



PHI-CON

6W DC-DC Converter P6B-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 84%



Model guide

Type	Input voltage range [V _{DC}]	Input current		Output voltage [V _{DC}]	Output current [mA]	Efficiency typ. [%]	Capacitive load (*1) [μF]
		No-load [mA]	Full-load [mA]				
Single output							
P6B243R3S	9...36	12	253	3.3	0...1400	76	1000
P6B2405S	9...36	10	312	5.0	0...1200	80	1000
P6B247R2S	9...36	18	312	7.2	0...833	80	470
P6B2409S	9...36	12	300	9.0	0...666	83	220
P6B2412S	9...36	15	300	12.0	0...500	83	100
P6B2415S	9...36	18	300	15.0	0...400	83	47
P6B2418S	9...36	15	300	18.0	0...333	83	47
P6B2424S	9...36	18	305	24.0	0...250	82	47
P6B483R3S	18...72	15	130	3.3	0...1400	76	1000
P6B4805S	18...72	10	156	5.0	0...1200	80	1000
P6B487R2S	18...72	15	155	7.2	0...833	80	470
P6B4809S	18...72	10	155	9.0	0...666	82	220
P6B4812S	18...72	10	150	12.0	0...500	83	100
P6B4815S	18...72	10	149	15.0	0...400	84	47
P6B4818S	18...72	10	150	18.0	0...333	83	47
P6B4824S	18...72	12	150	24.0	0...250	83	47
Dual output							
P6B243R3D	9...36	12	340	±3.3	0...±910	74	2 x 470
P6B2405D	9...36	10	315	±5.0	0...±600	80	2 x 680
P6B247R2D	9...36	18	315	±7.2	0...±416	80	2 x 220
P6B2409D	9...36	18	310	±9.0	0...±333	81	2 x 100
P6B2412D	9...36	20	300	±12.0	0...±250	83	2 x 100
P6B2415D	9...36	22	305	±15.0	0...±200	82	2 x 100
P6B2418D	9...36	18	305	±18.0	0...±166	82	2 x 22
P6B2424D	9...36	18	315	±24.0	0...±125	80	2 x 22
P6B483R3D	18...72	10	165	±3.3	0...±910	77	2 x 470
P6B4805D	18...72	10	160	±5.0	0...±600	79	2 x 680
P6B487R2D	18...72	15	155	±7.2	0...±416	80	2 x 220
P6B4809D	18...72	15	155	±9.0	0...±333	81	2 x 100
P6B4812D	18...72	10	150	±12.0	0...±250	82	2 x 100
P6B4815D	18...72	15	150	±15.0	0...±200	84	2 x 100
P6B4818D	18...72	15	155	±18.0	0...±166	80	2 x 22
P6B4824D	18...72	15	155	±24.0	0...±125	81	2 x 22

