



SE_T-W2 & SF_T-W2 Series

0.25W, FIXED INPUT, ISOLATED &
UNREGULATED DUAL/SINGLE OUTPUT
DC-DC CONVERTER UTRALMINIATURE SMD PACKAGE



FEATURES

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

APPLICATIONS

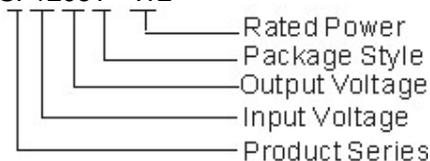
The SE_T-W2 & SF_T-W2 Series are specially designed for applications where a group of polar power supplies are isolated from the input power supply in a distributed power supply system on a circuit board. These products apply to:

- 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 $\leq 3000\text{VDC}$);
- 3) 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

SF1205T - W2



PRODUCT PROGRAM

Part Number	Input		Output			Efficiency (% Typ.)
	Voltage (VDC)		Voltage (VDC)	Current (mA)		
	Nominal	Range		Max	Min	
SF0303T-W2	3.3	3.0 ~ 3.6	3.3	75	8	60
SF0305T-W2			5	50	5	60
SF0505T-W2	5	4.5 ~ 5.5	5	50	5	64
SF0509T-W2			9	28	3	65
SF0512T-W2			12	21	2	67
SF0515T-W2			15	17	2	66
SE0505T-W2			± 5	± 25	± 3	64
SE0509T-W2			± 9	± 14	± 2	65
SE0512T-W2			± 12	± 10.5	± 1	67
SE0515T-W2	± 15	± 8.5	± 1	66		
SF1205T-W2	12	10.8 ~ 13.2	5	50	5	65
SF1209T-W2			9	28	3	64
SF1212T-W2			12	21	2	63
SF1215T-W2			15	17	2	64
SE1205T-W2			± 5	± 25	± 3	65
SE1209T-W2			± 9	± 14	± 2	64
SE1212T-W2			± 12	± 10.5	± 1	63
SE1215T-W2			± 15	± 8.5	± 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)			± 1.5	
	For Vin change of 1%(Others output)			± 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:

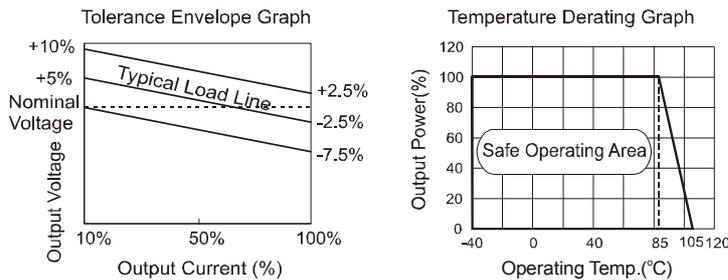
1. All specifications measured at $T_A=25^\circ\text{C}$, humidity < 75%, nominal input voltage and rated output load unless otherwise specified.
2. See below recommended circuits for more details.

COMMON SPECIFICATION

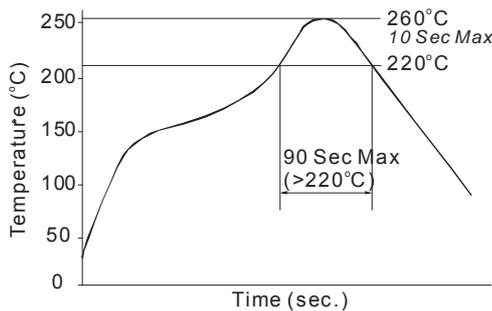
Item	Test Conditions	Min	Typ	Max	Units
Storage humidity				95	%
Operating temperature		-40		85	°C
Storage temperature		-55		125	
Temp. rise at full load			15	25	
Lead temperature	1.5mm from case for 10 seconds			260	
Cooling		Free air convection			
Isolation voltage	Tested for 1 minute and 1mA max	3000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

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

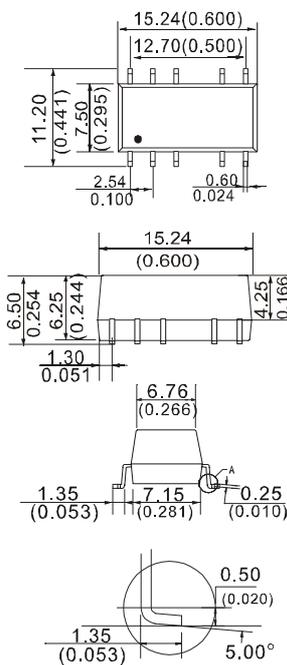
TYPICAL CHARACTERISTICS



RECOMMENDED REFLOW SOLDERING PROFILE

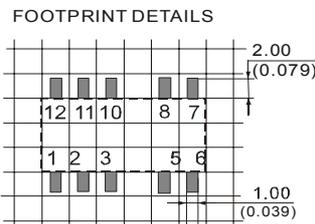


OUTLINE DIMENSIONS & FOOTPRINT DETAILS



First Angle Projection

RECOMMENDED FOOTPRINT
Top view, grid: 2.54mm (0.1inch), diameter: 1.00mm



FOOTPRINT DETAILS

Pin	Single	Dual
2	V _{in}	V _{in}
1	GND	GND
5	0V	0V
6	NC	-V _O
8	+V _O	+V _O
Others	NC	NC

Note:
Unit: mm (inch)
Pin section: 0.50*0.30mm (0.020*0.012inch)
Pin tolerances: ±0.10mm (±0.004inch)
General tolerances: ±0.25mm (±0.010inch)

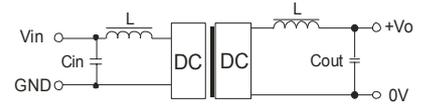
APPLICATION NOTE

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).



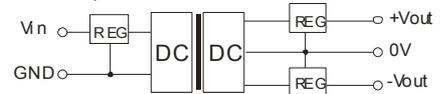
(Figure 1)

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.

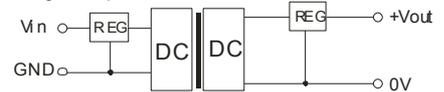
Output Voltage Regulation and Over-voltage Protection Circuit

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).

Dual Output



Single Output



(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.