

# **IB S-2W Series**

# 2W, FIXED INPUT, ISOLATED & REGULATED SINGLE OUTPUT DC-DC CONVERTER



multi-country patent protection RoHS

# **FEATURES**

Small Footprint SIP Package 1KVDC Isolation

Temperature Range: -40°C to +85°C No External Component Required Internal SMD construction Continuous Short Circuit Protection

Industry Standard Pinout RoHS Compliance

# **APPLICATIONS**

The IB\_S-2W Series are specially designed for applications where a single power supply is highly isolated from the input power supply in a distributed power supply system on a circuit board.

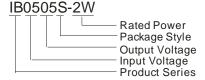
These products apply to:

- Where the voltage of the input power supply is fixed (voltage variation ≤±5%);
- Where isolation is necessary between input and output (isolation voltage ≤1000VDC);
- Where the regulation of the output voltage and the output ripple and noise are demanded.

	Input		Output				Switching
Part Number	Voltage (VDC)		Voltage Curr	Currer	nt (mA)	Efficiency (%, Typ)	frequenc
	Nominal	Range	(VDČ)	Max	Min	(76, Typ)	(KHz)
IB0505S-2W	5	4.75-5.25	5	400	40	70	333
IB1205S-2W	12	11.40-12.60	5	400	40	71	58
IB1505S-2W*	15	14.25-15.75	5	400	40	71	-
IB2405S-2W	24	22.8-25.2	5	400	40	71	66
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ISOLATION SPECIFICATIONS							
Item	Test condition	Min	Тур	Max	Units		
Isolation voltage	Tested for 1 minute and 1mA max	1000			VDC		
Isolation resistance	Test at 500VDC	1000			МΩ		
Isolation capacitance			100		pF		

# **MODEL SELECTION**



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COMMON SPECIFICATION					
Test condition	Min	Тур	Max	Units	
	0.2		2	W	
For Vin change of 5%			±0.5		
10% to 100% load			±1.5	%	
100% full load			±3		
100% full load			0.03	%/°C	
20MHz Bandwidth		20	30	mVp-p	
20MHz Bandwidth		50	150		
	For Vin change of 5% 10% to 100% load 100% full load 100% full load 20MHz Bandwidth	Test condition Min  0.2  For Vin change of 5%  10% to 100% load  100% full load  100% full load  20MHz Bandwidth	Test condition         Min         Typ           0.2         0.2           For Vin change of 5%         0.2           10% to 100% load         0.2           10% to 100% load         0.2           100% full load         0.2           100% full load         0.2           20MHz Bandwidth         20	Test condition         Min         Typ         Max           0.2         2           For Vin change of 5%         ±0.5           10% to 100% load         ±1.5           100% full load         ±3           100% full load         0.03           20MHz Bandwidth         20         30	

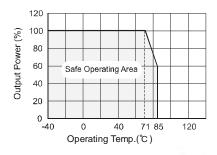
<sup>\*</sup>Test ripple and noise by "parallel cable" method. See detailed operation instructions at Testing of Power Converter section, application notes.

Note:

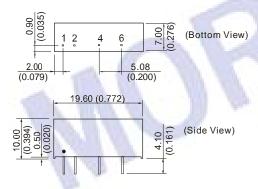
- All specifications measured at TA=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
- 2. See below recommended circuits for more details.

OUTPUT SPECIFICATIONS					
Item	Test Conditions	Min	Тур	Max	Units
Storage humidity				95	%
Operating temperature		-40		85	
Storage temperature		-55		125	°C
Temp. rise at full load			40	58	C
Lead temperature	1.5mm from case for 10 seconds			300	
Short circuit protection			Cont	inuous	
Cooling	Free air convection		ion		
Case material		Plastic(UL94-V0)			
MTBF		3500			K hours
Weight			2.8		g

# **TYPICAL TEMPERATURE CURVE**



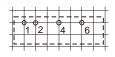
# **OUTLINE DIMENSION & PIN CONNECTIONS**



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

# First Angle Projection 🕣 🖶

RECOMMENDED FOOTPRINT Top view, grid: 2.54mm(0.1inch), diameter: 1.00mm(0.039inch)



#### FOOTPRINT DETAILS

Pin	Function		
1	Vin		
2	GND		
4	0V		
6	+Vo		

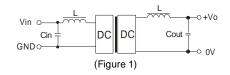
# **APPLICATION NOTE**

#### 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, or use our company's products with a lower rated output power.

#### 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).



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. For every channel of output, provided the safe and reliable operation is ensured, the greatest capacitance of its filter capacitor sees (Table 1).

#### EXTERNAL CAPACITOR TABLE (Table 1)

Vin (VDC)	Cin (uF)	Vout (VDC)	Cou (uF)
5	4.7	5	4.7
12	2.2	-	-
15	1	-	-
24	0.47	-	-

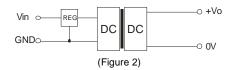
It's not recommended to connect any external capacitor in the application field with less than 0.5 watt output.

### **Overload Protection**

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

#### Input Over-voltage Protection Circuit

The simplest device for input over-voltage protection is a linear voltage regulator with overheat protection that is connected to the input end in series (Figure 2).



When the environment temperature is higher than 71°C, the product output power should be less then 60% of the rated power.

No parallel connection or plug and play.