THIS SERIES IS NOT recommended for new design-ins and this series is discontinued

Recommended alternative: 2T8A2_1.5UP series

Please click here for the datasheet.

2T8A1_1.5UP series

2W - Single Output DC-DC Converter - Fixed Input - Isolated & Unregulated
Compact SMD Package

DC-DC Converter 2 Watt

- Continuous short-circuit protection
- No-load input current as low as 8mA
- Operating ambient temperature range: -40°C to +105°C
- High efficiency up to 85%
- Compact SMD package
- I/O isolation test voltage 1.5kVDC
- Industry standard pin-out
- EN62368 approved

The 2T8A1_1.5UP series are designed for use in distributed power supply systems and especially suitable in applications such as pure digital circuits, low frequency analog circuits, relay-driven circuits and data switching circuits.

SHORT CIRCUIT PROTECTED

100% RoHS compliant

Common specifications

Short circuit protection:	Continuous, self-recovery
Operation temperature:	-40 ~ +105°C (See Fig. 2)
Storage temperature:	-55°C ~+125°C
Case Temperature Rise	25°C TYP (Ta = 25°C, nominal input voltage, full load)
Storage humidity:	5~95%RH (Non-condensing)
Reflow soldering temperature:*	Peak temp.≤245°C, maximum duration time≤60s over 217°C
MTBF (MIL-HDBK-217F@25°C):	>3,500,000 hours
Moisture Sensitivity Level(MSL):	Level 1; IPC/JEDEC J-STD-020D.1
Case Material:	Black plastic; flame-retardant and heat-resistant (UL94 V-0)
Dimensions:	13.20 x 11.40 x 7.25 mm
Weight:	1.4g TYP.
Cooling:	Free air convection

* Note: * See also IPC/JEDEC J-STD-020D.1.

Input specifications

Item	Test condition	Min	Typ	Max	Units
Input current (full load / no load)	• 5V input (3Vout) • 5V input (5/7Vout) • 5V input (9/12Vout) • 5V input (15/24Vout) • 12V input • 15V input • 24V input		339/8 447/8 471/8 466/8 196/8 161/8 98/8	357/- 500/- 494/- 488/-	mA mA mA mA mA mA mA
Reflected ripple current*			30		mA
Surge Voltage (1sec. max.)	• 5V input • 12V input • 15V input • 24V input	0.7 0.7 0.7 0.7		9 18 21 30	VDC VDC VDC VDC

EMC specifications

Emissions	CE	CISPR32/EN55032 CLASS B (see recommended circuit)
Emissions	RE	CISPR32/EN55032 CLASS B (see recommended circuit)
Immunity	ESD	IEC/EN61000-4-2 Contact ±6kV perf. Criteria B

Output specifications

Item	Operating condition	Min	Typ	Max	Units
Voltage accuracy	See output regulation curve (Fig. 1)				
Line regulation	Input voltage change:±1%			±1.2	%%
Load regulation	10% to 100% load • 5VDC output • 9VDC output • 12VDC output • 15VDC output • 24VDC output		 7 6 5 4 3	 15 10 10 10 10	 % % % % %
Ripple & Noise*	20MHz Bandwidth		50	150	mVp-p
Temperature Coefficient	Full load			±0.02	%/°C
Switching frequency	Full load, nominal input		260		KHz

* The "parallel cable" method is used for Ripple and noise test, please refer to DC-DC Converter Application Notes for specific information;

Isolation specifications

Item	Test condition	Min	Typ	Max	Units
Isolation voltage	Input-output, test time 1 min., leak current lower than 1mA	1500			VDC
Isolation resistance	Input-output, insulation voltage 500VDC	1000			MΩ
Isolation capacitance	Input/Output, 100KHz/0.1V		20		pF

Example:
2T8A1_1205S1.5UP
2 = 2Watt; T8 = SMT8; A1 = Series; 12 = 12Vin; 05 = 5Vout;
S = Single output; 1.5 = 1.5kVDC isolation; U=Unregulated output

Note:
1. If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
2. The maximum capacitive load offered were tested at input voltage range and full load;
3. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta = 25°C, humidity <75%RH with nominal input voltage and rated output load;
4. All index testing methods in this datasheet are based on our company corporate standards;
5. We can provide product customization service, please contact our technicians directly for specific information;
6. Products are related to laws and regulations: see "Features" and "EMC";
7. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

