

## E\_T-W2 & F\_T-W2 Series

### 0.25W, FIXED INPUT, ISOLATED & UNREGULATED DUAL/SINGLE OUTPUT DC-DC CONVERTER

#### UTRALMINIATURE SMD PACKAGE

Multi-country patent protection **RoHS**

#### FEATURES

- Single Voltage Output
- SMD Package Style
- Industry Standard Pinout
- No Heat sink Required
- 3KVDC Isolation
- High Power Density
- Internal SMD construction
- Temperature Range: -40°C~+85°C
- No External Component Required
- RoHS Compliance

#### APPLICATIONS

The E\_T-W2&F\_T-W2 Series are 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.

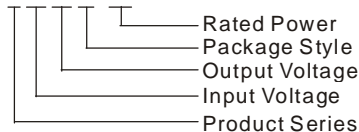
These products apply to:

- 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  $\leq 3000\text{VDC}$ );
- Where the regulation of the output voltage and the output ripple noise are not demanding.

Such as: purely digital circuits, ordinary low frequency analog circuits, and IGBT power device driving circuits.

#### MODEL SELECTION

F0505T-1W



#### PRODUCT PROGRAM

Part Number	Input		Output			Efficiency (% Typ.)		
	Voltage (VDC)		Voltage (VDC)	Current (mA)				
	Nominal	Range		Max	Min			
F0303T-W2	3.3	3.0-3.6	3.3	75	8	60		
F0305T-W2			5	50	5	60		
F0505T-W2	5	4.5-5.5	5	50	5	64		
F0509T-W2			9	28	3	65		
F0512T-W2			12	21	2	67		
F0515T-W2			15	17	2	66		
E0505T-W2			$\pm 5$	$\pm 25$	$\pm 3$	64		
E0509T-W2			$\pm 9$	$\pm 14$	$\pm 2$	65		
E0512T-W2			$\pm 12$	$\pm 10.5$	$\pm 1$	67		
E0515T-W2			$\pm 15$	$\pm 8.5$	$\pm 1$	66		
F1205T-W2			12	10.8-13.2	5	50	5	65
F1209T-W2					9	28	3	64
F1212T-W2	12	21			2	63		
F1215T-W2	15	17			2	64		
E1205T-W2	$\pm 5$	$\pm 25$			$\pm 3$	65		
E1209T-W2	$\pm 9$	$\pm 14$			$\pm 2$	64		
E1212T-W2	$\pm 12$	$\pm 10.5$			$\pm 1$	63		
E1215T-W2	$\pm 15$	$\pm 8.5$			$\pm 1$	64		

#### OUTPUT SPECIFICATIONS

Item	Test Conditions	Min	Typ.	Max	Units
Output power				0.25	W
Line regulation	For Vin change of 1%(3.3V output)			$\pm 1.5$	%
	For Vin change of 1%(Others output)			$\pm 1.2$	
Load regulation	10% to 100% load	3.3V output	15	20	%
		5V output	12.8	15	
		9V output	8.3	10	
		12V output	6.8	10	
		15V output	6.3	10	
Output voltage accuracy	See tolerance envelope graph				
Temperature drift	100% full load			0.03	%/°C
Output ripple & Noise*	20MHz Bandwidth		50	75	mVp-p
Switching frequency	Full load, nominal input		100		KHz

\*Test ripple and noise by "parallel cable" method. See detailed operation instructions at Testing of Power Converter section, application notes.

Note:

- All specifications measured at  $T_A=25^\circ\text{C}$ , humidity<75%, nominal input voltage and rated output load unless otherwise specified.
- See below recommended circuits for more details.

#### MORNSUN Science& Technology co.,Ltd.

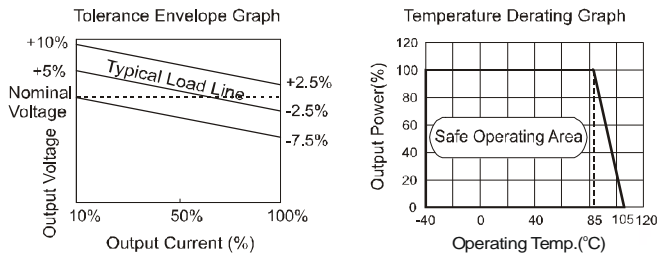
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## COMMON SPECIFICATION