Add suffix "H" for 3.5 kV isolation voltage

Add suffix "P" for plastic case

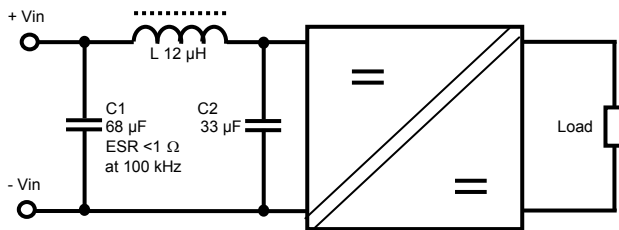
6W DC-DC Converter P6B-Series

Specifications

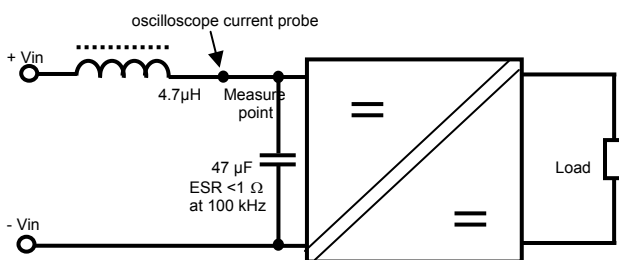
Input :	
Filter	Pi Network
Input reflected ripple current	35 mA _{p-p} (*2)
Isolation:	
Rated voltage	Standard: 1500 V _{DC}
Input / output 3 sec.	Suffix "H": 3500 V _{DC}
Input or output to case 3 sec.	1000 V _{DC}
Resistance input to output	10 ⁹ Ω
Capacitance	500 pF, typ.
Output:	
Voltage accuracy	± 1 %
Line voltage regulation	± 0.5 %, max.
Load voltage regulation	± 0.5 %, max. P6Bxx3R3x: 1.5 %, max.
Temperature coefficient	± 0.02 % / °C
Ripple and noise (at 20 MHz BW)	60 mV _{p-p} , max. (*3)
Short circuit protection	Continuous, automatic restart
General:	
Switching frequency	270 kHz, typ.
Safety in accordance with	IEC 60950-1
Reliability calc. MTBF	1.12 Mio. h, MIL-HDBK-217 F

Environmental:	
Operating temperature	-40...+85 °C ambient
Storage temperature	-40...+125 °C
Case temperature max.	100 °C
Derating	see diagram
Humidity	95 %, max., not condensing
Cooling	Free air convection
Physical :	
Dimensions	31.75 x 20.32 x 10.16 mm
Weight	Metal 17 g, Plastic 14 g
Case material	Nickel coated copper Suffix "P": Plastic
Potting material	UL94V-0 rated epoxy resin
EMC in accordance with	
Radiated emissions	EN55022 class A
Conducted emissions	EN55022 class A (*4)
ESD	IEC61000-4-2 perf. criteria A
RS	IEC61000-4-3 perf. criteria A
EFT	IEC61000-4-4 perf. criteria A
Surge (*5)	IEC61000-4-5 perf. criteria A
CS	IEC61000-4-6 perf. criteria A
PFMF	IEC61000-4-8 perf. criteria A
Absolute maximum ratings	
Input voltage	P6B24xxx -0.7...+40 V _p , 0.1 s max. P6B48xxx -0.7...+80 V _p , 0.1 s max.
Soldering temperature	260 °C for 10 s distance 1.5 mm from case

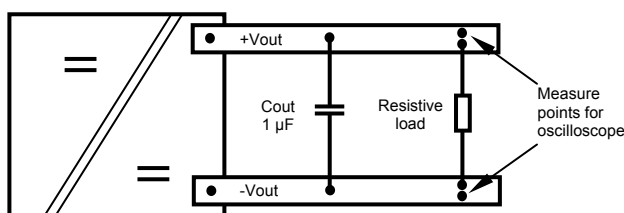
EMI filter circuit



Test circuit for reflected input ripple current



Test circuit for output ripple and noise



Note:

All specifications at Ta 25 °C, nominal input voltage and full load unless otherwise specified!

*1 Test by nominal input voltage and constant resistor load

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

*3 Typical value at nominal input voltage, full load and output ceramic chip capacitor 1 µF

