

5 W DC-DC Converter P5A-Series

- Wide 2:1 input range
- 1500 V_{DC} & 3500 V_{DC} isolation
- MTBF >1.121 Mio. Hours
- Continuous short circuit protection



Model guide

Type	Input voltage		Input current		Output voltage [V _{DC}] nom.	Output current		Efficiency [%] typ.	Capacitor load (see 1) [mA] max.
	Nominal [V _{DC}]	Range [V _{DC}]	No load [mA] max.	Full load [mA] typ.		[mA] min.	[mA] max.		
Single output									
P5A123R3S	12	9...18	30	490	3.3	0	1300	73	1000
P5A1205S	12	9...18	30	540	5.0	0	1000	77	1000
P5A127R2S	12	9...18	30	535	7.2	0	695	78	680
P5A1209S	12	9...18	30	535	9.0	0	556	78	680
P5A1212S	12	9...18	30	515	12.0	0	417	81	330
P5A1215S	12	9...18	30	520	15.0	0	333	80	220
P5A1218S	12	9...18	30	520	18.0	0	277	80	68
P5A1224S	12	9...18	30	520	24.0	0	209	80	68
P5A243R3S	24	18...36	20	240	3.3	0	1300	75	1000
P5A2405S	24	18...36	20	260	5.0	0	1000	80	1000
P5A247R2S	24	18...36	20	255	7.2	0	695	78	680
P5A2409S	24	18...36	20	255	9.0	0	556	82	680
P5A2412S	24	18...36	20	260	12.0	0	417	80	330
P5A2415S	24	18...36	20	255	15.0	0	333	82	220
P5A2418S	24	18...36	20	255	18.0	0	277	82	68
P5A2424S	24	18...36	20	255	24.0	0	209	82	68
P5A483R3S	48	36...72	12	120	3.3	0	1300	75	1000
P5A4805S	48	36...72	12	130	5.0	0	1000	80	1000
P5A487R2S	48	36...72	12	125	7.2	0	695	82	680
P5A4809S	48	36...72	12	125	9.0	0	556	82	680
P5A4812S	48	36...72	12	130	12.0	0	417	80	330
P5A4815S	48	36...72	12	125	15.0	0	333	83	220
P5A4818S	48	36...72	12	125	18.0	0	277	83	68
P5A4824S	48	36...72	12	125	24.0	0	209	83	68
Dual output									
P5A123R3D	12	9...18	30	565	±3.3	0	±750	73	2 x 680
P5A1205D	12	9...18	30	540	±5.0	0	±500	77	2 x 330
P5A127R2D	12	9...18	30	520	±7.2	0	±347	80	2 x 220
P5A1209D	12	9...18	30	520	±9.0	0	±278	80	2 x 220
P5A1212D	12	9...18	30	520	±12.0	0	±208	80	2 x 100
P5A1215D	12	9...18	30	530	±15.0	0	±167	79	2 x 47
P5A1218D	12	9...18	30	520	±18.0	0	±138	80	2 x 33
P5A1224D	12	9...18	30	520	±24.0	0	±105	80	2 x 33
P5A243R3D	24	18...36	20	275	±3.3	0	±750	75	2 x 680
P5A2405D	24	18...36	20	265	±5.0	0	±500	78	2 x 330
P5A247R2D	24	18...36	20	250	±7.2	0	±347	83	2 x 220
P5A2409D	24	18...36	20	250	±9.0	0	±278	83	2 x 220
P5A2412D	24	18...36	20	260	±12.0	0	±208	80	2 x 100
P5A2415D	24	18...36	20	260	±15.0	0	±167	80	2 x 47
P5A2418D	24	18...36	20	260	±18.0	0	±138	80	2 x 33
P5A2424D	24	18...36	20	260	±24.0	0	±105	80	2 x 33
P5A483R3D	48	36...72	12	140	±3.3	0	±750	73	2 x 680
P5A4805D	48	36...72	12	130	±5.0	0	±500	79	2 x 330
P5A487R2D	48	36...72	12	130	±7.2	0	±347	79	2 x 220
P5A4809D	48	36...72	12	130	±9.0	0	±278	79	2 x 220
P5A4812D	48	36...72	12	130	±12.0	0	±208	80	2 x 100
P5A4815D	48	36...72	12	130	±15.0	0	±167	80	2 x 47
P5A4818D	48	36...72	12	130	±18.0	0	±138	80	2 x 33
P5A4824D	48	36...72	12	130	±24.0	0	±105	80	2 x 33

