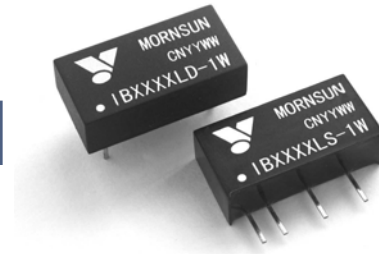


## IB\_LS-1W/ IB\_LD-1W Series

FIXED INPUT ISOLATED & REGULATED  
1W OUTPUT SINGLE OUTPUT  
MINIATURE SIP/DIP PACKAGE



multi-country patent protection

### FEATURES

- Efficiency up to 73%
- Small Footprint
- SIP/DIP Package
- Single Output Voltage
- 1KVDC Isolation
- Fixed Input Voltage
- Regulated Output Voltage
- Temperature Range: -40°C ~+85°C
- Industry Standard Pinout
- UL94-V0 Package
- No Heat Sink Required
- No External Component Required
- PCB Mounting
- Fully Encapsulated
- RoHS Compliance

### APPLICATIONS

The IB\_LS(D)-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:

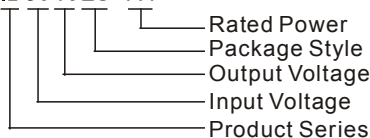
- 1) Where the voltage of the input power supply is fixed (voltage variation  $\leq \pm 5\%$ );
- 2) Where isolation is necessary between input and output (isolation voltage = 1000VDC);
- 3) Where the regulation of the output voltage and the output ripple and noise are demanded.

These products don't apply to:

- 1) Where the input supply voltage is varied (variation  $\geq \pm 5\%$ ), otherwise our company's WRA series is recommended;
- 2) Where the isolation voltage between input and output is required to be >1000VDC, otherwise our company's IF\_S(D) Series products are recommended;

### MODEL SELECTION

IB0515LS-1W



PRODUCT PROGRAM							
Part Number	Input		Output			Efficiency (% Typ)	Package Style
	Voltage (VDC)		Voltage (VDC)	Current (mA)			
	Nominal	Range		Max	Min		
IB0505LS/D-W75	5	4.75~5.25	5	150	15	69	SIP/DIP
IB0505LS/D-1W	5	4.75~5.25	5	200	20	68	SIP/DIP
IB0509LS/D-1W	5	4.75~5.25	9	111	12	70	SIP/DIP
IB0512LS/D-1W	5	4.75~5.25	12	83	9	71	SIP/DIP
IB0515LS/D-1W	5	4.75~5.25	15	67	7	72	SIP/DIP
IB1205LS/D-W75	12	11.4~12.6	5	150	15	69	SIP/DIP
IB1209LS/D-1W	12	11.4~12.6	9	111	12	71	SIP/DIP
IB1212LS/D-1W	12	11.4~12.6	12	83	9	72	SIP/DIP
IB1215LS/D-1W	12	11.4~12.6	15	67	7	72	SIP/DIP
IB2405LS/D-W75	24	22.8~25.2	5	150	15	70	SIP/DIP
IB2409LS/D-1W	24	22.8~25.2	9	111	12	72	SIP/DIP
IB2412LS/D-1W	24	22.8~25.2	12	83	9	73	SIP/DIP
IB2415LS/D-1W	24	22.8~25.2	15	67	7	73	SIP/DIP

Note: The IB\_LS(D)-0.25W series also are available in our company.

