3S7A1_1.5UP series

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

DC-DC Converter 3 Watt

- SIP7 package
- No-load input current as low as 8mA
- Continuous short circuit protection
- Operating temperature: -40°C to +105°C
- Up to 88% efficiency
- Unregulated output types
- 1500kVDC isolation
- Industry standard pinout
- Meets IEC62368, UL62368, EN62368 approvals

Introducing our new 3S7A1_1.5UP series in a compact SIP7 package, designed for efficient and reliable performance. With a no-load input current as low as 8mA, these modules ensure minimal energy consumption, making them highly efficient even when idle. Offering up to 88% efficiency, these modules deliver optimal power conversion while maintaining robust performance. They feature continuous short circuit protection, safeguarding your devices and ensuring long-term reliability.

Operating within a temperature range of -40°C to +105°C, they are suitable for use in various environmental conditions. The modules provide 1500VDC isolation, enhancing safety and protecting against electrical disturbances. Designed with an industry-standard pinout, our power modules are easy to integrate into your existing systems. They meet stringent safety standards, including IEC62368, UL62368, and EN62368 approvals, ensuring compliance with global regulations.

Common specifications

Short circuit protection:	Continuous.
Operation temperature range:	-40°C – +105°C (with derating)
Storage temperature range:	-55°C – +125°C
Case temperature rise (Ta = 25°C)	25°C
Storage humidity range:	95% RH max. (non-condensing)
MTBF (MIL-HDBK-217F@25°C):	>3500k hours
Case material:	DAP
Weight:	2.7g typ.
Dimensions	19.50 x 7.1 x 10.0 mm
Cooling:	Free air convection

Input specifications

Item	Test condition	Min	Typ	Max	Units
Voltage Range	Vo, Io Nom		±10		%
Input filter	Capacitance filter				

Isolation specifications

Item	Test condition	Min	Typ	Max	Units
Isolation voltage	Input-output, with the test time of 1 minute	1500			VDC
Isolation resistance	Input-output, test at 500VDC	1000			MΩ
Isolation capacitance	Input/output, 100kHz/0.1V		20		pF

Example:
3S7A1_1205D1.5UP
3 = 3Watt; S7 = SIP7; A1 = Pinning; 12 = 12Vin; 05 = 5Vout;
D = Dual Output; 1.5 = 1.5kVDC isolation; U = Unregulated Output;
P = Short circuit protection

Output specifications

Item	Test condition	Min	Typ	Max	Units
Voltage tolerance	100% full load			±5	%
Line regulation	For 1.0% OF Vin		1.2		%
Load regulation 10% to 100%	5V 12V 15V 24V		9 7 6 5	15 10 10 10	% % % %
Ripple & noise*	20MHz Bandwidth		100	150	mVp-p
Switching frequency	Full load, nominal input		250		kHz

Note:* The "parallel cable" method is used for ripple and noise test, please refer to DC-DC converter application notes for specific information.

EMC specifications

Emissions	CE	CISPR32/EN55032 CLASS B (see Fig for recommended circuit)
Emissions	RE	CISPR32/EN55032 CLASS B (see Fig. for recommended circuit)
Immunity	ESD	IEC/EN61000-4-2 Air ±8kV , Contact ±6kV perf. Criteria B

Note:
1. Operation under minimum load will not damage the converter; however, they may not meet all specifications.
2. Max. 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. In this datasheet, all test methods are based on our corporate standards.
5. All characteristics are for listed models, and non-standard models may per form differently. Please contact our technical support for more detail.
6. Please contact our technical support for any specific requirement.
7. Specifications of this product are subject to changes without prior notice.

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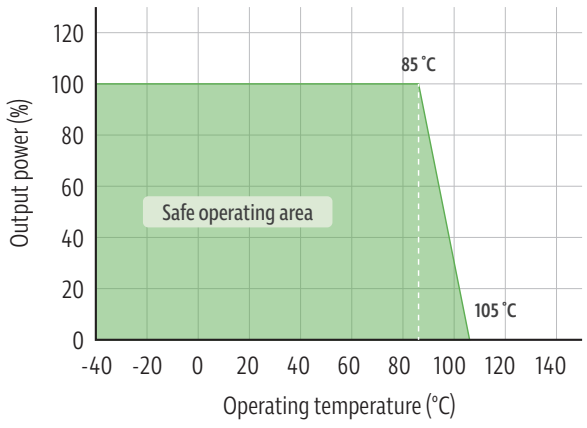
Product Selection Guide

Part Number	Input Voltage [Nominal, V]	Output Voltage [VDC]	Output current [mA]	Max. capacitive load [µF]	Efficiency [%, typ]
3S7A1_1205S1.5UP	12	5	600	1000	85
3S7A1_1212S1.5UP	12	12	250	220	87
3S7A1_1215S1.5UP	12	15	200	220	88
3S7A1_1224S1.5UP	12	24	125	47	88
3S7A1_1505S1.5UP	15	5	600	1000	85
3S7A1_1512S1.5UP	15	12	250	220	87
3S7A1_1515S1.5UP	15	15	200	220	88
3S7A1_1524S1.5UP	15	24	125	47	88
3S7A1_2405S1.5UP	24	5	600	1000	85
3S7A1_2412S1.5UP	24	12	250	220	87
3S7A1_2415S1.5UP	24	15	200	220	88
3S7A1_2424S1.5UP	24	24	125	47	88

