

2S7A_1RP Series

2W Single Output - Fixed Input - Isolated & Regulated
SIP PACKAGE

DC-DC Converter

2 Watt

- ⊕ Small Footprint
- ⊕ SIP Package
- ⊕ Low Ripple and good EMC features
- ⊕ Temperature Range: -40°C ~ +85°C
- ⊕ No Heat Sink Required
- ⊕ No External Component Required
- ⊕ 1KVDC Isolation
- ⊕ Internal SMD construction
- ⊕ Continuous Short Circuit Protection (SCP)
- ⊕ Industry Standard Pinout
- ⊕ RoHS Compliance

The 2S7A Series is specially designed for applications where a group of polar power supplies are isolated from the input power supply in a distributed power supply system on a circuit board.

These products apply to:

- 1) Where the voltage of the input power supply is fixed (voltage variation $\leq \pm 5\%$);
- 2) Where isolation is necessary between input and output (isolation voltage $\leq 1000\text{VDC}$);
- 3) Where the regulation of the output voltage and the output ripple and noise are demanded.



Common specifications	
Short circuit protection:	Continuous, self-recovery
Temperature rise at full load:	60°C MAX, 40°C TYP
Cooling:	Free air convection
Operation temperature range:	-40°C – +85°C
Storage temperature range:	-55°C – +125°C
Lead temperature	300°C (1.5mm from case for 10 sec.)
Storage humidity range:	< 95%
Case material:	Plastic [UL94-V0]
MTBF (MIL-HDBK-217F@25°C):	>3,500,000 hours
Weight:	2.4g

Output specifications						
Item	Test condition	Min	Typ	Max	Units	
Line regulation	For V_{in} change of $\pm 5\%$		± 0.5		%	
Load regulation	10% to 100% full load		± 1	± 2	%	
Output voltage accuracy	100% full load			± 3	%	
Temperature drift	100% full load			± 0.03	%/°C	
Ripple*	20MHz Bandwidth		20	30	mVp-p	
Noise*	20MHz Bandwidth		50	150	mVp-p	
Switching frequency	Full load, nominal input		100	300	KHz	

*Test ripple and noise by “parallel cable” method. See detailed operation instructions at Testing of Power Converter section, application notes.

Isolation specifications						
Item	Test condition	Min	Typ	Max	Units	
Isolation voltage	Tested for 1 minute	1000			VDC	
Isolation resistance	Test at 500VDC	1000			MΩ	
Isolation capacitance	Input-Output, 100KHz/0.1V		60		pF	

Model selection:

WCTP**_xxyyN##O

W=Watt; C= Case; T=Type; P=Pinning; **= Voltage Variation (omitted $\pm 10\%$); xx= V_{in} ; yy= V_{out} ; N= Numbers of Output; ##= Isolation (kVDC); O= output regulation

Example:

2S7A_0505S1RP

2= 2Watt; S7= SIP7; A= Pinning; 5Vin; 5Vout; S= Single Output; 1= 1kVDC; R= Regulated Output; P= Short Circuit Protection

Note:

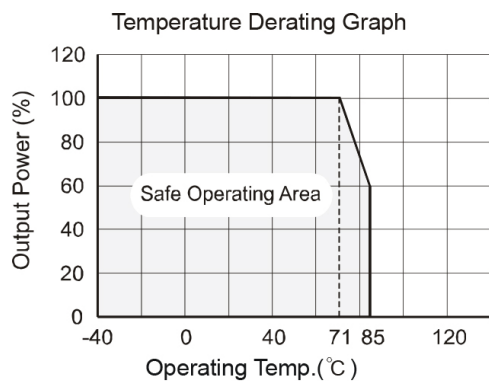
1. Operation under minimum load will not damage the converter; However, they may not meet all specification listed, and that will reduce the life of product.
2. All specifications measured at $T_a=25^\circ\text{C}$, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
3. In this datasheet, all the test methods of indications are based on corporate standards.
4. Only typical models listed, other models may be different, please contact our technical person for more details.

