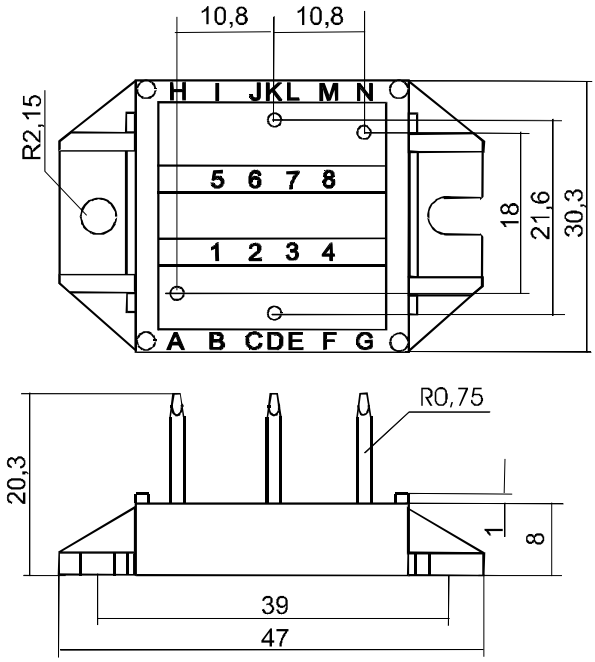


Figure 18

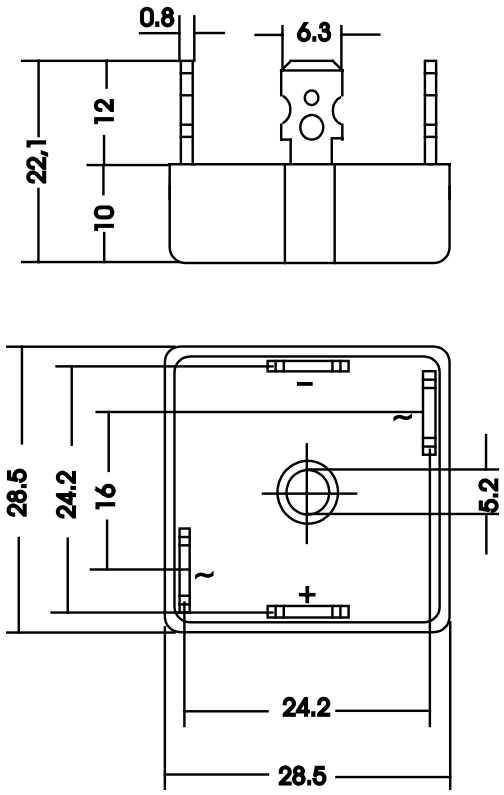


Figure 19

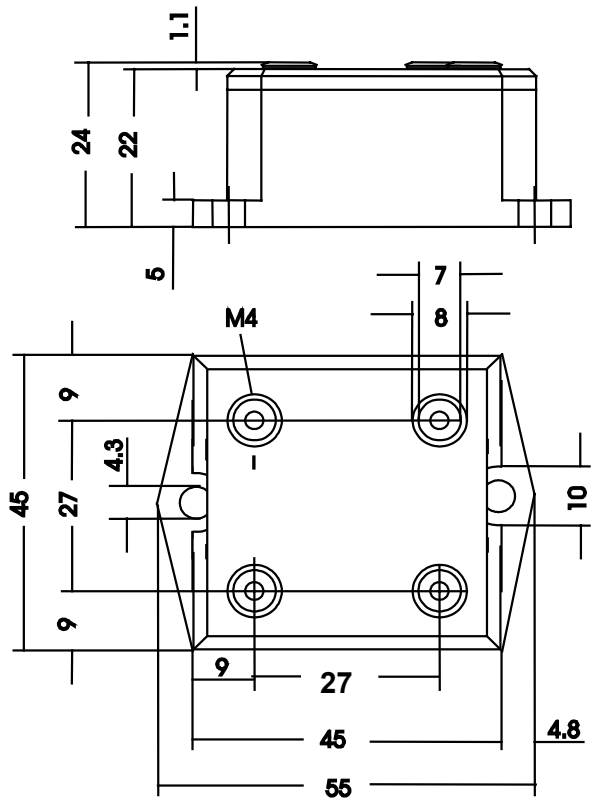
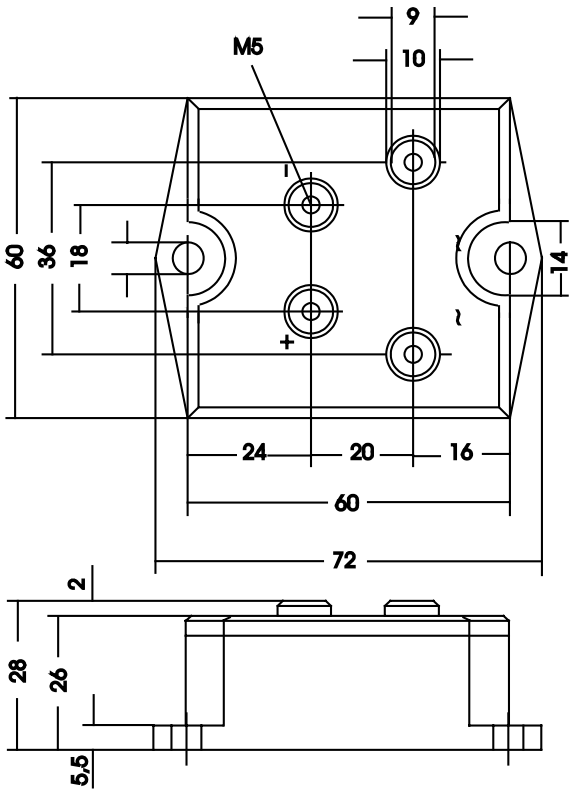


Figure 20



Outline Drawings

Dimensions in mm (1mm = 0.0394“)

Figure 21

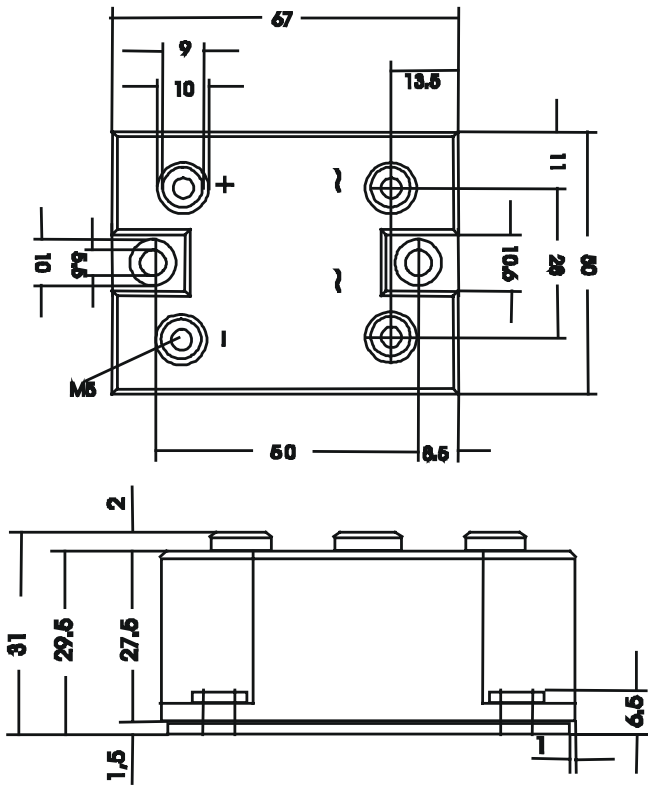


Figure 22

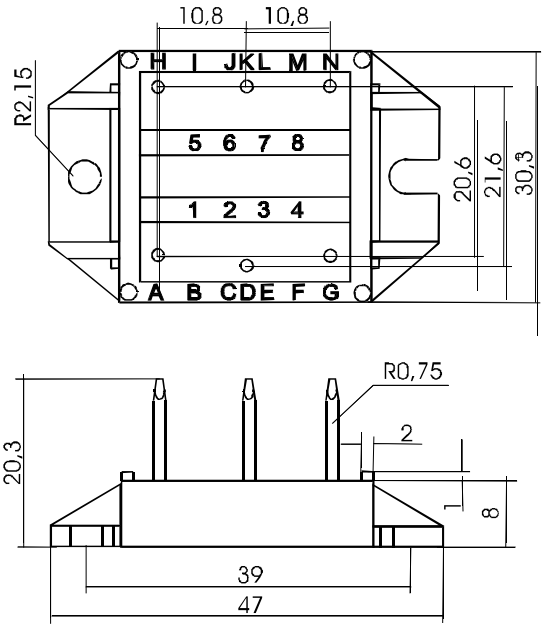


Figure 23

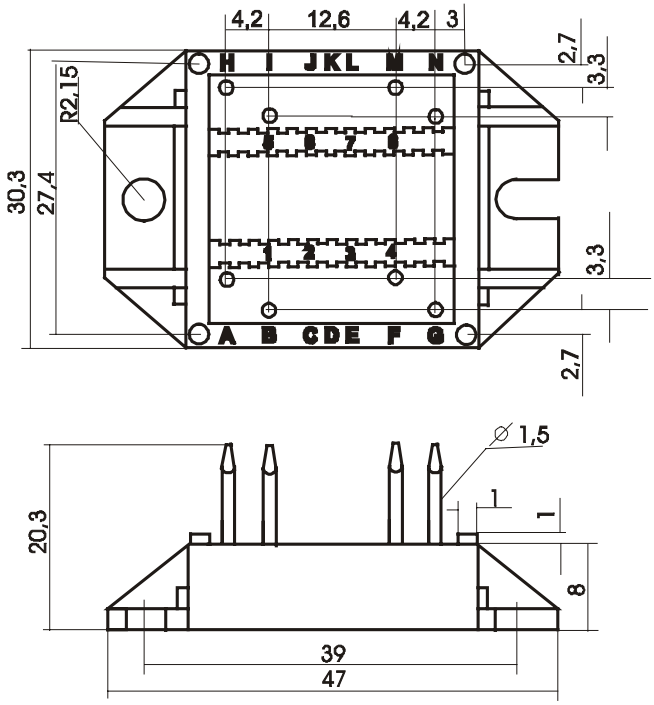
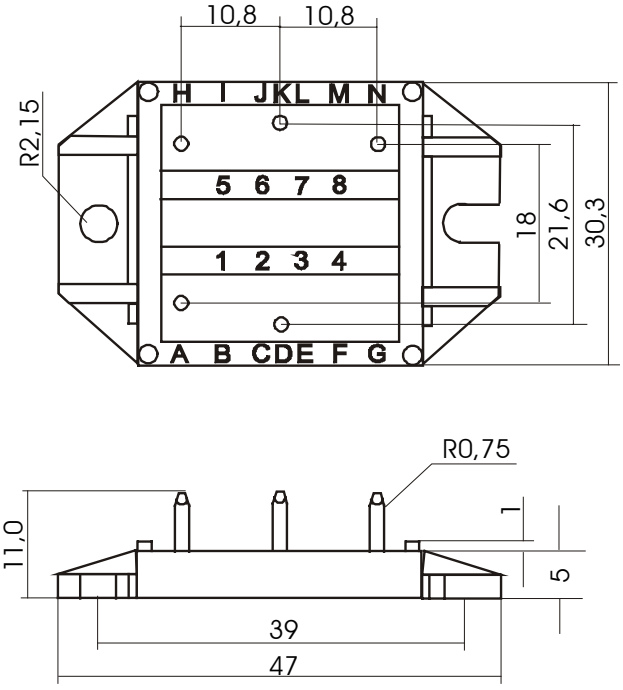


Figure 24



Outline Drawings

Dimensions in mm (1mm = 0.0394“)

Figure 25

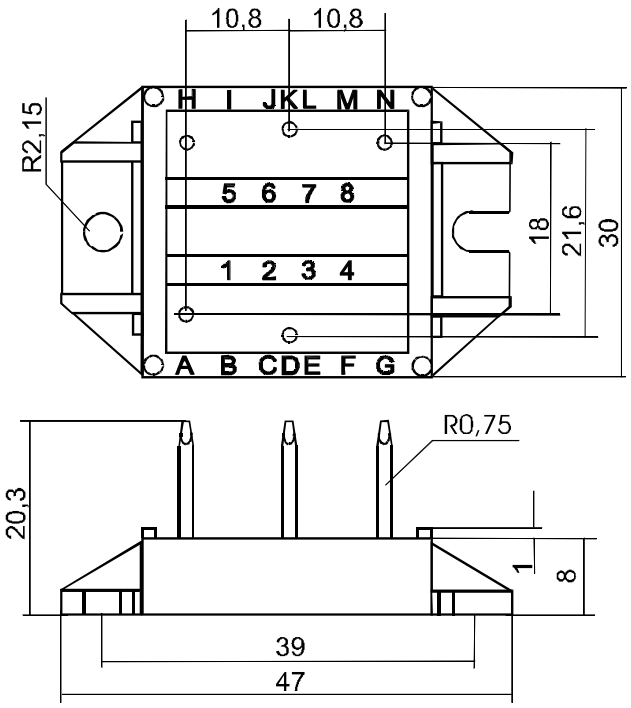


Figure 26

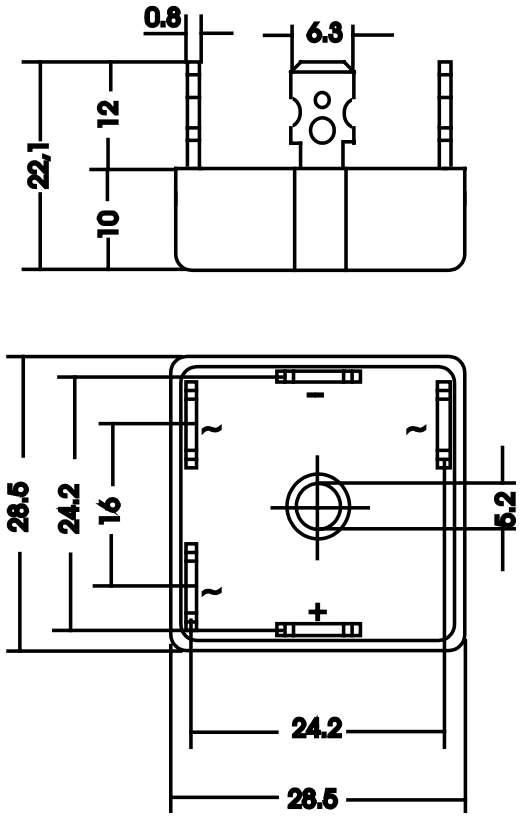


Figure 27

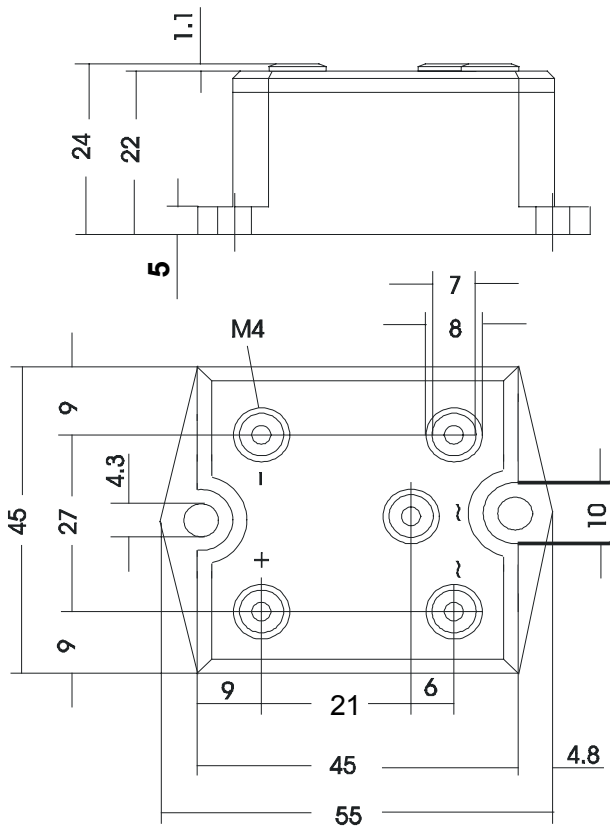
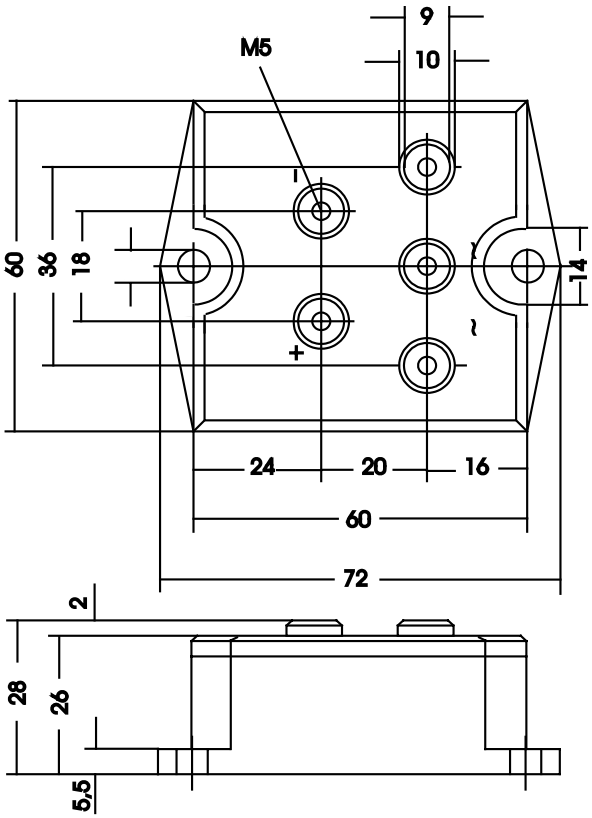


