



## 2S4A1\_1.5UP series

2W - Single Output DC-DC Converter - Fixed Input - Isolated & Unregulated

### DC-DC Converter 2 Watt

- ⊕ 4Pin SIP Package
- ⊕ Continuous short-circuit protection
- ⊕ No-load input current as low as 5mA
- ⊕ Operating ambient temp. range: -40°C to +105°C
- ⊕ High efficiency up to 89%
- ⊕ I/O isolation test voltage 1.5kVDC
- ⊕ Industry standard pin-out
- ⊕ Meets IEC62368, UL62368, EN62368 approvals

Introducing our cutting-edge 2S4A1\_1.5UP series with a SIP4 Package, designed to meet the demanding needs of modern electronic applications. This package offers continuous short-circuit protection, ensuring your devices remain safe and operational under any circumstances. With a no-load input current as low as 5mA, it maximizes efficiency even in standby mode. Our SIP Package operates within a wide ambient temperature range from -40°C to +105°C, making it suitable for various environments and conditions. It boasts an impressive high efficiency of up to 89%, ensuring optimal performance and energy savings.

The I/O isolation test voltage stands at a robust 1.5kVDC, providing reliable insulation and safety. Adhering to an industry-standard pin-out, our SIP Package integrates seamlessly into your existing designs. It is built to comply with international standards IEC62368, UL62368, and EN62368, ensuring high quality and safety.



#### Common specifications

Short circuit protection	Continuous
Operation temperature	-40°C ~ +105°C (with derating)
Storage temperature	-55°C ~ +125°C
Storage humidity	95% RH (non-condensing)
MTBF: (MIL-HDBK-217F@25°C)	>3,500,000 hours
Case Material	DAP
Dimensions	11.5 x 6.0 x 10.0 mm
Weight	1.5g (typ.)
Cooling	Free air convection

#### Input specifications

Item	Test condition	Min	Typ	Max	Units
Voltage range	Vo, Io Nom		±10		%
Filter	Capacitor				

#### Example:

##### 2S4A1\_1205S1.5UP

2 = 2 Watt; S4 = SIP4; A1 = Series; 12 = 12Vin; 05 = 5Vout;  
S = Single output; 1.5 = 1.5kVDC; U = Unregulated output;  
P = Short circuit protection

#### Output specifications

Item	Test condition	Min	Typ	Max	Units
Output voltage accuracy	100% load			±5	%
Line regulation	For 1.0% of Vin			1.2	%
Load regulation (10% to 100% load)	5V		8	15	%
	9V		6	10	%
	12V		5	10	%
	15V		4	10	%
	24V		3	10	%
Ripple & noise	BW = DC to 20MHz		75	150	mVp-p
Switching frequency	Full load, nominal input		250		KHz

#### Isolation specifications

Item	Test condition	Min	Typ	Max	Units
Isolation voltage		1500			VDC
Isolation resistance	Test at 500VDC	1000			MΩ
Isolation capacitance	Input/Output capacitance 100KHz/0.1V		20		pF

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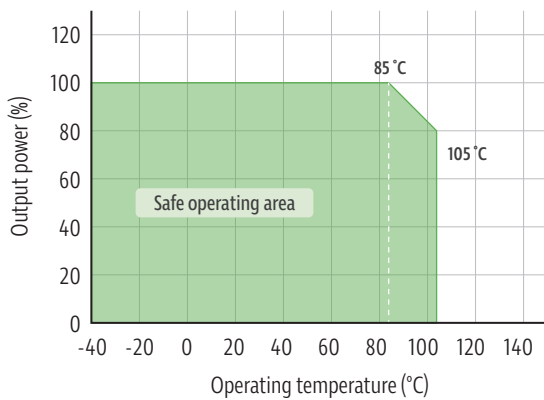
2W - Single Output DC-DC Converter - Fixed Input - Isolated & Unregulated

