

1T8CE_1.5UP series

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

DC-DC Converter 1 Watt

- ⊕ 8PIN SMD Package
- ⊕ No load input current as low as 5 mA
- ⊕ Continuous short circuit protection
- ⊕ High Efficiency up to 87%
- ⊕ Unregulated Output Types
- ⊕ 1.5kVDC Isolation
- ⊕ Operating Temperature: -40°C to +105°C
- ⊕ Industry Standard Pinout
- ⊕ Design refer to IEC62368, UL62368, EN62368

The 1T8CE_1.5UP 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 $\leq \pm 10\%$)
- 2) Where isolation is necessary between input and output (isolation voltage $\leq 1500\text{VDC}$)
- 3) Where the regulation of the output voltage and the output ripple noise are not demanding. Such as: digit circuit condition; normal low-frequency artificial circuit condition; relay drive circuit condition, etc.



Common specifications	
Short circuit protection:	continuous
Operation temperature range:	-40°C ~ +105°C
Storage temperature range:	-55°C ~ +125°C
Storage humidity range:	< 95% (Non Condensing)
MTBF (MIL-HDBK-217F@25°C):	>3,500,000 hours
Case material:	DAP
Cooling:	Free air convection
Dimensions:	12.8 x 10.8 x 6.9 mm
Weight:	1.28g

Input specifications					
Item	Test condition	Min	Typ	Max	Units
Voltage range (Vo,Io Nom)	Vin: 3.3V,5V			± 10	%
	Vin: 9V,12V,15V,24V			± 20	%
Filter	Capacitor				

Isolation specifications					
Item	Test condition	Min	Typ	Max	Units
Isolation voltage	Input to output	1500			VDC
Isolation resistance	Test at 500VDC	500			MΩ
Isolation capacitance	Input-output, 100KHz/0.1V		20		pF

EMC specifications		
Emissions	CE	CISPR32/EN55032 CLASS B (see Fig. 1 for recommended circuit)
Emissions	RE	CISPR25/EN55025 CLASS 4 (see Fig.3 for recommended circuit) CISPR32/EN55032 CLASS A (without external components)
Immunity	ESD	ISO10605 Contact $\pm 6\text{KV}$ perf. Criteria B

Output specifications					
Item	Test condition	Min	Typ	Max	Units
Voltage tolerance	100% full load			± 5	%
Line regulation	For Vin change of 1%		± 1.2		%
Load regulation	3.3V (10% To 100% F.L)		15	20	%
	5V (10% To 100% F.L)		10	15	%
	9V (10% To 100% F.L)		8	10	%
	12V (10% To 100% F.L)		7	10	%
	15V (10% To 100% F.L)		6	10	%
Ripple & Noise* (BW = DC To 20MHz)	Vo: 3.3V,5V,9V,12V,15V		30	75	mVp-p
	Vo: 24V		50	100	mVp-p
Switching frequency (Full load,nominal input)	3.3V,5V Vin other Vin		100		KHz

* Ripple and noise tested with "parallel cable" method. See detailed operation instructions at DC-DC Application Notes.

Example:

1T8CE_1205S1.5UP

1 = 1Watt; T8 = SMT8; CE = Series; 12 = 12Vin; 05 = 5Vout;
S = Single output; 1.5 = 1.5kVDC isolation; U = Unregulated output;
P = Short circuit protection (SCP)

Note:

1. Operation under minimum load will not damage the converter; However, they may not meet all specification listed.
2. Max. Capacitive Load tested at input voltage range and full load.
3. All specifications measured at Ta = 25°C, humidity < 75%, nominal input voltage and rated output load unless otherwise specified.
4. In this datasheet, all the test methods of indications are based on our corporate standards.

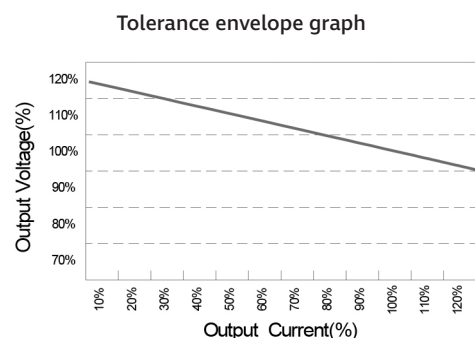
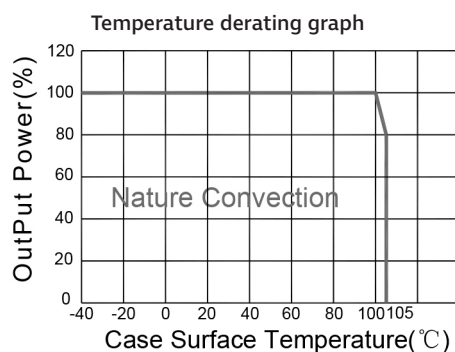
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Product Selection Guide