Figure 28



Outline Drawings

Dimensions in mm (1mm = 0.0394“)

Figure 29

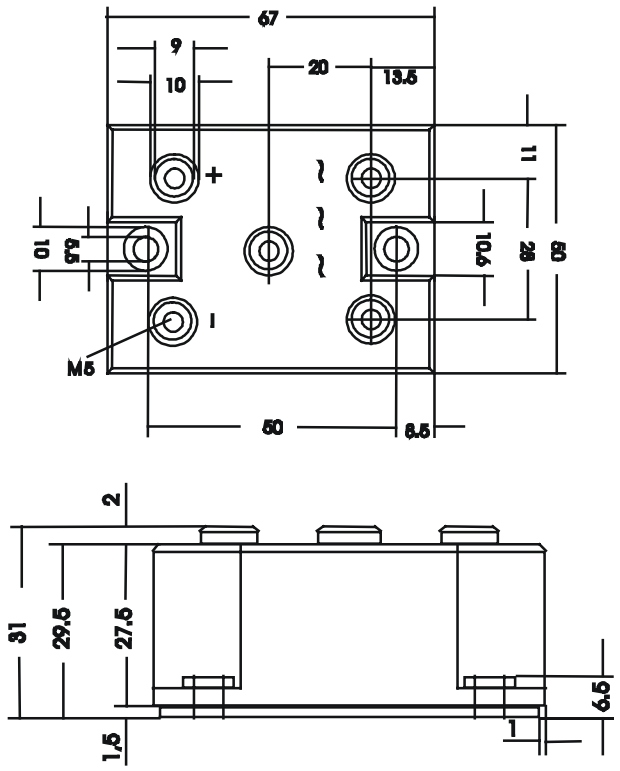


Figure 30

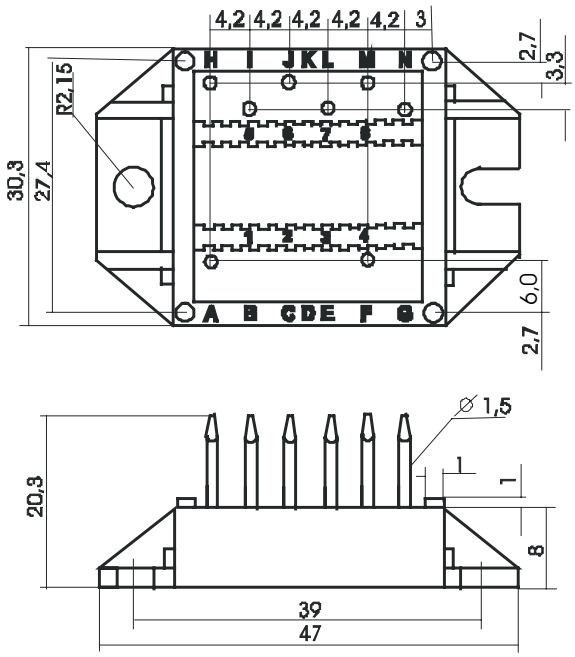


Figure 31

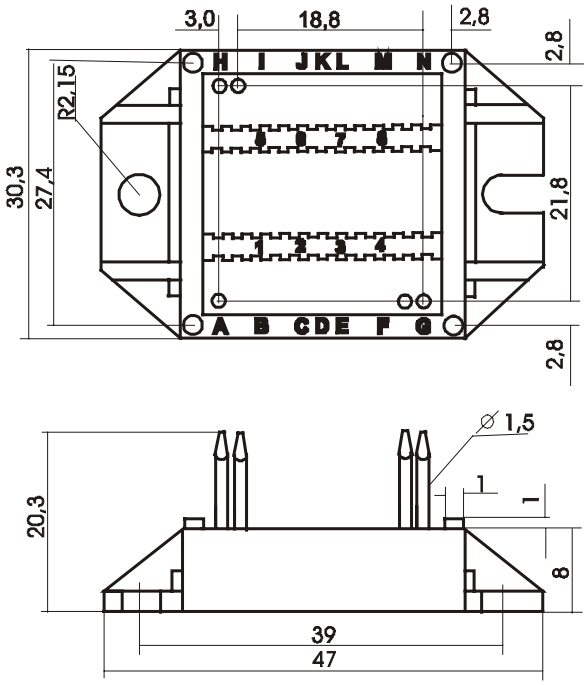
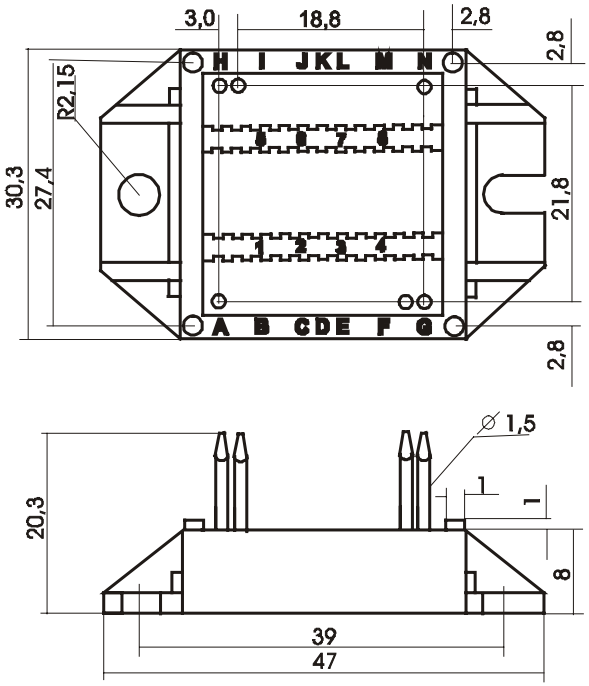


Figure 32



Outline Drawings

Dimensions in mm (1mm = 0.0394“)

Figure 33

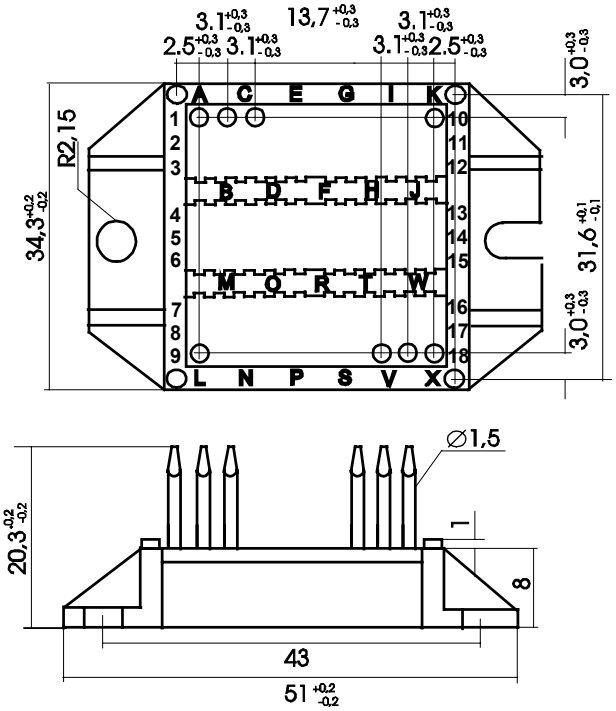


Figure 34

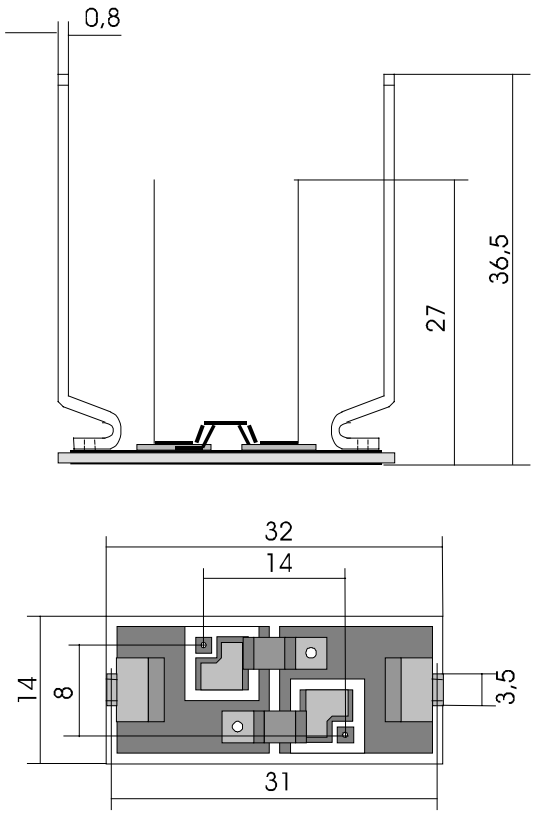


Figure 35

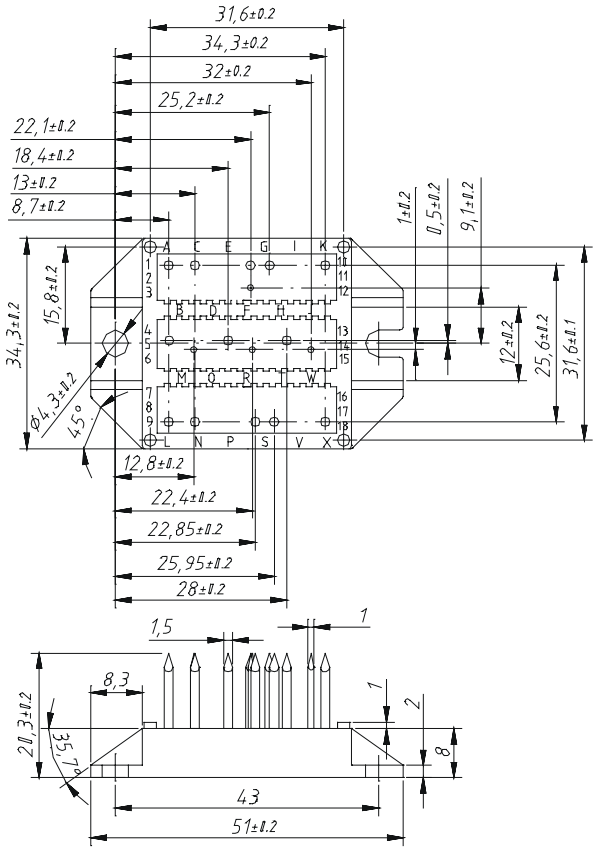
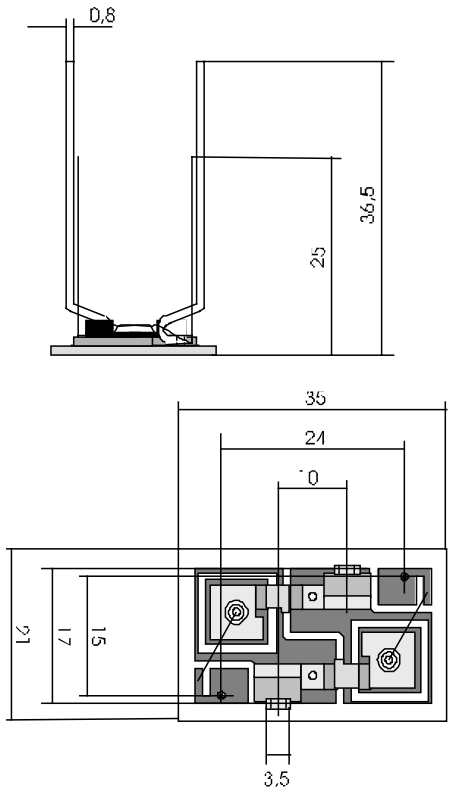


Figure 36



Outline Drawings

Dimensions in mm (1mm = 0.0394“)

Figure 37

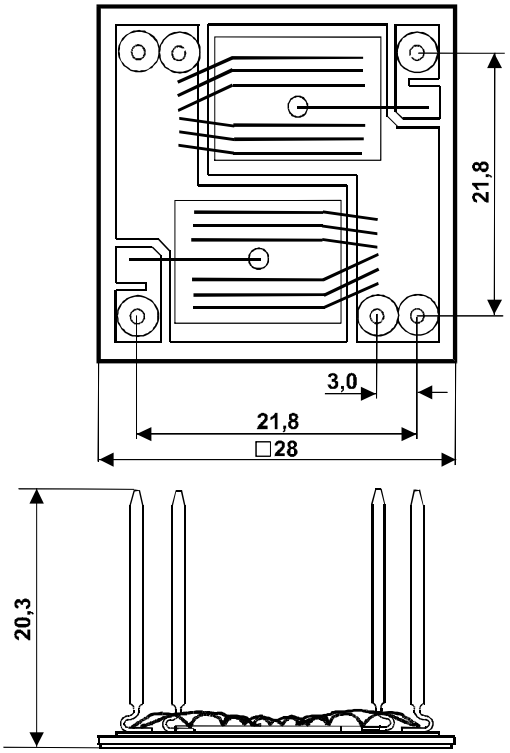


Figure 38

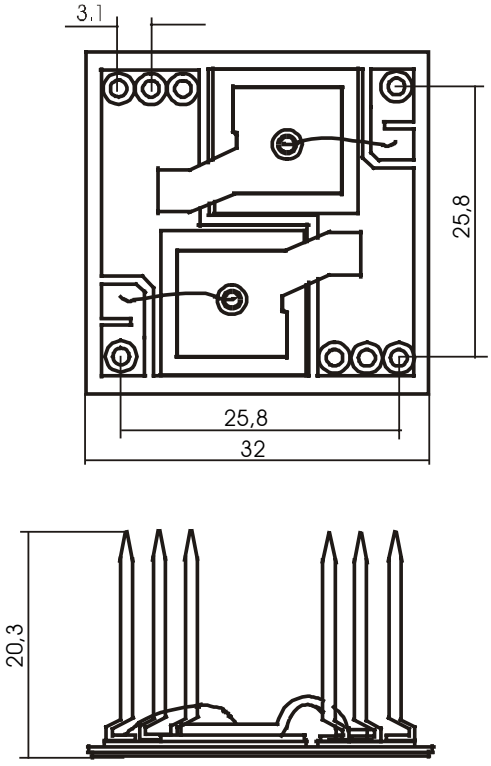


Figure 39

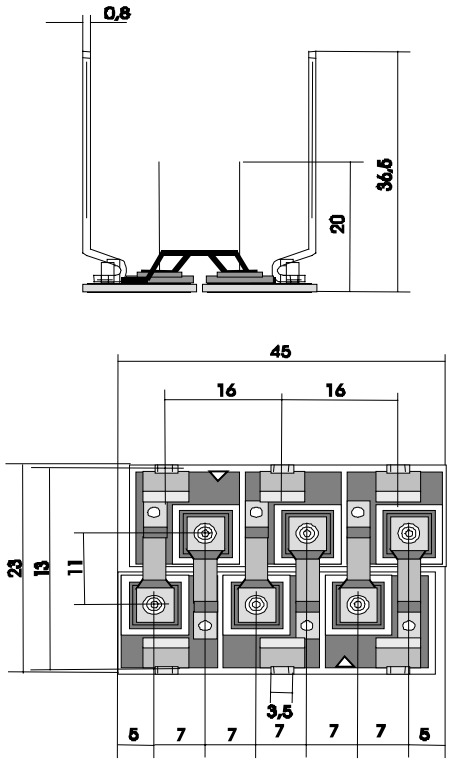
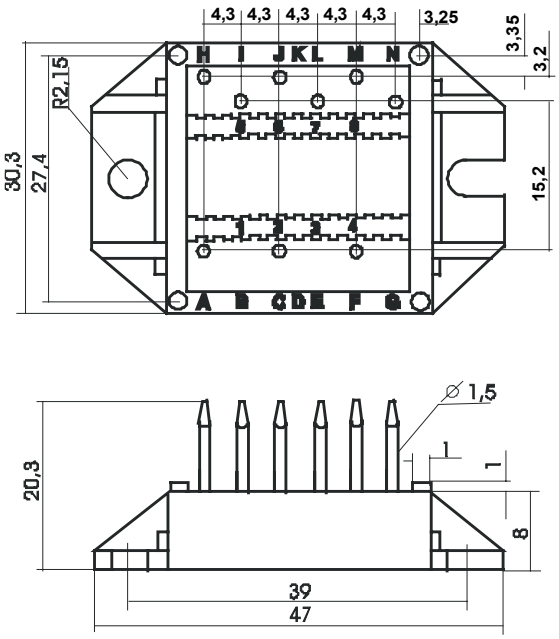


