

1S4A1_1.5UP series

1W - Single output DC-DC converter - Fixed input - Isolated & unregulated



DC-DC Converter

1 Watt

- ⊕ SIP4 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 87%
- ⊕ I/O isolation test voltage 1500kVDC
- ⊕ Unregulated output types
- ⊕ Industry standard pin-out
- ⊕ UL/cUL/IEC/EN 62368-1 approved

Introducing our cutting-edge 1S4A1_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 87%, 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
Cooling	Free air Convection
Dimensions	11.5 x 6.0 x 10.0 mm
Weight	1.1g typ.

Input specifications

Item	Test condition	Min	Typ	Max	Units
Voltage range (Vo, Io Nom)	3.3V, 5V, 9V 12V, 15V, 24V		±10 ±20		%
Filter	Capacitor				

Example:

1S4A1_120551.5UP

1 = 1 Watt; S4 = SIP4; A1 = Series; 12 = 12Vin; 05 = 5Vout;
S = Single output; 1.5 = 1.5kVDC; U = Unregulated output;
P = Short circuit protection

Electromagnetic compatibility (EMC)

EMI	CE	CISPR32/EN55032 CLASS B (see fig. 1 for recommended circuit)
	RE	CISPR32/EN55032 CLASS B (see fig. 1 for recommended circuit)
EMS	ESD	IEC/EN61000-4-2 air ±8kV , Contact ±6kV perf. criteria B

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% fullload)	3.3V		15	20	%
	5V		10	15	%
	9V		8	10	%
	12V		7	10	%
	15V		6	10	%
Ripple & noise BW = DC to 20MHz	@Vo: 3.3V, 5V, 9V, 12V, 15V		30	75	mVp-p
	@ Vo: 24V		50	100	mVp-p
Switching frequency	Full load, nominal input @3.3V, 5V Vin		215/370		kHz
Switching frequency	Full load, nominal input @other Vin		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

Note:

- If the product is not operated within the specified load range, its performance cannot be guaranteed to meet all the parameters listed in the datasheet.
- The maximum capacitive load was tested under the full input voltage range and load conditions.
- Unless otherwise stated, the parameters in this datasheet were measured under the conditions of Ta = 25°C, humidity <75%RH, with nominal input voltage and rated output load.
- All testing methods referenced in this datasheet are based on our company's corporate standards.
- We offer product customization services; please contact our technicians directly for more detailed information.
- Products are subject to laws and regulations; refer to the "Features" and "EMC" sections for more information.
- Our products are classified according to ISO14001 and relevant environmental