1. Suffix: "H" option isolation voltage 3.5 kV
2. Suffix: "P" option plastic case

5 W DC-DC Converter P5A-Series

Specifications

Input	
Filter	Pi Network
Reflected input ripple current	35 mAp-p (Figure 1)
Isolation:	
In / Out Rated voltage (60 s)	1500 V _{DC} , Standard 3500 V _{DC} , Suffix "H"
Input or output to case	1000 V _{DC}
Resistance	10 ⁹ Ω
Capacitance	500 pF, typ.
Output	
Voltage accuracy	± 1 %
Ripple and noise (at 20 MHz BW)	60 mVp-p, max.
Short circuit protection	Continuous (automatic restart)
Line regulation	± 0.5 %, max.
Load voltage regulation	± 0.5 % ± 1.5 % @ P5Ax3R3x
Temperature coefficient	± 0.02 % / °C
General	
Switching frequency	270 kHz, typ.
Safety standards	IEC, EN, UL, cUL60950-1 IEC, EN, UL, cUL62368-1
Reliability calc. MTBF (MIL-HDBK-217F)	1.12 Mio. h @ Ta 25 °C

EMC specifications	
Radiated emissions	EN55032 Class A
Only metal case version	
Conducted emissions	EN55032 Class A (see Fig. 3)
ESD	IEC61000-4-2 perf. criteria A
RS	IEC61000-4-3 perf. criteria A
EFT (see Fig. 3)	IEC61000-4-4 perf. criteria A
Surge (see Fig. 3)	IEC61000-4-5 perf. criteria A
CS	IEC61000-4-6 perf. criteria A
PFMF	IEC61000-4-8 perf. criteria A
Environmental	
Operating ambient temperature	-40 ... 85 °C
Case temperature	100 °C, max.
Storage temperature	-40 ... 125 °C
Derating	None required
Humidity	95 % max., non condensing
Cooling	Free air convection
Physical	
Weight	17 g metal case, standard 13.5 g plastic case, Suffix "P"
Potting material	Epoxy (UL94V-0 rated)
Case material	Metal: Nickel coated copper Black Plastic (UL94V-0 rated)
Absolute maximum ratings	
Input voltage < 100 ms	
P5A12xxx	24 V _{DC}
P5A24xxx	40 V _{DC}
P5A48xxx	80 V _{DC}
Lead soldering Temperature	260 °C for 10 s, distance from package 1.5 mm

1. Specified by nominal in voltage and constant resistive load.
2. Parallel operation of DC/DC-Converter outputs is not recommendet.
3. The P5A-series is not usable in IGBT and MOSFET driver applications.

Figure 1 Measure circuit input reflected ripple current

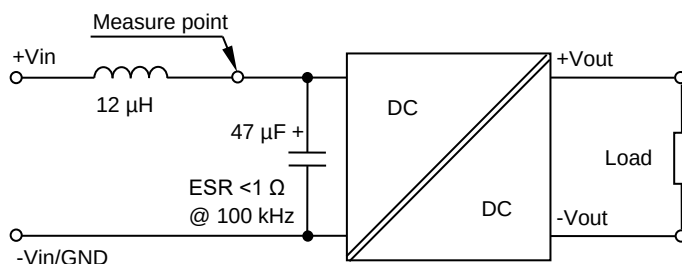
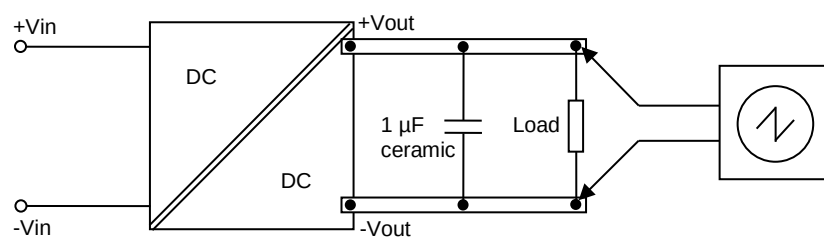