Figure 40



Outline Drawings

Dimensions in mm (1mm = 0.0394“)

Figure 41

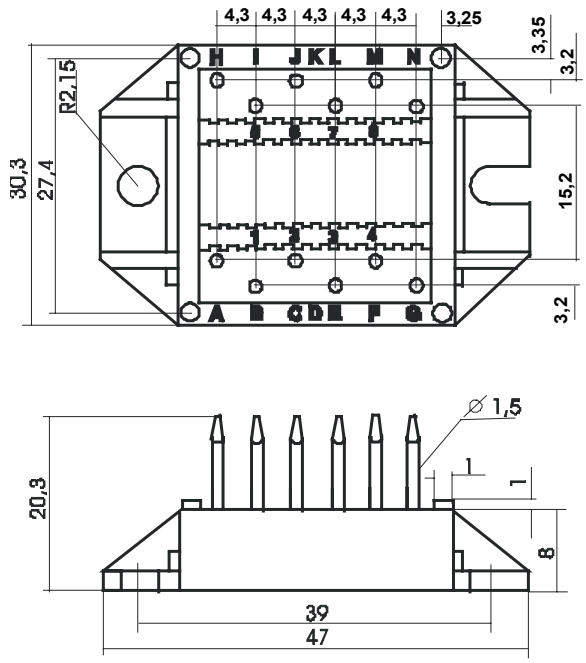


Figure 42

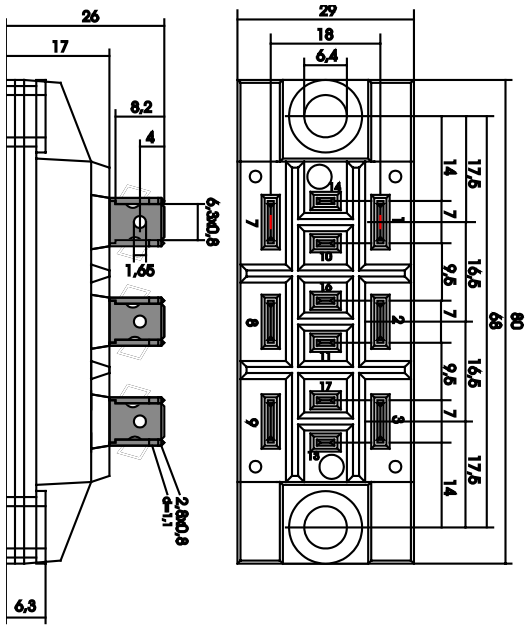


Figure 43

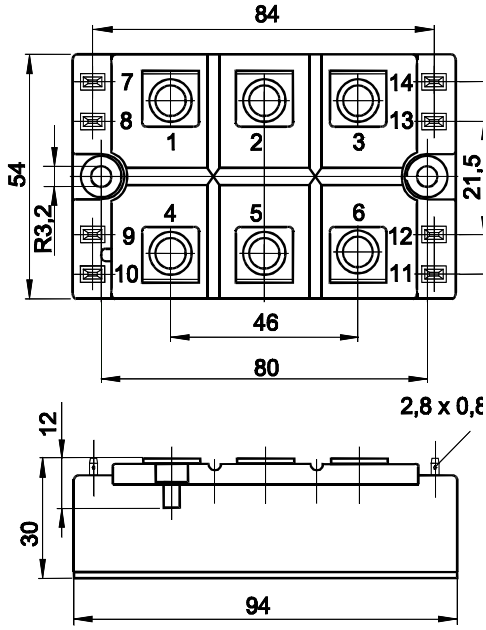
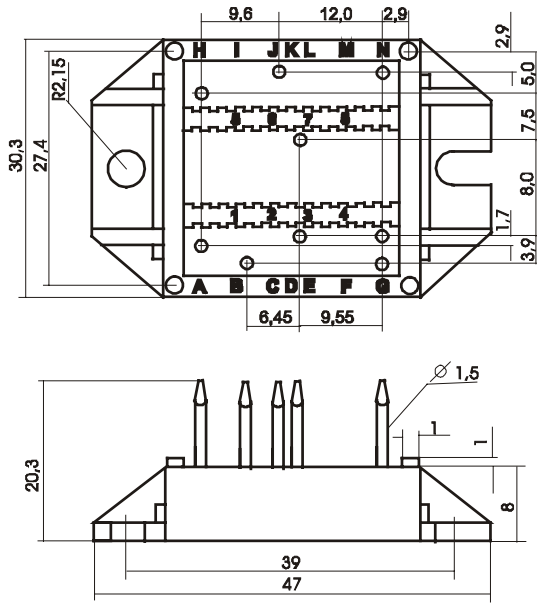


Figure 44



Outline Drawings

Dimensions in mm (1mm = 0.0394“)

Figure 45

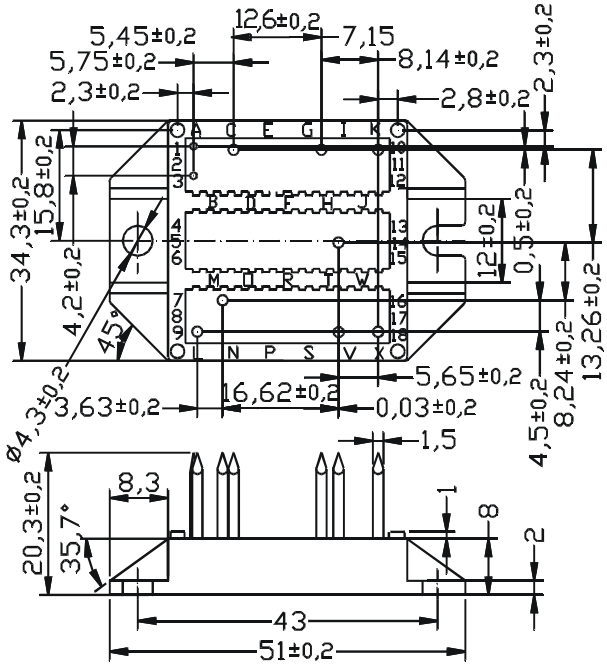


Figure 46

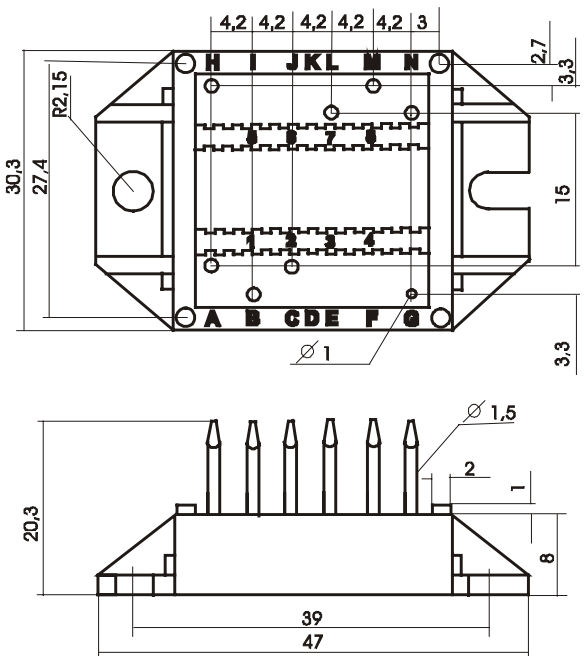


Figure 47

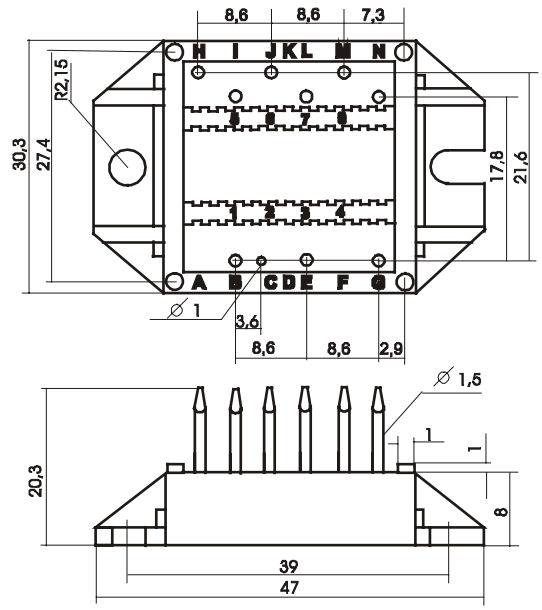
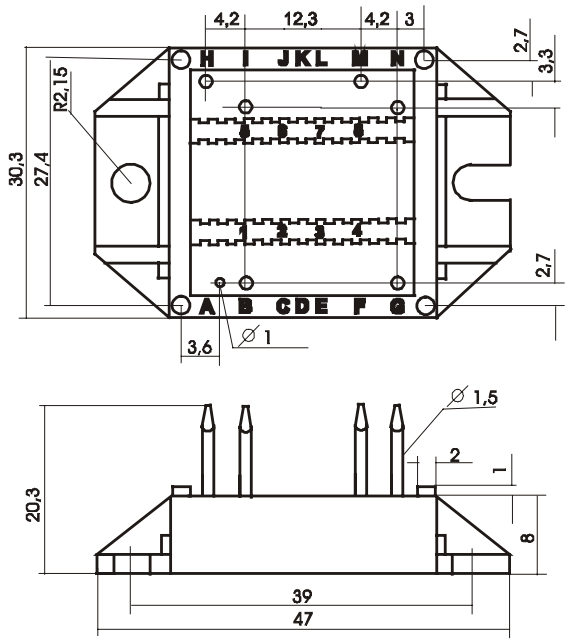


Figure 48



Outline Drawings

Dimensions in mm (1mm = 0.0394“)

Figure 49

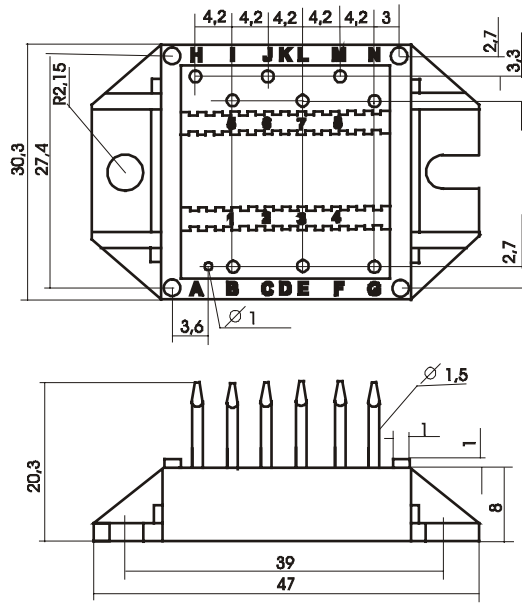


Figure 50

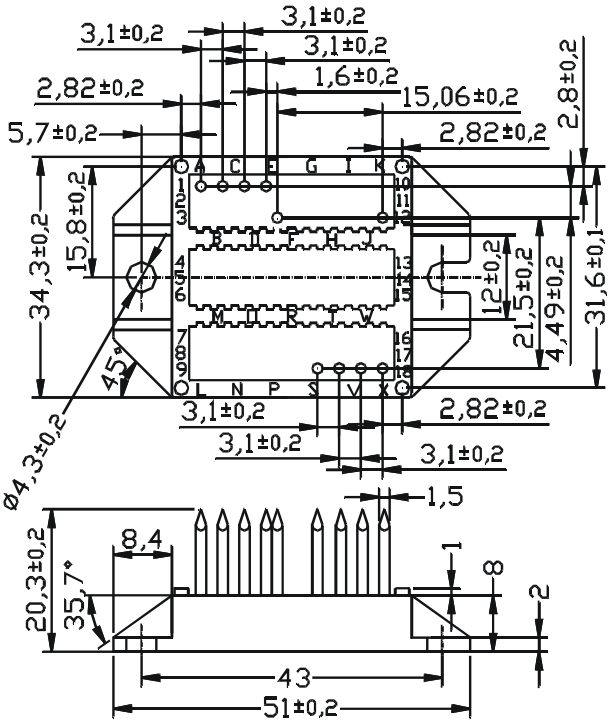


Figure 51

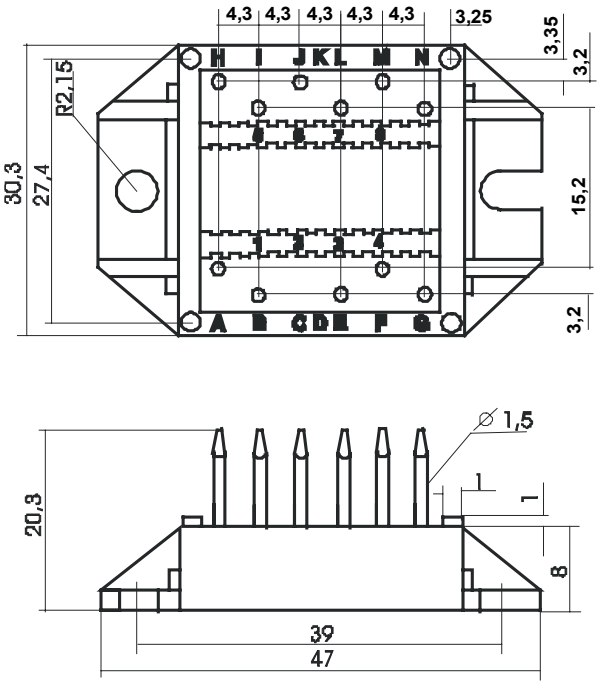
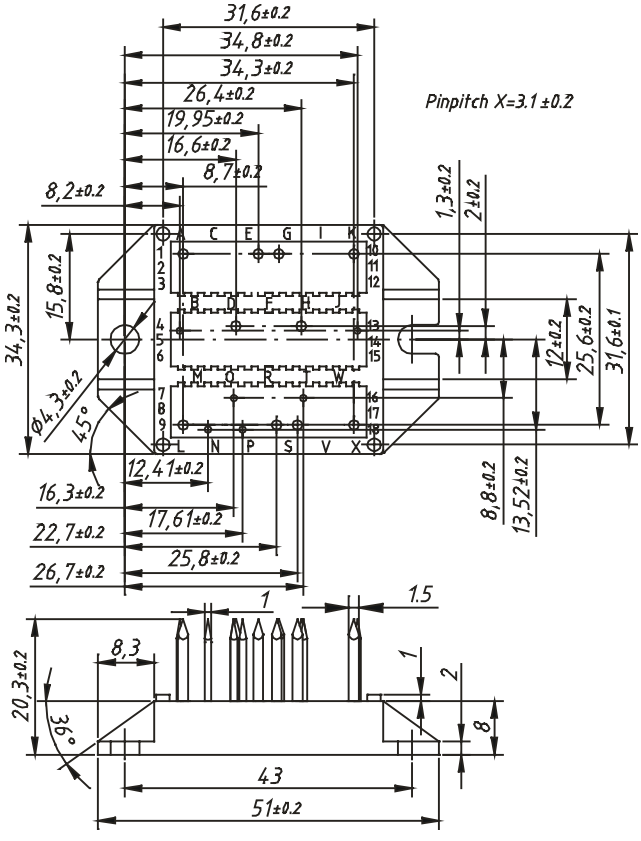


Figure 52



Outline Drawings

Dimensions in mm (1mm = 0.0394“)