COMMON SPECIFICATION	
Short circuit protection	1 second
Temperature rise at full load	25°C (MAX), 15°C (TYP)
Cooling	Free air convection
No-load power consumption	10% nominal power (typical)
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	$\leq 95\%$
Case material	Plastic (UL94-V0)
MTBF	>3,500,000 hours

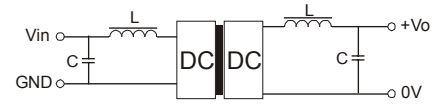
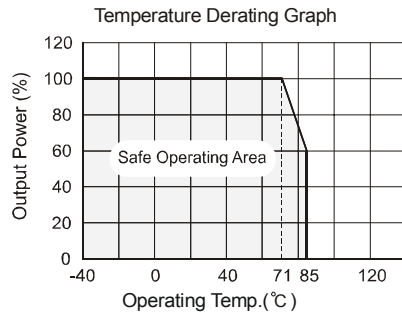
ISOLATION SPECIFICATIONS					
Item	Test condition	Min	Typ	Max	Units
Isolation voltage	Tested for 1 minute	1000			VDC
Isolation resistance	Test at 500VDC	1000			MΩ

OUTPUT SPECIFICATIONS					
Item	Test condition	Min	Typ	Max	Units
Output power		0.1		1	W
Line regulation	For $V_{in}$ change of $\pm 5\%$			0.25	%
Load regulation	10% to 100% full load			1	%
Output voltage accuracy	100% full load			$\pm 3$	%
Temperature drift	100% full load			0.03	%/°C
Output ripple & ripple	20Hz-300KHz bandwidth		10	20	mVp-p
Switching frequency	Full load, nominal input voltage		100		KHz

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 CHARECTERISTICS

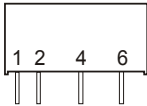


<Figure 1>

## FOOTPRINT DETAILS

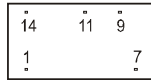
Pin	Function
1	Vin
2	GND
4	0V
6	+Vo

IBXXXXLS- Series



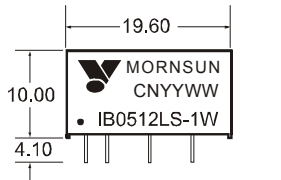
Pin	Function
1	GND
7	NC
9	+Vo
11	0V
14	Vin

IBXXXXLD-Series



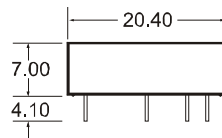
## OUTLINE DIMENSIONS & RECOMMENDED FOOTPRINT

IBXXXXLS-1W Package

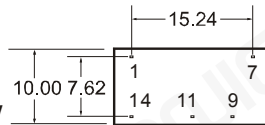
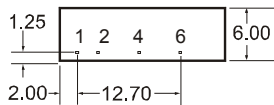


Side View

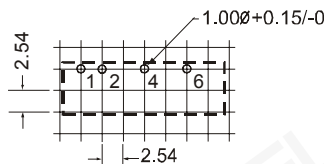
IBXXXXLD-1W Package



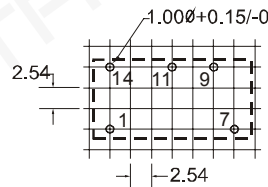
Bottom View



IBXXXXLS-1W Package



IBXXXXLD-1W Package



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

## APPLICATION NOTE

### Filtering

In some circuits which are sensitive to noise and ripple, a filtering capacitor may be added to the DC/DC output end and input end to reduce the noise and ripple. However, the capacitance of the output filter capacitor must proper. If the capacitance is too big, a startup problem might arise. For every channel of output, providing the safe and reliable operation is ensured, the greatest capacitance of its filter capacitor refer to the **External Capacitor Table**. To get an extreme low ripple, an "LC" filtering network may be connected to the input and output ends of the DC/DC converter, which may produce a more significant filtering effect. 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 (see figure 1).

### 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 (IB\_LS(D)-0.25W Series).

### 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.

**When the environment temperature is higher than 70°C, the product output power should be less then 60% of the rated power.**

### External Capacitor Table

V <sub>in</sub>	External capacitor	V <sub>out</sub>	External capacitor
5VDC	4.7uF	5VDC	10uF
12VDC	2.2uF	9VDC	4.7uF
24VDC	1uF	12VDC	2.2uF
--	--	15VDC	1uF



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