

0.25 W SMD DC-DC Converter P02JS-Series



PHI-CON

- SMD8 package
- Single output
- Up to 3000 V_{DC} isolation
- MTBF > 3.5 Mio. h at 25 °C
- -40...105 °C operating temperature range
- Efficiency up to 77 %



Model guide

Type	Input voltage		Output voltage [V _{DC}]	Input current		Output current		Output voltage drift @ load 10~100% [%]	Efficiency [%] typ.	Capacitive load [μF] max.
	Nominal [V _{DC}]	Range [V _{DC}]		no load typ. [mA]	full load typ. [mA]	min. [mA]	max. [mA]			
P02JS0505S	5.0	4.5..5.5	5.0	15	68	5	50	12	77	220
P02JS1205S	12.0	10.8..13.2	5.0	10	27	5	50	12	77	220

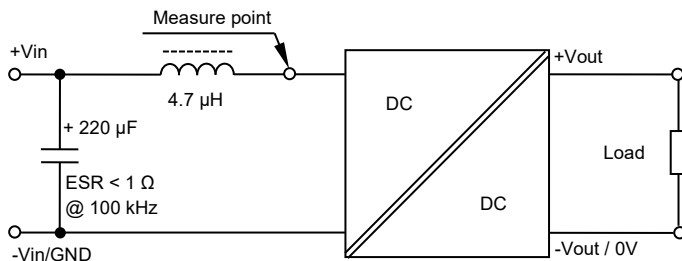
Specifications

Input	
Voltage range	± 10 %
Filter	Capacitor
Reflected input ripple current	P02JS0505S: 20 mA, typ. P02JS1205S: 5 mA, typ. (see Figure 1)
Input / output:	
Isolation voltage tested for 60 sec. @ leakage current < 1 mA	3 kV _{DC}
Isolation Resistance @ 500 V _{DC}	≥ 10 ⁹ Ω
Capacitance @ 100 mV, 100 kHz	20 pF, typ.
Output	
Voltage deviation @ 1% V _{in} change	≤ ± 1.2 %
Output voltage tolerance	See diagram
Output voltage Load drift	≤ 15 %
Temperature coefficient	0.03 % / °C, max., at full load
Ripple & noise (BW 20 MHz)	≤ 50 mVp-p, (see Figure 2)
Short circuit protection	Continuously, automatic restart
General	
Switching frequency	~ 100 kHz
Reliability, MTBF (MIL-HDBK-217 @ 25 °C)	3.5 Mio. h

Environmental	
EMI	
CE	EN 55032, CISPR 32 CLASS B (see Figure 4)
RE	EN 55032, CISPR 32 CLASS B (see Figure 4)
ESD	EN-, IEC 61000-4-2 contact ± 8 kV perf. criteria B
Operating ambient temperature	-40 ... 105 °C with derating
Storage temperature	-55 ... 125 °C
Case temperature rise at full load	15 °C, typ.
Derating	See derating curve
Storage humidity	≤ 95 %, non condensing
Cooling	Free air convection, ≥ 30 LFM
Physical	
Package material	Epoxy resin (UL94 V-0)
Mechanical dimensions	11.2 x 12.7 x 7.25 mm
Weight	1.5 g
Absolute maximum ratings	
P02JS05xxS	V _{in} -0.7 ~ 9 V _{DC} , ≤ 1 s
P02JS12xxS	V _{in} -0.7 ~ 18 V _{DC} , ≤ 1 s
Reflow soldering temperature IPC/JEDEC J-STD-020D.1	≤ 217 °C duration ≤ 60 s, peak ≤ 245 °C duration ≤ 10 s
Moisture sensitivity level IPC/JEDEC J-STD-020D.1	MSL 1

Part designation structure												
PHI-CON & output power		Series designation	Mounting technology		Input voltage		Output voltage		Output configuration		Packing	
P02	0.25 W	J	S	SMD	05	5 V	05	5 V	S	Single	blank	Tube
					12	12 V	12	12 V			TR	Reel

Figure 1 Measure circuit for Input reflected ripple current



0.25 W SMD DC-DC Converter P02JS-Series

Figure 2 Measure circuit for Input reflected ripple current

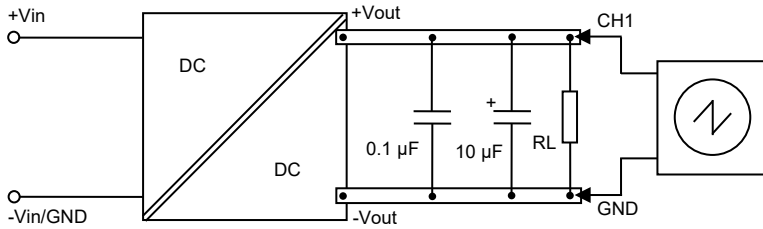


Figure 3 Recommended external circuit for ripple & noise reduction

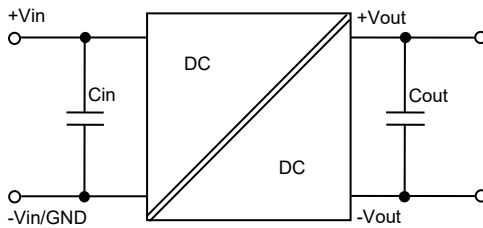


Table A External capacitor table for Figure 3

Vin version	Cin	Vout version	Cout
P02JS0505S	4.7 μF	P02JSxx05S	10 μF
P02JS1205S	2.2 μF		