Figure 53

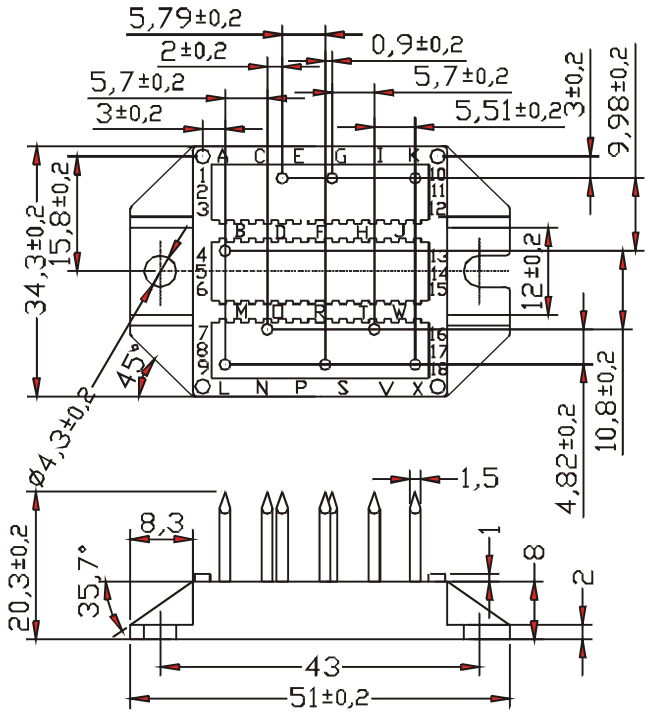


Figure 54a, b

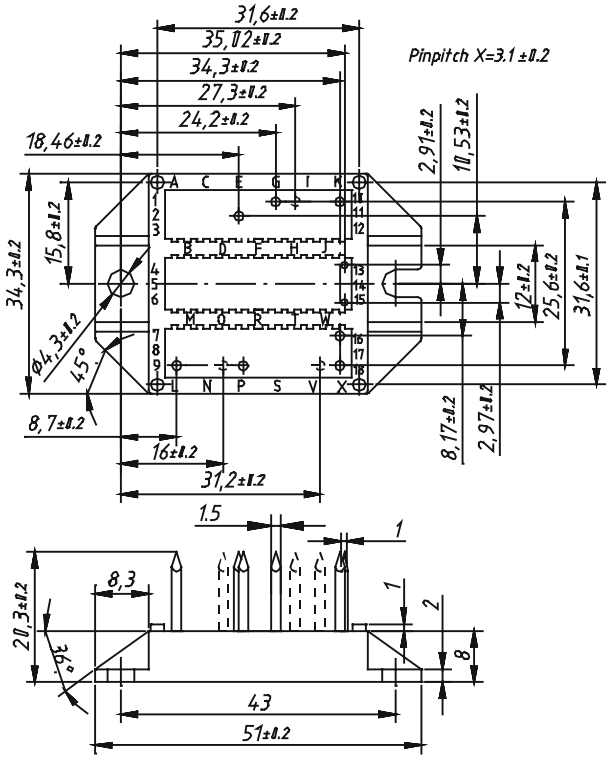


Figure 55a, b

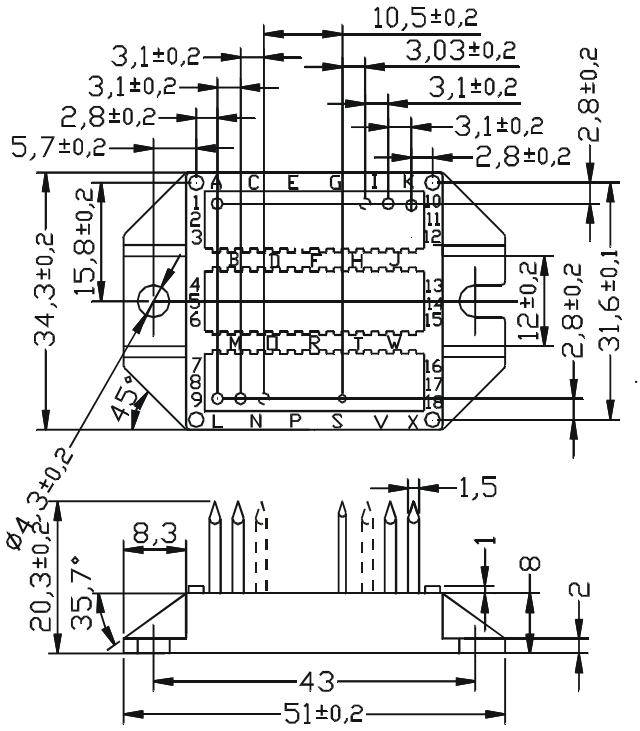
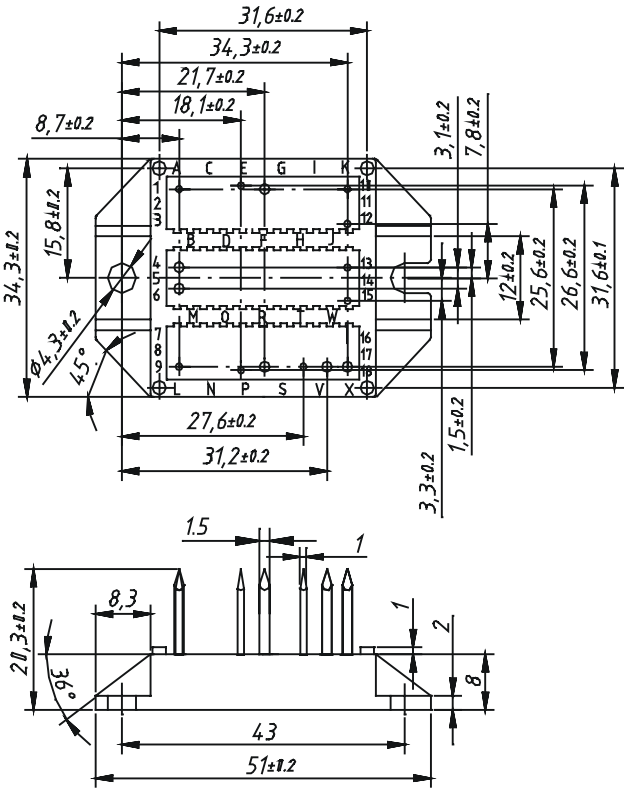


Figure 56



Outline Drawings

Dimensions in mm (1mm = 0.0394“)

Figure 57a, b

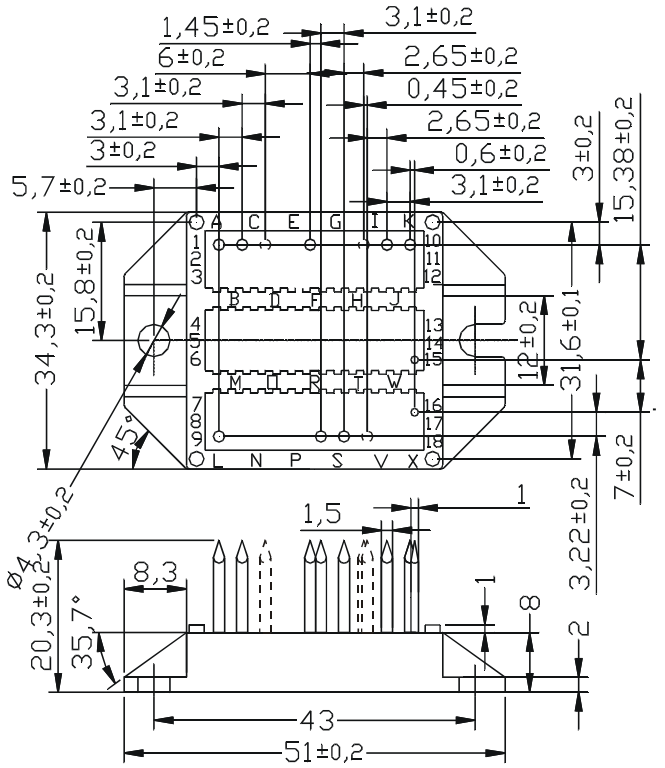


Figure 58

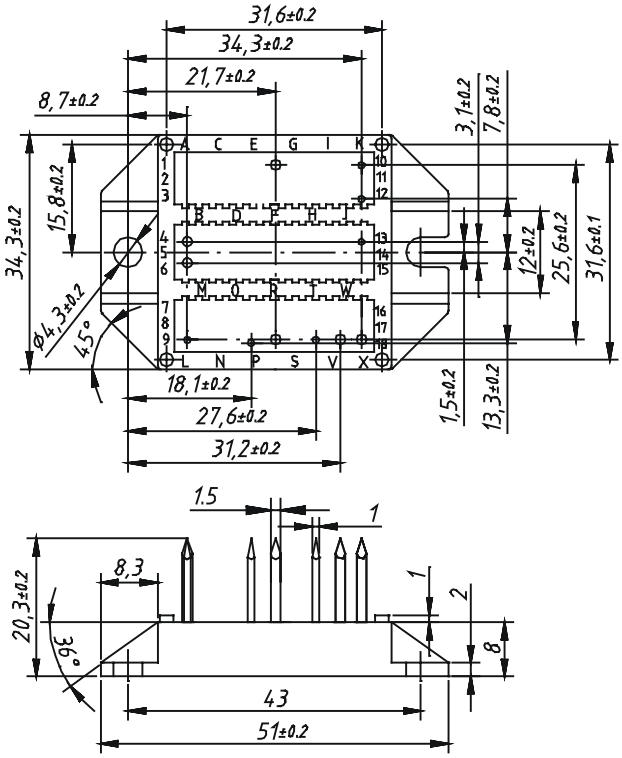


Figure 59

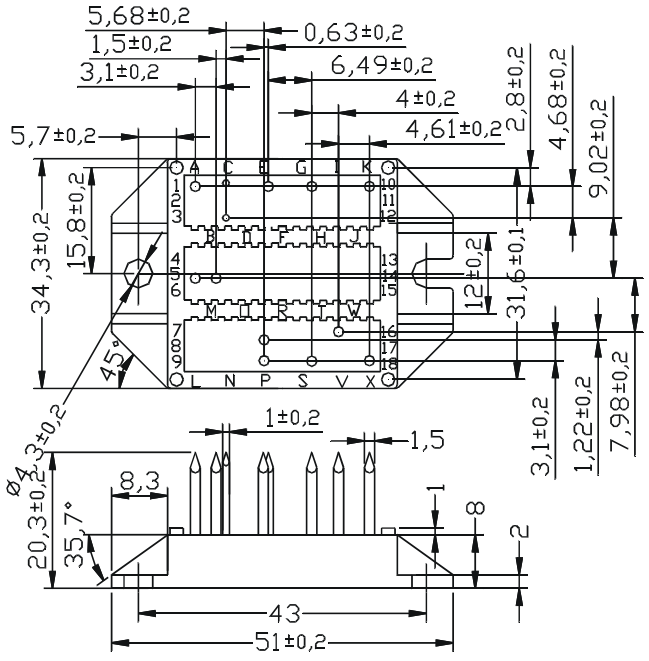
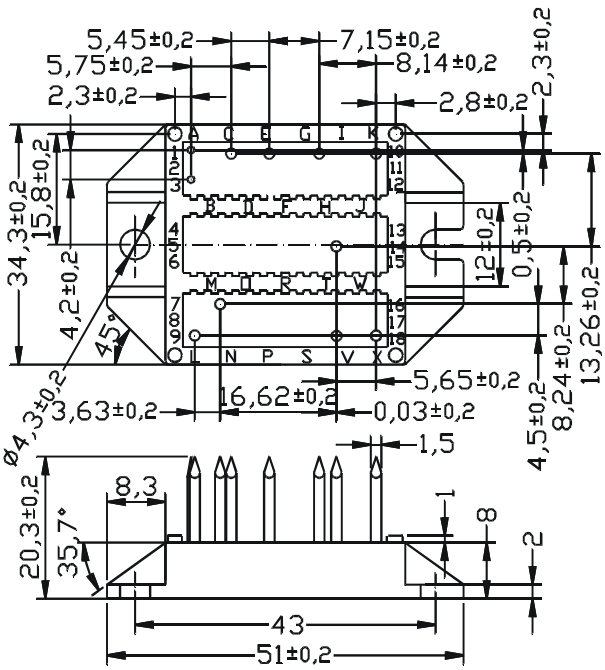


Figure 60



Outline Drawings

Dimensions in mm (1mm = 0.0394“)

Figure 61

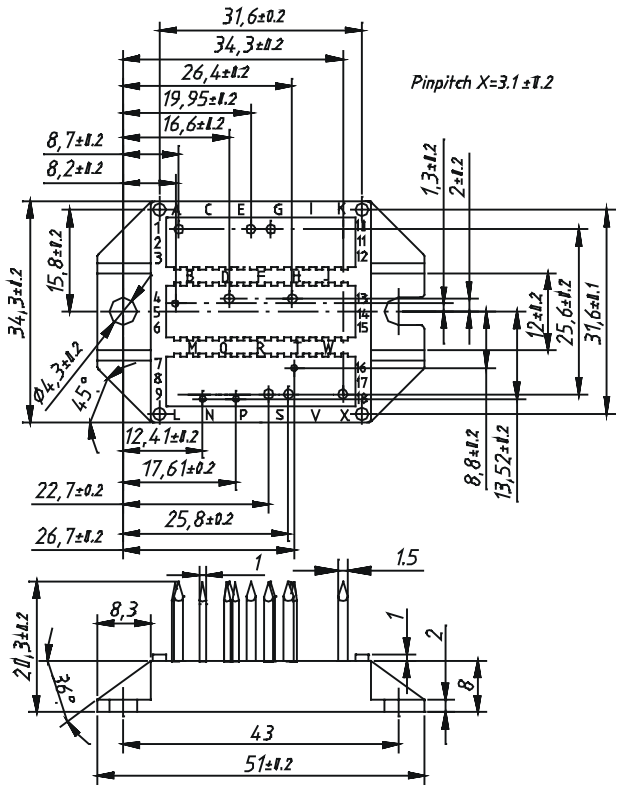


Figure 62a,b

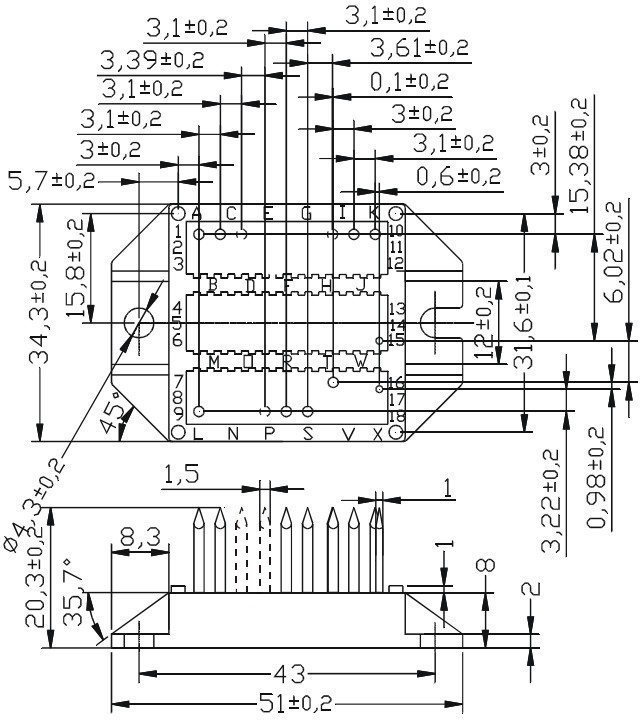


Figure 63

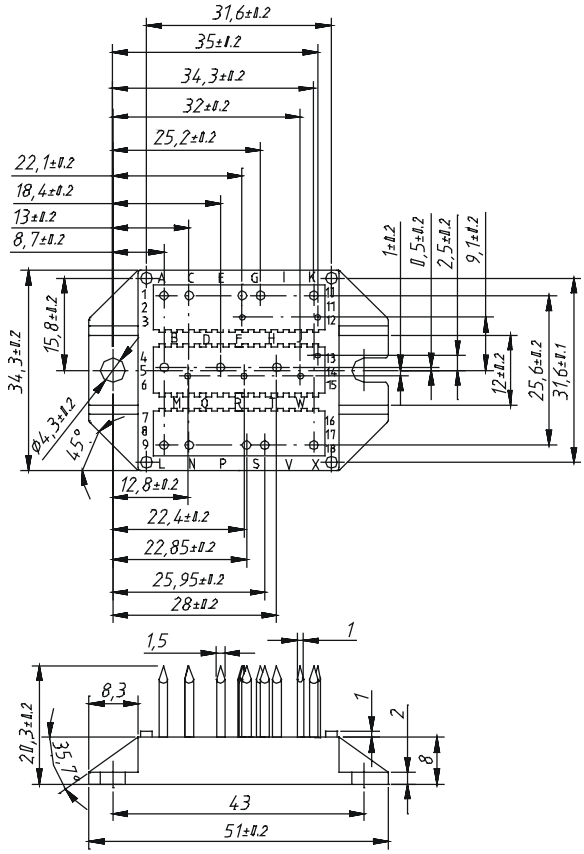
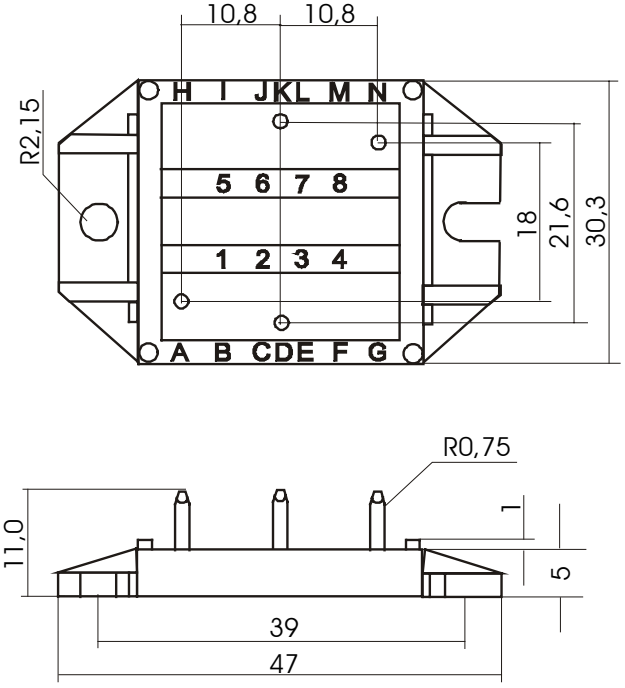