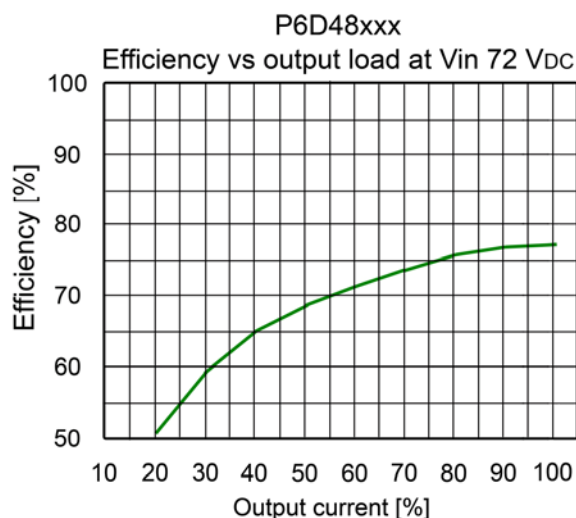
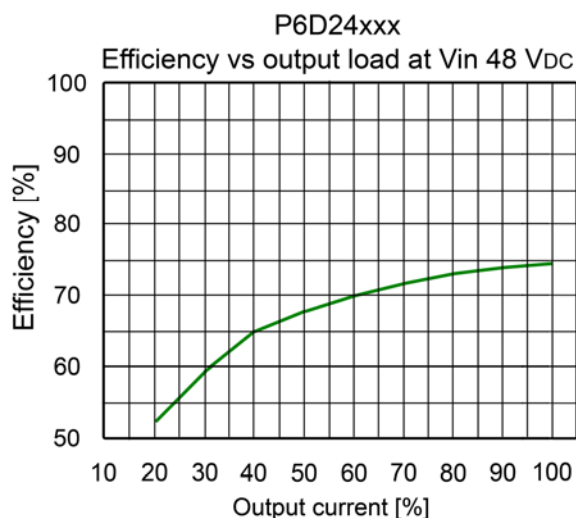
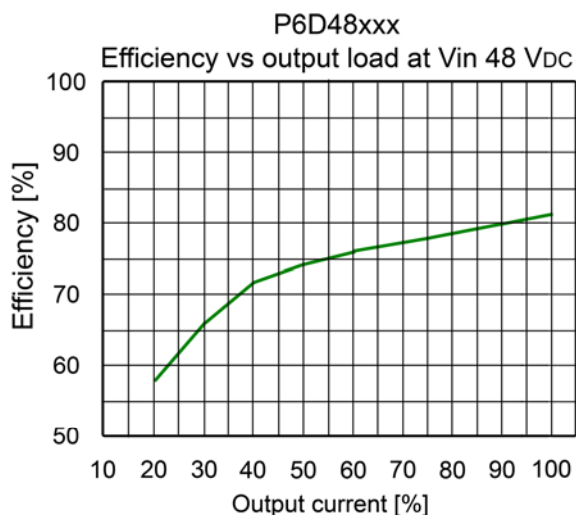
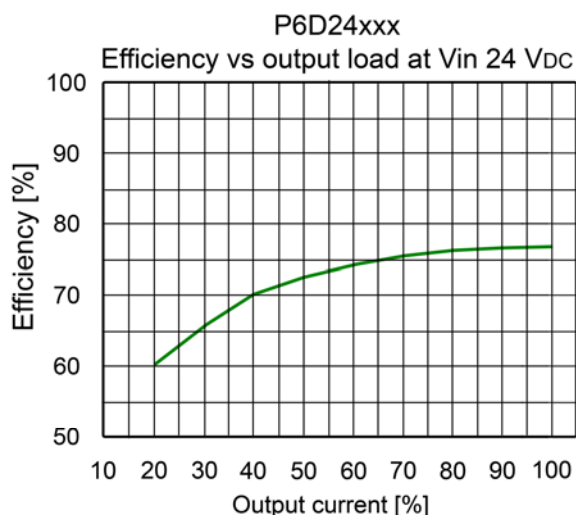
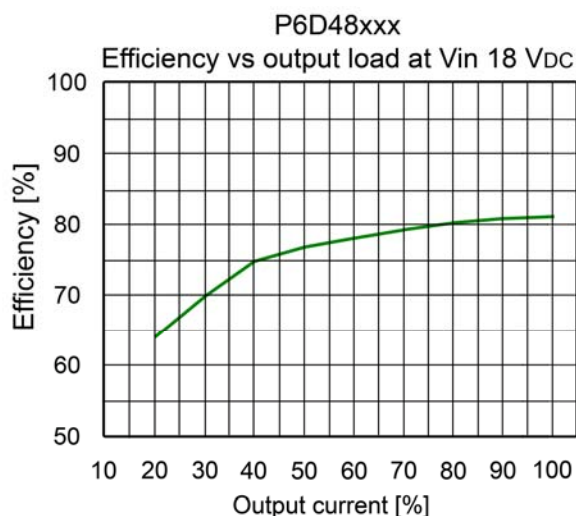
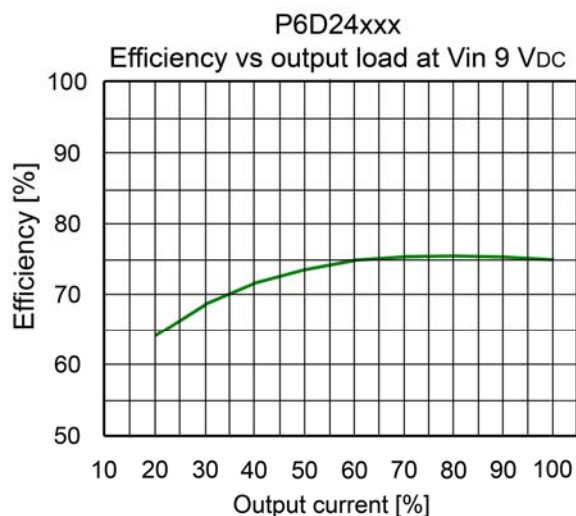
*4 It is recommended to add C1, C2 and L on input and to achieve EN 55022 conducted class A, see "EMI filter circuit"