Part Number	Input Voltage [V]	Output Voltage [VDC]	Output Current [mA, max]		Input Current [mA, max]		Efficiency [%, typ]
			Max.	Min.	Max. load	Min. load	
2S7A_0505S1RP	5	5	400	40	580	25	69
2S7A_0512S1RP	5	12	150	15	507	25	71
2S7A_1205S1RP	12	5	400	40	238	20	70
2S7A_1215S1RP	12	15	133	13	231	20	72
2S7A_1505S1RP	15	5	400	40	190	15	70
2S7A_2405S1RP	24	5	400	40	119	8	70

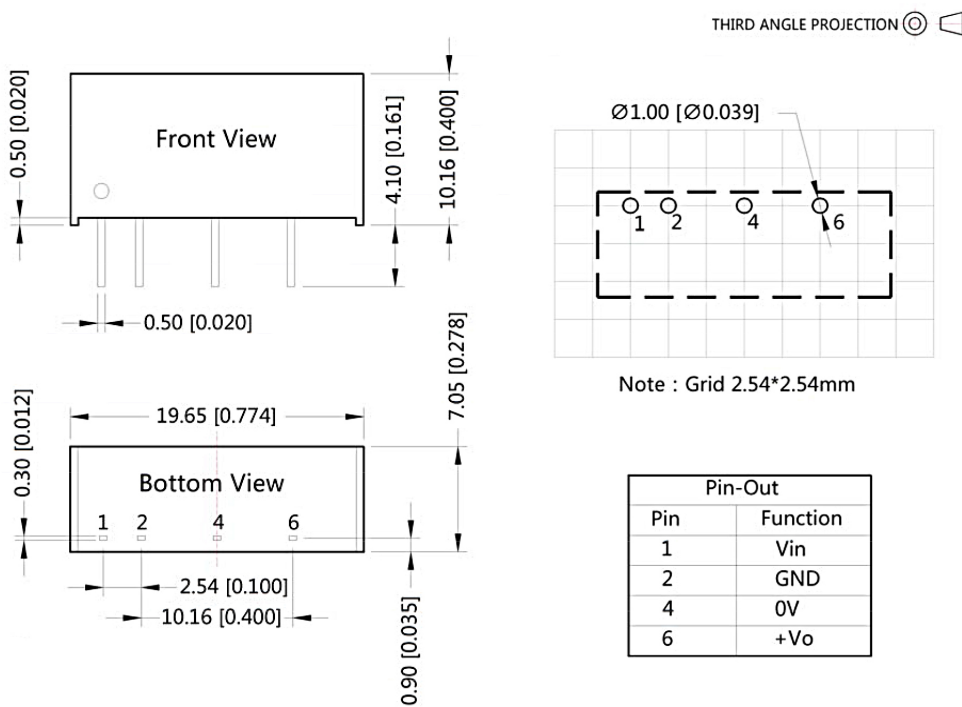
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Typical characteristics



Mechanical Dimensions



Note:

Unit: mm[inch]

Pin section tolerances: $\pm 0.10\text{mm}$ [$\pm 0.004\text{inch}$]

General tolerances: $\pm 0.25\text{mm}$ [$\pm 0.010\text{inch}$]

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Application note

1) Requirement on output load

To ensure this module can operate efficiently and reliably, During operation, the minimum output load could not be less than 10% of the full load. If the actual output power is very small, please connect a resistor with proper resistance at the output end in parallel to increase the load.

2) Recommended testing and application circuit

If you want to further decrease the input/output ripple, an "LC" filtering network may be connected to the input and output ends of the DC/DC converter, see (Figure 1).

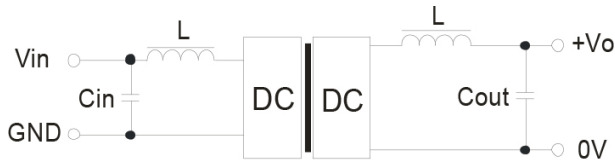


Figure 1

It should also be noted that the inductance and the frequency of the "LC" filtering network should be staggered with the DC/DC frequency to avoid mutual interference. However, the capacitance of the output filter capacitor must be proper. If the capacitance is too big, a startup problem might arise. For every channel of output, provided the safe and reliable operation is ensured, the greatest capacitance of its filter capacitor sees (Table 1).

Vin (VDC)	Cin (uF)	Single Vout (VDC)	Cout (uF)
5	4.7	5	4.7
12	2.2	12	2.2
15	1	15	1
24	0.47	--	--

3) Input Over-voltage Protection Circuit

The simplest device for input over-voltage protection is a linear voltage regulator with overheat protection that is connected to the input end in series (Figure 2).



Figure 2

4) Overload Protection

Under normal operating conditions, the output circuit of these products has no protection against overload. The simplest method is to connect self-recovery fuse in series at the input end or add a circuit breaker to the circuit.

5) When the environment temperature is higher than 71°C, the product output power should be less than 60% of the rated power.

6) It is not recommended to increase the output power capability by connecting two or more converters in parallel. The product is not hot-swappable.