Figure 64



Outline Drawings

Dimensions in mm (1mm = 0.0394“)

Figure 65

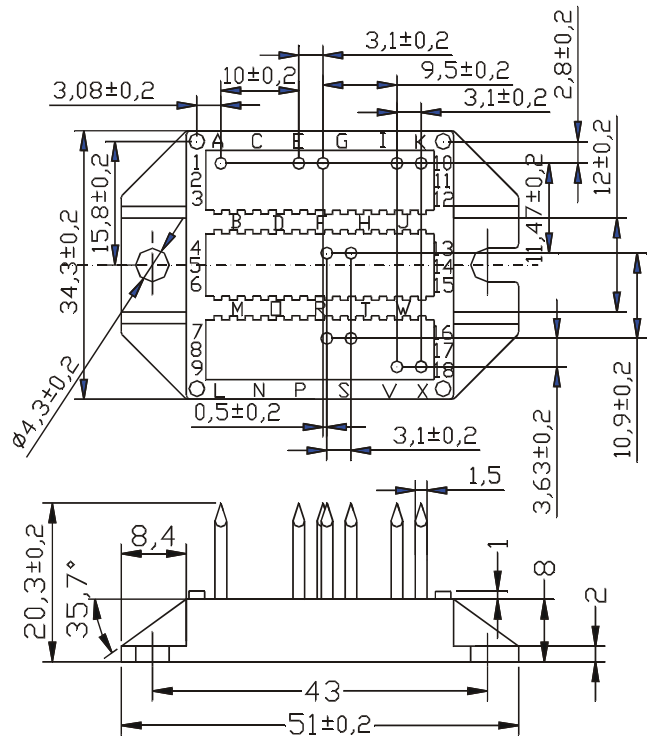


Figure 66

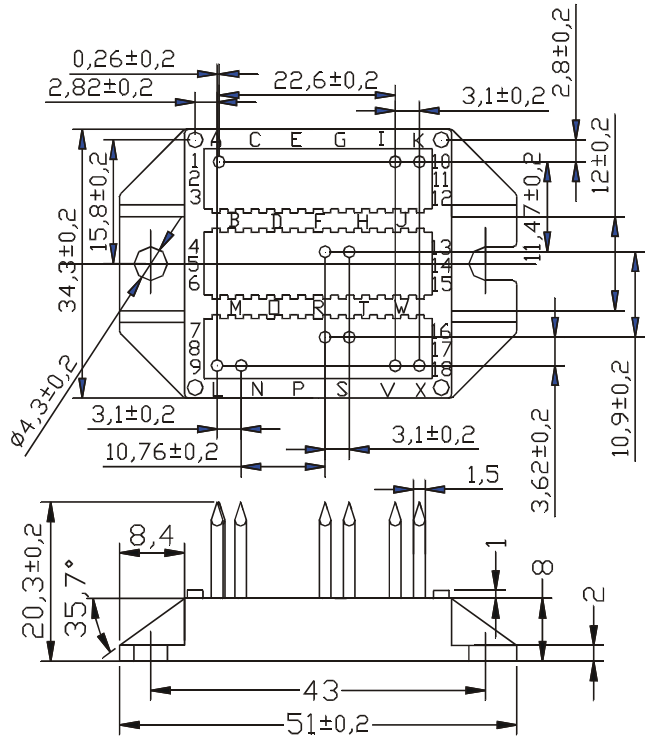


Figure 67

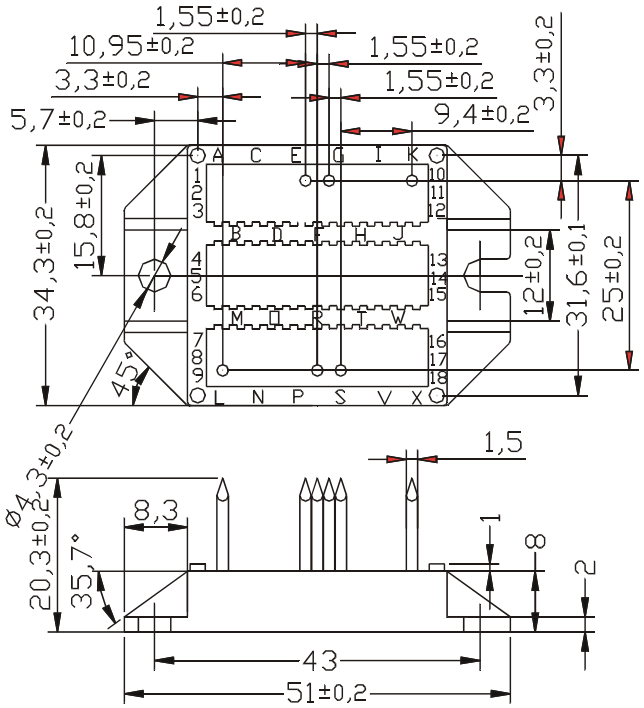
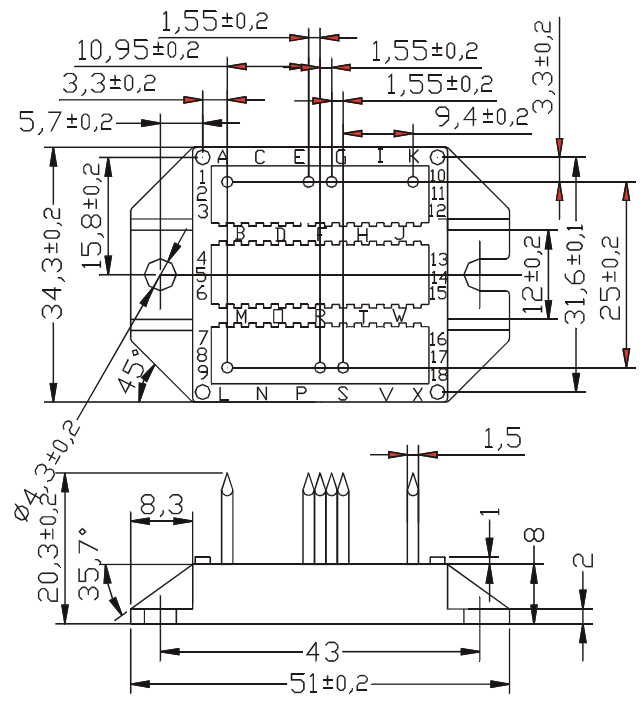


Figure 68



Outline Drawings

Dimensions in mm (1mm = 0.0394“)

Figure 69

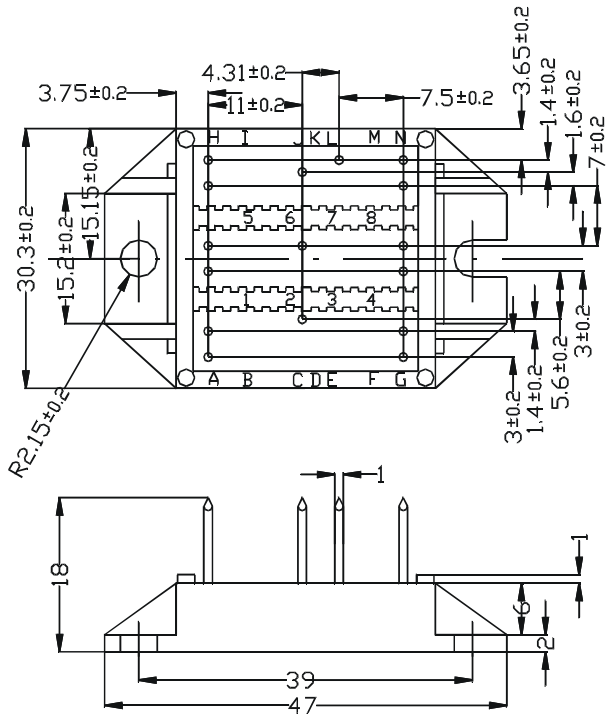


Figure 70

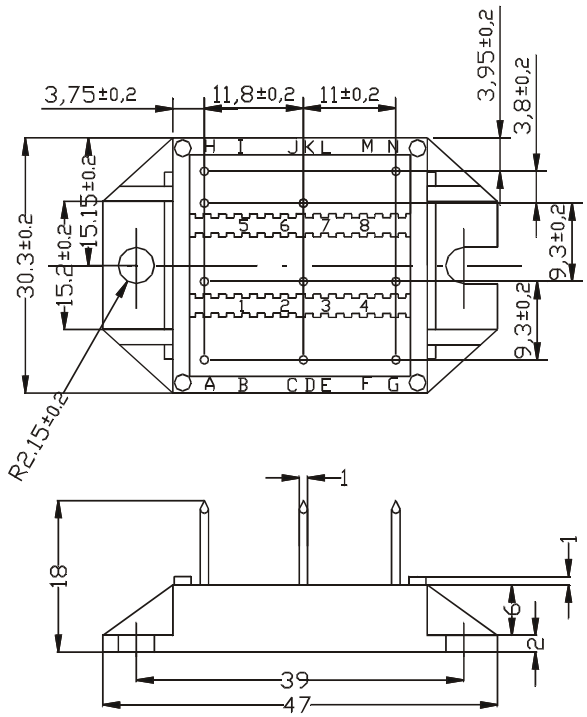


Figure 71

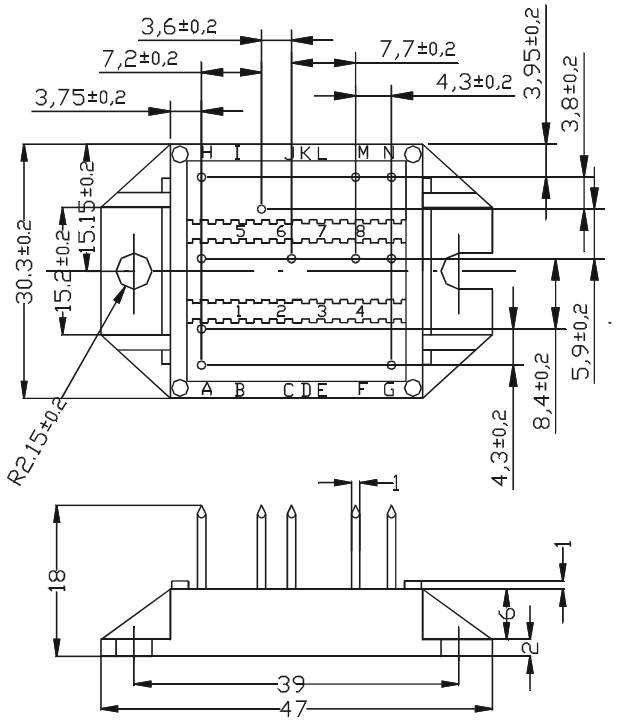
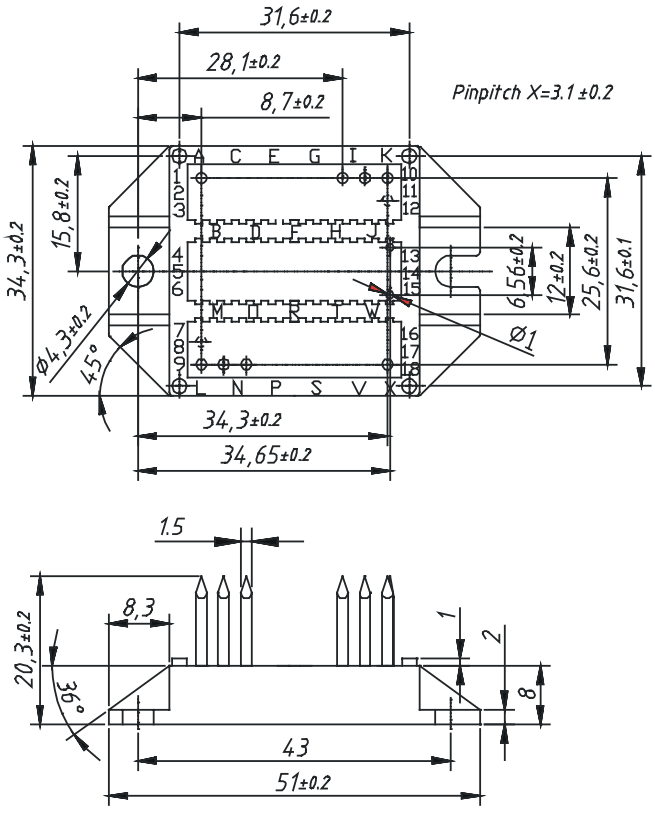


Figure 72a, b



Outline Drawings

Dimensions in mm (1mm = 0.0394“)