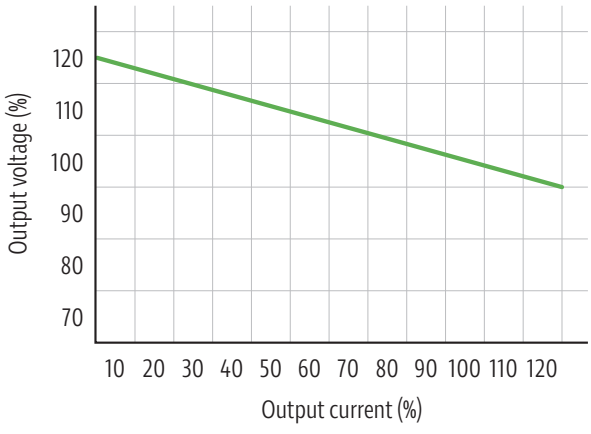
Part Number	Input Voltage [Nominal, V]	Output Voltage [VDC]	Output current [mA]	Max. capacitive load [µF]	Efficiency [%, typ]
3S7A1_1205D1.5UP	12	±5	±300	±560	86
3S7A1_1212D1.5UP	12	±12	±125	±100	86
3S7A1_1215D1.5UP	12	±15	±100	±100	88
3S7A1_1224D1.5UP	12	±24	±63	±22	88
3S7A1_1505D1.5UP	15	±5	±300	±560	86
3S7A1_1512D1.5UP	15	±12	±125	±100	86
3S7A1_1515D1.5UP	15	±15	±100	±100	88
3S7A1_1524D1.5UP	15	±24	±63	±22	88
3S7A1_2405D1.5UP	24	±5	±300	±560	86
3S7A1_2412D1.5UP	24	±12	±125	±100	86
3S7A1_2415D1.5UP	24	±15	±100	±100	88
3S7A1_2424D1.5UP	24	±24	±63	±22	88

Typical characteristics

Temperature derating graph



Tolerance envelope graph



Typical application

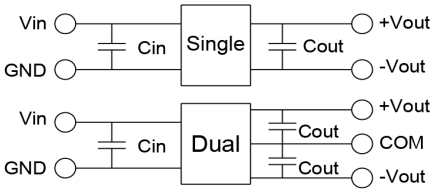


Fig:1

Table 1: Recommended input and output capacitor values

Vin	Cin	Single Vout	Cout	Dual Vout	Cout
12VDC	2.2µF/25V	5VDC	10µF/16V	±5Vdc	±4.7µF/16V
15VDC	2.2µF/25V	9VDC	2.2µF/16V	±9Vdc	±1µF/16V
24VDC	1µF/50V	12VDC	2.2µF/25V	±12Vdc	±1µF/25V
		15VDC	1µF/25V	±15Vdc	±1µF/25V
		24VDC	1µF/50V	±24Vdc	±1µF/50V

EMC typical recommended circuit (CLASS B)

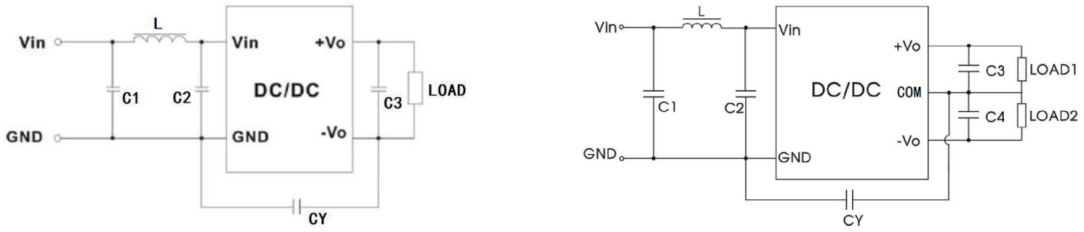
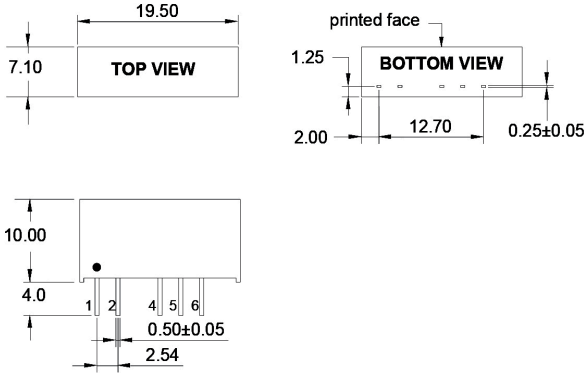


Fig:2

Table: EMC recommended circuit value table

Emissions	C1	10µF /50V
Emissions	C2	10µF /50V
Emissions	CY	1nF/4kV
Emissions	C3, C4	Recommended test circuit
Emissions	L	6.8µH

Mechanical dimensions



7 PIN SIP	
Pin	Function
1	+Vin
2	-Vin
4	-Vout
5	No Pin (S) - COM (D)
6	+Vout

UNIT: mm Unless otherwise specified, all tolerances are ±0.25