5W DC-DC Converter P5W-Series

PHI-CON

- Wide 4:1 input range
- -40...+85°C operation temperature range
- Isolation up to 3500 V_{DC}
- MTBF > 1.121 MHours
- Continuous short circuit protection
- Efficiency up to 82%

Model selection guide

Typ	Input voltage range [V_{DC}]	Input current No-load [mA]	Input current Full-load [mA]	Output voltage [V_{DC}]	Output current [mA]	Efficiency typ. [%]	Capacitive load (*1) [µF]
Single output							
P5W243R3S	9...36	18	240	3.3	0...1300	75	1000
P5W2405S	9...36	18	260	5.0	0...1000	80	680
P5W247R2S	9...36	18	260	7.2	0...700	80	470
P5W2409S	9...36	18	258	9.0	0...560	81	220
P5W2412S	9...36	18	258	12.0	0...420	81	100
P5W2415S	9...36	18	255	15.0	0...335	82	100
P5W2418S	9...36	18	260	18.0	0...280	80	68
P5W2424S	9...36	18	260	24.0	0...210	80	47
P5W483R3S	18...72	15	120	3.3	0...1300	75	1000
P5W4805S	18...72	15	130	5.0	0...1000	80	680
P5W487R2S	18...72	15	130	7.2	0...700	80	470
P5W4809S	18...72	15	128	9.0	0...560	81	220
P5W4812S	18...72	15	128	12.0	0...420	81	100
P5W4815S	18...72	15	127	15.0	0...335	82	100
P5W4818S	18...72	15	130	18.0	0...280	80	68
P5W4824S	18...72	15	130	24.0	0...210	80	47
Dual output							
P5W243R3D	9...36	18	282	±3.3	0...±760	74	2 x 680
P5W2405D	9...36	18	260	±5.0	0...±500	80	2 x 330
P5W247R2D	9...36	18	260	±7.2	0...±350	80	2 x 100
P5W2409D	9...36	18	258	±9.0	0...±277	81	2 x 100
P5W2412D	9...36	18	258	±12.0	0...±210	81	2 x 47
P5W2415D	9...36	18	255	±15.0	0...±165	82	2 x 47
P5W2418D	9...36	18	260	±18.0	0...±140	80	2 x 33
P5W2424D	9...36	18	260	±24.0	0...±105	80	2 x 10
P5W483R3D	18...72	15	140	±3.3	0...±760	74	2 x 680
P5W4805D	18...72	15	130	±5.0	0...±500	80	2 x 330
P5W487R2D	18...72	15	130	±7.2	0...±350	80	2 x 100
P5W4809D	18...72	15	128	±9.0	0...±277	81	2 x 100
P5W4812D	18...72	15	128	±12.0	0...±210	81	2 x 47
P5W4815D	18...72	15	127	±15.0	0...±165	82	2 x 47
P5W4818D	18...72	15	130	±18.0	0...±140	80	2 x 33
P5W4824D	18...72	15	130	±24.0	0...±105	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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Deutschland:
Inselkammerstraße 10
D-82008 Unterhaching
Tel.: 089 614 503-10
E-Mail: power@hy-line.de

Schweiz:
Gründenstrasse 82
CH-8247 Flurlingen
Tel.: 052 647 42 00
E-Mail: power@hy-line.ch

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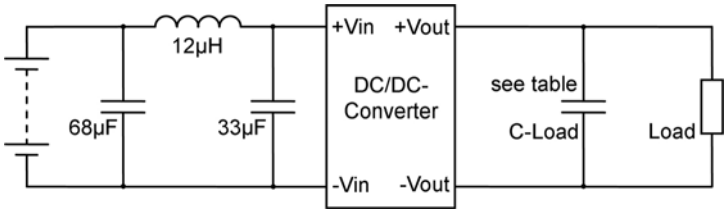
Specifications

Input :	
Filter	Pi Network
Input reflected ripple current	35 mAp-p (*2)
Absolute max. input voltage	
24V types	-0.7...+40 Vp for 100 ms max.
48V types	-0.7...+80 Vp for 100 ms 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.
Temperature coefficient	± 0.02 % / °C
Ripple and noise (at 20 MHz BW)	60 mVp-p, max. (*3)
Short circuit protection	Continuous
Short circuit restart	Automatic
General:	
Switching frequency	266 kHz, typ.
Safety in accordance with	IEC60950-1:2001