Figure 73

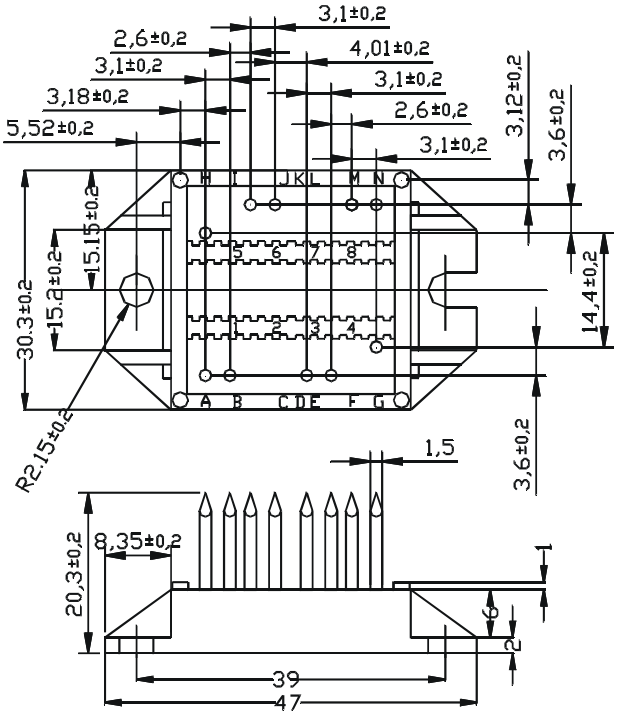


Figure 74

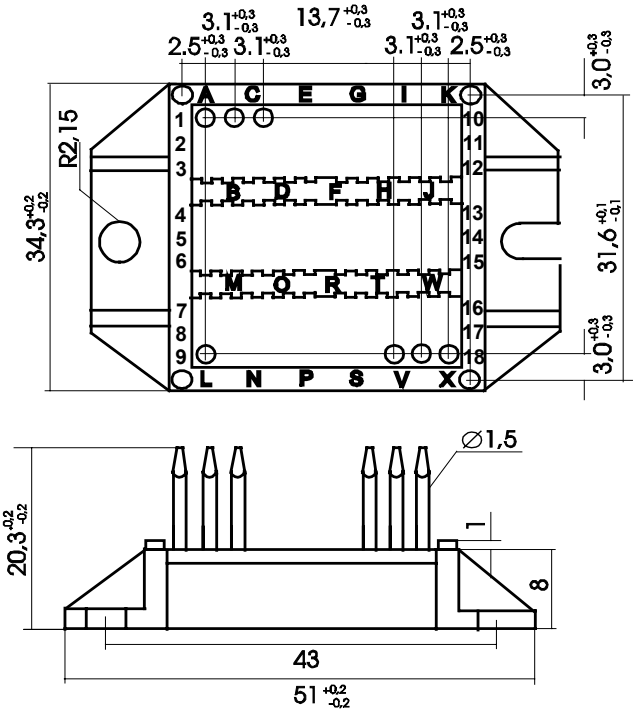


Figure 75

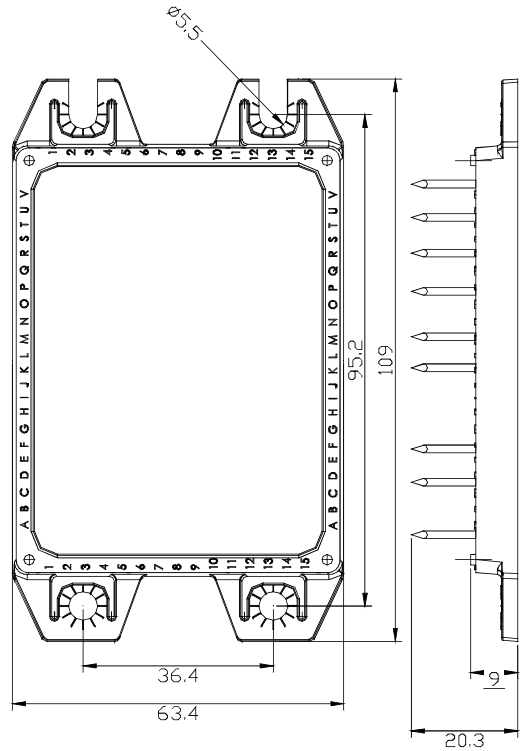
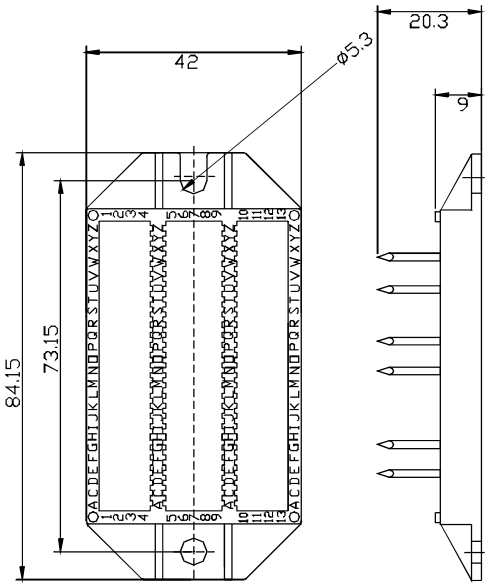


Figure 76



Outline Drawings

Dimensions in mm (1mm = 0.0394“)

Figure 77

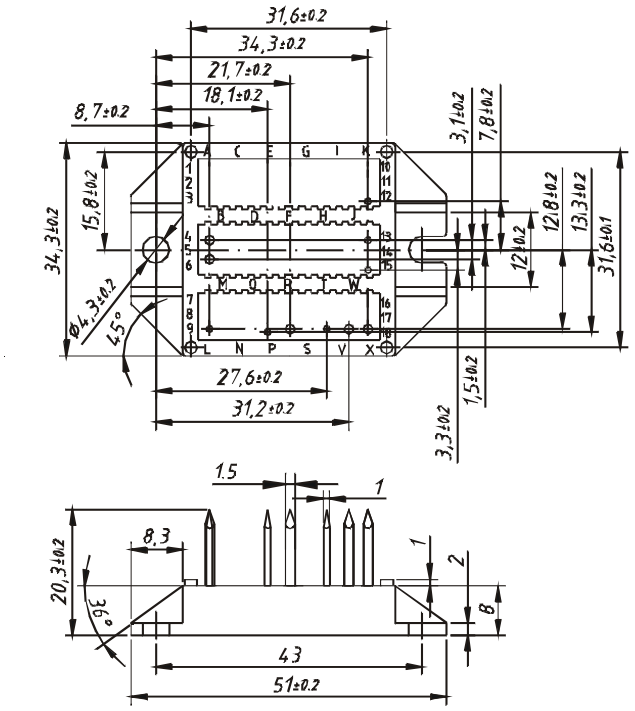


Figure 78

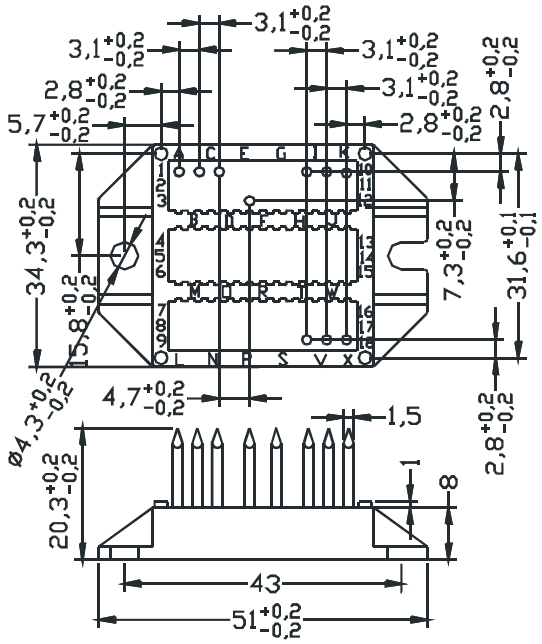


Figure 79

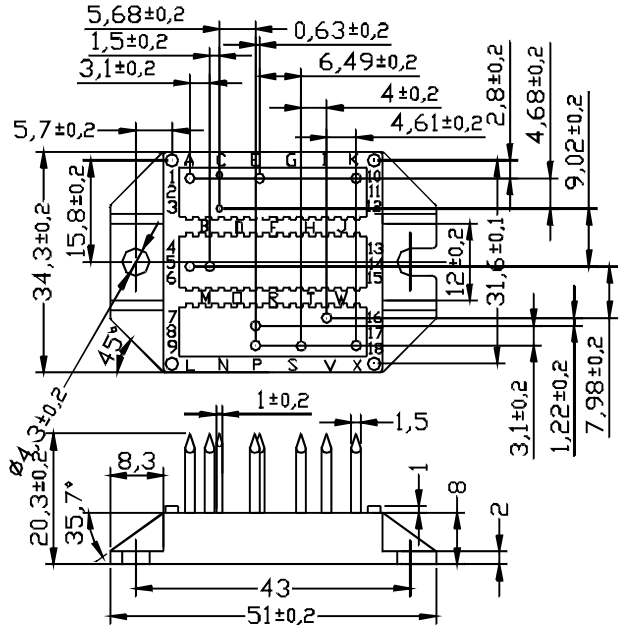


Figure 80

6 Ampere Silicon Power Diodes

FEATURES

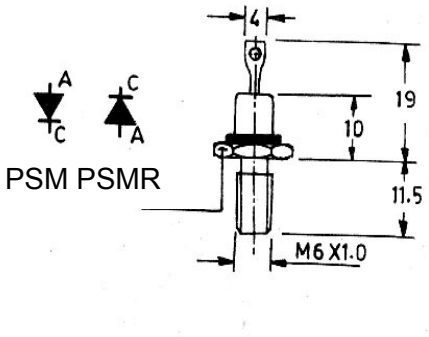
- All Diffused Series
- Available In Normal & Reverse Polarity
- Industrial Grade
- Available In Avalanche Characteristic

DO-4

ELECTRICAL SPECIFICATIONS

		6PSM/PSMR
$I_{F(A)}$	Maximum average forward current Tc = 150ºC	6 A
V_{FM}	Maximum peak forward voltage drop @ rated 1F(AV)	1.3 V
I_{FSM}	Maximum peak one cycle (non-rep) surge current 10 m sec	150 A
I_{FRM}	Maximum peak repetitive surge current	30 A
I^2t	Maximum I²t rating (non-rep.) for 5 to 10 msec.	150 A²sec

6PSM/PSMR



THERMAL MECHANICAL SPECIFICATIONS

Q_{J-C}	Maximum thermal resistance junction to case	3 °C/W
T_J	Operating junction Temp.	-65 °C to 150 °C
T_{stg}	Storage temperature	-65 °C to 200 °C
	Mounting torque (non-lubricated threads)	0.14 M-kg min. 0.17 M-kg max.
W	Approx. weight	7 g

ELECTRICAL RATINGS

TYPE	NUMBER 6PSM/PSMR	10	20	40	60	80	100	120	140	160
V_{RRM}	Max. repetitive peak reverse voltage (V)	100	200	400	600	800	1000	1200	1400	1600
$V_{R(RMS)}$	Max. R.M.S. reverse voltage (V)	70	140	280	420	560	700	840	980	1120
V_R	Max. D.C. blocking voltage (V)	100	200	400	600	800	1000	1200	1400	1600
	Recommended R.M.S. working voltage (V)	40	80	160	240	320	400	480	560	640
$I_{R(AV)}$	Max. average reverse leakage current @V_{RMM} Tc 25°C (µA)	100	100	100	100	100	100	100	100	100

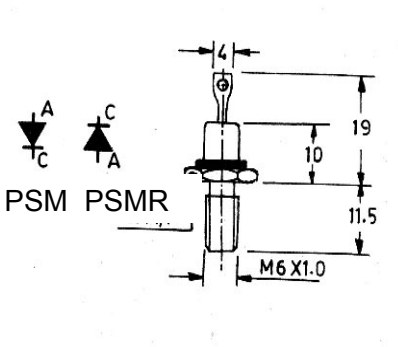
12 Ampere & 16 Ampere Silicon Power Diodes

FEATURES

- All Diffused Series
- Available In Normal & Reverse Polarity
- Industrial Grade
- Available In Avalanche Characteristic

DO-4

12 & 16 PSM/PSMR



ELECTRICAL SPECIFICATIONS

		12PSM/PSMR	16PSM/PSMR
$I_{F(A)}$	Maximum average forward Current Tc = 150°C	12 A	16 A
V_{FM}	Maximum peak forward voltage drop @ rated 1F (AV)	1.3 V	1.2 V
I_{FSM}	Maximum peak one cycle (non-rep) surge current 10 msec	250 A	300 A
I_{FRM}	Maximum peak one cycle (non-rep) surge current 10 msec	60 A	80 A
I^2t	Maximum I²t rating (non-rep.) for 5 to 10 msec.	250 A²sec	450 A²sec

THERMAL MECHANICAL SPECIFICATIONS

Q_{J-C}	Maximum thermal resistance junction to case	2 °C/W 1 °C/W
T_J	Operating junction temp.	-65 °C to 150 °C
T_{stg}	Storage temperature.	-65 °C to 150 °C
	Mounting torque (Non-lubricated threads)	0.14 M-kg min. 0.17 M-kg max.
W	Approx. weight	7 g

ELECTRICAL RATINGS

TYPE	NUMBER 12PSM/PSMR 16PSM/PSMR	10	20	40	60	80	100	120	140	160
V_{RRM}	Max. repetitive peak voltage (V)	100	200	400	600	800	1000	1200	1400	1600
$V_{R(RMS)}$	Max.R.M.S reverse voltage (V)	70	140	280	420	560	700	840	980	1120
V_R	Max. D.C. blocking voltage (V)	100	200	400	60	800	1000	1200	1400	1600
	Recommended R.M.S. working voltage (V)	40	80	160	240	320	400	480	560	640
$I_{R(AV)}$	Max. average reverse leakage current @V_{RRM} Tc 25°C µA	100	100	100	100	100	100	100	100	100

SILICON RECTIFIERS

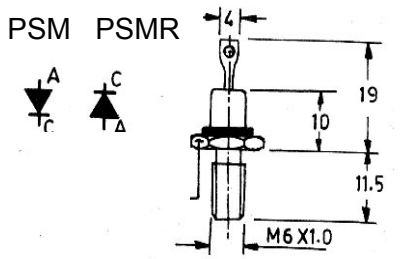
25 Ampere Silicon Power Diodes

FEATURES

- All Diffused Series
- Available In Normal & Reverse Polarity
- Industrial Grade
- Available In Avalanche Characteristic

DO-4

25PSM/PSMR



ELECTRICAL SPECIFICATIONS

		25PSM/PSMR
$I_{F(AV)}$	Maximum average forward current Tc = 140°C	25 A
V_{FM}	Maximum peak forward voltage drop @ rated 1F (AV)	1.35 V
I_{FSM}	Maximum peak one cycle (non-rep) surge current 10 msec	400 A
I_{FRM}	Maximum peak repetitive surge current	150 A
I^2t	Maximum I²t rating (non-rep.) for 5 to 10 msec.	800 A²sec

THERMAL MECHANICAL SPECIFICATIONS

O_{J-C}	Maximum thermal resistance junction to case	0.80 °C/W
T_J	Operating junction temperature	-65 °C to 150 °C
T_{stg}	Storage temperature	-65 °C to 200 °C
	Mounting torque (Non-lubricated threads)	0.14 M-kg min. 0.17 M-kg max.
W	Approx. weight	7 g

ELECTRICAL RATING

TYPE	NUMBER 25PSM/PSMR	10	20	40	60	80	100	120	140	160
V_{RRMS}	Max. repetitive peak voltage (V)	100	200	400	600	800	1000	1200	1400	1600
$V_{R(RMS)}$	Max. R.M.S reverse voltage (V)	70	140	280	420	560	700	840	980	1120
V_R	Max. D.C. blocking voltage (V)	100	200	400	60	800	1000	1200	1400	1600
	Recommended R.M.S. working voltage (V)	40	80	160	240	320	400	480	560	640
$I_{R(AV)}$	Max. average reverse leakage current @V_{RRM} Tc 25 ° C (µA)	150	150	150	150	150	150	150	150	150

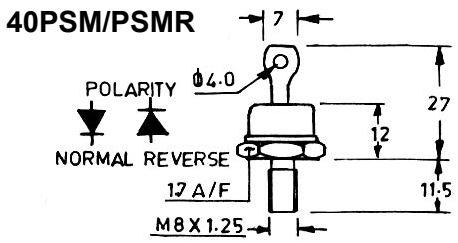
SILICON RECTIFIERS

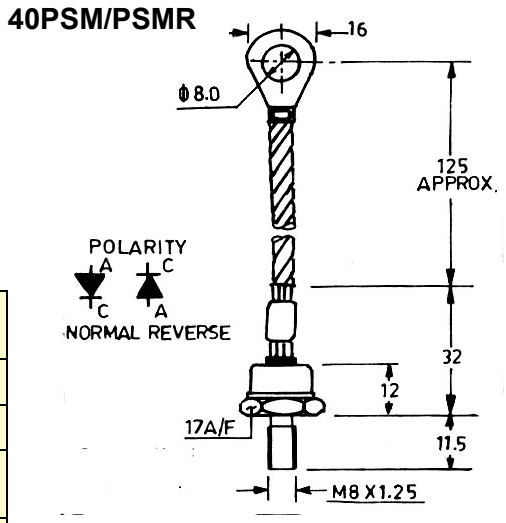
40 Ampere Silicon Power Diodes

FEATURES

- All Diffused Series
- Available In Normal & Reverse Polarity
- Industrial Grade
- Available In Avalanche Characteristic

DO-5





ELECTRICAL SPECIFICATIONS

$I_{F(AV)}$	Maximum average forward current Tc = 140°C	40 A
V_{FM}	Maximum peak forward voltage drop @ rated 1F(AV)	1.3 V
I_{FSM}	Maximum peak one cycle (non-rep) surge current 10 msec	500 A
I_{FRM}	Maximum peak repetitive surge current	200 A
I^2t	Maximum I²t rating (non-rep.) for 5 to 10 msec.	1200 A²sec

THERMAL MECHANICAL SPECIFICATIONS

O_{J-C}	Maximum thermal resistance junction to case	0.65 °C/W
T_J	Operating junction temperature	-65 °C to 150 °C
T_{stg}	Storage temperature	-65 °C to 200 °C
	Mounting torque (Non-lubricated threads)	0.4 M-kg min. 0.6 M-kg max.
W	Approx. weight	13.5 & 30 g

ELECTRICAL RATINGS

TYPE	NUMBER 40PSM/PSMR	10	20	40	60	80	100	120	140	160
V_{RRM}	Max. repetitive peak voltage (V)	100	200	400	600	800	1000	1200	1400	1600
$V_{R(RMS)}$	Max.R.M.S reverse voltage (V)	70	140	280	420	560	700	840	980	1120
V_R	Max. D.C. blocking voltage (V)	100	200	400	600	800	1000	1200	1400	1600
	Recommended R.M.S. working voltage (V)	40	80	160	240	320	400	480	560	640
$I_{R(AV)}$	Max. average reverse leakage current @V_{RRM} Tc 25°C (μA)	200	200	200	200	200	200	200	200	200

