GAPTEC®
GREEN TECHNOLOGY

0.5T8E_1U Series

0.5W - Single Output DC-DC Converter - Fixed Input - Isolated & Unregulated

DC-DC Converter 0.5 Watt

- **Small footprint**
- **Miniature SMD package style**
- **High efficiency up to 78%**
- **1000VDC isolation**
- **Temperature range: -40°C ~ +85°C**
- **Industry standard pinout**
- **Low temperature rise**
- **Internal SMD construction**
- **No external component required**
- **RoHS compliance**

The 0.5T8E_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:
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 ≤1000VDC)
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:	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
Weight:	1g
Dimensions:	12.7*7.6*6.25mm

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		1000			VDC
Isolation resistance	Test at 500VDC	1000			MΩ

Output specifications

Item	Test condition	Min	Typ	Max	Units
Output voltage accuracy			±5		%
Line regulation	For Vin change of 1%		1.2		%
Load regulation	10% to 100% load • 3.3V • 5V • 9V • 12V • 15V		 15	 15 9 7.5 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:
0.5T8E_0505S1U
0.5 = 0.5Watt; T8 = SMT8; E = Series; 05 = 5Vin; 05 = 5Vout;
S = Single output; 1 = 1kVDC; U = Unregulated output

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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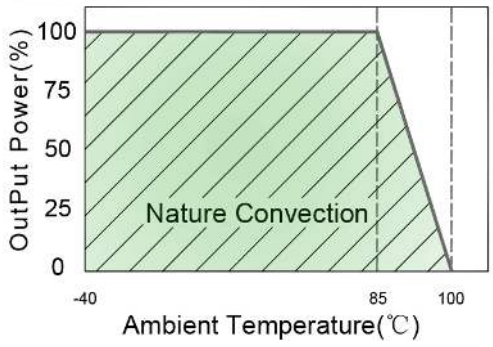
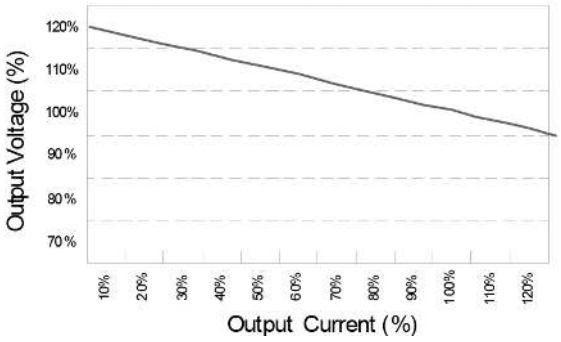
Part Number	Input Voltage [V]	Output Voltage [VDC]	Output Current [mA]	Efficiency [%, typ]
0.5T8E_0303S1U	3.3	3.3	150	65
0.5T8E_0305S1U	3.3	5	100	70
0.5T8E_0309S1U	3.3	9	56	70
0.5T8E_0312S1U	3.3	12	42	70
0.5T8E_0315S1U	3.3	15	33	70
0.5T8E_0503S1U	5	3.3	150	68
0.5T8E_0505S1U	5	5	100	70
0.5T8E_0509S1U	5	9	56	72
0.5T8E_0512S1U	5	12	42	72
0.5T8E_0515S1U	5	15	33	72
0.5T8E_0903S1U	9	3.3	150	70
0.5T8E_0905S1U	9	5	100	72
0.5T8E_0909S1U	9	9	56	72
0.5T8E_0912S1U	9	12	42	72
0.5T8E_0915S1U	9	15	33	72
0.5T8E_1203S1U	12	3.3	150	70
0.5T8E_1205S1U	12	5	100	70
0.5T8E_1209S1U	12	9	56	72
0.5T8E_1212S1U	12	12	42	72
0.5T8E_1215S1U	12	15	33	72
0.5T8E_1503S1U	15	3.3	150	70
0.5T8E_1505S1U	15	5	100	73
0.5T8E_1509S1U	15	9	56	75
0.5T8E_1512S1U	15	12	42	76
0.5T8E_1515S1U	15	15	33	78

Typical characteristics

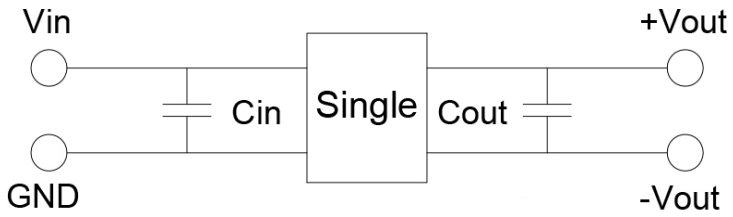
Temperature derating graph



Tolerance envelope graph

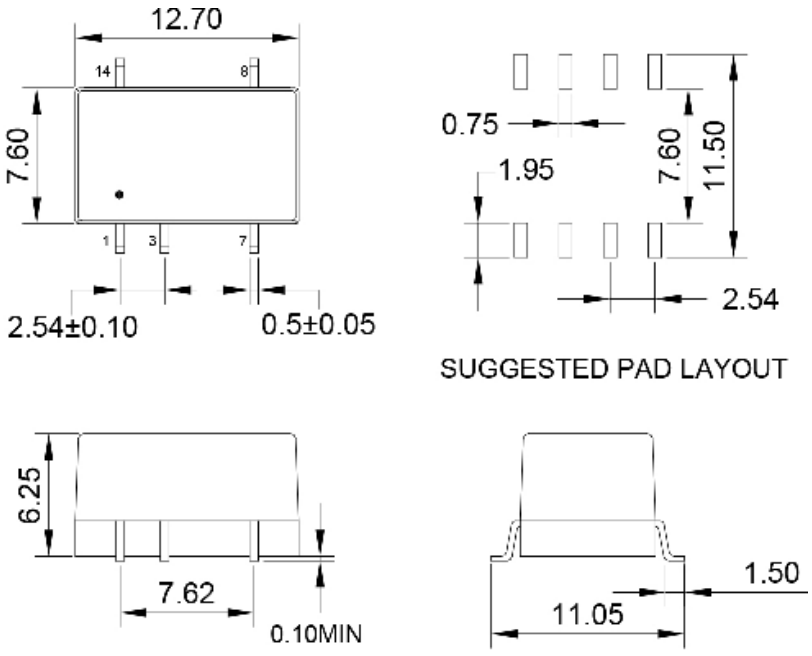


Recommended test circuit



3.3V: Cin 4.7uF, 25V	3.3V: Cout 22uF, 16V
5V: Cin 4.7uF, 25V	5V: Cout 10uF, 25V
9V: Cin 4.7uF, 25V	9V: Cout 4.7uF, 25V
12V: Cin 2.2uF, 25V	12V: Cout 2.2uF, 25V
15V: Cin 1uF, 50V	15V: Cout 1uF, 50V

Mechanical dimensions



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

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

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