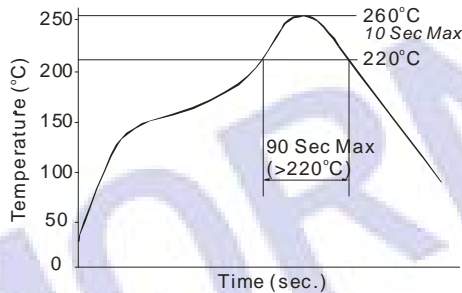
Item	Test Conditions	Min	Typ	Max	Units
Storage humidity				95	%
Operating temperature		-40		85	°C
Storage temperature		-55		125	
Temp. rise at full load			15	25	
Lead temperature	1.5mm from case for 10 seconds			260	
Cooling		Free air convection			
Isolation voltage	Tested for 1 minute and 1mA max	3000			VDC
Isolation resistance	Test at 500VDC	1000			MΩ
Short circuit protection*				1	second
package material		Epoxy Resin(UL94-V0)			
MTBF		3500			K hours
Weight			1.71		g

\*Supply voltage must be discontinued at the end of short circuit duration.

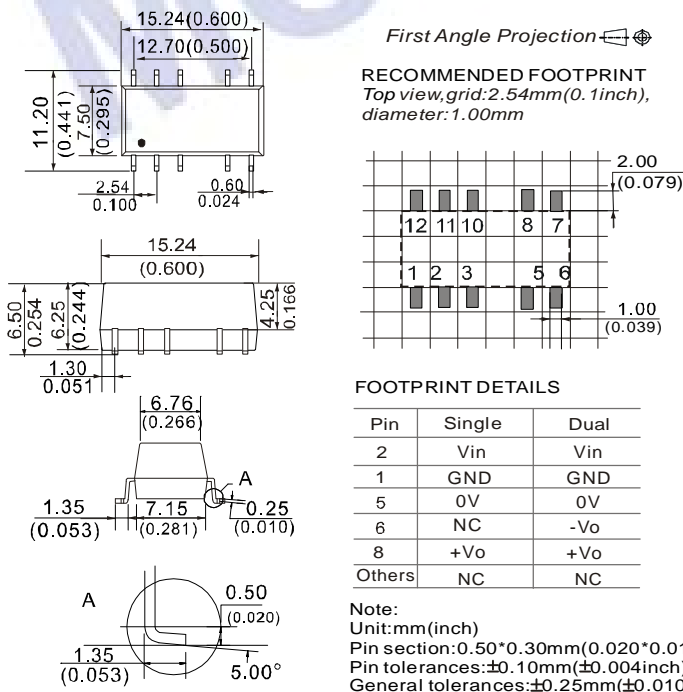
## TYPICAL CHARACTERISTICS



## RECOMMENDED REFLOW SOLDERING PROFILE



## OUTLINE DIMENSIONS & FOOTPRINT DETAILS



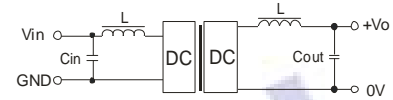
## APPLICATION NOTE

### Requirement on output load

To ensure this module can operate efficiently and reliably, During operation, the minimum output load is **not less than 10%** of the full load, and that **this product should never be operated under no load!** If the actual output power is very small, please connect a resistor with proper resistance at the output end in parallel to increase the load.

### Recommended circuit

If you want to further decrease the input/output ripple, an "LC" filtering network may be connected to the input and output ends of the DC/DC converter, see (Figure 1).

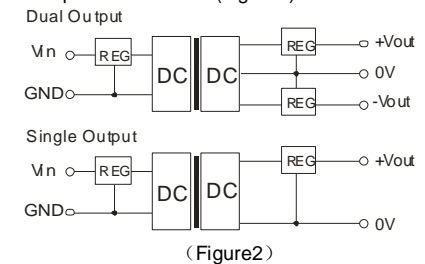


(Figure 1)

It should also be noted that the inductance and the frequency of the "LC" filtering network should be staggered with the DC/DC frequency to avoid mutual interference. However, the capacitance of the output filter capacitor must be proper. If the capacitance is too big, a startup problem might arise. It's not recommended to connect any external capacitor in the application field.

### Output Voltage Regulation and Over-voltage Protection Circuit

The simplest device for output voltage regulation, over-voltage and over-current protection is a linear voltage regulator with overheat protection that is connected to the input or output end in series (Figure2).



(Figure2)

### Overload Protection

Under normal operating conditions, the output circuit of these products has no protection against overload. The simplest method is to connect a self-recovery fuse in series at the input end or add a circuit breaker to the circuit.

### No parallel connection or plug and play.