



PHI-CON

5W DC-DC Converter P5B-Series

- Wide 2:1 input range
- Up to 3500 V_{DC} isolation
- MTBF >1.121 MHours
- Continuous short circuit protection



Model selection guide

Typ	Input nominal voltage [V _{DC}]	Output voltage [V _{DC}]	Output current [mA]	Efficiency typ. [%]	Capacitor load max. [mA]
Single output					
P5B123R3S	9...18	3.3	1300	73	1000
P5B1205S	9...18	5.0	1000	77	1000
P5B1209S	9...18	9.0	556	78	680
P5B1212S	9...18	12.0	417	81	330
P5B1215S	9...18	15.0	333	80	220
P5B1224S	9...18	24.0	209	80	68
P5B243R3S	18...36	3.3	1300	75	1000
P5B2405S	18...36	5.0	1000	80	1000
P5B2409S	18...36	9.0	556	82	680
P5B2412S	18...36	12.0	417	80	330
P5B2415S	18...36	15.0	333	82	220
P5B2424S	18...36	24.0	209	82	68
P5B483R3S	36...72	3.3	1300	75	1000
P5B4805S	36...72	5.0	1000	80	1000
P5B4809S	36...72	9.0	556	82	680
P5B4812S	36...72	12.0	417	80	330
P5B4815S	36...72	15.0	333	83	220
P5B4824S	36...72	24.0	209	83	68
Dual output					
P5B123R3D	9...18	±3.3	±750	73	2 x 680
P5B1205D	9...18	±5.0	±500	77	2 x 330
P5B1209D	9...18	±9.0	±278	80	2 x 220
P5B1212D	9...18	±12.0	±208	80	2 x 100
P5B1215D	9...18	±15.0	±167	79	2 x 47
P5B1224D	9...18	±24.0	±105	80	2 x 33
P5B243R3D	18...36	±3.3	±750	75	2 x 680
P5B2405D	18...36	±5.0	±500	78	2 x 330
P5B2409D	18...36	±9.0	±278	83	2 x 220
P5B2412D	18...36	±12.0	±208	80	2 x 100
P5B2415D	18...36	±15.0	±167	80	2 x 47
P5B2424D	18...36	±24.0	±105	80	2 x 33
P5B483R3D	36...72	±3.3	±750	73	2 x 680
P5B4805D	36...72	±5.0	±500	79	2 x 330
P5B4809D	36...72	±9.0	±278	79	2 x 220
P5B4812D	36...72	±12.0	±208	80	2 x 100
P5B4815D	36...72	±15.0	±167	80	2 x 47
P5B4824D	36...72	±24.0	±105	80	2 x 33

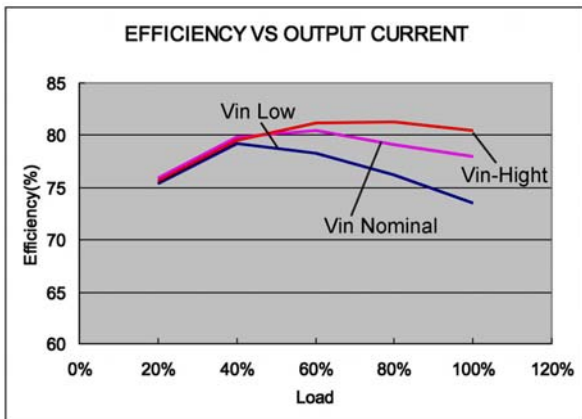
Suffix: "H" for 3.5kV isolation voltage

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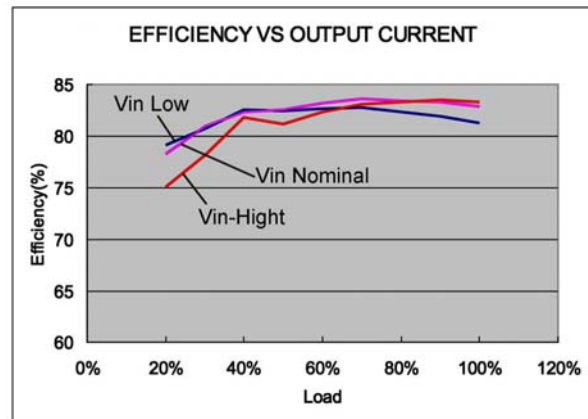
Specifications

Input	
no load current	12 V series 30 mA _{DC} , typ. 24 V series 20 mA _{DC} , typ. 48 V series 12 mA _{DC} , typ.
Filter	Pi Network
Isolation:	
Rated voltage (3 sec., input to output)	1500 V _{DC} , Standard 3500 V _{DC} , Suffix "H"
Resistance	10 ⁹ Ω
Capacitance	470 pF, typ.
Output	
Voltage accuracy	± 1%
Voltage balance (dual outputs)	± 1%
Ripple and noise (at 20 MHz BW)	60 mVp-p, max.
Short circuit protection	Continuous (automatic restart)
Current limiting	120% of full load
Line voltage regulation	± 0.5%, ±1.5%@3.3V type
Load voltage regulation	± 0.5%, max.
Temperature coefficient	± 0.02% / °C

