3S7B2_3UP series

3W - Single/Dual Output DC-DC Converter - Isolated & Unregulated

DC-DC Converter 3 Watt

- SIP7 package
- 3000VDC isolation
- Operating temperature range: -40°C to +105°C
- Up to 86% efficiency
- International standard pinning
- MTBF 3,500,000 hours

Introducing our new 3S7B2_3UP series. Designed in a compact SIP7 package, this series combines reliability with performance. With a high isolation voltage of 3000VDC, an extended operating temperature range from -40°C to +105°C, and efficiency levels up to 86%, it delivers stable and dependable operation across demanding environments. Built to international standard pinning and boasting an MTBF of 3,500,000 hours, it ensures long-lasting durability. Application areas include electric power, industrial control, communications, the Internet of Things, automotive, and more.

Common specifications

Short circuit protection	Continuous, self recovery
Switching frequency	250 kHz (full load, nominal input voltage)
Operation temperature	-40°C ~+105°C (with derating)
Storage temperature	-55°C ~+125°C
Pin welding can withstand the highest temperature	+300°C (soldering spot is 1.5mm away from case for 10 seconds)
Case temperature rise	25°C (Ta = 25°C nominal input, output load)
Storage humidity	95% RH (non-condensing)
MTBF: (MIL-HDBK-217F@25°C)	3,500,000 hours
Input filter	Capacitance filter
Hot plug	Unavailable
Case material	Black plastic; flame-retardant and heat-resistant (UL94V-0 rated)
Package dimensions	19.60 x 7.05 x 10.10 mm
Weight	2.02 g (typ.)
Cooling method	Free air convection

Output specifications

Item	Test condition	Min	Typ	Max	Units
Output voltage accuracy	See envelope curve figure 1				
Linear regulation rate	Input voltage variation		±1.2		%
Load regulation rate (10% - 100% load)	5VDC output Other output		12 10		%
Ripple noise	20MHz bandwidth (peak to peak)		75	150	mV
Temperature drift efficient	Full load			±0.03	%/°C

Isolation specifications

Item	Test condition	Min	Typ	Max	Units
Isolation voltage	Input-output, test time 1 minute, leakage current less than 1mA	3000			VDC
Isolation resistance	Input-output, isolated voltage 500VDC	1000			MΩ
Isolation capacitance	Input-output, 100kHz/0.1V		20		pF

Input specifications

Item	Test condition	Min	Typ	Max	Units
Input current (full load/ no load)	5VDC input 12VDC input 15VDC input		750/6 312/4 240/4	--/15 --/15 --/20	mA
Reflected ripple current			15		mA
Impulse voltage	5VDC input 12VDC input 15VDC input	-0.7 -0.7 -0.7		9 18 21	VDC

1. The input voltage should not exceed the specified range value, otherwise it may cause permanent and irreparable damage;
2. It is recommended to use at a load of over 5%. If the load is below 5%, the ripple index of the product may exceed the specifications, but it does not affect the reliability of the product;
3. The maximum capacitive load is tested within the input voltage range and under full load conditions;
4. Unless otherwise specified, all indicators in this datasheet are measured at Ta = 25°C, humidity <75% RH, nominal input voltage, and output rated load;
5. All indicator testing methods in this datasheet are based on our standards;
6. Product specifications are subject to change without prior notice.

Example:
3S7B2_1205S3UP
3 = 3Watt; S7 = SIP; B2 = Series; 12 = 12Vin; 05 = 5Vout; S = Single Output;
3 = 3000VDC isolation; U = Unregulated Output; P = Short circuit protection.

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EMC specifications				
EMC	EMI	CE	CISPR32/EN55032 CLASS B (the recommended circuit is shown in Figure 4)	
EMC	EMI	RE	CISPR32/EN55032 CLASS B (the recommended circuit is shown in Figure 4)	
EMC	EMS	Electrostatic Discharge	IEC/EN61000-4-2 Contact ±8kV	perf. Criteria B

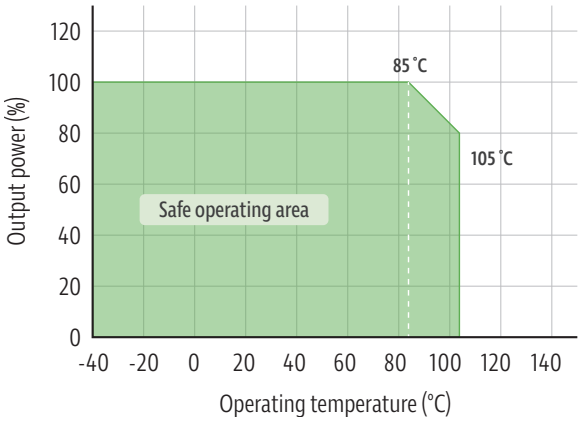
Product Selection Guide

Approval	Part number	Input Voltage Nominal (Range) (VDC)	Output Voltage (VDC)	Output Current (mA) max./min.	Full Load Efficiency% (min./typ.)	Capacitive Load max. (µF)
	3S7B2_0505S3UP	5	5	600/60	83	1200
	3S7B2_0509S3UP	5	9	333/33	83	1200
	3S7B2_0524S3UP	5	24	100/10	88	220
	3S7B2_1205S3UP	12	5	600/60	85	1200
	3S7B2_1212S3UP	12	12	250/25	86	220
	3S7B2_1515S3UP	15	15	200/20	83	220

