2S7A1_1.5UP series

2W - Single/Dual Output DC-DC Converter - Isolated & Unregulated

DC-DC Converter 2 Watt

- Features a 7-Pin SIP package
- No-load input current as low as 5mA
- Provides continuous short-circuit protection
- Achieves high efficiency of up to 89%
- Offers unregulated output types
- Ensures 1.5kVDC isolation
- Operates within a temperature range of -40°C to +105°C
- Follows industry standard pinout
- Compliant with IEC62368, UL62368, and EN62368 approvals

Introducing our latest 2S7A1_1.5UP series, featuring a 7-Pin SIP package designed for efficient and reliable performance. With a no-load input current as low as 5mA, this product ensures minimal energy consumption when not in use. It offers continuous short-circuit protection, safeguarding your devices from potential damage. Achieving high efficiency of up to 89%, this product delivers optimal power usage. It comes with unregulated output types and provides a robust 1.5kVDC isolation. Designed to operate in a wide temperature range from -40°C to +105°C, it is suitable for various environmental conditions.

The industry-standard pinout ensures compatibility with existing systems, and it meets the stringent IEC62368, UL62368, and EN62368 approvals, guaranteeing adherence to international safety standards.

UL62368 - E347551

Common specifications

Short circuit protection	Continuous
Operation temperature	-40°C ~+105°C (with derating)
Storage temperature	-55°C ~+125°C
Humidity	95 %RH (non condensing)
MTBF: (MIL-HDBK-217F@25°C)	3,500,000 Hours
Case material	DAP
Switching frequency	Full load, nominal input (250 kHz)
Dimensions	19.5 x 6.0 x 10.0 mm
Weight	2.1 g
Cooling	Free air convection

Input specifications

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

Example:
2S7A1_0509D1.5UP
2 = 2Watt; S7 = SIP7; A1 = Pinning; 05 = 5Vin; 09 = 9Vout; D = Dual Output; 1.5 = 1.5kVDC; 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 9V 12V 15V 24V		8 6 5 4 3	15 10 10 10 10	% % % % %
Ripple & noise	BW = DC to 20MHz		75	150	mVp-p

Isolation specifications

Item	Test condition	Min	Typ	Max	Units
Insulation resistance	500VDC	1000			MΩ
Isolation voltage	Input to output	1500			VDC
Isolation capacitance	Input-output, 100kHz/0.1V		20		pF

EMC specifications

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

GAPTEC-Electronic GmbH & Co. KG
sales@gaptec-electronic.com – www.gaptec-electronic.com

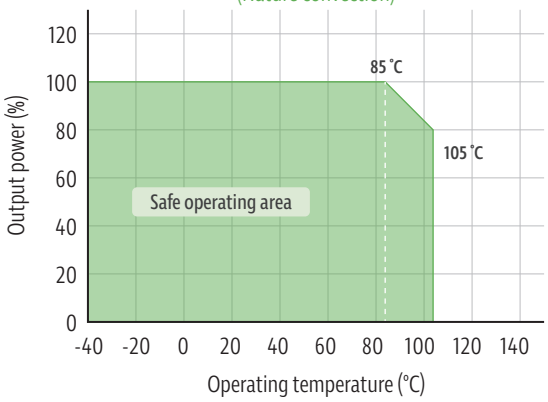
Product Selection Guide

Approval	Part number	Input Voltage (VDC)	Output Voltage (VDC)	Output Current (mA)	Efficiency (%) typ.	Capacitive Load (µF)max.
	2S7A1_0505S1.5UP	5	5	400	85	2400
	2S7A1_0509S1.5UP	5	9	223	87	820
	2S7A1_0512S1.5UP	5	12	167	87	470
	2S7A1_0515S1.5UP	5	15	133	88	220
	2S7A1_0524S1.5UP	5	24	84	89	100
	2S7A1_1205S1.5UP	12	5	400	85	2400
	2S7A1_1209S1.5UP	12	9	223	87	820
	2S7A1_1212S1.5UP	12	12	167	87	470
	2S7A1_1215S1.5UP	12	15	133	88	220
	2S7A1_1224S1.5UP	12	24	84	89	100
	2S7A1_1505S1.5UP	15	5	400	85	2400
	2S7A1_1509S1.5UP	15	9	223	87	820
	2S7A1_1512S1.5UP	15	12	167	87	470
	2S7A1_1515S1.5UP	15	15	133	88	220
	2S7A1_1524S1.5UP	15	24	84	89	100
	2S7A1_2405S1.5UP	24	5	400	85	2400
	2S7A1_2409S1.5UP	24	9	223	87	820
	2S7A1_2412S1.5UP	24	12	167	87	470
	2S7A1_2415S1.5UP	24	15	133	88	220
	2S7A1_2424S1.5UP	24	24	84	89	100