SILICON RECTIFIERS

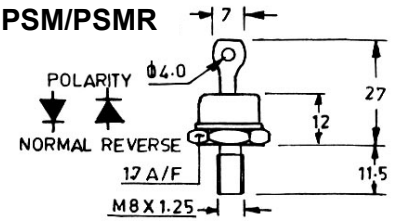
60 Ampere Silicon Power Diodes

FEATURES

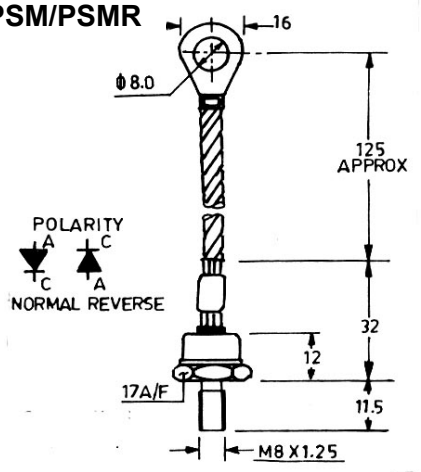
- Diffused Series
- Available In Normal & Reverse Polarity
- Industrial Grade
- Available In Avalanche Characteristic

DO-5

60PSM/PSMR



60PSM/PSMR



ELECTRICAL SPECIFICATIONS

$I_{F(AV)}$	Maximum average forward current Tc = 125°C	60 A
V_{FM}	Maximum peak forward voltage drop @ rated 1F(AV)	1.3 V
I_{FSM}	Maximum peak one cycle (non-rep) surge current 10 msec	860 A
I_{FRM}	Maximum peak cylce repetitive surge current	300 A
I^2t	Maximum I^2t rating (non-rep.) for 5 to 10 msec.	5000 A^2sec

THERMAL MECHANICAL SPECIFICATIONS

O_{J-C}	Maximum thermal resistance junction to case	0.55 °C/W
T_J	Operating junction temperature	-65 °C to 150 °C
T_{stg}	Storage temperature	-65 °C to 200 °C
	Mounting torque (Non-lubricated threads)	0.4 M-kg min. 0.6 M-kg max.
W	Approx. weight	13.5 & 30 g

ELECTRICAL RATINGS

TYPE	NUMBER 60PSM/PSMR	10	20	40	60	80	100	120	140	160
V_{RSM}	Max. non repetitive peak reverse voltage (V)	200	400	600	800	1000	1200	1400	1600	1800
V_{RRM}	Max. repetitive peak voltage (V)	100	200	400	600	800	1000	1200	1400	1600
V_R	Max. D.C. blocking voltage (V)	100	200	400	600	800	1000	1200	1400	1640
	Recommended R.M.S. working voltage (V)	40	80	160	240	320	400	480	560	640
$I_{R(AV)}$	Max. average reverse leakage current @ V_{RRM} Tc 25°C (µA)	200	200	200	200	200	200	200	200	200

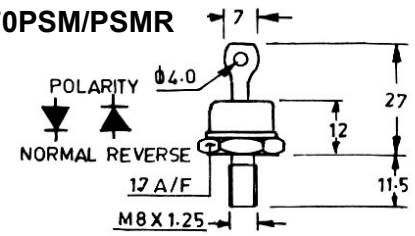
70 Ampere Silicon Power Diodes

FEATURES

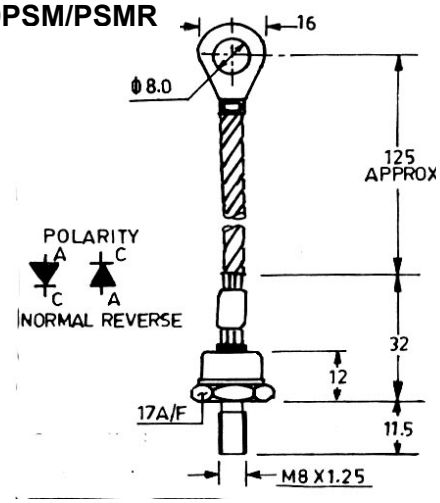
- All Diffused Series
- Available In Normal & Reverse Polarity
- Industrial Grade
- Available In Avalanche Characteristic

DO-5

70PSM/PSMR



70PSM/PSMR



ELECTRICAL SPECIFICATIONS

$I_{F(AV)}$	Maximum average forward current Tc = 125ºC	70 A
V_{FM}	Maximum peak forward voltage drop @ rated 1F(AV)	1.3 V
I_{FSM}	Maximum peak one cycle (non-rep) surge current 10 msec	1000 A
I_{FRM}	Maximum peak cylce repetitive surge current	350 A
I^2t	Maximum I²t rating (non-rep.) for 5 to 10 msec.	7500 A²sec

THERMAL MECHANICAL SPECIFICATIONS

O_{J-C}	Maximum thermal resistance junction to case	0.55 °C/W
T_J	Operating junction temperature	-65 °C to 150 °C
T_{stg}	Storage temperature	-65 °C to 200 °C
	Mounting torque (Non-lubricated threads)	0.4 M-kg min. 0.6 M-kg max.
W	Approx. weight	13.5 & 30 g

ELECTRICAL RATINGS

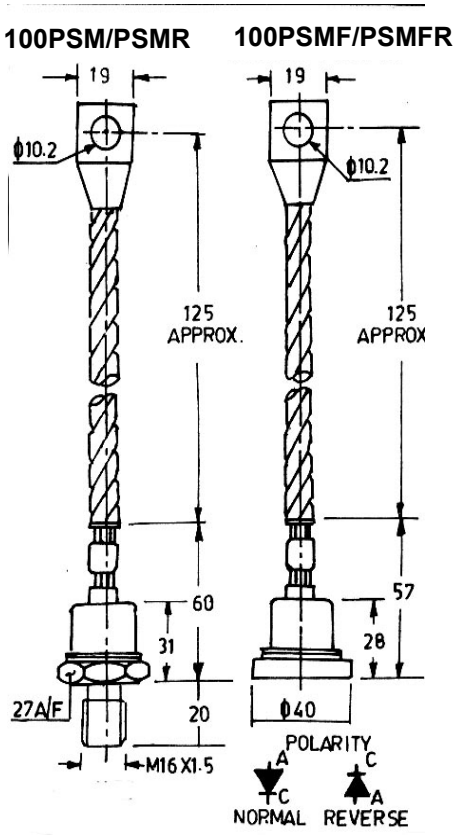
TYPE	NUMBER 70PSM/PSMR	10	20	40	60	80	100	120	140	160
V_{RRM}	Max. repetitive peak voltage (V)	100	200	400	600	800	1000	1200	1400	1600
$V_{R(RMS)}$	Max.R.M.S reverse voltage (V)	70	140	280	420	560	700	840	980	1120
V_R	Max. D.C. blocking voltage (V)	100	200	400	600	800	1000	1200	1400	1640
	Recommended R.M.S. working voltage (V)	40	80	160	240	320	400	480	560	640
$I_{R(AV)}$	Max. average reverse leakage current @ V_{RRM} Tc 25ºC (µA)	200	200	200	200	200	200	200	200	200

100 Ampere Silicon Power Diodes

FEATURES

- Diffused Series
- Available In Normal & Reverse Polarity
- Industrial Grade
- Available In Avalanche Characteristic

DO-8



ELECTRICAL SPECIFICATIONS

$I_{F(AV)}$	Maximum average forward current Tc = 150ºC	100 A
V_{FM}	Maximum peak forward voltage drop @ rated 1F(AV)	1.4 V
I_{FSM}	Maximum peak one cycle (non-rep) surge current 10 msec	2300 A
I_{FRM}	Maximum peak cylce repetive surge current	500 A
I^2t	Maximum I^2t rating (non-rep.) for 5 to 10 msec.	26 000 A^2sec

THERMAL MECHANICAL SPECIFICATIONS

O_{J-C}	Maximum thermal resistance junction to case	0.40 °C/W
T_J	Operating junction temperature	-65 °C to 150 °C
T_{stg}	Storage temperature	-65 °C to 200 °C
	Mounting torque (Non-lubricated threads)	2.0 M-kg min. 3.0 M-kg max.
W	Approx. weight	150 g

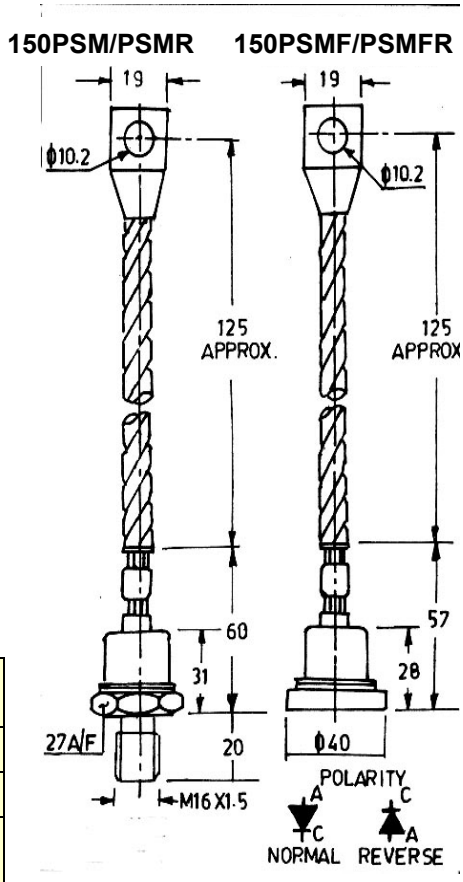
ELECTRICAL RATINGS

TYPE	NUMBER 100PSM/PSMR 100PSMF/PSMFR	10	20	40	60	80	100	120	140	160
V_{RRM}	Max. repetitive peak voltage (V)	100	200	400	600	800	1000	1200	1400	1600
$V_{R(RMS)}$	Max. R.M.S reverse voltage (V)	70	140	280	420	560	700	840	980	1120
V_R	Max. D.C. blocking voltage (V)	100	200	400	600	800	1000	1200	1400	1640
	Recommended R.M.S. working voltage (V)	40	80	160	240	320	400	480	560	640
$I_{R(AV)}$	Max. average reverse leakage current @ V_{RRM} Tc 25°C (µA)	200	200	200	200	200	200	200	200	200

SILICON RECTIFIERS

150 Ampere Silicon Power Diodes

DO-8



FEATURES

- Diffused Series
- Available In Normal & Reverse Polarity
- Industrial Grade
- Available In Avalanche Characteristic

ELECTRICAL SPECIFICATIONS

$I_{F(AV)}$	Maximum average forward current Tc = 125ºC	150 A
V_{FM}	Maximum peak forward voltage drop @ rated 1F (AV)	1.5 V
I_{FSM}	Maximum peak one cycle (non-rep) surge current 10 msec	3600 A
I_{FRM}	Maximum peak cylce repetitive surge current	750 A
I^2t	Maximum I^2t rating (non-rep.) for 5 to 10 msec.	65,000 A^2sec

THERMAL MECHANICAL SPECIFICATIONS

O_{J-C}	Maximum thermal resistance junction to case	0.25 °C/W
T_J	Operating junction temperature	-65 °C to 150 °C
T_{stg}	Storage temperature	-65 °C to 200 °C
	Mounting torque (Non-lubricated threads)	2.0 M-kg min. 3.0 M-kg max.
W	Approx. weight	150 g

ELECTRICAL RATINGS

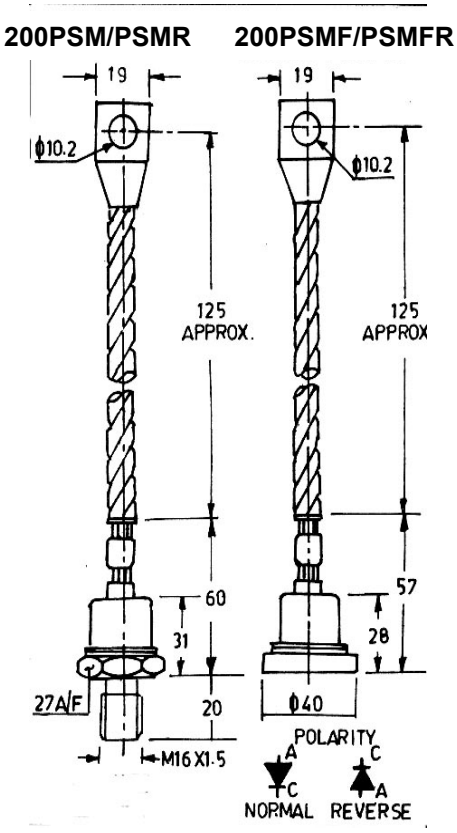
TYPE	NUMBER 150PSM/PSMR 150PSMF/PSMFR	10	20	40	60	80	100	120	140	160
V_{RRM}	Max. repetitive peak voltage (V)	100	200	400	600	800	1000	1200	1400	1600
$V_{R(RMS)}$	Max. R.M.S reverse voltage (V)	70	140	280	420	560	700	840	980	1120
V_R	Max. D.C. blocking voltage (V)	100	200	400	600	800	1000	1200	1400	1640
	Recommended R.M.S. working voltage (V)	40	80	160	240	320	400	480	560	640
$I_{R(AV)}$	Max. average reverse leakage current @ V_{RRM} Tc 25ºC (µA)	200	200	200	200	200	200	200	200	200

200 Ampere Silicon Power Diodes

FEATURES

- Diffused Series
- Available In Normal & Reverse Polarity
- Industrial Grade
- Also Available With External Cables

DO-8



ELECTRICAL SPECIFICATIONS

$I_{F(AV)}$	Maximum average forward current Tc = 130ºC	200 A
V_{FM}	Maximum peak forward voltage drop @ rated 1F(AV)	1.35 V
I_{FSM}	Maximum peak one cycle (non-rep) surge current 10 msec	4300 A
I_{FRM}	Maximum peak cylce repetitive surge current	1100 A
I^2t	Maximum I^2t rating (non-rep.) for 5 to 10 msec.	92,500 A^2 sec

THERMAL MECHANICAL SPECIFICATIONS

O_{J-C}	Maximum thermal resistance junction to case	0.2 °C/W
O_{C-H}	Contact thermal resistance	0.07 °C/W
T_J	Operating junction temperature	-65 °C to 150 °C
T_{stg}	Storage temperature	-65 °C to 200 °C
	Mounting torque (Non-lubricated threads)	0.70 M-kg min. 0.86 M-kg max.
W	Approx. weight	115 g

ELECTRICAL RATINGS

TYPE	NUMBER 200PSM/PSMR 200PSMF/PSMFR	10	20	40	60	80	100
V_{RRM}	Max. repetitive peak voltage (V)	100	200	400	600	800	1000
$V_{R(RMS)}$	Max. R.M.S reverse voltage (V)	70	140	280	420	560	700
V_R	Max. D.C. blocking voltage (V)	100	200	400	600	800	1000
	Recommended R.M.S. working voltage (V)	40	80	160	240	320	400
$I_{R(AV)}$	Max. average reverse leakage current @ V_{RRM} Tc 25°C (µA)	50	50	35	35	35	30

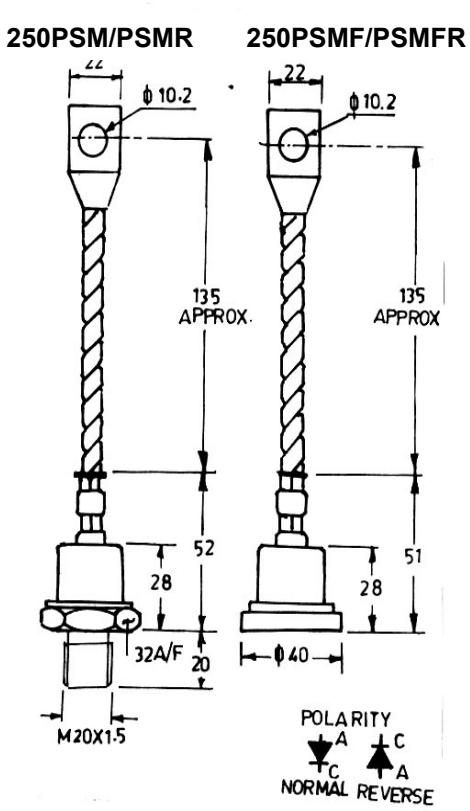
SILICON RECTIFIERS

250 Ampere Silicon Power Diodes

FEATURES

- Diffused Series
- Available In Normal & Reverse Polarity
- Industrial Grade

DO-9



ELECTRICAL SPECIFICATIONS

$I_{F(AV)}$	Maximum average forward current Tc = 130ºC	250 A
V_{FM}	Maximum peak forward voltage drop @ rated 1F(AV)	1.35 V
I_{FSM}	Maximum peak one cycle (non-rep) surge current 10 msec	4500 A
I_{FRM}	Maximum peak cylce repetitive surge current	1200 A
I^2t	Maximum I^2t rating (non-rep.) for 5 to 10 msec.	100,000 A^2sec