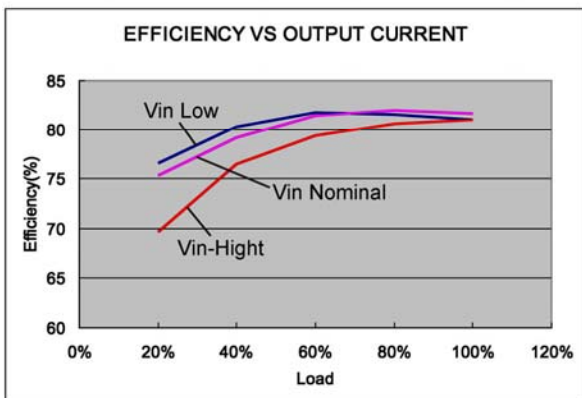
General	
Efficiency	73% to 83%
Switching frequency	265 kHz, typ.
Safety in accordance with	IEC60950-1:2001
Environmental	
Operating temperatur (ambient)	-40 °C to +85 °C
Case temperature	100 °C max.
Storage temperature	-40 °C to +125 °C
Derating	None required
Humidity	Up to 95%, non-condensing
Cooling	Free-air convection
Physical	
Dimensions	31.75x20.32x10.16 mm
Weight	17 g metal, standard
Base material	Epoxy (UL94-V-0 rated)
Case material	Standard, nickel-coated copper metal
Lead soldering Temperature	260°C for 10 s, distance from package 1.5 mm



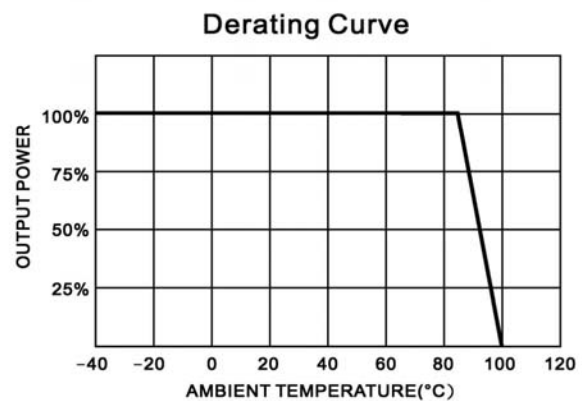
Vin 12V Types



Vin 24V Types



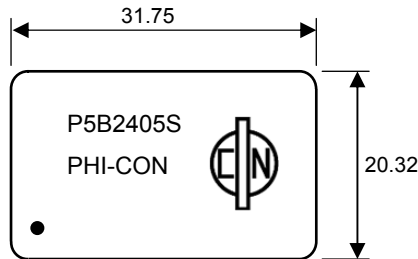
Vin 48V Types



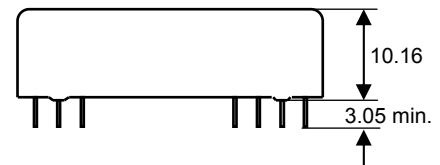
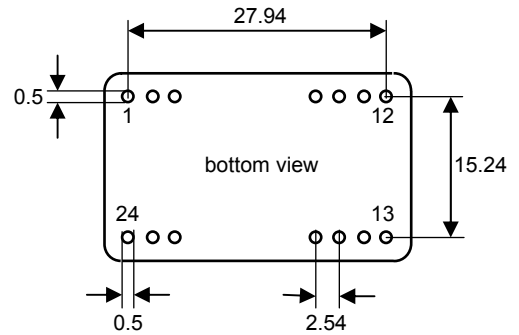
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Dimensions



All dimensions in mm
Tolerance ± 0.25 mm



Pin connections

Pin	Standard		3.5 kV _{DC}	
	Single	Dual	Single	Dual
1	+V Input	+V Input	Omitted	Omitted
2	N.C.	-V Output	-V Input	-V Input
3	N.C.	Common	-V Input	-V Input
9	Omitted	Omitted	Omitted	Common
10	-V Output	Common	Omitted	Omitted
11	+V Output	+V Output	N.C.	-V Output
12	-V Input	-V Input	Omitted	Omitted
13	-V Input	-V Input	Omitted	Omitted
14	+V Output	+V Output	+V Output	+V Output
15	-V Output	Common	Omitted	Omitted
16	Omitted	Omitted	-V Output	Common
22	N.C.	Common	+V Input	+V Input
23	N.C.	-V Output	+V Input	+V Input
24	+V Input	+V Input	Omitted	Omitted

Life Support Policy: HY-LINE does not authorize the use of any of its products for use in life support devices or systems without the express written approval of an officer of the Company. Life support systems are devices which support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.
Rev: 7.08 f