



PHI-CON

3W DC-DC Converter P3W-Series

- Wide 4:1 input range
- -40...+85°C operation temperature range
- Isolation up to 3500 V_{DC}
- MTBF > 1.12 MHours
- Continuous short circuit protection
- Efficiency up to 80%



Model selection guide

Typ	Input voltage range [V _{DC}]	Input current		Output voltage [V _{DC}]	Output current min. / max. [mA]	Efficiency typ. [%]	Capacitive load (*1) [μF]
		No-load [mA]	Full-load [mA]				
Single output							
P3W243R3S	9...36	16	165	3.3	0...900	75	680
P3W2405S	9...36	16	160	5.0	0...600	78	470
P3W247R2S	9...36	16	160	7.2	0...416	78	100
P3W2409S	9...36	16	160	9.0	0...333	80	100
P3W2412S	9...36	16	155	12.0	0...250	80	68
P3W2415S	9...36	16	155	15.0	0...200	80	47
P3W2418S	9...36	16	155	18.0	0...166	80	47
P3W2424S	9...36	16	155	24.0	0...125	80	22
P3W483R3S	18...72	14	83	3.3	0...900	75	680
P3W4805S	18...72	14	80	5.0	0...600	78	470
P3W487R2S	18...72	14	80	7.2	0...416	78	100
P3W4809S	18...72	14	78	9.0	0...333	80	100
P3W4812S	18...72	14	78	12.0	0...250	80	68
P3W4815S	18...72	14	78	15.0	0...200	80	47
P3W4818S	18...72	14	78	18.0	0...166	80	47
P3W4824S	18...72	14	78	24.0	0...125	80	22
Dual output							
P3W243R3D	9...36	16	165	±3.3	0...±454	75	2 x 330
P3W2405D	9...36	16	160	±5.0	0...±300	78	2 x 220
P3W247R2D	9...36	16	160	±7.2	0...±208	78	2 x 47
P3W2409D	9...36	16	160	±9.0	0...±166	80	2 x 47
P3W2412D	9...36	16	155	±12.0	0...±125	80	2 x 33
P3W2415D	9...36	16	155	±15.0	0...±100	80	2 x 22
P3W2418D	9...36	16	155	±18.0	0...±83	80	2 x 22
P3W2424D	9...36	16	155	±24.0	0...±63	80	2 x 10
P3W483R3D	18...72	14	83	±3.3	0...±454	75	2 x 330
P3W4805D	18...72	14	80	±5.0	0...±300	78	2 x 220
P3W487R2D	18...72	14	80	±7.2	0...±208	78	2 x 47
P3W4809D	18...72	14	78	±9.0	0...±166	80	2 x 47
P3W4812D	18...72	14	78	±12.0	0...±125	80	2 x 33
P3W4815D	18...72	14	78	±15.0	0...±100	80	2 x 22
P3W4818D	18...72	14	78	±18.0	0...±83	80	2 x 22
P3W4824D	18...72	14	78	±24.0	0...±63	80	2 x 10

Add suffix "H" for 3.5kV isolation voltage

Note:

*1 Test by nominal input voltage and constant resistor load

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Specifications

Input :	
Filter	Pi Network
Input reflected ripple current	35mA _{p-p} (*2)
Absolute max. input voltage	
24V types	-0.7...+40V _p for 100ms max.
48V types	-0.7...+80V _p for 100ms max.
Isolation:	
Rated voltage input/output 3 sec.	1500 V _{DC} , Standard 3500 V _{DC} , Suffix "H"
Resistance	10 ⁹ Ω
Capacitance	500 pF, typ.
Output:	
Voltage accuracy	± 1%
Line voltage regulation	± 0.5%, max.
Load voltage regulation	± 0.5%, max. ± 1.5%, max. @ 3.3V output
Temperature coefficient	± 0.02% / °C
Ripple and noise (at 20 MHz BW)	60 mV _{p-p} , max. (*3)
Short circuit protection	Continuous
Short circuit restart	Automatic
General:	
Switching frequency	270 kHz, typ.
Safety in accordance with	IEC60950-1:2001

Operating temperatur (ambient)	-40 °C to +85 °C
Case temperature	100 °C max.
Storage temperature	-40 °C to +125 °C
Derating	see diagram
Humidity	Up to 95%
Cooling	Free-air convection
Physical :	
Dimensions	31.75 x 20.32 x 10.16 mm
Weight	17 g
Case material	Nickel-coated copper
Potting material	Epoxy (UL94V-0 rated)
Pin soldering temperature	260°C for 10s distance 1.5mm from case
EMC in accordance with	
Radiated emissions	EN55022 class A
Conducted emissions	EN55022 class A (*4)
ESD	IEC61000-4-2 perf. criteria B
RS	IEC61000-4-3 perf. criteria A
EFT	IEC61000-4-4 perf. criteria B
CS	IEC61000-4-6 perf. criteria A
PFMF	IEC61000-4-8 perf. criteria A
Absolute maximum ratings	
Input voltage < 100ms	
24V Input types	-0.7...40 V _{DC}
48V Input types	-0.7...80 V _{DC}