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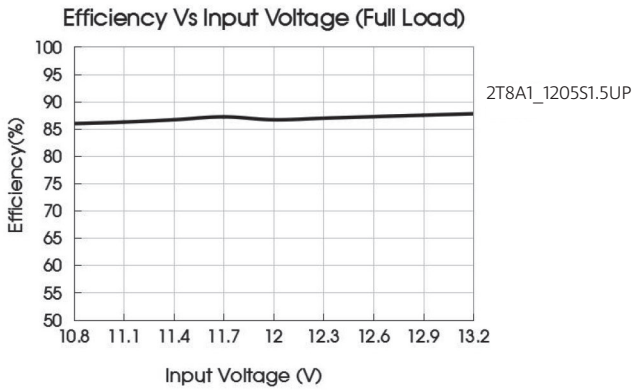
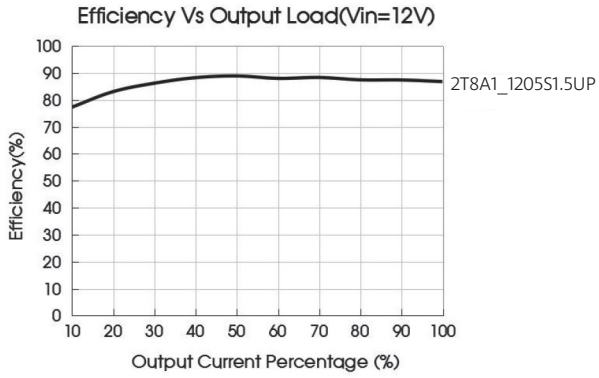
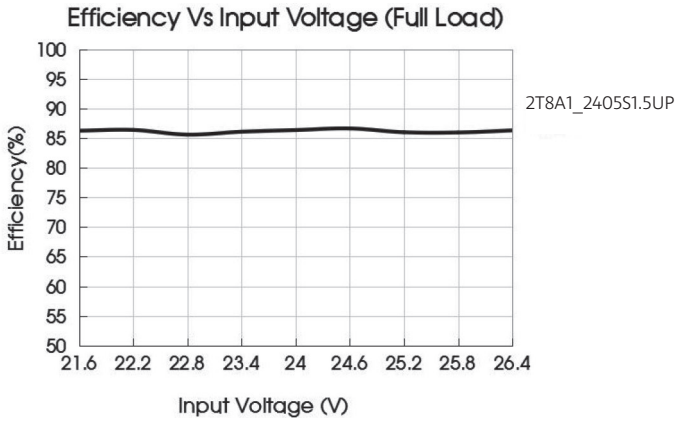
Product Selection Guide

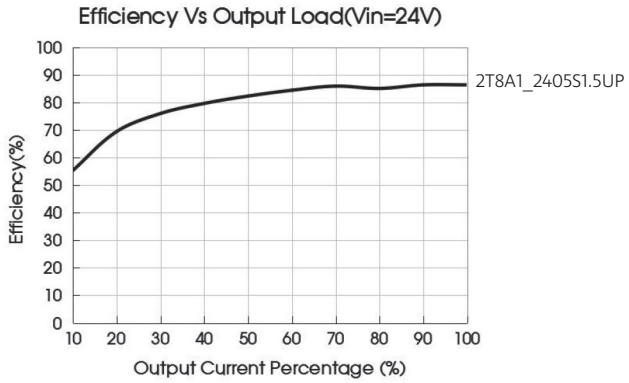
Part Number	Input Voltage [V] [Nominal]	Output Voltage [VDC]	Output current [mA; max/min]	Efficiency [%; Typ] @ full load	Capacitive Load (µF)
2T8A1_0503S1.5UP	5	3.3	400/40	78	2400
2T8A1_0505S1.5UP	5	5	400/40	84	2400
2T8A1_0507S1.5UP	5	7	286/29	84	2400
2T8A1_0509S1.5UP	5	9	222/22	85	2400
2T8A1_0512S1.5UP	5	12	167/17	85	2400
2T8A1_0515S1.5UP	5	15	133/13	86	2400
2T8A1_0524S1.5UP	5	24	83/8	86	2400
2T8A1_1205S1.5UP	12	5	400/40	83	2400
2T8A1_1209S1.5UP	12	9	222/22	83	1000
2T8A1_1212S1.5UP	12	12	167/17	84	560
2T8A1_1215S1.5UP	12	15	133/13	84	560
2T8A1_1224S1.5UP	12	24	83/8	85	220

Efficiency









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Typical characteristics

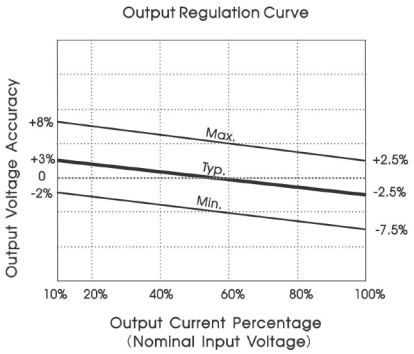


Fig. 1

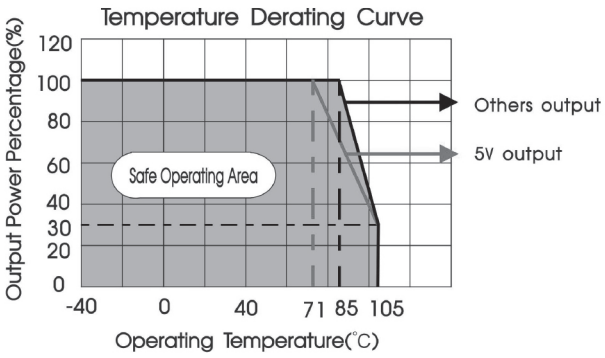


Fig. 2

Typical application circuit

Input and/or output ripple can be further reduced, by connecting a filter capacitor from the input and/or output terminals to ground (Fig.3. Choosing suitable filter capacitor values is very important for a smooth operation of the modules, particularly to avoid start-up problems) caused by capacitor values that are too high. For recommended input and output capacitor values refer to Table 1.