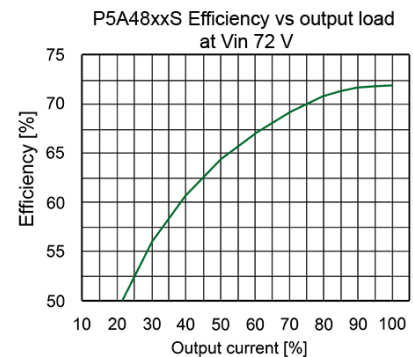
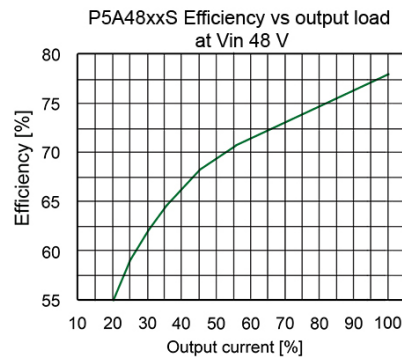
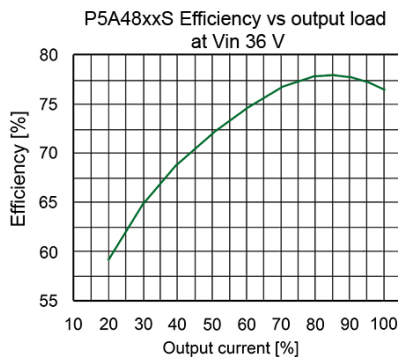
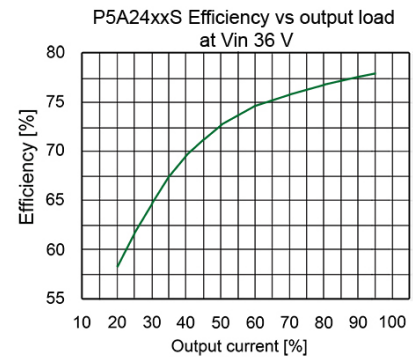
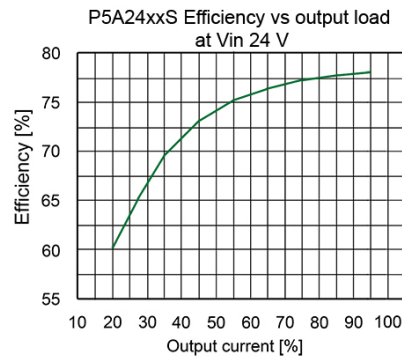
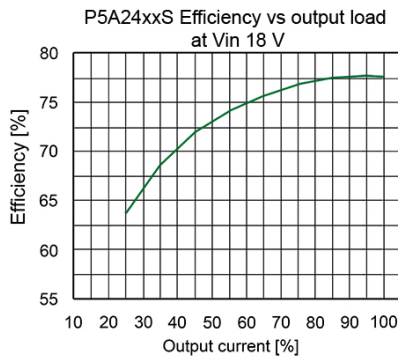
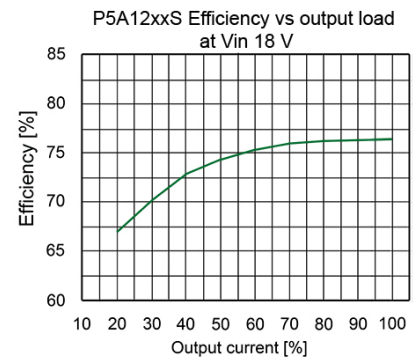
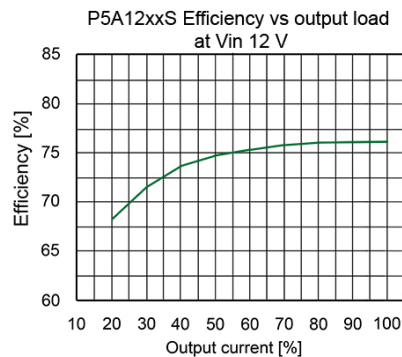
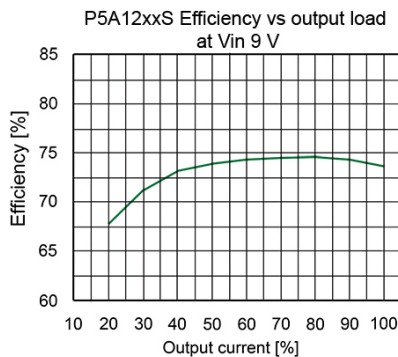
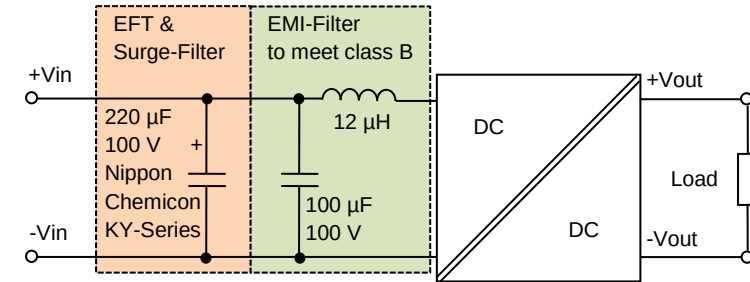
Figure 2 Measure circuit output ripple & noise voltage



