8 W DC-DC Converter P8A-Series

PHI-CON

- Wide 2:1 input range
- 1500 VDC isolation
- MTBF > 910000 h
- Continuous short circuit protection
- Over current protection

Model guide

Type	Input voltage		Input current		Output voltage [V_{DC}] nom.	Output current		Efficiency	Capacitor load (see 1)
	Nominal [V_{DC}]	Range [V_{DC}]	No load [mA] max.	Full load [mA] typ.		[mA] min.	[mA] max.	[%] typ.	[mA] max.
Single output									
P8A123R3S	12	9...18	20	690	3.3	0	2000	80	3300
P8A1205S	12	9...18	20	760	5.0	0	1500	82	2200
P8A127R2S	12	9...18	20	800	7.2	0	1111	83	1000
P8A1209S	12	9...18	20	795	9.0	0	888	84	470
P8A1212S	12	9...18	20	785	12.0	0	665	85	470
P8A1215S	12	9...18	20	800	15.0	0	535	83	220
P8A243R3S	24	18...36	15	345	3.3	0	2000	80	3300
P8A2405S	24	18...36	15	380	5.0	0	1500	82	2200
P8A247R2S	24	18...36	15	400	7.2	0	1111	84	1000
P8A2409S	24	18...36	15	390	9.0	0	888	86	470
P8A2412S	24	18...36	15	390	12.0	0	665	85	470
P8A2415S	24	18...36	15	400	15.0	0	535	84	220
P8A483R3S	48	36...72	15	170	3.3	0	2000	80	3300
P8A4805S	48	36...72	15	190	5.0	0	1500	82	2200
P8A487R2S	48	36...72	15	200	7.2	0	1111	84	1000
P8A4809S	48	36...72	15	200	9.0	0	888	84	470
P8A4812S	48	36...72	15	200	12.0	0	665	84	470
P8A4815S	48	36...72	15	200	15.0	0	535	84	220
Dual output									
P8A1205D	12	9...18	20	815	±5.0	0	±800	82	2 x 1000
P8A127R2D	12	9...18	20	805	±7.2	0	±555	83	2 x 470
P8A1209D	12	9...18	20	800	±9.0	0	±444	84	2 x 330
P8A1212D	12	9...18	20	800	±12.0	0	±335	84	2 x 220
P8A1215D	12	9...18	20	800	±15.0	0	±265	84	2 x 100
P8A2405D	24	18...36	15	410	±5.0	0	±800	82	2 x 1000
P8A247R2D	24	18...36	15	400	±7.2	0	±555	84	2 x 470
P8A2409D	24	18...36	15	390	±9.0	0	±444	85	2 x 330
P8A2412D	24	18...36	15	400	±12.0	0	±335	83	2 x 220
P8A2415D	24	18...36	15	390	±15.0	0	±265	85	2 x 100
P8A4805D	48	36...72	15	205	±5.0	0	±800	82	2 x 1000
P8A487R2D	48	36...72	15	200	±7.2	0	±555	84	2 x 470
P8A4809D	48	36...72	15	200	±9.0	0	±444	84	2 x 330
P8A4812D	48	36...72	15	195	±12.0	0	±335	85	2 x 220
P8A4815D	48	36...72	15	195	±15.0	0	±265	85	2 x 100

Specifications

Input	
Filter	Pi Network
Reflected input ripple current	35 mAp-p (see Figure 1)
Isolation:	
In / Out Rated voltage (60 s)	1500 V_{DC}, Standard
Input or output to case	1000 V_{DC}
Resistance	≥ 10^9 Ω
Capacitance	1000 pF, typ.
Output	
Voltage tolerance	± 1 %
Ripple and noise (at 20 MHz BW)	≤ 75 mVp-p (see Figure 2)
Short circuit protection	Continuous, automatic restart
Over current protection	150 %, typ. of max. current
Line regulation	≤ ± 0.5 %
Load voltage regulation @ 0…100 % load change	P8AxxxxS: ± 0.5 % P8AxxxxD: ± 1 % P8Axx3R3D: ± 1.5 %
Dual output cross deviation @ 75 % load difference	≤ 5 %
Temperature coefficient	± 0.02 % / °C
General	
Switching frequency	330 kHz, typ.
Reliability calc. MTBF (MIL-HDBK-217F)	≥ 910000 h @ Ta 25 °C
Safety standards	IEC, EN, UL, cUL60950-1 IEC, EN, UL, cUL62368-1