### Product Selection Guide

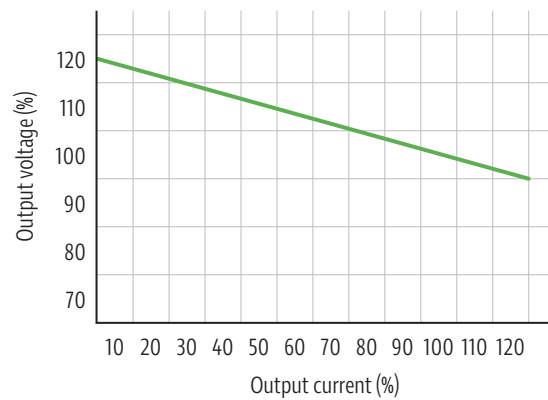
Model	Output Voltage (VDC)	Output Current (mA)	Full Load Efficiency (%) Typ.	Capacitive Load ( $\mu$ F) Max.
2S4A1_0505S1.5UP	5	400	84	2400
2S4A1_0509S1.5UP	9	223	85	820
2S4A1_0512S1.5UP	12	167	85	470
2S4A1_0515S1.5UP	15	133	86	220
2S4A1_0524S1.5UP	24	84	87	100
2S4A1_1205S1.5UP	5	400	85	2400
2S4A1_1209S1.5UP	9	223	87	820
2S4A1_1212S1.5UP	12	167	87	470
2S4A1_1215S1.5UP	15	133	88	220
2S4A1_1224S1.5UP	24	84	89	100
2S4A1_1505S1.5UP	5	400	85	2400
2S4A1_1509S1.5UP	9	223	87	820
2S4A1_1512S1.5UP	12	167	87	470
2S4A1_1515S1.5UP	15	133	88	220
2S4A1_1524S1.5UP	24	84	89	100

### Typical characteristics

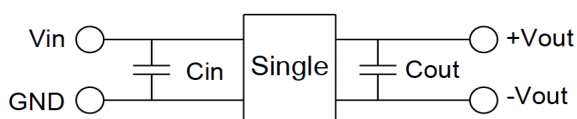
Temperature derating graph



Tolerance envelope graph



### Recommended test circuit



Vin	Cin	Single Vout	Cout
5VDC	4.7 $\mu$ F/25V	5VDC	10 $\mu$ F/16V
12VDC	2.2 $\mu$ F/25V	9VDC	2.2 $\mu$ F/16V
15VDC	2.2 $\mu$ F/25V	12VDC	2.2 $\mu$ F/16V
24VDC	1 $\mu$ F/50V	15VDC	2.2 $\mu$ F/25V
		24VDC	1 $\mu$ F/50V

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### EMC (CLASS B) compliance circuit

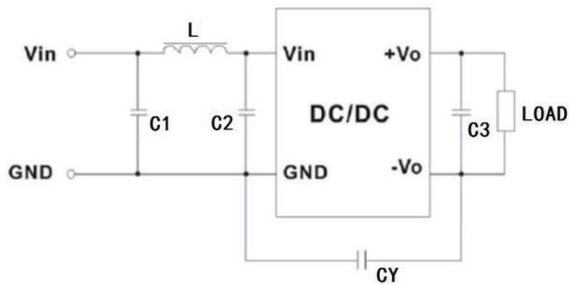
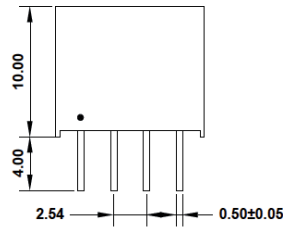
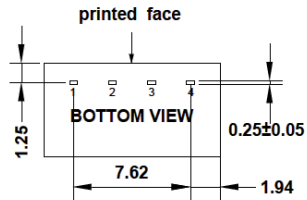
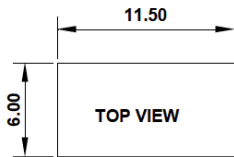


Fig. 1

EMC recommended circuit value table

EMI	C1	4.7 $\mu$ F /50V
EMI	C2	4.7 $\mu$ F /50V
EMI	CY	1nF/4kV
EMI	C3	Recommended Test Circuit
EMI	L	6.8 $\mu$ H

### Mechanical dimensions



Pin-Out	
Pin	Function
1	-Vin
2	+Vin
3	-Vout
4	+Vout

UNIT: mm Unless otherwise specified, all tolerances are  $\pm$ 0.25