Fig.3

Vin (VDC)	Cin (µF)	Vo (VDC)	Cout (µF)
12	2.2µF/25V	5	10/10V
15	1µF/25V	9	2.2/25V
24	1µF/50V	12	2.2/25V
-	-	15	1/25V
-	-	24	0.47/50V

Table 1: Recommended input and output capacitor values

EMC solution-recommended circuit

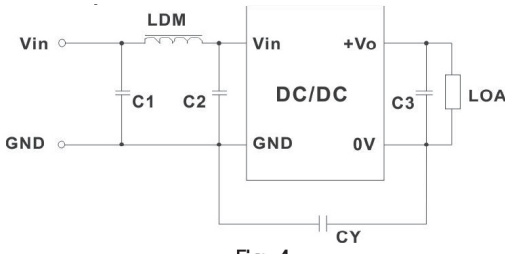
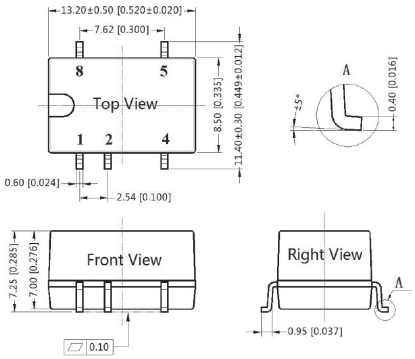


Fig. 4

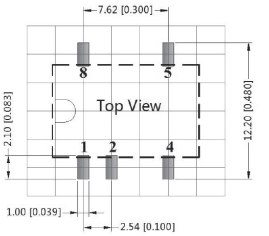
Emissions	C1/C2	4.7µF /50V
Emissions	C3	Refer to the Cout in Fig. 3
Emissions	CY	270pF/2kV
Emissions	LDM	6.8µH

Mechanical dimensions

THIRD ANGLE PROJECTION



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



Note:
Grid 2.54*2.54 mm

Pin-Out	
Pin	Function
1	GND
2	Vin
4	0V
5	+Vo
8	NC

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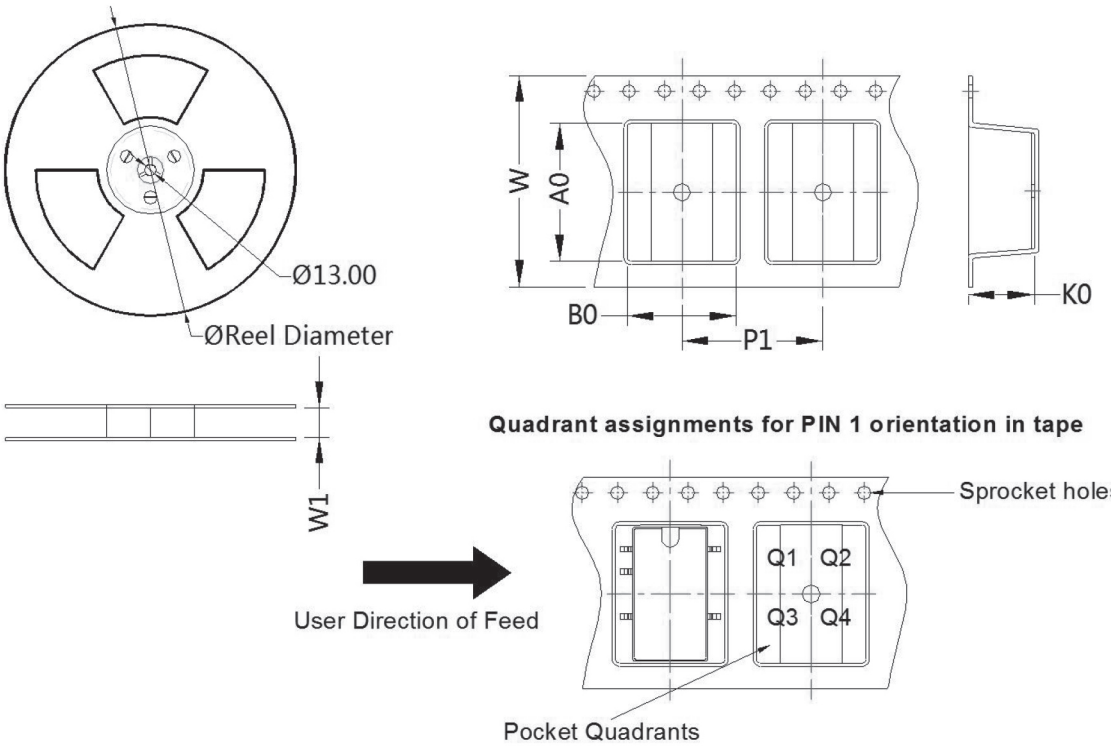
Tape and Reel Info



Package Type	Pin	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
SMD	5	500	330.0	24.5	13.4	11.7	7.5	16.0	24.0	Q1