1S4E_1.5U series

1W - Single Output - Fixed Input - Isolated & Unregulated
Miniature SIP Package

DC-DC Converter 1 Watt

- **Fixed Input, isolation, Unregulated Output, 1W**
- **Isolation voltage: 1.5kVDC,**
- **SIP package**
- **Efficiency: up to 80%**
- **Operating temperature -40°C ~+85°C**
- **Industry standard pinout**
- **No heat sink required - no external component required**

The 1S4E_1.5U series are specially designed for applications where a single power supply is 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 ≤±10%);
2) Where isolation is necessary between input and output (isolation voltage = 1500VDC)
3) Where the regulation of the output voltage and the output ripple and noise are not demanding.

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
Storage humidity range:	< 95%
MTBF:	>3,500,000 hours
Case material:	Plastic [UL94-V0]
Dimension:	11.5 x 10 x 6 mm

Output specifications					
Item	Test condition	Min	Typ	Max	Units
Output power		0.1		1	W
Line regulation	For Vin change of 1%			1.2	%
Load regulation	10% to 100% full load			15	%
Temperature drift	100% full load			0.03	%/°C
Ripple and noise	20MHz Bandwidth			<75	mVp-p
Switching frequency	Full load, nominal input		100		KHz

Note:

1. All specifications measured at TA = 25°C, humidity < 75%, nominal input voltage and rated output load unless otherwise specified.
2. See below recommended circuits for more details.

Isolation specifications					
Item	Test condition	Min	Typ	Max	Units
Isolation voltage	Tested for 1 minute	1500			VDC
Isolation resistance	Test at 500VDC	1000			MΩ
Isolation resistance			60		pf

Example:
1S4E_0505S1.5U
1 = 1Watt; S4 = SIP4; E = Pinning; 05 = 5Vin; 05 = 5Vout;
S = Single Output; 1.5 = 1.5kVDC; U = Unregulated Output

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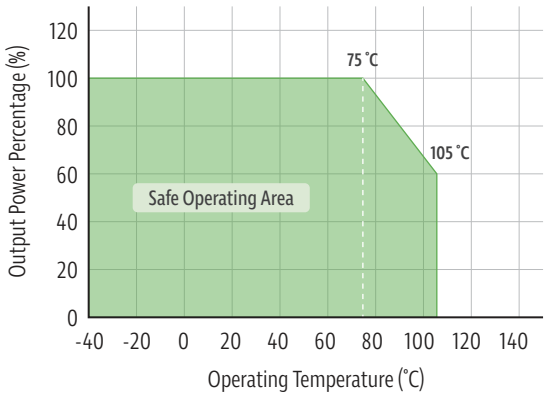
Product Selection Guide

Part Number	Input Voltage [V] Vin	Range	Output Voltage [VDC]	Output Current [mA] Min	Max	Efficiency [%, typ]
1S4E_0303S1.5U	3.3	3.13-3.46	3.3	30	303	72
1S4E_0305S1.5U	3.3	3.13-3.46	5	20	200	74
1S4E_0503S1.5U	5	4.5-5.5	3.3	30	300	72
1S4E_0505S1.5U	5	4.5-5.5	5	20	200	74
1S4E_0509S1.5U	5	4.5-5.5	9	11	110	72
1S4E_0512S1.5U	5	4.5-5.5	12	8	83	74
1S4E_0515S1.5U	5	4.5-5.5	15	6.8	68	72
1S4E_0524S1.5U	5	4.5-5.5	24	4.2	42	74
1S4E_1205S1.5U	12	10.8-13.2	5	20	200	74
1S4E_1209S1.5U	12	10.8-13.2	9	11	110	72
1S4E_1212S1.5U	12	10.8-13.2	12	8	83	74
1S4E_1215S1.5U	12	10.8-13.2	15	6.8	68	72
1S4E_1224S1.5U	12	10.8-13.2	24	4.2	42	74
1S4E_1505S1.5U	15	13.5-16.5	5	20	200	74
1S4E_1515S1.5U	15	13.5-16.5	15	6.8	68	72
1S4E_1818S1.5U	18	16.2-19.8	18	5	56	72
1S4E_2403S1.5U	24	21.6-26.4	3.3	30	303	74
1S4E_2405S1.5U	24	21.6-26.4	5	20	200	72
1S4E_2409S1.5U	24	21.6-26.4	9	11	110	74
1S4E_2412S1.5U	24	21.6-26.4	12	8	83	72
1S4E_2415S1.5U	24	21.6-26.4	15	6.8	68	74
1S4E_2424S1.5U	24	21.6-26.4	24	4.2	42	72
1S4E_4805S1.5U	48	43.2-52.8	5	20	200	72
1S4E_4809S1.5U	48	43.2-52.8	9	11	110	74
1S4E_4812S1.5U	48	43.2-52.8	12	8	83	72
1S4E_4815S1.5U	48	43.2-52.8	15	6.8	68	74
1S4E_4824S1.5U	48	43.2-52.8	24	4.2	42	72