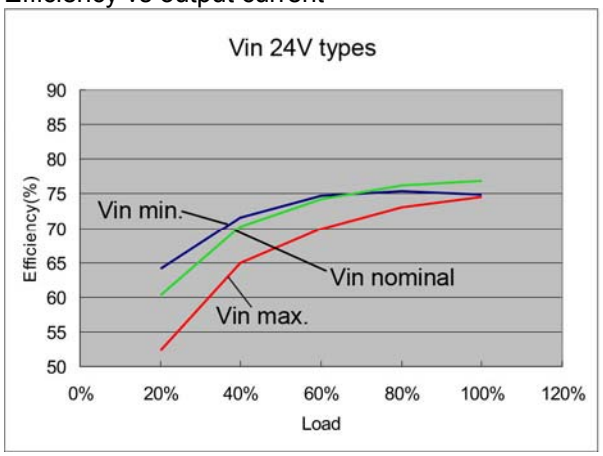
Environmental:	
Operating temperatur (ambient)	-40 °C to +85 °C
Case temperature	100 °C max.
Storage temperature	-40 °C to +125 °C
Derating	see diagram
Humidity	Up to 95 %,
Cooling	Free-air convection
Physical :	
Dimensions	31.75 x 20.32 x 10.16 mm
Weight	17 g
Case material	Nickel-coated copper
Potting material	Epoxy (UL94V-0 rated)
Pin soldering temperature	260 °C for 10 s distance 1.5 mm 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

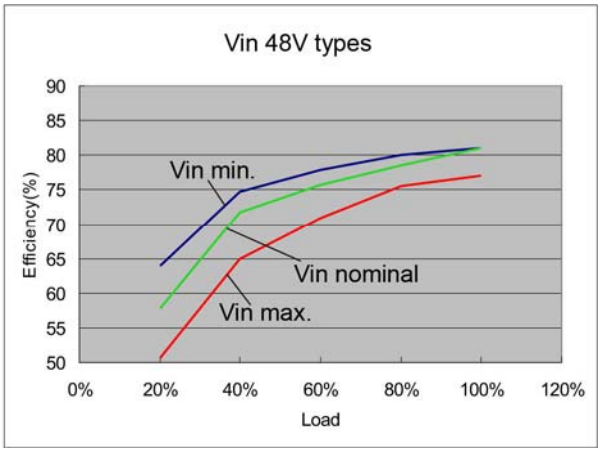
Note:
*2 Measured input reflected ripple current with a simulated source inductance of 12µH
*3 Typical value at nominal input voltage and full load
*4 It's recommended to add C: 68µF, C: 33µF and L: 12µH in input and to achieve EN55022 conducted class A

Application circuit



Efficiency vs output current





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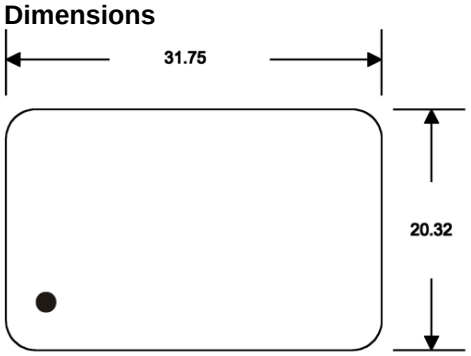
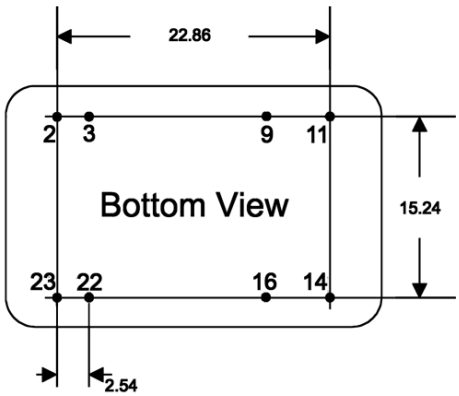
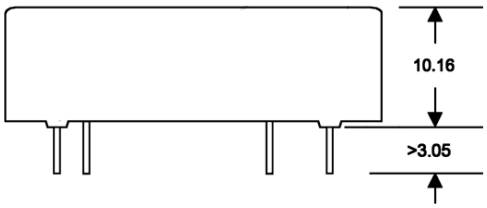
Dimensions



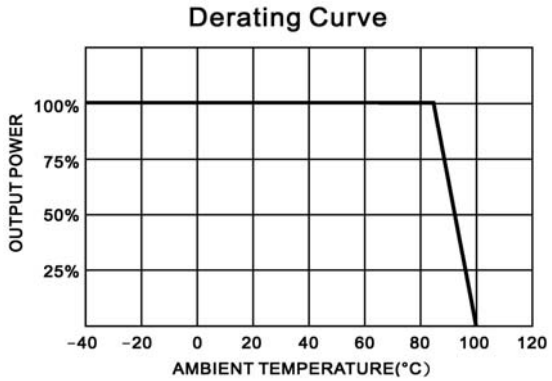




Notes: All dimensions are typical in millimeters
1. Pin diameter: 0.5 ±0.05
2. Pin pitch tolerance: ±0.35
3. Case Tolerance: ±0.5

Pin connections

Pin	1.5 / 3.5kV$_{DC}$	
	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



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