SMD DC/DC Converter – SBT-W5 Series

FIXED INPUT ISOLATED& UNREGULATED
0.5W OUTPUT
SINGLE OUTPUT
ULTRAMINIATURE SMD PACKAGE

FEATURES

- High Efficiency up to 70%
- Single Voltage Output
- SMD Package Styles
- Industry Standard Pin out
- UL94-V0 Package
- No Heat sink Required
- 1KVDC Isolation
- High Power Density
- Temperature Range: -40°C~+85°C
- No External Component Required
- Low Cost
- Small Footprint

PRODUCT PROGRAM							
Part Number	Input		Output			Efficiency (%, Typ)	Package Style
	Voltage (VDC)		Voltage (VDC)	Current (mA)			
	Nomin	Range		Max	Min		
SB0505T-W5	5	4.5~5.5	5	100	10	68	SMD
SB0509T-W5	5	4.5~5.5	9	55	5	68	SMD
SB0512T-W5	5	4.5~5.5	12	40	4	69	SMD
SB0515T-W5	5	4.5~5.5	15	33	3	70	SMD
SB1205T-W5	12	10.8~13.2	5	100	10	67	SMD
SB1209T-W5	12	10.8~13.2	9	55	5	69	SMD
SB1212T-W5	12	10.8~13.2	12	40	4	69	SMD
SB1215T-W5	12	10.8~13.2	15	33	3	70	SMD

APPLICATIONS

The SBT-W5 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 ≤±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: purely digital circuits, ordinary low frequency analog circuits, and IGBT power device driving circuits.

COMMON SPECIFICATIONS	
Short circuit protection	1 second
Temperature rise at full load	25°C MAX, 15°CTYP
Cooling	Free air convection
Operating temperature range	-40°C~+85°C
Storage temperature range	-55°C ~+125°C
Lead temperature	300°C (1.5mm from case for 10 seconds)
Storage humidity range	≤ 95%
Case material	Plastic (UL94-V0)
MTBF	>3,500,000 hours

ISOLATION SPECIFICATIONS					
Item	Test conditions	Min	Typ	Max	Units
Isolation voltage	Tested for 1 minute	1000			VDC
Isolation resistance	Test at 500VDC	1000			MΩ

OUTPUT SPECIFICATIONS					
Item	Test conditions	Min	Typ	Max	Units
Output power		0.05		0.5	W
Line regulation	For Vin change of 1%			1.2	%
Load regulation	10% to 100% load (5V output)		12.8	15	%
	10% to 100% load (9V output)		8.3	9.0	
	10% to 100% load (12V output)		6.8	7.5	
	10% to 100% load (15V output)		6.3	7.0	
Output voltage accuracy	See tolerance envelope graph				
Temperature drift	100% full load			0.03	%/°C
Output ripple	20MHz Bandwidth		75		mVp-p
Switching frequency	Full load, nominal input	80	100	150	KHz

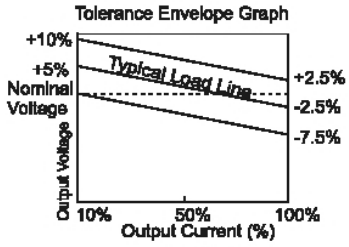
MODEL SELECTION

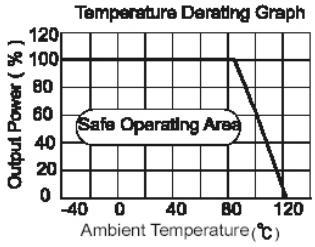
SB 05 05 T- W5

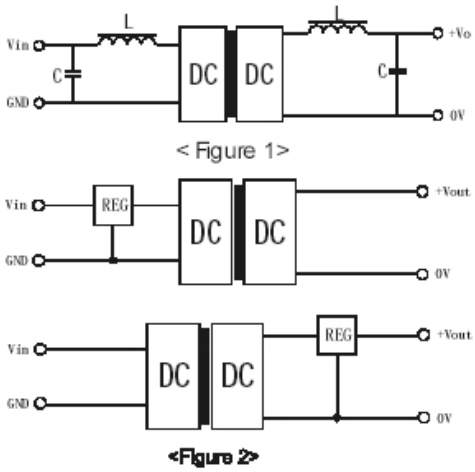
- W5 — Rated Power
- T- — Package Style
- 05 — Output Voltage
- 05 — Input Voltage
- SB — Product Series

Note:
1.All specifications measured at TA=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
2.See below recommended circuits for more details.

TYPICAL CHARACTERISTICS

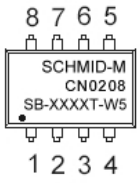






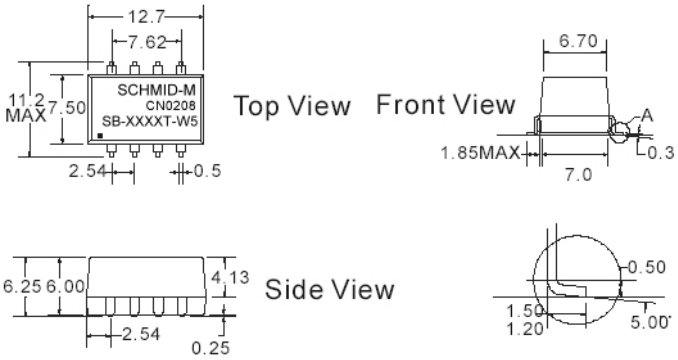
PIN CONNECTIONS

Pin	Function
1	GND
2	Vin
3	NC
4	0V



Pin	Function
5	+Vo
6	NC
7	NC
8	NC

OUTLINE DIMENSIONS& RECONMENDED FOOTPRINT DETAILS



Note: All Pins on a 2.54mm pitch; all pin diameters are 0.50mm; all dimensions in mm.

APPLICATION NOTE

Requirement on output load

To ensure this module can operate efficiently and reliably, a minimum load is specified for this kind of DC/DC converter in addition to a maximum load (namely full load). During operation, make sure the specified range of input voltage is not exceeded, 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, or use our company's products with a lower rated output power (SBT-0.25Wseries).

Overload Protection

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

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 (see Figure 1).

Recommended Reflow Soldering