

1T12A_3U Series

1W - Single/Dual Output DC-DC Converter - Fixed Input - Isolated & Unregulated

DC-DC Converter

1 Watt

- ⊕ Small footprint
- ⊕ 12Pin SMD package
- ⊕ 3kVDC isolation
- ⊕ High efficiency up to 80%
- ⊕ RoHS Compliance

- ⊕ Operating temperature range: -40°C ~ +85°C
- ⊕ International standard pinout
- ⊕ No external component required

The 1T12A_3U Series are specially designed for applications where an isolated voltage is required in a distributed power supply system.

They are suitable for

- 1) Where the voltage of the input power supply is stable (voltage variation: $\pm 10\%V_{in}$);
- 2) Where isolation between input and output is necessary (isolation voltage $\leq 3000VDC$);
- 3) Where the output voltage regulation is not strictly required;
- 4) Typical application: preceding-stage interference isolation condition; ground-interference canceled condition; digit circuit condition; Voltage-isolation converting condition; normal low-frequency artificial circuit condition; relay drive circuit condition, etc.



Common specifications

Short circuit protection:	short term, 1 sec.
Temperature rise at full load:	25°C TYP
Cooling:	Free air convection
Operation temperature range:	-40°C~+85°C
Storage temperature range:	-40°C ~+100°C
Storage humidity range:	< 95%
Case material:	Epoxy resin [UL94-V0]
MTBF:	>3,500,000 hours
Weight:	1.36g (15V: 1.5g)
Dimensions:	15.24x8.0x7.30mm (15V: 15.24x8.0x8.50mm)

Output specifications

Item	Test condition	Min	Typ	Max	Units
Output voltage accuracy			± 5		%
Line regulation	For V_{in} change of $\pm 1\%$		1.2		%
Load regulation	10% to 100% load • 3.3V output • 5V/9V output • 12V/15V output		15		%
				12/8	%
				8.5/7	%
Temperature drift	100% full load			± 0.03	%/°C
Ripple & Noise*	20MHz Bandwidth			75	mVp-p
Transient response setting time	50% load step change		350		μs
Switching frequency	Full load, nominal input		100		KHz

*Test ripple and noise by "parallel cable" method. See detailed operation instructions at application notes.

Input specifications

Item	Test condition	Min	Typ	Max	Units
Input voltage range			± 10		%
Input Filter	Capacitor				

Isolation specifications

Item	Test condition	Min	Typ	Max	Units
Isolation voltage	Input-output (2sec/0.5mA)	3000			VDC
Isolation resistance	Input-output, insulation voltage 500VDC	1000			MΩ

Example:

1T12A_0515S3U

1 = 1Watt; T12 = SMT12; A = Series; 5Vin; 15Vout; S = Single output;
3 = 3kVDC isolation; U = Unregulated output

Note:

1. If the product is operated under the min. required load, the product performance cannot be guaranteed to comply with all performance indexes in this datasheet;
2. The max. capacitive load should be tested within the input voltage range and under full load conditions;
3. Unless otherwise specified, data in this data sheet should be tested under the conditions of $T_a = 25^\circ C$, humidity <75% when inputting nominal voltage and outputting rated load;
4. All index testing methods in this datasheet are based on our Company's corporate standards;

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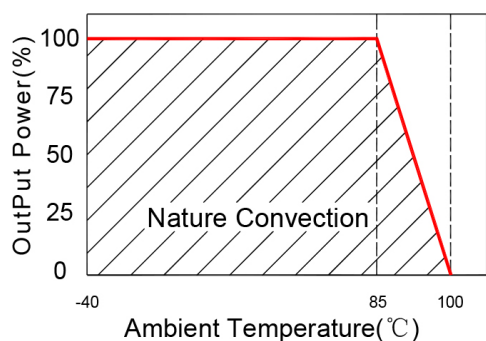
Part Number	Input Voltage [V]	Output Voltage [VDC]	Output current [mA; typ]	Efficiency [%; Typ] @ full load
1T12A_xx03S3U	3.3, 5, 9, 12, 15	3.3	303	65
1T12A_xx05S3U	3.3, 5, 9, 12, 15	5	200	70
1T12A_xx09S3U	3.3, 5, 9, 12, 15	9	112	75
1T12A_xx12S3U	3.3, 5, 9, 12, 15	12	84	78
1T12A_xx15S3U	3.3, 5, 9, 12, 15	15	67	80
1T12A_xx03D3U	3.3, 5, 9, 12, 15	±3.3	±150	65
1T12A_xx05D3U	3.3, 5, 9, 12, 15	±5	±100	70
1T12A_xx09D3U	3.3, 5, 9, 12, 15	±9	±56	75
1T12A_xx12D3U	3.3, 5, 9, 12, 15	±12	±42	78
1T12A_xx15D3U	3.3, 5, 9, 12, 15	±15	±34	80

Note:
 „xx“ is input voltage:
 03 = 3.3VDC
 05 = 5VDC
 09 = 9VDC
 12 = 12VDC
 15 = 15VDC