THERMAL MECHANICAL SPECIFICATIONS

O_{J-C}	Maximum thermal resistance junction to case	0.18 ºC/W
T_J	Operating junction temperature	-65 ºC to 150 ºC
T_{stg}	Storage temperature	-65 ºC to 200 ºC
	Mounting torque (Non-lubricated threads)	3.2 M-kg min. 3.7 M-kg max.
W	Approx. weight	260 g

ELECTRICAL RATINGS

TYPE	NUMBER 250PSM/PSMR 250PSMF/PSMFR	10	20	40	60	80	100	120	140	160
V_{RRM}	Max. repetitive peak voltage (V)	100	200	400	600	800	1000	1200	1400	1600
$V_{R(RMS)}$	Max. R.M.S reverse voltage (V)	70	140	280	420	560	700	840	980	1120
V_R	Max. D.C. blocking voltage (V)	100	200	400	600	800	1000	1200	1400	1600
	Recommended R.M.S. working voltage (V)	40	80	160	240	320	400	480	560	640
$I_{R(AV)}$	Max. average reverse leakage current @ V_{RRM} Tc 25ºC (mA)	2	2	2	2	2	2	2	2	2

SILICON RECTIFIERS

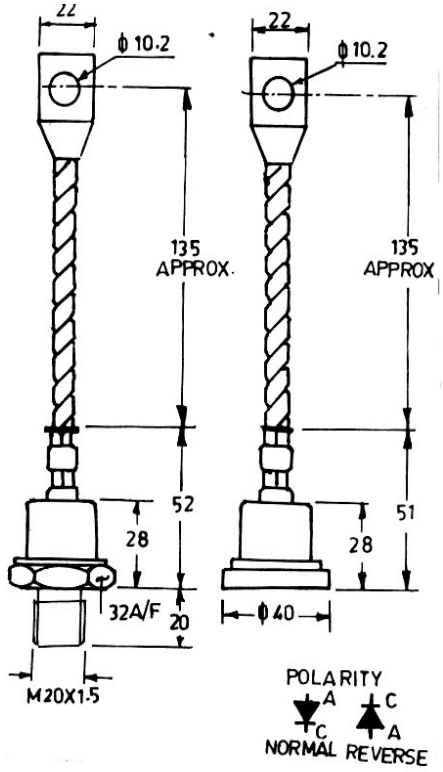
300 Ampere Silicon Power Diodes

DO-9

FEATURES

- Diffused Series
- Available In Normal & Reverse Polarity
- Industrial Grade

300PSM/PSMR 300PSMF/PSMFR



ELECTRICAL SPECIFICATIONS

$I_{F(AV)}$	Maximum average forward current Tc = 125ºC	300 A
V_{FM}	Maximum peak forward voltage drop @ rated 1F(AV)	1.35 V
I_{FSM}	Maximum peak one cycle (non-rep) surge current 10 msec	5000 A
I_{FRM}	Maximum peak cylce repetitive surge current	1400 A
I^2t	Maximum I^2t rating (non-rep.) for 5 to 10 msec.	150,000 A^2sec

THERMAL MECHANICAL SPECIFICATIONS

O_{J-C}	Maximum thermal resistance junction to case	0.18 °C/W
T_J	Operating junction temperature	-65 °C to 150 °C
T_{stg}	Storage temperature	-65 °C to 200 °C
	Mounting torque (Non-lubricated threads)	3.2 M-kg min. 3.75 M-kg max.
W	Approx. weight	260 g

ELECTRICAL RATINGS

TYPE	NUMBER 300PSM/PSMR 300PSMF/PSMFR	10	20	40	60	80	100	120	140	160
V_{RRM}	Max. repetitive peak voltage (V)	100	200	400	600	800	1000	1200	1400	1600
$V_{R(RMS)}$	Max. R.M.S reverse voltage (V)	70	140	280	420	560	700	840	980	1120
V_R	Max. D.C. blocking voltage (V)	100	200	400	600	800	1000	1200	1400	1640
	Recommended R.M.S. working voltage (V)	40	80	160	240	320	400	480	560	640
$I_{R(AV)}$	Max. average reverse leakage current @ V_{RRM} Tc 25ºC (mA)	3	3	3	3	3	3	3	3	3

SILICON RECTIFIERS

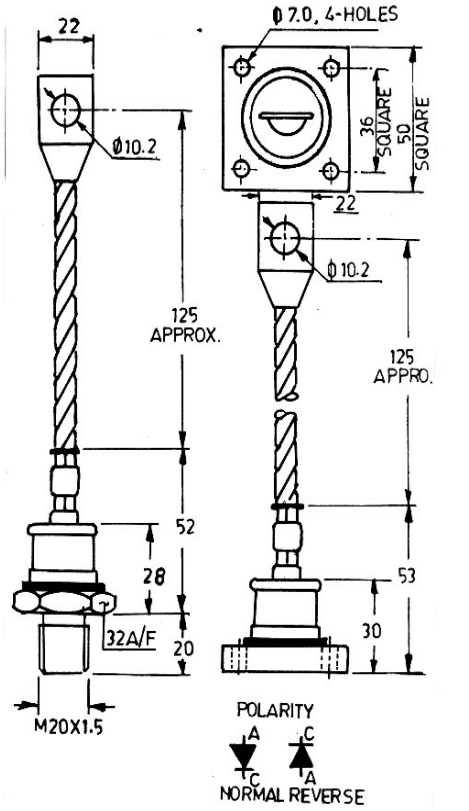
320 Ampere Silicon Power Diodes

DO-9

FEATURES

- Diffused Series
- Mainly Available In Reverse Polarity
- Device Conforms To IS 3700 (iii) & IS 440 (iii)
- Device Outline (321 ns / NSR) Conforms to IS 5000 (DO –9)

320PSM/PSMR 320PSMF/PSMFR



ELECTRICAL SPECIFICATIONS

$I_{F(AV)}$	Maximum average forward current Tc = 125°C	320 A
V_{FM}	Maximum peak forward voltage drop @ rated 1F(AV)	1.65 V
I_{FSM}	Maximum peak one cycle (non-rep) surge current 10 msec	5500 A
I_{FRM}	Maximum peak cylce repetitive surge current	1500 A
I^2t	Maximum I^2t rating (non-rep.) for 5 to 10 msec.	180,000 A^2sec

THERMAL MECHANICAL SPECIFICATIONS

O_{J-C}	Maximum thermal resistance junction to case	0.15 °C/W
T_J	Operating junction temperature	-65 °C to 150 °C
T_{stg}	Storage temperature	-65 °C to 200 °C
	Mounting torque (Non-lubricated threads)	3.2 M-kg min. 3.75 M-kg max.
W	Approx. weight	350 g

ELECTRICAL RATINGS

TYPE	NUMBER 320PSM/PSMR 320PSMF/PSMFR	10	20	40	60	80	100	120	140	160
V_{RSM}	Max. non repetitive peak reverse voltage (V)	200	400	600	800	1000	1200	1400	1600	1800
V_{RRM}	Max. repetitive peak voltage (V)	100	200	400	600	800	1000	1200	1400	1600
$V_{R(RMS)}$	Max. R.M.S reverse voltage (V)	70	140	280	420	560	700	840	980	1120
V_R	Max. D.C. blocking voltage (V)	100	200	400	600	800	1000	1200	1400	1640
	Recommended R.M.S. working voltage (V)	40	80	160	240	320	400	480	560	640
$I_{R(AV)}$	Max. average reverse leakage current @ V_{RRM} Tc 25°C (mA)	5	5	5	5	5	5	5	5	5

Design Information

For Thyristors, Diodes, Thyristor / Diode Modules and Rectifier Bridges

Surge current

The 60 Hz value of I_{TSM} is 10% higher than the 50 Hz value.
The I_{TSM} value at T_{VJM} is 10 to 15% lower than the 45°C value.

Limiting I^2t

50 Hz: I^2t (A^2s) = I_{TSM} (A) • I_{TSM} (A) • ¼ • 1/50 (s) use rated I_{TSM} value (10ms)
60 Hz: I^2t (A^2s) = I_{TSM} (A) • I_{TSM} (A) • ¼ • 1/60 (s) use 60-Hz-value of I_{TSM}

Forward current

The average current ratings in tables are mostly specified for temperature conditions of: T_A = 45°C, T_C = 85°C or T_C = 100°C
For other temperature conditions, the current ratings can be calculated using the following formulas, applicable up to 400Hz:

$$I_{TAV} = \frac{-V_{TO} + \sqrt{V_{TO}{}^2 + 4k^2 r_T P}}{2k^2 r_T} \text{ where } P = \frac{T_{VJM} - T_C}{R_{thJC}} \text{ or } P = \frac{T_{VJM} - T_A}{R_{thJA}}$$

I_{TAV} (A), P (W), V_{TO}(V), r_T(Ω), T_{VJM} (°C), T_C (°C), T_A (°C), R_{thJC} (K/W), R_{thJA} (K/W)

$k^2 = 1$	for DC-current
$k^2 = [\pi/2]^2$	for sinusoidal half wave current
$k^2 = 3$	for 120° rectangular current
$k^2 = 6$	for 60° rectangular current

The average forward current is limited by the RMS-current value I_{TRMS}: When the calculated value I_{TAV} is higher than I_{TRMS}/k, replace it by $I_{TAV} = I_{TRMS}$/k.

Mounting Instructions

Modules and Rectifier Bridges :

Contact surfaces must be free of dirt and be undamaged. The heat sink contact surface must have a flatness of < 0.03 mm (< 1.2 mil) and a levelling depth of <0.02 mm (< 0.8 mil). Apply a thin layer of heat transfer paste evenly to the module's base plate just sufficient to cover the entire base plate to heat sink. It is recommended to apply DC 340 (Dow Corning) or Berulub FZ 1E3 (Bechem, silicone free), or equivalent by using a sponge/soft rubber roller.
The minimum thickness of grease is best controlled by removing some modules from the heat sink after mounting and to inspect the entire area of the metal base plate. The module bottom surface must have wetted completely with thermal grease.
The minimum required depth of thread in aluminium heatsinks is 12 mm and 10 mm in copper heat sink.
All mounting holes must be free from burrs. First tighten all mounting and terminal screws stepwise. Then use a torque wrench to apply the tightening torques given on the data sheet. Make sure that the screws fit easily into the threads. Otherwise the total tightening torque will be reached without the necessary contact being obtained.
Do not pull or push on the terminals when making the electrical connections. Make sure that no permanent tensile force is exerted on the terminals.

Modules and Rectifier Bridges supplied with solderable leads :

The maximum allowable soldering time is 10 seconds. Do not exert any axial force on the leads. Make sure that the distance between the bending axis and package is > 5 mm, with the bending radius > 2 mm. Avoid repeated bending. The distance between solder leads and package should be > 10 mm.

Important note:

The terminal connection torques given in the data sheets are maximum values, depending on the applied connection.
Using current bars, torques up to 5 Nm can be necessary to achieve a tight and reliable connection.
For open cable lugs, a torque of 2.5 Nm is already sufficient to realize a good electrical connection. Higher terminal connection torques could damage the lug itself as well as the module terminals and the housing.
In every case, one should pay attention, that the clamping parts don´t move, while the terminal screws are fastened. Twisting of the terminals would effect mechanical stresses on the terminals themselves and on the housing. Both could reduce lifetime and reliability fo the module.
For each module you can download detailed datasheets from our website or send us your request to datasheets@powersem.net

if you should need more help and information
concerning mounting instructions
do not hesitate to contact:

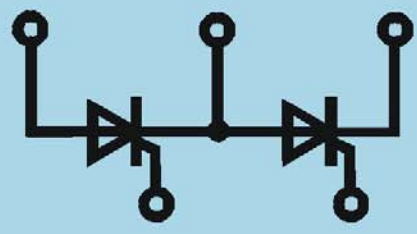
tech@powersem.net

Thyristor / Thyristor Module

n e w Design

V_{RRM}:	600 - 1800 V
I_{TAVM}:	116 A @ T_C = 85 °C
I_{FSM}:	2250 A (45 °C, 10 msec)
V_{T0}:	0.8 V
r_T:	2.4 mΩ
T_{VJM}:	125 °C
R_{thJC}:	0.26 K/W
R_{thJH}:	0.46 K/W

PSKT 95 (TO 240)
PSKT 96 (ECO-PAC™2)

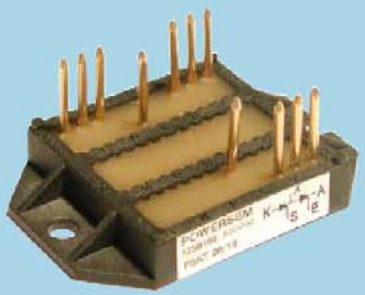


Why using screws?

TO 240

soldering is the solution...

ECO-PAC™



HIGH POWER in small dimensions :

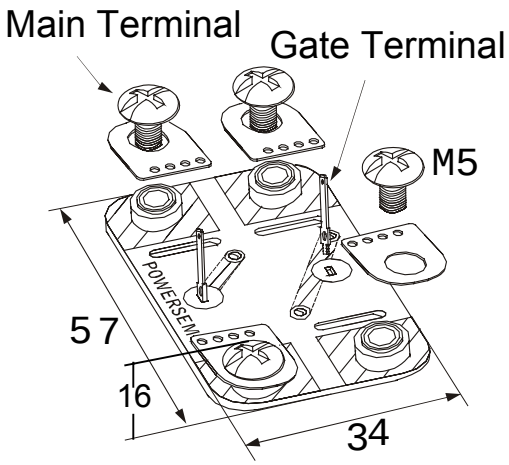
ECO-PAC™ 2

Accessory: ECO-BOARD™

For diode and thyristor modules in ECO-PAC™ 2 a accessory is available:

ECO-BOARD™

This accessory is especially designed for all customers who cannot or do not want to solder the module on a pcb. With this device **POWERSEM** offers its customers to use screws for the terminal connections instead of soldering. The gold plated leads are perfect for soldering the module directly onto the **ECO-BOARD™**.



(dimensions in mm)

ECO-PAC™ 2 - modules available with ECO-BOARD™:

Type	Page
FRED Module	
PSEI 2x101	29
PSEI 2x121	29
PSEI 2x161	29
Thyristor/Diode Module	
PSKH 96	35
Thyristor Module	
PSKC 96	35
PSKA 96	35
PSKT 96	35
PSKI 96	35
PSET 132	35
PSET 180	35
AC Controller Module	
PSW1H205	50
PSW1C205	50

Picture left: Thyristor module PSKT 96 shown with an **ECO-BOARD™**

Where to get more information for POWERSEM Semiconductor Modules

concerning:

- **Datasheets for PSM Semiconductor Modules**
- **Application/Technical Support**
- **Distributor Information/Sales Support**
- **Job Opportunities**
- **Trade Show Information**

Africa, Europe, Baltic States, China, Israel, Russia, Ukraine Ihr Vertriebspartner: HY-LINE® POWER COMPONENTS Inselkammerstraße 10 D-82008 Unterhaching Tel.: +49 (0)89 614503 10 Fax: +49 (0)89 614503 20 E-Mail: power@hy-line.de URL: www.hy-line.de	**POWERSEM GmbH** **Headquarters Europe:** Walpersdorfer Strasse 53, 91126 Schwabach, Germany Phone: +49 (0) 9122-9764-0, Fax : +49 (0) 9122-9764-20 http://www.powersem.de contact: info@powersem.de
North **America** (Canada, Mexico, USA) South **America** (Argentina, Brasil, Chile)	contact: sales@powersem-usa.com
Australia, India, Indonesia, Japan, Malaysia, New Zealand, Persia,Taiwan, Turkey, South Korea, UAE	**POWERSEM Semiconductors Pvt. Ltd.** **Headquarters Asia:** C-96, 2nd B Main, 2nd Stage, Peenya Industrial Estate Bangalore – 560 058, India Phone: +91-80-412 72 602, Fax: +91-80-412 72 604 www.powersem.in contact: info@powersem.in

Meet us at the Following Trade Fairs:

PCIM China 2007/2008
POWERSEM Booth
2007: March 21 - 23, Shanghai, China
2008: March 18 - 20, Shanghai, China

PCIM Europe 2007/2008
POWERSEM Booth
2007: Mai 22 - 24, Nuremberg, Germany
2008: Mai 27 - 29, Nuremberg, Germany