



## 1S7A\_1RP Series

1W Single Output - Fixed Input - Isolated & Regulated  
SIP PACKAGE

# DC-DC Converter 1 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 1S7A Series is specially designed for applications where a single power supply is highly 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.



RoHS

Common specifications	
Short circuit protection:	1 second
Temperature rise at full load:	25°C MAX, 15°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:	>3,500,000 hours

Output specifications						
Item	Test condition	Min	Typ	Max	Units	
Output power		0.1		1	W	
Line regulation	For Vin change of $\pm 5\%$		$\pm 0.25$		%	
Load regulation	10% to 100% full load			$\pm 1$	%	
Output voltage accuracy	100% full load			$\pm 3$	%	
Temperature drift	100% full load			$\pm 0.03$	%/°C	
Ripple*	20MHz Bandwidth		10	20	mVp-p	
Noise*	20MHz Bandwidth		50	75	mVp-p	
Switching frequency	Full load, nominal input		100		KHz	

Isolation specifications						
Item	Test condition	Min	Typ	Max	Units	
Isolation voltage	Tested for 1 minute	1000			VDC	
Isolation resistance	Test at 500VDC	1000			MΩ	

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

**Model selection:**  
WCTP\*\*\_xxyyN#O  
W=Watt; C= Case; T=Type; P=Pinning; \*\*= Voltage Variation (omitted  $\pm 10\%$ ); xx= Vin; yy= Vout; N= Numbers of Output; ##= Isolation (kVDC); O= output regulation

**Example:**  
1S7A\_0505S1RP  
1=1Watt; S7= SIP7; A=Pinning; 5Vin; 5Vout; S=Single Output; 1=1kVDC; R=Regulated Output; P= Short Circuit Protection

Note:

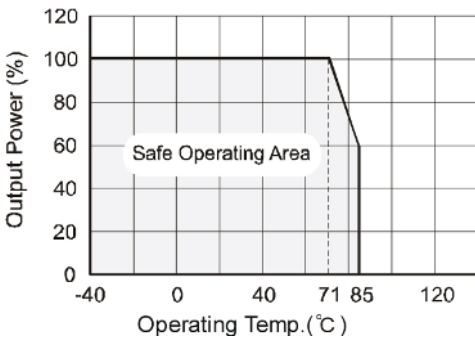
1. Operation under minimum load will not damage the converter; However, they may not meet all specification listed, and that will reduce the life of product.
2. All specifications measured at Ta=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
3. In this datasheet, 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.

## 1S7A\_1RP Series

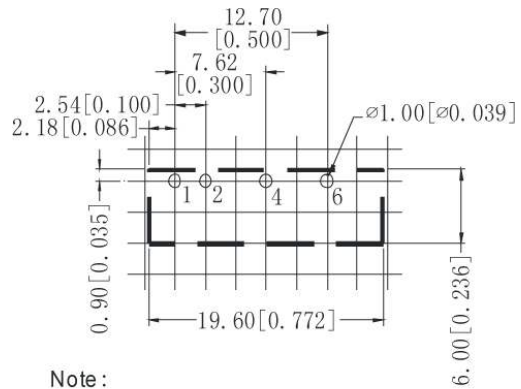
1W Output Dual Output - Fixed Input - Isolated & Regulated  
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Part Number	Input Voltage [V]	Output Voltage [VDC]	Current [mA, max]	Efficiency [%, max]	Package
1S7A_0505S1RP	5	5	200	66	SIP
1S7A_0509S1RP	5	9	111	70	SIP
1S7A_0512S1RP	5	12	83	71	SIP
1S7A_0515S1RP	5	15	67	73	SIP
1S7A_0524S1RP	5	24	42	68	SIP
1S7A_1205S1RP	12	5	200	67	SIP
1S7A_1209S1RP	12	9	111	72	SIP
1S7A_1212S1RP	12	12	83	70	SIP
1S7A_1215S1RP	12	15	67	74	SIP
1S7A_1224S1RP	12	24	42	68	SIP
1S7A_1505S1RP	15	5	200	67	SIP
1S7A_1509S1RP	15	9	111	71	SIP
1S7A_1515S1RP	15	15	67	72	SIP
1S7A_1524S1RP	15	24	42	68	SIP
1S7A_2405S1RP	24	5	200	68	SIP
1S7A_2409S1RP	24	9	111	68	SIP
1S7A_2412S1RP	24	12	83	73	SIP
1S7A_2415S1RP	24	15	67	75	SIP
1S7A_2424S1RP	24	24	42	68	SIP

### Typical characteristics



### Recommended footprint

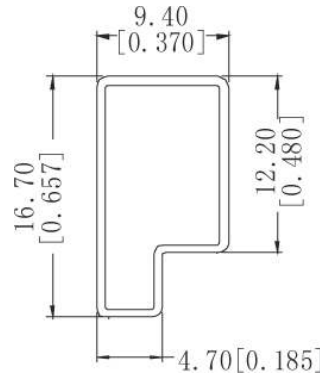
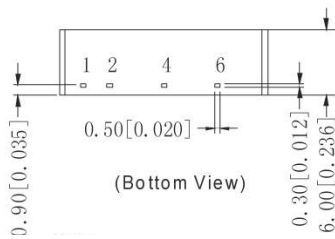
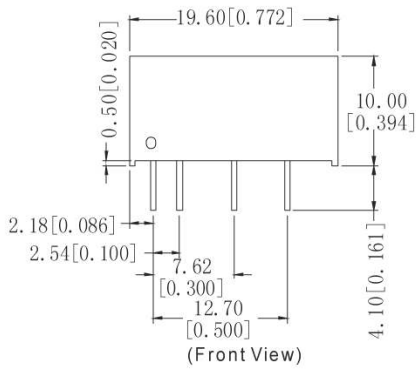


Note:  
Grid: 2.54\*2.54mm.

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## Mechanical Dimensions Tube Outline



Note:  
Unit: mm[inch]  
General tolerances: ±0.50mm [±0.020inch]

L=530mm [20.866inch]  
Tube Quantity: 25pcs

L=220mm [8.661inch]  
Tube Quantity: 10pcs

FOOTPRINT DETAILS	
Pin	Function
1	Vin
2	GND
4	0V
6	+Vo

Note:  
Unit: mm[inch]  
Pin section tolerances: ±0.10mm [±0.004inch]  
General tolerances: ±0.25mm [±0.010inch]

## 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, or use our company's products with a lower rated output power.

### 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).

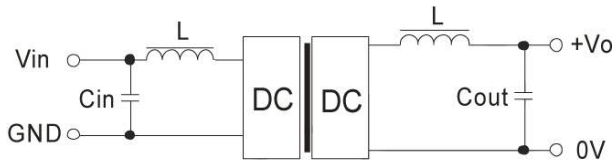


Figure 1

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	10
12	4.7	9	4.7
15	2.2	12	2.2
24	1	15	1
--	--	24	0.47

### 3) Input Over-voltage Protection Circuit

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

### 4) Overload Protection

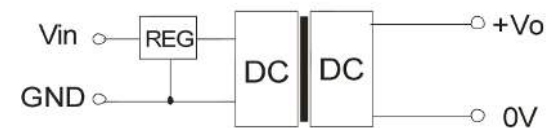


Figure 2

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

### 5) No parallel connection or plug and play