

1S4A / 1D8A Series

1W- Single Output - Fixed Input - Isolated & Unregulated
 MINIATURE SIP/DIP PACKAGE

DC-DC Converter

1 Watt

- ⊕ Efficiency up to 81%
- ⊕ Small Footprint
- ⊕ Miniature SIP/DIP Package
- ⊕ Single Output Voltage
- ⊕ 1KVDC Isolation
- ⊕ Temperature Range: -40°C~+85°C
- ⊕ Industry Standard Pinout
- ⊕ UL94-V0 Package
- ⊕ No Heat sink Required
- ⊕ No External Component Required
- ⊕ PCB Mounting
- ⊕ RoHS Compliance

The 1S4A / 1D8A 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 $\leq \pm 10\%$);
- 2) Where isolation is necessary between input and output (isolation voltage = 1000VDC)
- 3) Where the regulation of the output voltage and the output ripple and noise are not demanding. Such as: purely digital circuits, ordinary low frequency analog circuits and IGBT power device driven circuits, etc.

These products don't apply to:

- 1) Where the input supply voltage is varied (variation $\geq \pm 10\%$), otherwise our company's wide range series is recommended
- 2) Where the isolation voltage between input and output is required to be >1000VDC, otherwise our company's high isolation series of products are recommended
- 3) Circuits in which the output voltage regulation is demanding, otherwise our company's 1D14A_S3R Series are recommended



UL-60950-1 Certified

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
Storage humidity range:	< 95%
Case material:	Plastic [UL94-V0]
MTBF:	>3,500,000 hours

Isolation specifications

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

Model selection:

WCTP**_xyyN##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:

1S4A_0505S1U

1=1Watt; S4= SIP4; A=Pinning; 5Vin; 5Vout; S=Single Output; 1=1kVDC; U=Unregulated Output

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	%
Output voltage accuracy	See tolerance envelope graph				
Temperature drift	100% full load			0.03	%/°C
Output ripple	20MHz Bandwidth		50	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.

1S4A / 1D8A Series

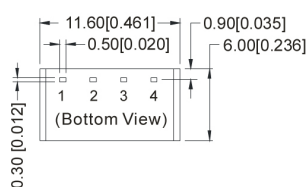
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Part Number	Input Voltage [V]	Output Voltage [VDC]	Current [mA]	Efficiency [% , max]	Package
1S4A_0303S1U	3.3	3.3	300	72	SIP4
1S4A_0305S1U	3.3	5	200	73	SIP4
1S4A_0505S1U	5	5	200	78	SIP4
1S4A_0512S1U	5	12	83	80	SIP4
1S4A_0515S1U	5	15	67	78	SIP4
1S4A_1205S1U	12	5	200	78	SIP4
1S4A_1212S1U	12	12	83	81	SIP4
1S4A_1215S1U	12	15	67	79	SIP4
1S4A_2405S1U	24	5	200	79	SIP4
1S4A_2412S1U	24	12	83	81	SIP4
1S4A_2415S1U	24	15	67	79	SIP4
1D8A_0303S1U	3.3	3.3	300	72	DIP8
1D8A_0305S1U	3.3	5	200	73	DIP8
1D8A_0505S1U	5	5	200	78	DIP8
1D8A_0512S1U	5	12	83	80	DIP8
1D8A_0515S1U	5	15	67	78	DIP8
1D8A_1205S1U	12	5	200	78	DIP8
1D8A_1212S1U	12	12	83	81	DIP8
1D8A_1215S1U	12	15	67	79	DIP8
1D8A_2405S1U	24	5	200	79	DIP8
1D8A_2412S1U	24	12	83	81	DIP8
1D8A_2415S1U	24	15	67	79	DIP8

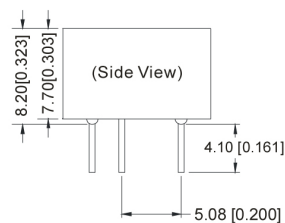
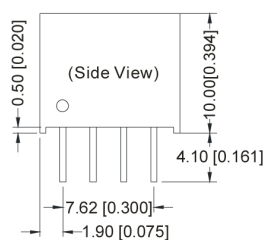
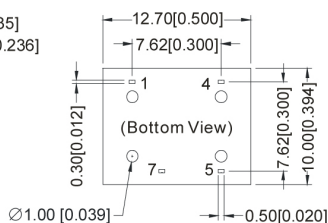
Mechanical dimensions

