

1T8B_1U series

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

DC-DC Converter

1 Watt

- Small footprint
- Miniature SMD package style
- High efficiency up to 80%
- 1000VDC isolation
- Temperature range:
-40°C ~ +85°C

- Industry standard pinout
- Low temperature rise
- Internal SMD construction
- No external component required
- RoHS compliance
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The 1T8B_1U 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:

- Where the voltage of the input power supply is fixed (voltage variation $\leq \pm 10\%$)
- Where isolation is necessary between input and output (isolation voltage $\leq 1000\text{VDC}$)
- 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:	1 second
Temperature rise at full load:	25°C TYP (Ta = 25°C)
Cooling:	Free air convection
Operation temperature range:	-40°C ~ +85°C
Storage temperature range:	-40°C ~ +100°C
Lead temperature	300°C MAX, 1.5mm from case for 10 sec
Storage humidity range:	< 95%
Package material:	Epoxy Resin [UL94-V0]
MTBF (MIL-HDBK-217F@25°C):	>3,500,000 hours
Dimensions:	12.7x7.6x6.25mm
Weight:	1g

Input specifications

Item	Test condition	Min	Typ	Max	Units
Voltage tolerance				± 10	%
Filter	Capacitor				

Isolation specifications

Item	Test condition	Min	Typ	Max	Units
Isolation voltage	Input to Output (2sec/0.5mA)	1000			VDC
Isolation resistance	Test at 500VDC	1000			MΩ

Output specifications

Item	Test condition	Min	Typ	Max	Units
Voltage tolerance			± 5		%
Line regulation	For Vin change of 1%		1.2		%
Load regulation	10% to 100% load				
	• 3.3V		15		%
	• 5V			15	%
	• 9V			9	%
	• 12V			7.5	%
	• 15V			7	%
Transient response setting time	50% load step change		350		μs
Temperature drift	100% full load			± 0.03	%/°C
Ripple & Noise*	20MHz Bandwidth			100	mVp-p
Switching frequency	Full load, nominal input		100		KHz

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

Example:

1T8B_0505S1U
1 = 1Watt; T8 = SMT8; E = Series; 05 = 5Vin; 05 = 5Vout;
S = Single output; 1 = 1kVDC; U = Unregulated output

Note:

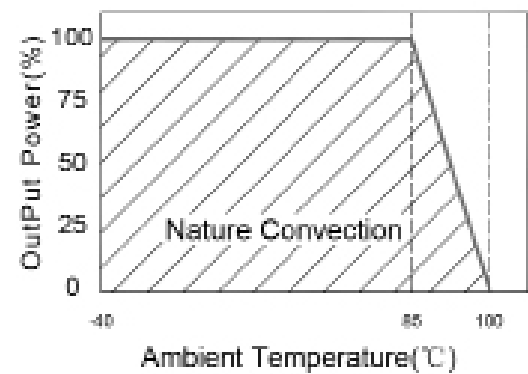
- Operation under minimum load will not damage the converter; However, they may not meet all specification listed.
- Max. Capacitive Load tested at input voltage range and full load.
- All specifications measured at Ta = 25°C, humidity < 75%, nominal input voltage and rated output load unless otherwise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

Part Number	Input Voltage [V]	Output Voltage [VDC]	Output Current [mA]	Capacitive load [μF, Max.]	Efficiency [%, typ]
1T8B_xx03S1U	3.3; 5; 9; 12; 15	3.3	303	220	65
1T8B_xx05S1U	3.3; 5; 9; 12; 15	5	200	220	70
1T8B_xx09S1U	3.3; 5; 9; 12; 15	9	111	220	75
1T8B_xx12S1U	3.3; 5; 9; 12; 15	12	84	220	78
1T8B_xx15S1U	3.3; 5; 9; 12; 15	15	67	220	80

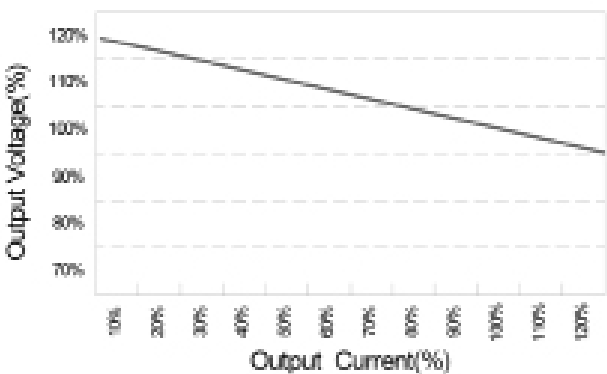
- xx = Input Voltage (possible for other input and output voltage combinations on request)
Vin = 3.3VDC, xx = 03
Vin = 5VDC, xx = 05
Vin = 9VDC, xx = 09
Vin = 12VDC, xx = 12
Vin = 15VDC, xx = 15

Typical characteristics

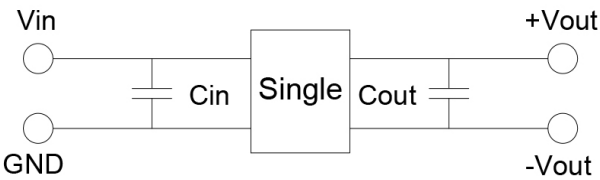
Temperature derating graph



Tolerance envelope graph



Recommended test circuit



- 3.3V: Cin 4.7uF, 25V

5V: Cin 4.7uF, 25V

9V: Cin 4.7uF, 25V

12V: Cin 2.2uF, 25V

15V: Cin 1uF, 50V
- 3.3V: Cout 22uF, 16V

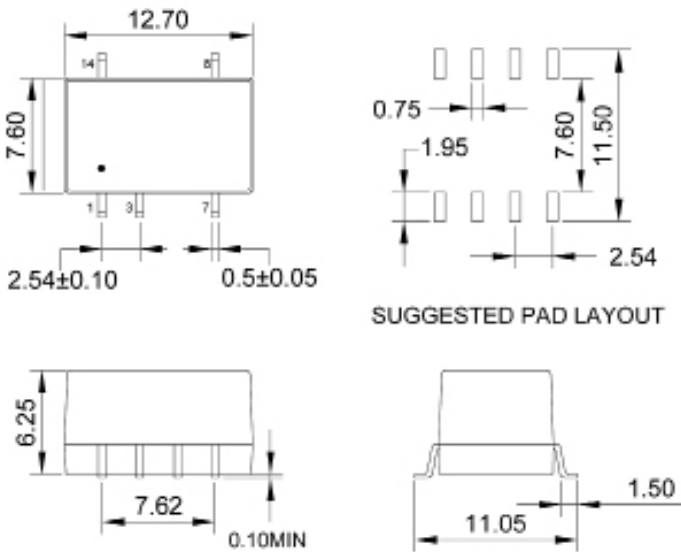
5V: Cout 10uF, 25V

9V: Cout 4.7uF, 25V

12V: Cout 2.2uF, 25V

15V: Cout 1uF, 50V

Mechanical dimensions



PIN	Single
1	-Vin
3	+Vin
7	-Vout
8	+Vout
Other	NC

Note:
Unit: mm[inch]
General tolerances: ±0.25mm[±0.010inch]