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Product Selection Guide

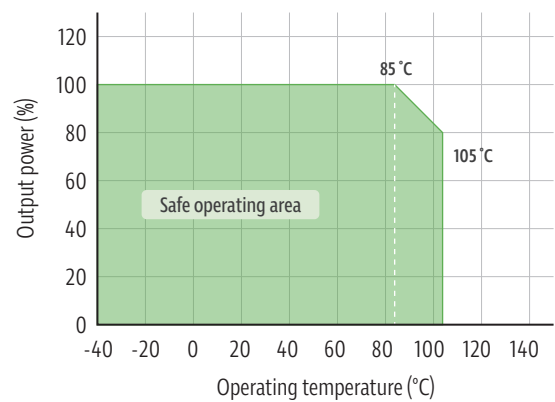
Part Number	Input Voltage [VDC, Nom]	Output Voltage [VDC]	Output Current [mA]	Full Load Efficiency [% , Typ.]	Capacitive Load [μF, Max.]
1S4A1_0303S1.5UP	3.3	3.3	303	76	2400
1S4A1_0305S1.5UP	3.3	5	200	82	2400
1S4A1_0309S1.5UP	3.3	9	112	83	1000
1S4A1_0312S1.5UP	3.3	12	84	84	470
1S4A1_0315S1.5UP	3.3	15	67	84	330
1S4A1_0324S1.5UP	3.3	24	42	85	100
1S4A1_0503S1.5UP	05	3.3	303	76	2400
1S4A1_0505S1.5UP	05	5	200	82	2400
1S4A1_0509S1.5UP	05	9	112	83	1000
1S4A1_0512S1.5UP	05	12	84	84	470
1S4A1_0515S1.5UP	05	15	67	84	330
1S4A1_0524S1.5UP	05	24	42	85	100
1S4A1_0903S1.5UP	09	3.3	303	76	2400
1S4A1_0905S1.5UP	09	5	200	82	2400
1S4A1_0909S1.5UP	09	9	112	83	1000
1S4A1_0912S1.5UP	09	12	84	84	470
1S4A1_0915S1.5UP	09	15	67	84	330
1S4A1_0924S1.5UP	09	24	42	85	100
1S4A1_1203S1.5UP	12	3.3	303	78	2400
1S4A1_1205S1.5UP	12	5	200	82	2400
1S4A1_1209S1.5UP	12	9	112	85	1000
1S4A1_1212S1.5UP	12	12	84	85	680
1S4A1_1215S1.5UP	12	15	67	87	330
1S4A1_1224S1.5UP	12	24	42	85	220
1S4A1_1503S1.5UP	15	3.3	303	78	2400
1S4A1_1505S1.5UP	15	5	200	82	2400
1S4A1_1509S1.5UP	15	9	112	85	1000
1S4A1_1512S1.5UP	15	12	84	85	680
1S4A1_1515S1.5UP	15	15	67	87	330
1S4A1_1524S1.5UP	15	24	42	85	220
1S4A1_2403S1.5UP	24	3.3	303	78	2400
1S4A1_2405S1.5UP	24	5	200	82	2400
1S4A1_2409S1.5UP	24	9	112	85	1000
1S4A1_2412S1.5UP	24	12	84	85	680
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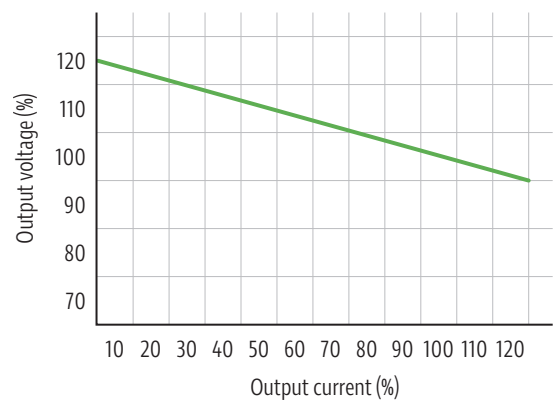
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Typical characteristics

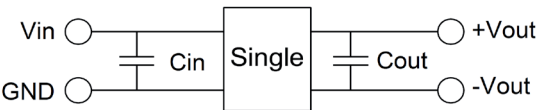
Temperature derating graph



Tolerance envelope graph



Recommended test circuit



Vin	Cin	Single Vout	Cout
3.3VDC	4.7µF/25V	3.3VDC	10µF/16V
5VDC	4.7µF/25V	5VDC	10µF/16V
9VDC	4.7µF/25V	9VDC	2.2µF/16V
12VDC	2.2µF/25V	12VDC	2.2µF/25V
15VDC	2.2µF/25V	15VDC	1µF/25V
24VDC	1µF/25V	24VDC	1µF/50V

EMC (CLASS B) compliance circuit

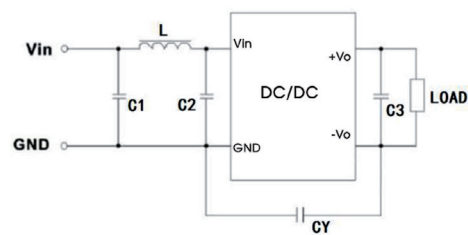


Fig. 1

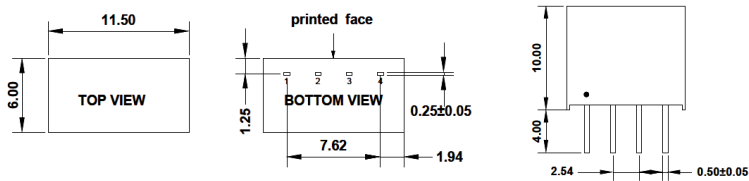
EMC recommended circuit value table

EMI	C1	4.7µF /50V
EMI	C2	4.7µF /50V
EMI	CY	1nF/4kV
EMI	C3	Recommended test circuit
EMI	L	6.8µH

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Mechanical dimensions



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

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