

IB_LS-1W/ IB_LD-1W Series

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



multi-country patent protection **RoHS**

FEATURES

- Small Footprint
- SIP/DIP Package
- 1KVDC Isolation
- Regulated Output Voltage
- Temperature Range: -40°C ~+85°C
- Industry Standard Pinout
- No Heat Sink Required
- No External Component Required
- Fully Encapsulated
- RoHS Compliance

PRODUCT PROGRAM

Part Number	Input		Output			Efficiency (% Typ)	Package Style
	Voltage (VDC)		Voltage (VDC)	Current (mA)			
	Nominal	Range		Max	Min		
IB0305LS/D-W75	3.3	3.13~3.46	5	150	15	66	SIP/DIP
IB0505LS/D-W75	5	4.75~5.25	5	150	15	67	SIP/DIP
IB0505LS/D-1W			5	200	20	67	SIP/DIP
IB0509LS/D-1W			9	111	12	71	SIP/DIP
IB0512LS/D-1W			12	83	9	72	SIP/DIP
IB0515LS/D-1W			15	67	7	73	SIP/DIP
IB0524LS/D-1W			24	42	4	68	SIP/DIP
IB1205LS/D-W75			12	11.4~12.6	5	150	15
IB1205LS/D-1W	5	200			20	70	SIP/DIP
IB1209LS/D-1W	9	111			12	72	SIP/DIP
IB1212LS/D-1W	12	83			9	70	SIP/DIP
IB1215LS/D-1W	15	67			7	74	SIP/DIP
IB1224LS/D-1W	24	42			4	68	SIP/DIP
IB2405LS/D-W75	24	22.8~25.2	5	150	15	67	SIP/DIP
IB2405LS/D-1W			5	200	20	68	SIP/DIP
IB2409LS/D-1W			9	111	12	73	SIP/DIP
IB2412LS/D-1W			12	83	9	73	SIP/DIP
IB2415LS/D-1W			15	67	7	75	SIP/DIP
IB2424LS/D-1W			24	42	4	68	SIP/DIP

Note: The IB_LS(D)-W2 series also are available in our company.

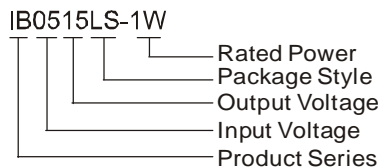
APPLICATIONS

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.

MODEL SELECTION



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 Vin change of $\pm 5\%$			0.25	%
Load regulation	10% to 100% full load			± 1	%
Output voltage	100% full load			± 3	%
Temperature drift	100% full load			0.03	%/°C
Output ripple	20MHz bandwidth		10	20	mVp-p
Output noise	20MHz bandwidth		50	100	
Switching frequency	Full load, nominal input voltage		100		KHz

Note:

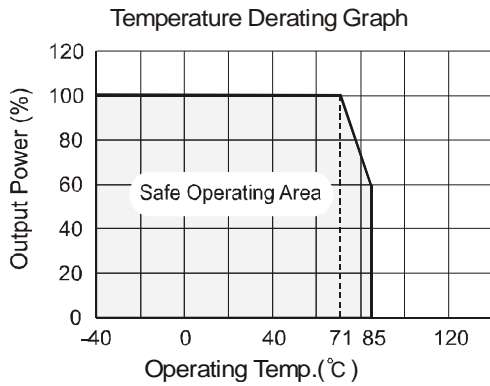
1. All specifications measured at TA=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
2. See below recommended circuits for more details.

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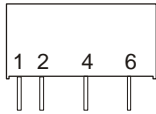
http://www.mornsun-power.com

TYPICAL CHARACTERISTICS

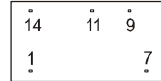


FOOTPRINT DETAILS

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

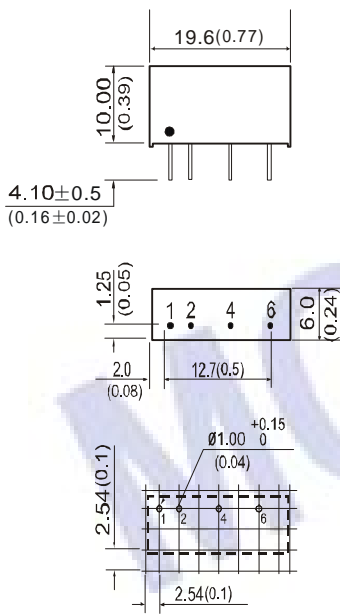


Pin	Function
1	GND
7	NC
9	+Vo
11	0V
14	Vin

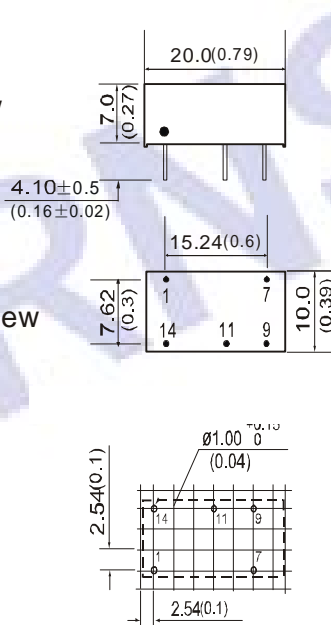


OUTLINE DIMENSIONS & RECOMMENDED FOOTPRINT

SIP package



DIP package

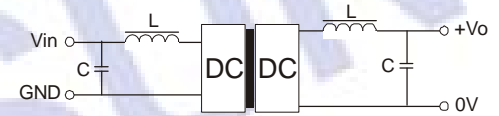


Filtering

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 be 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 (Figure 1).

External Capacitor Table

Vin	External capacitor	Vout	External capacitor
3.3VDC	4.7uF	5VDC	10uF
5VDC	4.7uF	9VDC	4.7uF
12VDC	2.2uF	12VDC	2.2uF
24VDC	1uF	15VDC	1uF



<Figure 1>

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 than 60% of the rated power.

. Note: All Pins on a 2.54mm(0.1) pitch; All Pin diameters are 0.50 mm(0.02); Tolerances:±0.25mm(0.01); Unit: mm(inch).

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.