

## IB\_LD-1W & IB\_LS-1W Series

1W, FIXED INPUT, ISOLATED & REGULATED  
SINGLE OUTPUT DC-DC CONVERTER



multi-country patent protection **RoHS**

### FEATURES

- Small Footprint
- SIP/DIP Package
- Low Ripple and good EMC features
- Temperature Range: -40°C to +85°C
- No Heat Sink Required
- No External Component Required
- 1KVDC Isolation
- Internal SMD construction
- Continuous Short Circuit Protection
- Industry Standard Pinout
- RoHS Compliance

### APPLICATIONS

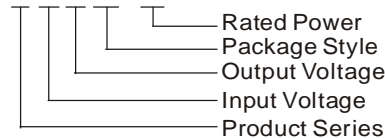
The IB\_LD-1W & IB\_LS-1W Series are specially designed for applications where a single power supply is highly isolated from the input power supply in a distributed power supply system on a circuit board.

These products apply to:

- Where the voltage of the input power supply is fixed (voltage variation  $\leq \pm 5\%$ );
- Where isolation is necessary between input and output (isolation voltage  $\leq 1000\text{VDC}$ );
- Where the regulation of the output voltage and the output ripple and noise are demanded.

### MODEL SELECTION

IB0515LS-1W



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### PRODUCT PROGRAM

Part Number	Input		Output			Efficiency (% Typ)	Package		
	Voltage (VDC)		Voltage (VDC)	Current (mA)					
	Nominal	Range		Max	Min				
IB0505LD-W75	5	4.75-5.25	5	150	15	68	DIP		
IB0509LD-1W			9	111	12	70	DIP		
IB0512LD-1W			12	83	9	71	DIP		
IB0515LD-1W			15	67	7	73	DIP		
IB0505LS-W75			5	150	15	68	SIP		
IB0509LS-1W			9	111	12	70	SIP		
IB0512LS-1W			12	83	9	71	SIP		
IB0515LS-1W			15	67	7	73	SIP		
IB1205LD-W75			12	11.4-12.6	5	150	15	68	DIP
IB1209LD-1W	9	111			12	72	DIP		
IB1212LD-1W	12	83			9	70	DIP		
IB1215LD-1W	15	67			7	74	DIP		
IB1205LS-W75	5	150			15	68	SIP		
IB1209LS-1W	9	111			12	72	SIP		
IB1212LS-1W	12	83			9	70	SIP		
IB1215LS-1W	15	67			7	74	SIP		
IB1505LS-W75	15	14.25-15.75			5	150	15	70	SIP
IB1509LS-1W *			9	111	12	71	SIP		
IB1512LS-1W *			12	83	9	71	SIP		
IB1515LS-1W			15	67	7	72	SIP		
IB2405LD-W75*			24	22.8-25.2	5	150	15	68	DIP
IB2409LD-1W					9	111	12	68	DIP
IB2412LD-1W					12	83	9	73	DIP
IB2415LD-1W					15	67	7	75	DIP
IB2405LS-W75					5	150	15	68	SIP
IB2409LS-1W	9	111			12	68	SIP		
IB2412LS-1W	12	83			9	73	SIP		
IB2415LS-1W	15	67			7	75	SIP		

\* Designing.

### COMMON SPECIFICATION

Item	Test condition	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			300	
Short circuit protection		Continuous			
Cooling		Free air convection			
Case material		Plastic(UL94-V0)			
MTBF		3500			K hours
Weight			2.1		g

## ISOLATION SPECIFICATIONS

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

## OUTPUT SPECIFICATIONS

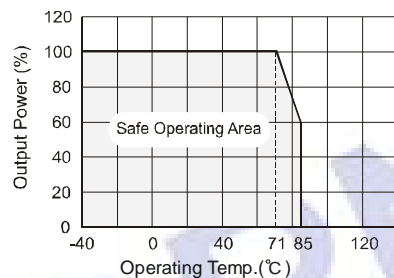
Item	Test Conditions	Min	Typ	Max	Units
Output power		0.1		1	W
Line regulation	For Vin change of 5%			±0.25	%
Load regulation	10% to 100% load			±1	
Output voltage accuracy	100% full load			±3	
Temperature drift	100% full load			0.03	%/°C
Ripple*	20MHz Bandwidth		10	20	mVp-p
Noise*	20MHz Bandwidth		50	75	
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.

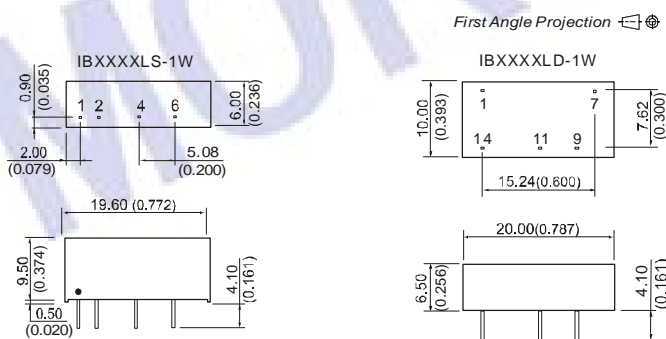
Note:

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

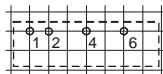
## TYPICAL TEMPERATURE CURVE



## OUTLINE DIMENSION & PIN CONNECTIONS



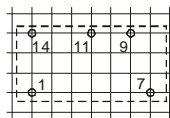
RECOMMENDED FOOTPRINT  
Top view, grid: 2.54\*2.54mm (0.1\*0.1inch),  
diameter: 1.00mm (0.039inch)



### FOOTPRINT DETAILS

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

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)



### FOOTPRINT DETAILS

Pin	DIP
1	GND
7	NC
9	+Vo
11	0V
14	Vin

NC:No Connection

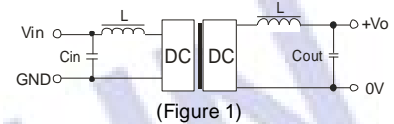
## APPLICATION NOTE

### 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 (IB\_LD -W25/IB\_LS-W25 series).

### 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)	Cout (uF)
5	4.7	5	10
12	4.7	9	4.7
15	2.2	12	2.2
24	1	15	1

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

**No parallel connection or plug and play.**