Part Number	Output Voltage [VDC]	Output Current [mA]	Efficiency [% , typ]	Capacitive Load [μ F]
1T8CE_0303S1.5UP	3	303	76	2400
1T8CE_0305S1.5UP	5	200	82	2400
1T8CE_0309S1.5UP	9	112	83	1000
1T8CE_0312S1.5UP	12	84	84	470
1T8CE_0315S1.5UP	15	67	84	330
1T8CE_0324S1.5UP	24	42	85	100
1T8CE_0503S1.5UP	3	303	76	2400
1T8CE_0505S1.5UP	5	200	82	2400
1T8CE_0509S1.5UP	9	112	83	1000
1T8CE_0512S1.5UP	12	84	84	470
1T8CE_0515S1.5UP	15	67	84	330
1T8CE_0524S1.5UP	24	42	85	100
1T8CE_0903S1.5UP	3	303	76	2400
1T8CE_0905S1.5UP	5	200	82	2400
1T8CE_0909S1.5UP	9	112	83	1000
1T8CE_0912S1.5UP	12	84	84	470
1T8CE_0915S1.5UP	15	67	84	330
1T8CE_0924S1.5UP	24	42	85	100
1T8CE_1203S1.5UP	3	303	78	2400
1T8CE_1205S1.5UP	5	200	82	2400
1T8CE_1209S1.5UP	9	112	85	1000
1T8CE_1212S1.5UP	12	84	85	680
1T8CE_1215S1.5UP	15	67	87	330
1T8CE_1224S1.5UP	24	42	85	220
1T8CE_1503S1.5UP	3	303	78	2400
1T8CE_1505S1.5UP	5	200	82	2400
1T8CE_1509S1.5UP	9	112	85	1000
1T8CE_1512S1.5UP	12	84	85	680
1T8CE_1515S1.5UP	15	67	87	330
1T8CE_1524S1.5UP	24	42	85	220
1T8CE_2403S1.5UP	3	303	78	2400
1T8CE_2405S1.5UP	5	200	82	2400
1T8CE_2409S1.5UP	9	112	85	1000
1T8CE_2412S1.5UP	12	84	85	680
1T8CE_2415S1.5UP	15	67	87	330
1T8CE_2424S1.5UP	24	42	85	220

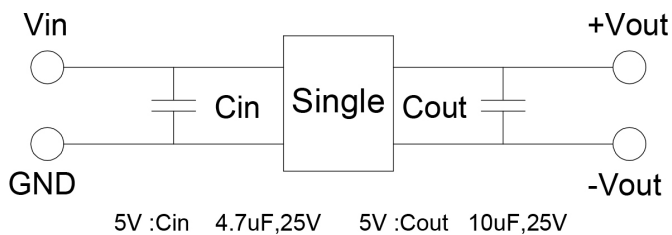
Typical characteristics



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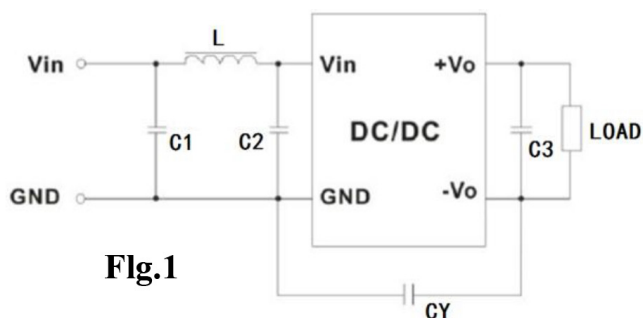
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Recommended test circuit



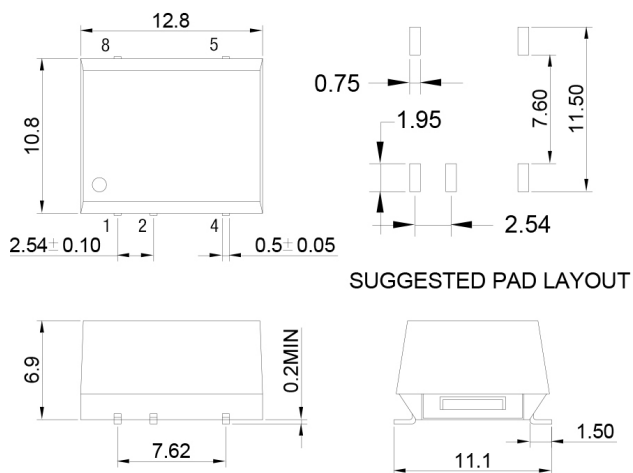
Vin	Cin	Single Vout	Cout
3.3VDC	4.7 μ F/25V	3.3VDC	10 μ F/16V
5VDC	4.7 μ F/25V	5VDC	10 μ F/16V
9VDC	4.7 μ F/25V	9VDC	2.2 μ F/16V
12VDC	2.2 μ F/25V	12VDC	2.2 μ F/25V
15VDC	2.2 μ F/25V	15VDC	1 μ F/25V
24VDC	1 μ F/50V	24VDC	1 μ F/50V

Recommended test circuit



EMC recommended circuit value table		
Emissions	C1	4.7 μ F /50V
Emissions	C2	4.7 μ F /50V
Emissions	CY	1nF/4kV
Emissions	C3	Recommended Test Circuit
Emissions	L	6.8 μ H

Mechanical dimensions



PIN	Single
1	-Vin
2	+Vin
4	-Vout
5	+Vout
8	NC
Other	NO PIN

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