MORNSUN®

IA_WS-1W5 Series

1.5W, FIXED INPUT, ISOLATED & REGULATED DUAL OUTPUT DC-DC CONVERTER

RoHS

FEATURES

SIP package
Temperature Range: -25°C to +75°C
No Heat sink Required
Internal SMD construction
No External Component Required
Industry standard pinout
RoHS Compliance

PRODUCT PROGRAM

Part Number	Input		Output			Efficiency (%, Typ)
	Voltage (VDC)		Voltage (VDC)	Current (mA)		
	Nominal	Range		Max	Min	
IA0512WS-1W5	5	4.5-5.5	±12	±60	±6	60
~~IA1215WS-1W5~~	~~12~~	~~10.8-13.2~~	~~±15~~	~~±50~~	~~±5~~	~~60~~

Note: Models listed with strike-through text have been officially discontinued.

APPLICATIONS

The IA_WS-1W5 Series are specially designed for applications where a group of polar 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 fixed (voltage variation ≤±10%);
2) Where isolation is necessary between input and output (isolation voltage ≤1000VDC);
3) Where the regulation of the output voltage and the output ripple noise are demanded.

ISOLATION SPECIFICATIONS

Item	Test conditions	Min	Typ	Max	Units
Isolation voltage	Tested for 1 minute and 1 mA max	1000			VDC
Isolation resistance	Test at 500VDC	1000			MΩ

OUTPUT SPECIFICATIONS

Item	Test conditions	Min	Typ	Max	Units
Output power		0.15		1.5	W
Line regulation	For Vin change of ±5%			±0.25	%
Load regulation	10% to 100% full load			±1	
Output voltage accuracy	100% full load			±3	
Temperature drift	100% full load			±0.03	%/°C
Output ripple*	20MHz Bandwidth		20	30	mVp-p
Output noise*	20MHz Bandwidth		75	150	
Switching frequency	Full load, nominal input		75		KHz

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

Note:

1. All specifications measured at T_A=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
2. See below recommended circuits for more details.
3. Operation under minimum load will not damage the converter; However, they may not meet all specification listed, and that will reduce the life of product.

MODEL SELECTION

IA0512WS-1W5

- Rated Power
- Package Style
- Output Voltage
- Input Voltage
- Product Series

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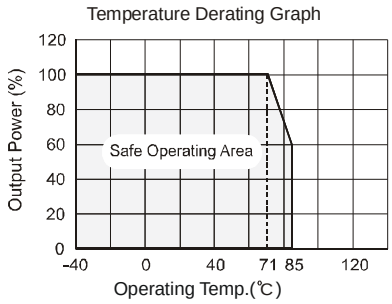
COMMON SPECIFICATIONS

Item	Test conditions	Min	Typ	Max	Units
Storage humidity				95	%
Operating temperature		-25		75	°C
Storage temperature		-45		105	
Temp. rise at full load			25		
Lead temperature	1.5mm from case for 10 seconds			300	
Cooling		Free air convection			
Case material		Plastic (UL94-V0)			
Short circuit protection*				1	S
MTBF		3500			K hours
Weight			6.3		g

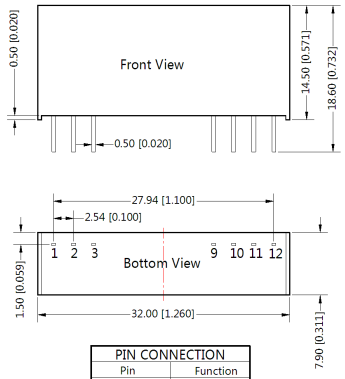
*Supply voltage must be discontinued at the end of short circuit duration.

TYPICAL CHARACTERISTICS



OUTLINE DIMENSIONS & PIN CONNECTIONS

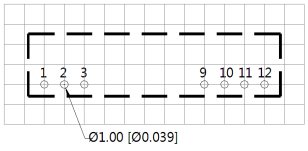
MECHANICAL DIMENSIONS



PIN CONNECTION	
Pin	Function
1	Vin
2	-Vo
3	0V
9	NC
10	0V
11	+Vo
12	GND
NC:No connection	

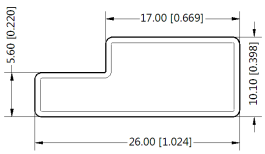
Note:
Unit:mm[inch]
Pin section tolerances:±0.1mm[±0.004inch]
General tolerances:±0.25mm[±0.01inch]
THIRD ANGLE PROJECTION

RECOMMENDED FOOTPRINT DETAILS



Note : Grid 2.54*2.54mm

TUBE PACKAGING DIMENSIONS



Note:
Unit :mm[inch]
General tolerances: ± 0.50[± 0.020]
L=530[20.866] Tube Quantity: 15pcs
L=220[8.661] Tube Quantity: 6pcs
Inner carton(S): L*W*H=255*170*80
Outer carton(S): L*W*H=375*280*270, 6 inner cartons(S)
Inner carton(L): L*W*H=580*200*100
Outer carton(L): L*W*H=600*215*220, 2 inner cartons(L)
Outer carton(L): L*W*H=600*215*325, 3 inner cartons(L)

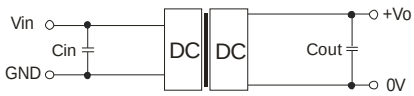
APPLICATION NOTE

Requirement on output load

To ensure this module can operate efficiently and reliably, During operation, the minimum output load could ***not be less than 10%*** of the full 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.

Recommended circuit

If you want to further decrease the input/output ripple, an capacitor filtering network may be connected to the input and output ends of the DC/DC converter, see (Figure 1).



(Figure 1)

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 (μF)	Vo (VDC)	Cout (μF)
5	4.7	±12	1
~~12~~	~~2.2~~	~~±15~~	~~0.47~~

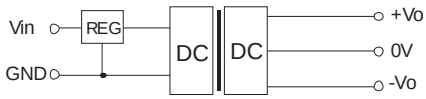
It's not recommended to connect any external capacitor in the application field with less than 0.5 watt output.

Overload Protection

Under normal operating conditions, the output circuit of these products has no protection against over-current 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.

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).



(Figure 2)

When the environment temperature is higher than 71°C, the product working should be see temperature derating graph.

No parallel connection or plug and play.