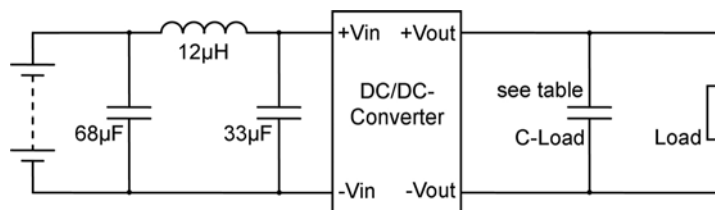
Note:

*2 Measured input reflected ripple current with a simulated source inductance of 12μH

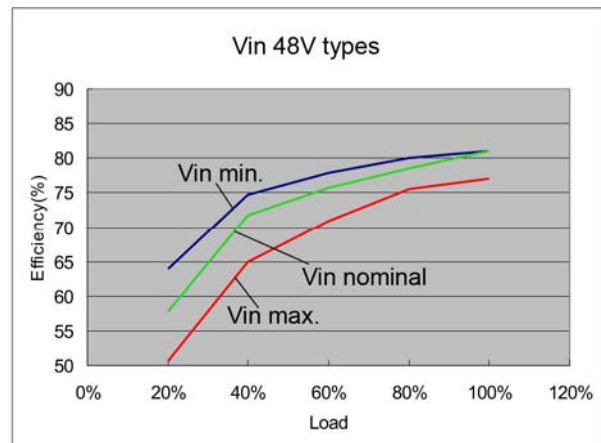
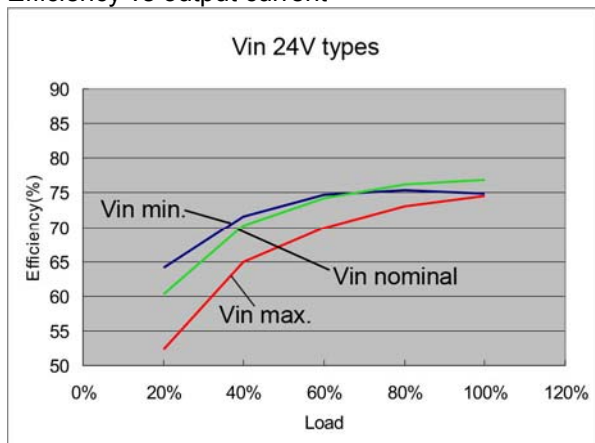
*3 Typical value at nominal input voltage and full load

*4 It's recommended to add C: 68μF, C: 33μF and L: 12μH in input and to achieve EN55022 conducted class A

Application circuit

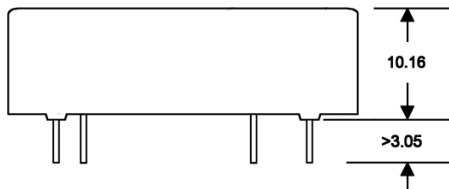
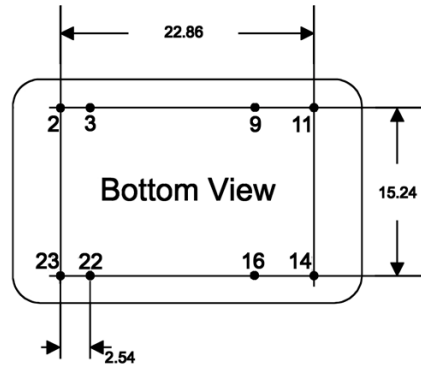
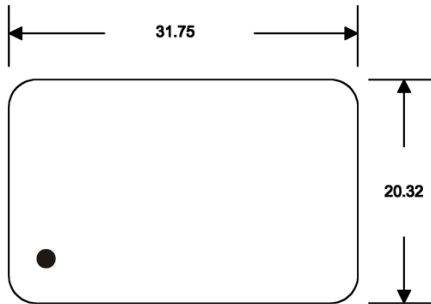


Efficiency vs output current



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Dimensions

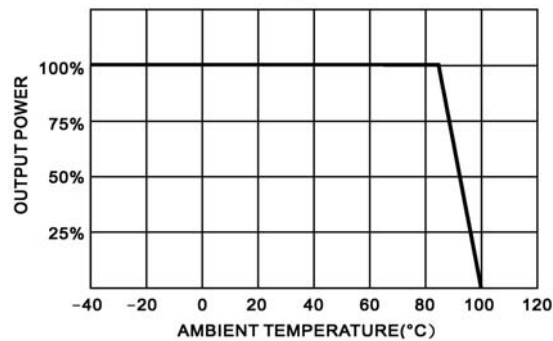


- Notes: All dimensions are typical in millimeters
1. Pin diameter: 0.5 ± 0.05
 2. Pin pitch tolerance: ± 0.35
 3. Case Tolerance: ± 0.5

Pin connections

Pin	Single	Dual
2	-V Input	-V Input
3	-V Input	-V Input
9	Omitted	Common
11	N.C.	-V Output
14	+V Output	+V Output
16	-V Output	Common
22	+V Input	+V Input
23	+V Input	+V Input

Derating Curve



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