If it is required to further reduce input and output ripple, a filter capacitor may be connected to the input and output terminals (see Figure 3). Moreover, choosing a suitable filter capacitor is very important, start-up problems may be caused if the capacitance is too large. Under the condition of safe and reliable operation, the recommended capacitive load values are shown in (see table page 1).

Figure 4 EMI recommended external circuit

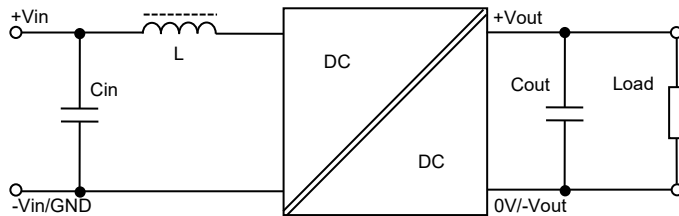


Table B for Figure 4 external components to meet EN- IEC 55032, CLASS B

Model series	Cin	L	Cout
P02JS05xxS	4.7 μF, 50 V	6.8 μH	10 μF
P02JS12xxS	4.7 μF, 50 V	6.8 μH	

In order to ensure the converter can work reliably with high efficiency, the minimum load should not less than 10 % rated load when it is used. If the needed power is indeed small, please parallel a resistor on the output side. The sum of the efficient power and resistor consumption power should not be less than 10 %.

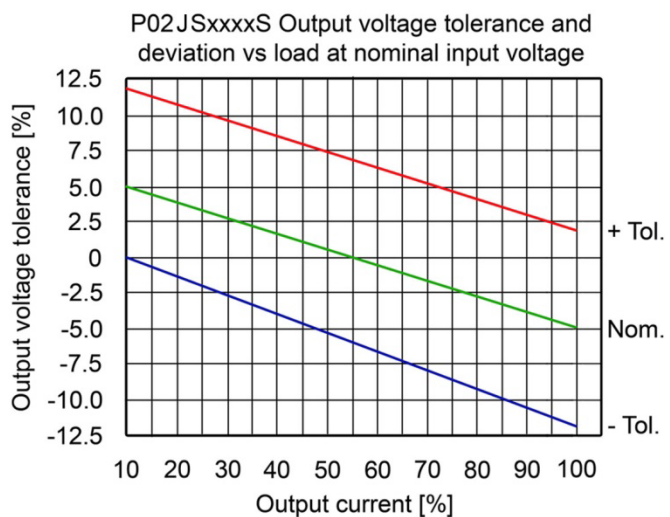
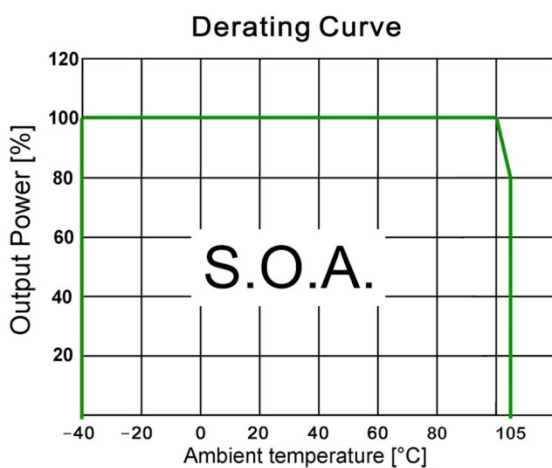
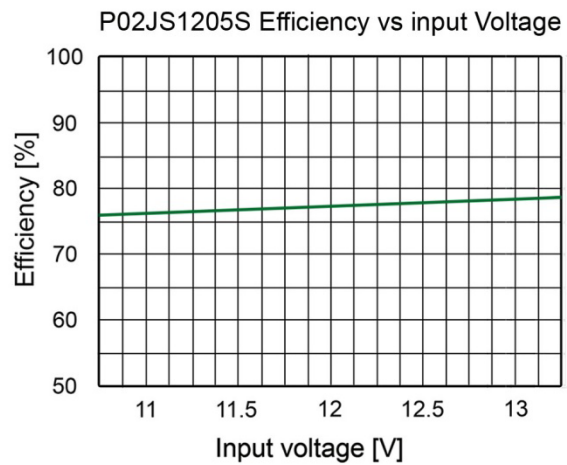
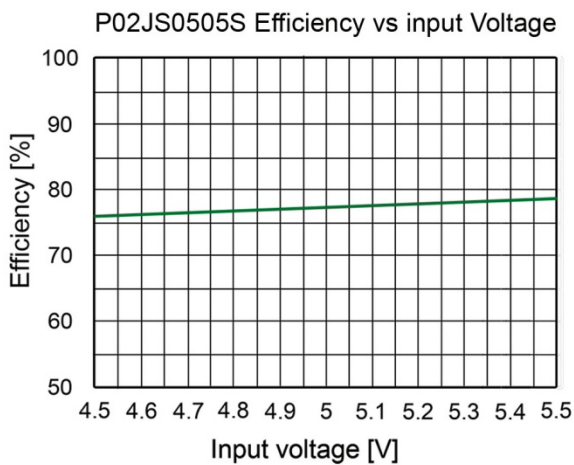
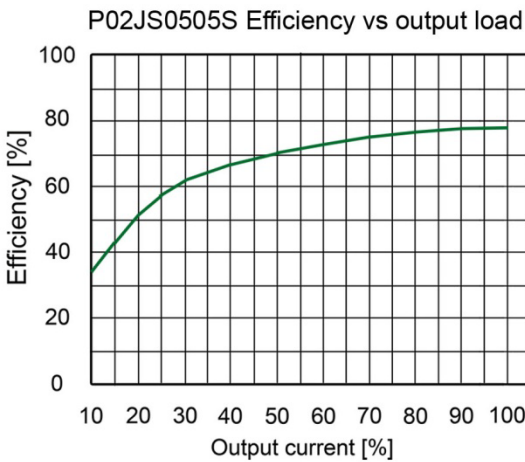
Note:

1. Operation under minimum load will not damage the converter. However, they may not meet all specifications.
2. Maximum capacitive load is tested at nominal input voltage and full load.
3. Unless otherwise noted, all specifications are measured at Ta 25 °C, humidity <75 %, nominal input voltage and rated output load.
4. Specifications of this product are subject to changes without prior notice.
5. P02JS series is not usable for IGBT driver applications.



PHI-CON

0.25 W SMD DC-DC Converter P02JS-Series

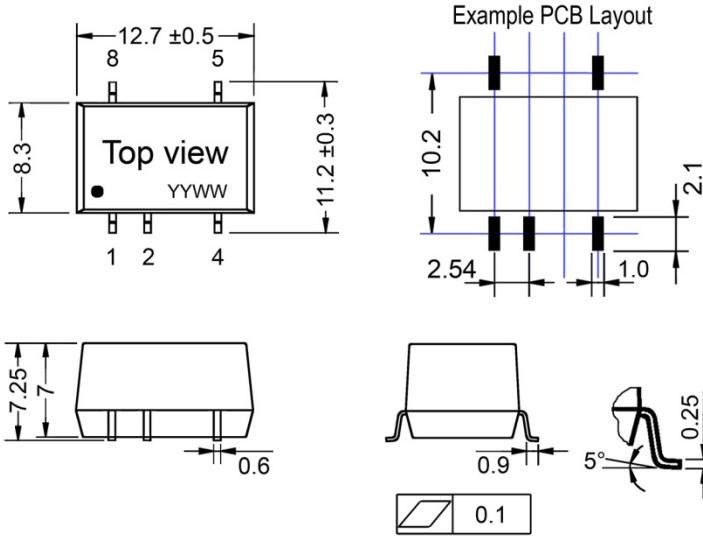




PHI-CON

0.25 W SMD DC-DC Converter P02JS-Series

Dimensions and footprint layout

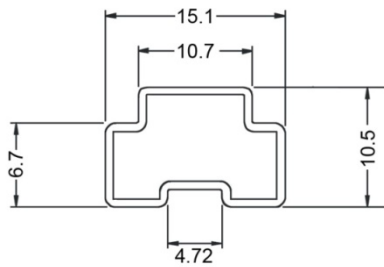


Notes:

All dimensions are in mm
Pitch 2.54 mm
General tolerances ± 0.25 mm
Pin tolerances ± 0.1 mm

Lead	Lead connection
1	- Vin/GND
2	+ Vinput
3	No lead
4	- Voutput
5	+ Voutput
6	No lead
7	No lead
8	Not connected

Dimensions tube packing

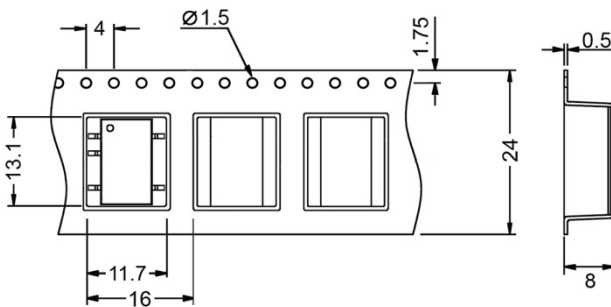


Note:

Unit: mm
General tolerances: ± 0.5 mm

Short tube, quantity 15 pieces
Long tube, quantity 32 pieces
Reel 330 mm, quantity 500 pieces

Dimensions tape packing



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: 20220209 n