EMC specifications		
RE	EN 55032	Class A
CE	EN 55032	Class A (see Figure 3)
ESD	EN-, IEC 61000-4-2	Perf. criteria A
RS	EN-, IEC 61000-4-3	Perf. criteria A
EFT	EN-, IEC 61000-4-4	Perf. criteria A (see Figure 3)
Surge	EN-, IEC 61000-4-5	Perf. criteria A (see Figure 3)
CS	EN-, IEC 61000-4-6	Perf. criteria A
PFMF	EN-, IEC 61000-4-8	Perf. criteria A
Environmental		
Operating ambient temperature		-40 … 85 °C
Case temperature		≤ 100 °C
Storage temperature		-40 … 125 °C
Derating		See SOA diagram
Humidity		≤ 95 %, non condensing
Cooling		Free air convection, ≥ 35 LFM
Physical		
Weight		13 g, typ.
Potting material		Epoxy (UL94V-0 rated)
Case material		Aluminum
Absolute maximum ratings		
P8A12xxx		Vin ≤ 25 V_{DC}, ≤ 100 ms
P8A24xxx		Vin ≤ 50 V_{DC}, ≤ 100 ms
P8A48xxx		Vin ≤ 100 V_{DC}, ≤ 100 ms
Lead soldering Temperature		≤ 260 °C duration ≤ 10 s, ≥ 1.5 mm distance from package

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Note:

1. Maximum output capacitive load specified by nominal in voltage and constant resistive load.
2. Parallel operation of DC/DC-Converter outputs is not recommendet.
3. All parameter are specified at 25 °C, nominal input voltage and full load, unless not otherwise specified.
4. The P8A-series is not usable for IGBT and MOSFET driver applications.

Part number structure							
Output power	Series	Input voltage		Output voltage		Outputs	
P8	A	24		05		S	
8 Watt		12	9…18 V	3R3	3.3 V	S	single
		24	18..36 V	05	5 V	D	dual
		48	36..72 V	7R2	7.2 V		
				09	9 V		
				12	12 V		
				15	15 V		

Figure 1 Measure circuit input reflected ripple current

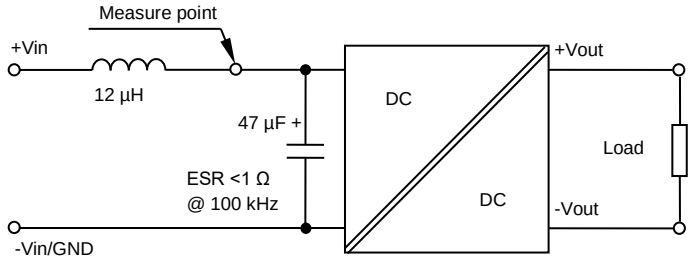


Figure 2 Measure circuit output ripple & noise voltage, BW 25 MHz

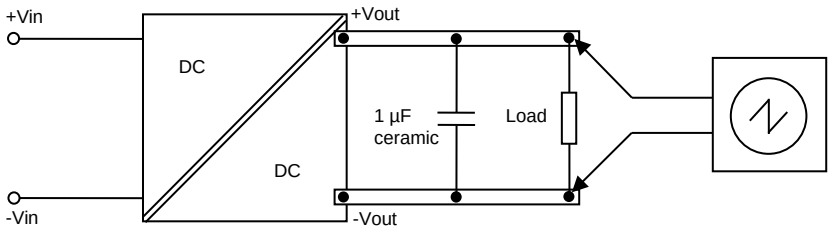
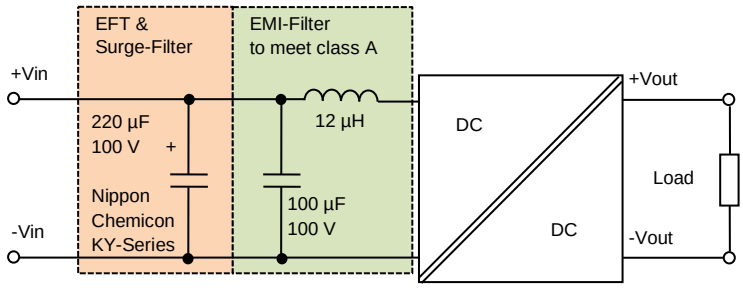