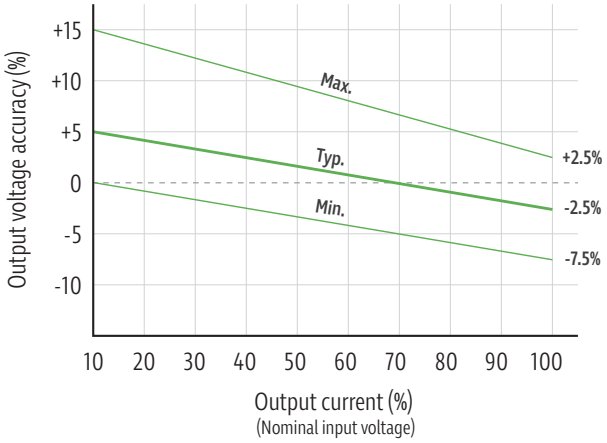
Approval	Part number	Input Voltage Nominal (Range) (VDC)	Output Voltage (VDC)	Output Current (mA) max./min.	Full Load Efficiency% (min./typ.)	Capacitive Load max. (µF)
	3S7B2_0506D3UP	5	±6	±250/±25	83	560

Typical characteristics

Temperature derating graph



Output regulation curve



Typical circuit design and application

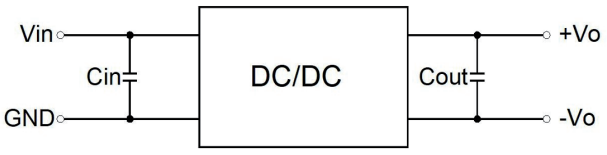


Figure3

Recommended capacitive load valuet able

Vin	Cin	Vo	Cout
5VDC	10uF/16V	5/6VDC	10uF/16V
12VDC	4.7uF/25V	12/15VDC	2.2uF/25V
15VDC	2.2uF/25V	24VDC	1.0uF/50V

EMI recommended component parameters

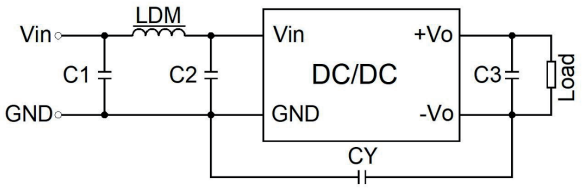


Figure4

EMI recommended component parameters

Input Voltage (VDC)	5/12/15
C1/C2	4.7μF /50V
C3	Refer to the Cout parameter in Fig.3
CY	1nF/4kV
LDM	6.8μH

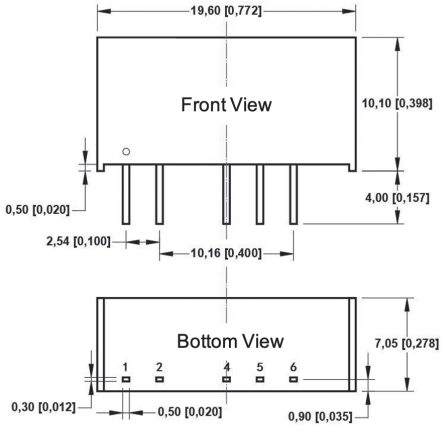
1. Typical applications

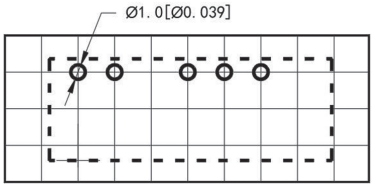
To further reduce input and output ripple, a capacitor filtering network can be connected at the input and output terminals.The application circuit is shown in Fig.3. However, care should be taken to select a suitable filter capacitor. If the capacitance is too large, it is likely to cause start-up problems. For each output, the recommended capacitive load values are shown in "Recommended Capacitive Load Value Table" for safe and reliable operation.

2. EMC typical recommended circuit
See Fig.4

3. Output load requirements
In order to ensure that the module can work efficiently and reliably, the minimum output load should not be less than 10% of the rated load when used. If the power required is really small, connect a resistor in parallel to the output end (the sum of the power consumed by the resistance and the power actually used is greater than or equal to 10% of the rated power).

Mechanical dimensions





Note:The grid distance is 2.54*2.54 mm

Pin definition table		
Pin	Functio (single)	Function (double)
1	Vin	Vin
2	GND	GND
4	-Vo	-Vo
5	No Pin	COM
6	+Vo	+Vo

Note:
Unit: mm [inch]
Pin section tolerances: ±0.10 [±0.004]
General tolerances: ±0.50 [±0.020]