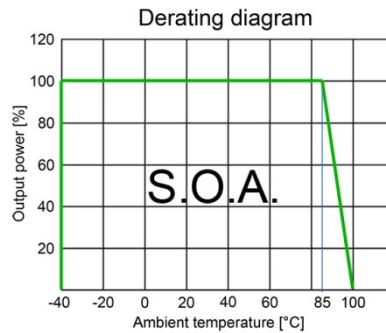
5 W DC-DC Converter P5A-Series

Figure 3

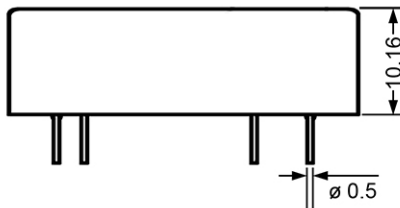
Application circuit to meet EFT IEC61000-4-4 class A, Surge IEC61000-4-5 class A and EMI conducted emission EN55032 Class A



5 W DC-DC Converter P5A-Series

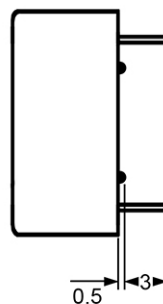
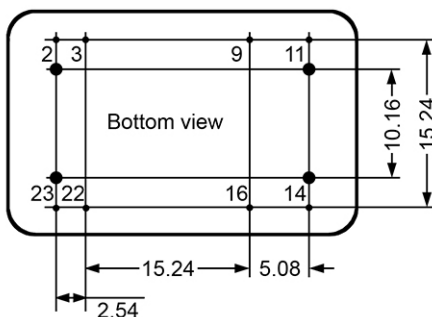


Dimensions



All units in mm

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



Pin assignment		
Pin	1.5 kV & 3.5 kV isolation	
	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

PHI-CON is a trademark of HY-LINE Holding GmbH.

Only for professional use by professionals! Not for resale or distribution to the general public in any way! Read the instructions carefully before using!

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: 20171108 f