Figure 3 Application circuit to meet EFT EN 61000-4-4 Class A, Surge EN 61000-4-5 Class A and EMI conducted emission EN 55032 Class A



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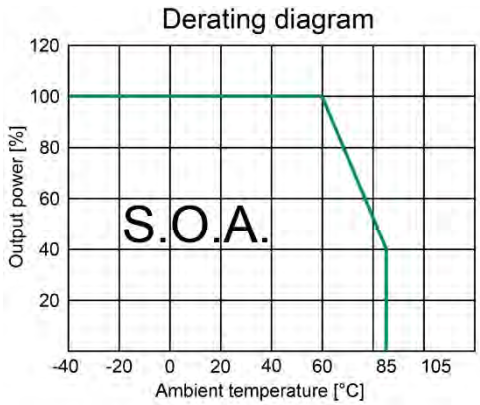

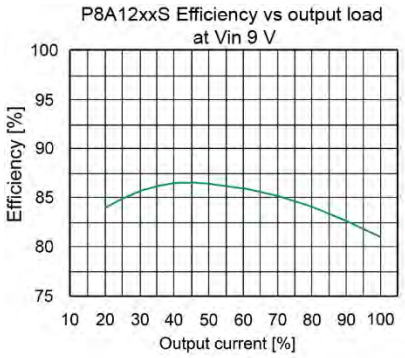

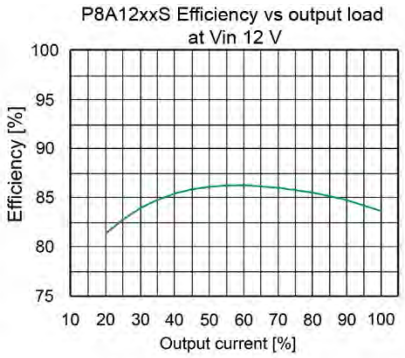

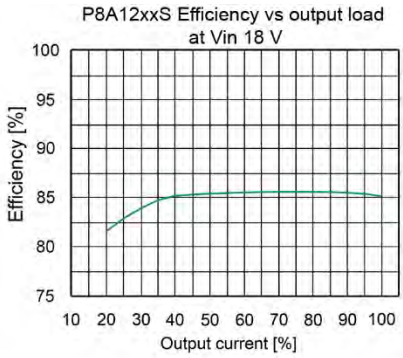

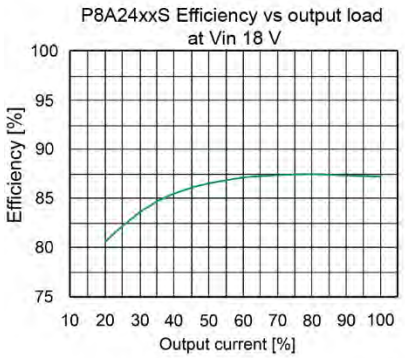

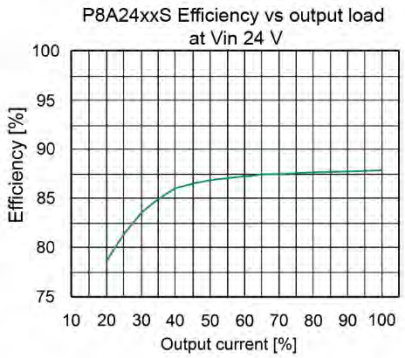

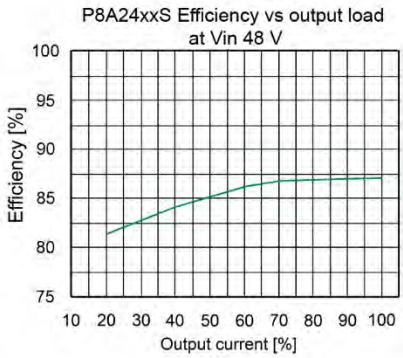

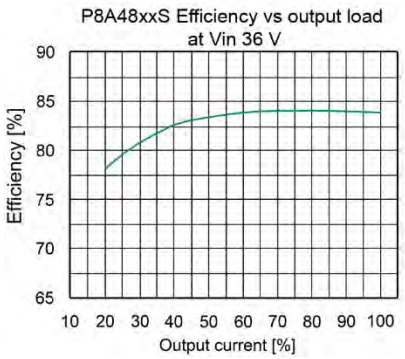

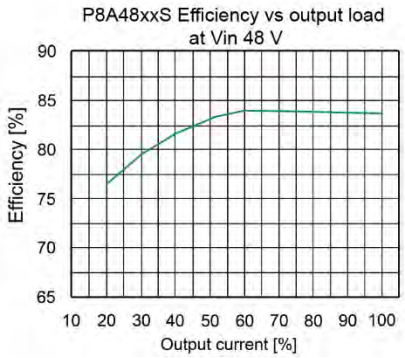