*5 Only with external input capacitor 220 µF, 100 V, Nippon Chemicon, KY series



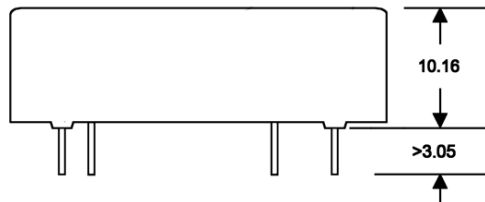
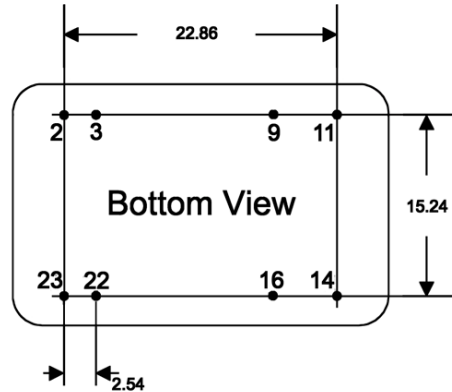
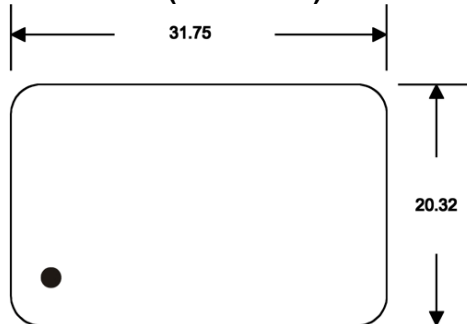
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Dimensions (metal case)

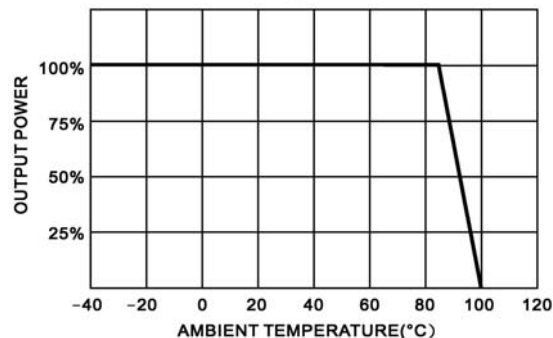


- Notes: All dimensions are typical in millimeters
1. Pin diameter: 0.5 ± 0.05
 2. Pin pitch tolerance: ± 0.35
 3. Case Tolerance: ± 0.5

Pin connections

Pin	Isolation 1.5 / 3.5 kV _{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

Derating Curve



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