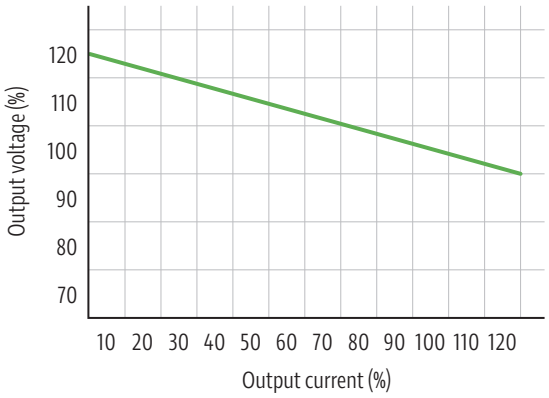
Approval	Serie	Input Voltage (VDC)	Output Voltage (VDC)	Output Current (mA)	Efficiency (%) typ.	Capacitive Load (µF)max.
	2S7A1_0505D1.5UP	5	±5	±200	82	±1200
	2S7A1_0509D1.5UP	5	±9	±112	85	±330
	2S7A1_0512D1.5UP	5	±12	±84	87	±330
	2S7A1_0515D1.5UP	5	±15	±67	88	±100
	2S7A1_0524D1.5UP	5	±24	±42	89	±47
	2S7A1_1205D1.5UP	12	±5	±200	82	±1200
	2S7A1_1209D1.5UP	12	±9	±112	85	±330
	2S7A1_1212D1.5UP	12	±12	±84	87	±330
	2S7A1_1215D1.5UP	12	±15	±67	88	±100
	2S7A1_1224D1.5UP	12	±24	±42	89	±47
	2S7A1_1505D1.5UP	15	±5	±200	82	±1200
	2S7A1_1509D1.5UP	15	±9	±112	85	±330
	2S7A1_1512D1.5UP	15	±12	±84	87	±330
	2S7A1_1515D1.5UP	15	±15	±67	88	±100
	2S7A1_1524D1.5UP	15	±24	±42	89	±47
	2S7A1_2405D1.5UP	24	±5	±200	82	±1200
	2S7A1_2409D1.5UP	24	±9	±112	85	±330
	2S7A1_2412D1.5UP	24	±12	±84	87	±330
	2S7A1_2415D1.5UP	24	±15	±67	88	±100
	2S7A1_2424D1.5UP	24	±24	±42	89	±47

Typical characteristics

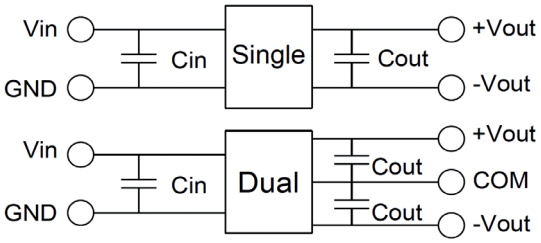
Temperature derating graph
(Nature convection)



Tolerance envelope graph



Recommended test circuit



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

EMC (CLASS B) compliance circuit

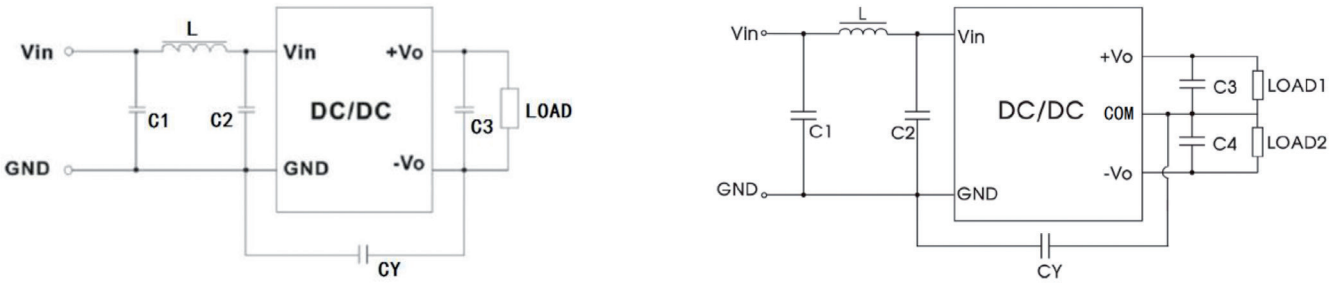
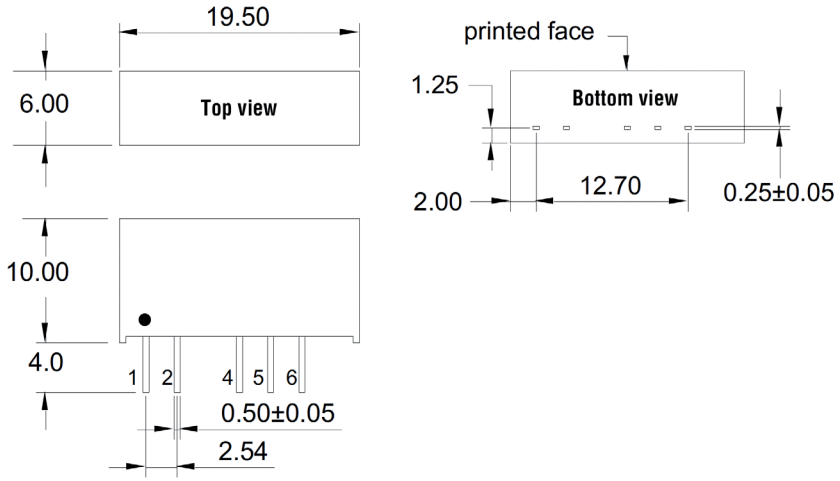


Fig. 1

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

Mechanical dimensions



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

PIN Connection					
PIN	1	2	4	5	6
Single	+Vin	-Vin	-Vout	No Pin	+Vout
Dual	+Vin	-Vin	-Vout	Com	+Vout