



## RSB\_T-3W Series

### WIDE INPUT ISOLATED & REGULATED 3W SINGLE OUTPUT SMD PACKAGE

multi-country patent protection **RoHS**

#### FEATURES

- Wide (2:1) Input Range
- Operating Temperature: -40°C~+85°C
- 1500VDC Isolation
- UL94-V0 Package
- No Heat Sink Required
- Industry Standard Pinout
- MTBF>1,000,000 hours
- Custom Service Available
- RoHS Compliance

#### APPLICATIONS

The RSB\_T-3W Series are specially designed for applications where a wide range input voltage power supplies are isolated from the input power supply in a distributed power supply system on a circuit board.

These products apply to:

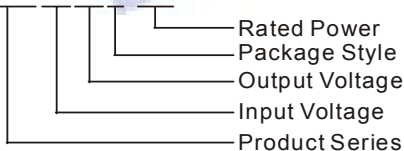
- 1) Where the voltage of the input power supply is wide range (voltage range: 2:1);
- 2) Where isolation is necessary between input and output (isolation voltage =1500VDC);
- 3) Where the regulation of the output voltage and the output ripple noise are demanded.

#### PRODUCT PROGRAM

Part Number	Input			Output			Efficiency (% Typ)
	Voltage (VDC)			Voltage (VDC)	Current(mA)		
	Nominal	Range	Max*		Max	Min	
RSB1205T-3W	12	9~18	22	5	600	60	75
RSB1209T-3W				9	330	33	78
RSB1212T-3W				12	250	25	79
RSB1215T-3W				15	200	20	78
RSB2405T-3W	24	18~36	40	5	600	60	77
RSB2409T-3W				9	330	33	80
RSB2412T-3W				12	250	25	82
RSB2415T-3W				15	200	20	81
RSB4803T-3W	48	36~72	80	3.3	909	90	72
RSB4805T-3W				5	600	60	75
RSB4809T-3W				9	330	33	78
RSB4812T-3W				12	250	25	81
RSB4815T-3W				15	200	20	83

#### MODEL SELECTION

##### RSB2405T-3W



#### ISOLATION SPECIFICATIONS

Item	Test conditions	Min	Typ	Max	Units
Isolation voltage	Flash tested for 60 seconds	1500			VDC
Isolation resistance	Test at 500VDC	1000			MΩ

#### OUTPUT SPECIFICATIONS

Item	Test conditions	Min	Typ	Max	Units
3W output power	See below products program	0.3		3	W
Output Voltage accuracy	Refer to recommended circuit		±1	±2	%
Load regulation	From 10% to 100% load		±0.5	±0.75	
Line regulation	Input Voltage From Low to High		±0.2	±0.5	
Temperature drift (Vout)	Refer to recommended circuit			±0.03	%/°C
Ripple	20MHz bandwidth			50	mVp-p
Noise	20MHz bandwidth		50	100	
Switching frequency	100% load, nominal input voltage	300 (PFM)			KHz

Note:

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

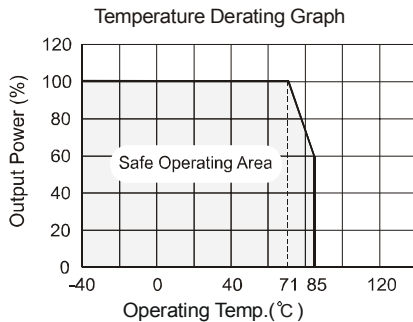
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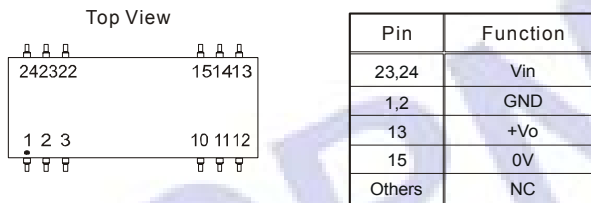
## COMMON SPECIFICATIONS

Output Short Circuit Protection	Continuous, Automatic Recovery
Temperature Rise at Full Load	20°C (typ)
Cooling	Free Air Convection
No-load Power Consumption	150mW (typical)
Operating Temperature Range	-40°C~+85°C
Storage Temperature Range	-50°C ~+125°C
Reflow Soldering Profile***	Peak Temp 260°C(10sec,max)
Storage Humidity Range	≤ 95%
Case Material	Plastic (UL94-V0)
MTBF	>1,000,000 hours
***220°C for 90sec,max	

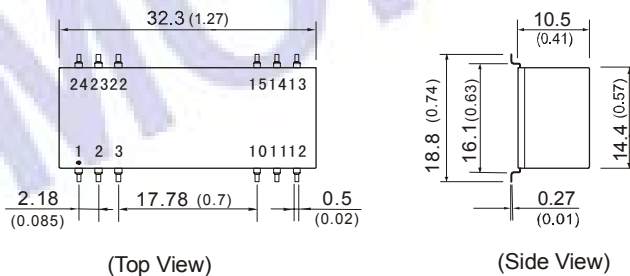
## TYPICAL CHARACTERISTICS



## FOOTPRINT DETAILS



## OUTLINE DIMENSIONS



Note: Unit: mm(inch); Tolerance: ±0.25mm; All Pins on a 2.54mm pitch;

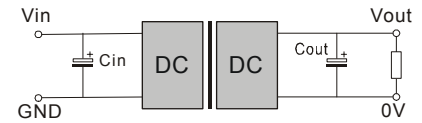
## APPLICATION NOTE

### Requirement on Output Load

To ensure this module 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 out put load is not less than 10% Of the full load, If the actual load is less below the specified minimum load, the output ripple of this type of DC/DC converter may increase drastically. If the actual output power from the load in your circuit is very small, please connect a resistor with proper resistance at the output end to in parallel to increase the load, or use our company's other products with a lower rated output power.

## Recommended Circuit

All the RSB\_T-3W Series have been tested according to the following recommended testing circuit before leaving factory. This series should be tested under load(Figure 1).



(Figure 1)

If you want to further decrease the input/output ripple, you can increase capacitance properly or choose capacitors with low ESR. However, the capacitance should not be too high(Table 1)

External Capacitor Table(Table 1)

Vout	Cout/μF (max)
5V	1000
9V	680
12V	470
15V	220
3.3μF	2200

## External Capacitor

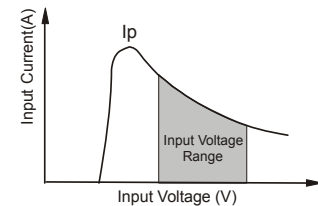
Although this series of DC/DC converter can work without external capacitor, in order to keep an optimum performance, however, it needs external capacitor. (Table 2)

External Capacitor Table (Table 2)

Vin	Cin	Cout (0+70°C)	Cout (-40+85°C)
12V	100uF	100uF (electrolytic capacitor)	47uF (tantalum capacitor)
24V&48V	10uF		

## Input Current

When it is used in unregulated power supply, be sure that the fluctuating range of the power supply and the rippled voltage do not exceed the module standard. Input current of power supply should afford the startup current of this kind of DC/DC module (Figure 2)



(Figure 2)

**The products cannot be used in parallel and in plug and play.**