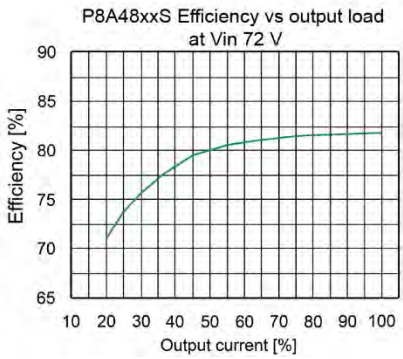

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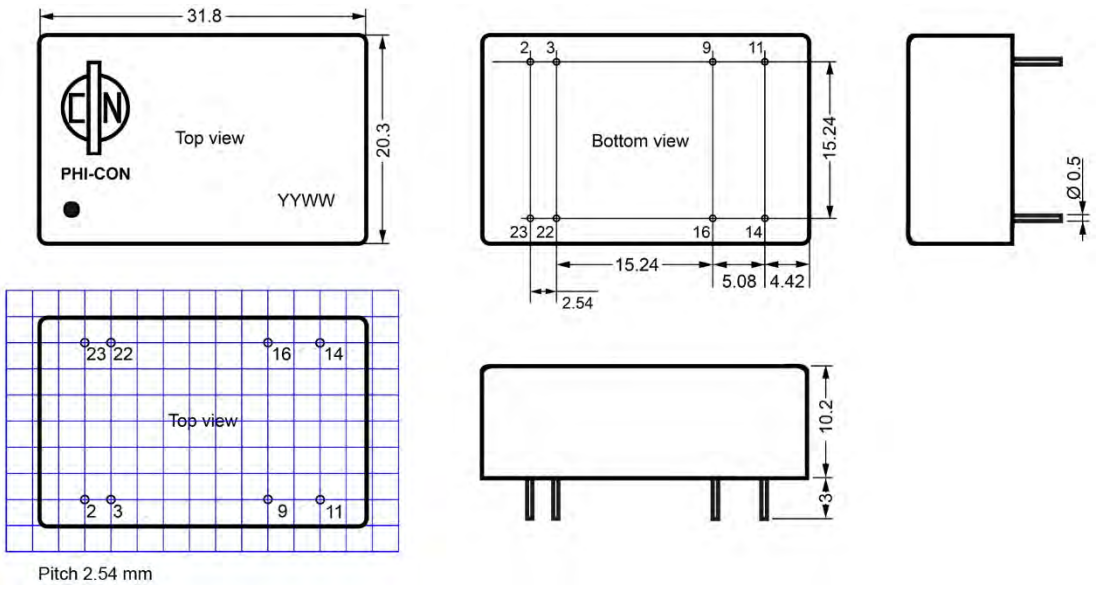
Mechanical drawing



Pin assignment		
	Single	Dual
2	-V Input	-V Input
3	-V Input	-V Input
9	No Pin	Common
11	Not Connected.	-V Output
14	+V Output	+V Output
16	-V Output	Common
22	+V Input	+V Input
23	+V Input	+V Input

All units in mm

1. Pin diameter tolerance ±0.05 mm
2. Pin pitch tolerance ±0.35 mm
3. Pin length tolerance ±0.35 mm
4. Case tolerance ±0.5 mm

Rev: 20240808 g

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