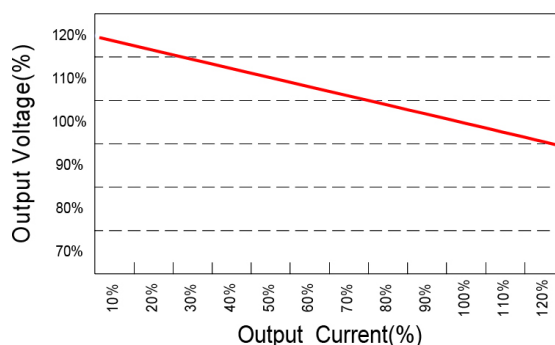
Recognized by UL 60950-1: 1T12A_0503S3U, 1T12A_0505S3U, 1T12A_0509S3U, 1T12A_0512S3U, 1T12A_0515S3U and 1T12A_1205S3U

Typical characteristics

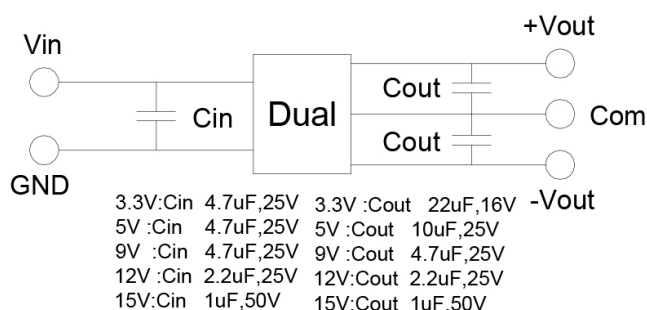
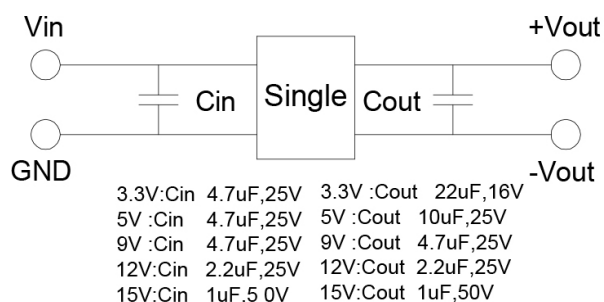
Temperature derating graph



Tolerance envelope graph



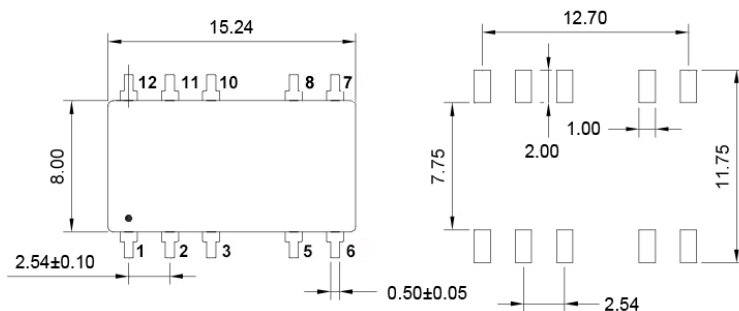
Recommended test circuit



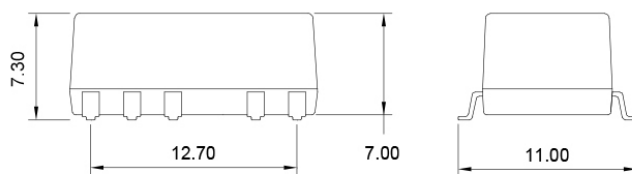
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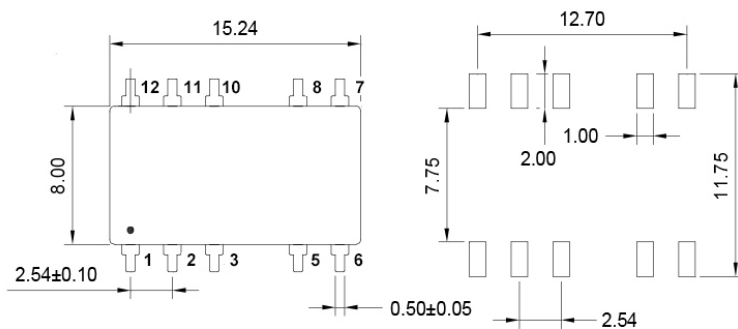
Mechanical dimensions



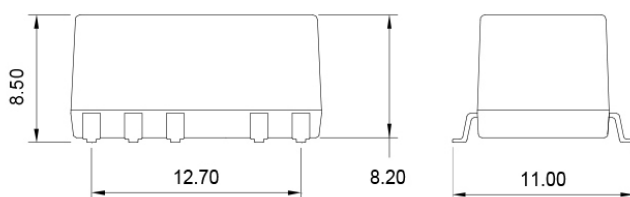
SUGGESTED PAD LAYOUT



Output 15V



SUGGESTED PAD LAYOUT



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

PIN	1	2	3	5	6	7	8	10	11	12
SINGLE	-Vin	+Vin	NC	-Vout	NC	NC	+Vout	NC	NC	NC
DUAL	-Vin	+Vin	NC	Com	-Vout	NC	+Vout	NC	NC	NC