Shows the nominal value of input voltage,due to space limitations, the above list is only for some products.

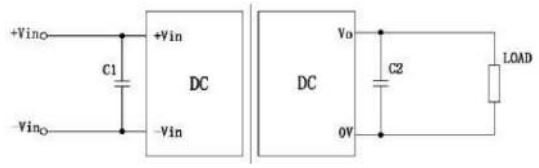
Typical characteristics

Temperature Derating Curve



Recommend Circuit

18V Series



Others

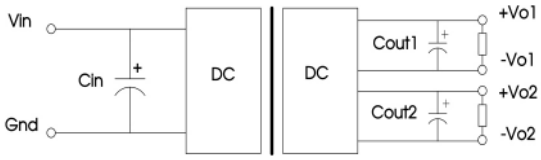
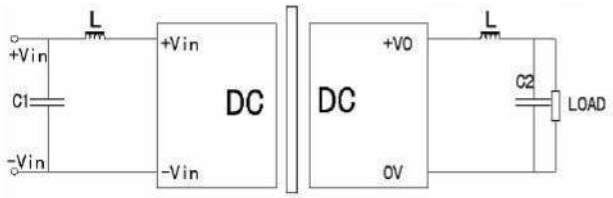


Fig. 2

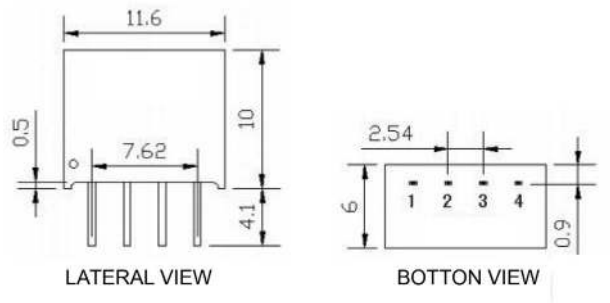
Vin	C1	Vout	C2
3.3VDC	4.7uF	3.3VDC	10uF
5VDC	4.7uF	5 VDC	10uF
12VDC	2.2uF	9 VDC	4.7uF
		12 VDC	2.2uF
		15 VDC	1uF

Application Note

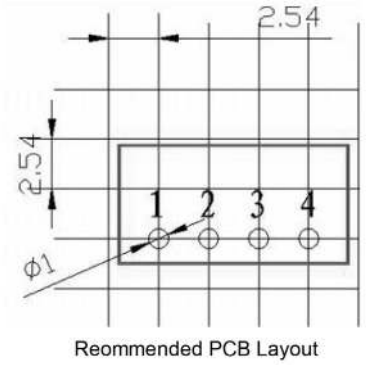
(1) Please don't use under no load: when the load power is less than 10% of the rated power ,we advise to connect the resistance following the output or the selection the smaller rated power module,for the resistance,the value is 5~10% of the rated power,resistance = U2 /(10%×1W)
(2) Please don't connect the excessive capacitor in external circut :output connects C2's value can't be too big, otherwise easily lead to module startup flow or poor starting, According to the external table to select the capacitance
(3) For the ripple & noise with higher requirements ,we advise to connect the LC filter, the frequency of LC filter is far smaller than the DC-DC module switching frequency, prevent mutual interference, resulting in increased the ripple damage the power module.



Mechanical dimensions



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



Reommended PCB Layout

Pin-Out	
Pin	Function
1	GND
2	Vin
3	0V
4	+Vo