Typical characteristics

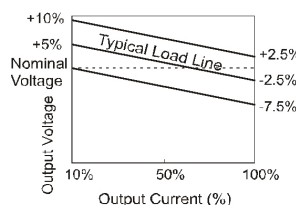
1S4A Series



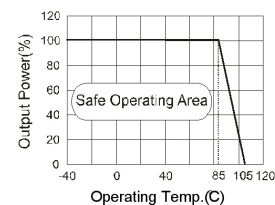
1D8A Series



Tolerance Envelope Graph

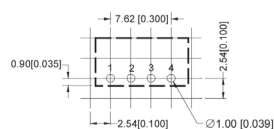


Temperature Derating Graph

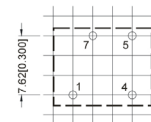


Recommended footprint

1S4A Series



1D8A Series



FOOTPRINT DETAILS

Pin	1S4A
1	GND
2	Vin
3	0V
4	+Vo

FOOTPRINT DETAILS

Pin	1D8A
1	GND
4	Vin
5	+Vo
7	0V

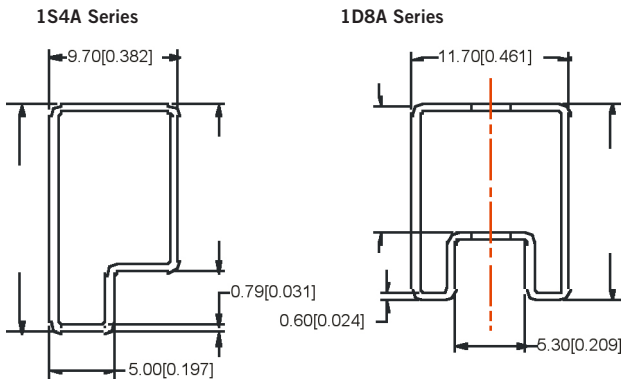
Note:

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

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Tube outline



Note:
 Unit: mm[inch]
 General tolerances: 0.5mm[0.020inch]

L=530mm[20.866inch]
 Devices per tube quantity: 43pcs (1S4A)
 40pcs (1D8A)

L=220mm[8.661inch]
 Devices per tube quantity: 17pcs (1S4A)
 16pcs (1D8A)

Application note

Filtering

In some circuits which are sensitive to noise and ripple, a filtering capacitor may be added to the DC/DC output end and input end to reduce the noise and ripple.

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 the external capacitor table. To get an extremely low ripple, an "LC" filtering network may be connected to the input and output ends of the DC/DC converter, which may produce a more significant filtering effect. 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 (see figure 1).

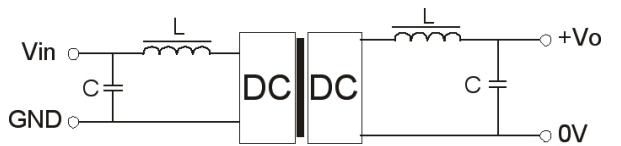


Figure 1

Requirement On Output Load

To ensure this module can operate efficiently and reliably, a minimum load is specified for this kind of DC/DC converter in addition to a maximum load (namely full load). During operation, make sure the specified range of input voltage is not exceeded, the minimum output load is not less than 10% of the full load, and that this product should never be operated under no 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.

Overload Protection

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

Output Voltage Regulation and 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 (see Figure 2).

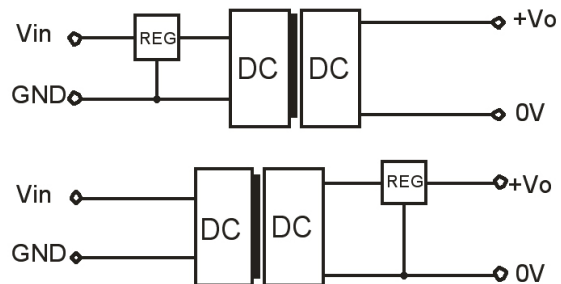


Figure 2

V _{in}	External capacitor	V _{out}	External capacitor
3.3VDC	4.7uF	3.3VDC	10uF
5VDC	4.7uF	5VDC	10uF
12VDC	2.2uF	9VDC	4.7uF
24VDC	1uF	12VDC	2.2uF
--	--	15VDC	1uF