

1W, Fixed input voltage, isolated & regulated single output



Patent Protection RoHS

FEATURES

- Continuous short circuit protection
- Operating temperature range: -40°C to +85°C
- Isolation voltage: 3K VDC
- Ultra Compact package
- International standard pin-out
- Compatible with DCP01 Series

IF_RN-1W & IF_RT-1W series is specially designed for applications where an isolated voltage is required in a distributed power supply system. It is suitable for

1. Where the voltage of the input power supply is stable (voltage variation: $\pm 5\%V_{in}$);
2. Where isolation is necessary between input and output (isolation voltage $\leq 3000VDC$);
3. Where do not has high requirement of line regulation, load regulation and the ripple & noise of the output voltage;
Such as: pure digital circuits, low frequency analog circuits, and IGBT power device driving circuits.

Selection Guide

Part No.	Input Voltage (VDC)	Output		Efficiency (%Min./Typ.) @ Full Load	Max. Capacitive Load (μF)
	Nominal (Range)	Output Voltage (VDC)	Output Current (mA)(Max./Min.)		
IF0505RN-1W	5 (4.75-5.25)	5	200/20	66/70	220
IF0505RT-1W		5	200/20	66/70	220
IF1205RN-1W	12 (11.4-12.6)	5	200/20	68/72	220
IF1205RT-1W		5	200/20	68/72	220

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (full load / no-load)	5V input	--	285/25	--	mA
	12V input	--	115/20	--	
Surge Voltage (1sec. max.)	5V input	-0.7	--	9	VDC
	12V input	-0.7	--	18	
Input Filter		Capacitor filter			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		--	--	± 3	%
Line Regulation	Input voltage change: $\pm 1\%$	--	--	± 0.25	
Load Regulation	10%-100% load	--	--	± 1	
Ripple *	20MHz bandwidth	--	10	20	mVp-p
Noise *		--	50	75	
Temperature Drift Coefficient	100% load	--	--	± 0.03	%/°C
Output Short Circuit Protection		Continuous, self-recovery			

Note: * Ripple and noise tested with "parallel cable" method, please see DC-DC Converter Application Notes for specific operation methods.

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Isolation Voltage	Input-output, with the test time of 1 minute and the leak current lower than 1mA	3000	--	--	VDC
Isolation Resistance	Input-output, isolation voltage 500VDC	1000	--	--	M Ω
Isolation Capacitance	Input-output, 100KHz/0.1V	--	25	--	pF
Operating Temperature	Derating if the temperature $\geq 71^\circ C$, (see Fig. 1)	-40	--	85	°C
Storage Temperature		-55	--	125	
Casing Temperature Rise	Ta=25°C	--	15	25	

Pin Welding Resistance Temperature	Welding spot is 1.5mm away from the casing, 10 seconds	--	--	250	°C
Reflow Soldering Temperature		Peak temp. ≤245°C, maximum duration time ≤60s at 217°C. For actual application, please refer to IPC/JEDEC J-STD-020D.1.			
Storage Humidity	Non-condensing	--	--	95	%RH
Switching Frequency	100% load, nominal input voltage	--	100	--	KHz
MTBF	MIL-HDBK-217F@25°C	3500	--	--	K hours

Physical Specifications

Casing Material	Black flame-retardant heat-proof epoxy resin (UL94 V-0)				
Package Dimensions	IF_RN-1W	19.50*9.50*4.68mm			
	IF_RT-1W	19.50*10.53*5.00mm			
Weight	1.4 g (Typ.)				
Cooling Method	Free air convection				

Product Characteristic Curve

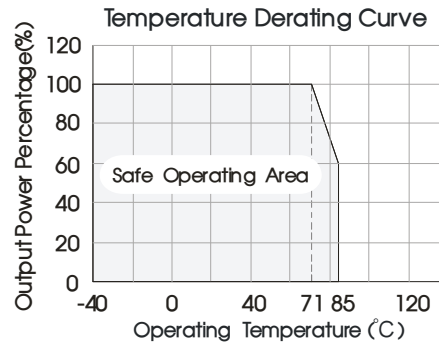


Fig. 1

Design Reference

1. Typical application

If it is required to further reduce input and output ripple, a filter capacitor can be connected to the input and output terminals, see Fig.2. Moreover, choosing suitable filter capacitor is very important, start-up problems may be caused by too large capacitance. To ensure the modules running well, the recommended capacitive load values as shown in Table 1.

The simplest device for output voltage regulation, over-voltage and over-current protection is a linear voltage regulator with overheat protection that is connected to the input or output end in series (Fig.3).

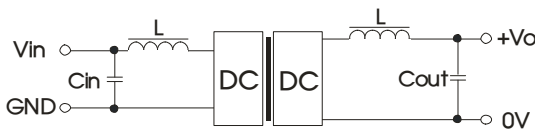


Fig.2



Fig.3

Recommended capacitive load value table (Table 1)

Vin (VDC)	Cin (μF)	Vout (VDC)	Cout (μF)
5	4.7	5	4.7
12	2.2	--	--

2. Output load requirements

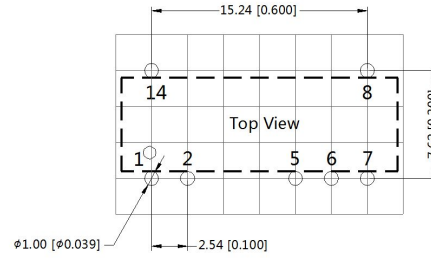
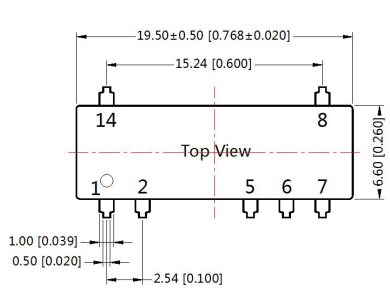
In order to ensure the converter can work reliably with high efficiency, the minimum load should not less than 10% rated load when it is used. If the needed power is indeed small, please parallel a resistor on the output side (The sum of the efficient power and resistor consumption power is not less than 10%).

3. For more information Please find the application notes on www.mornsun-power.com

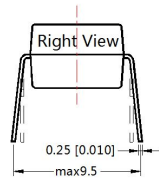
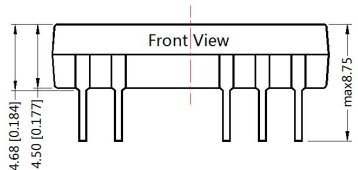
Dimensions and Recommended Layout

IF_RN-1W series

THIRD ANGLE PROJECTION



Note: Grid 2.54*2.54mm



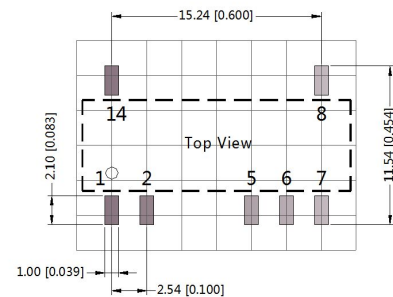
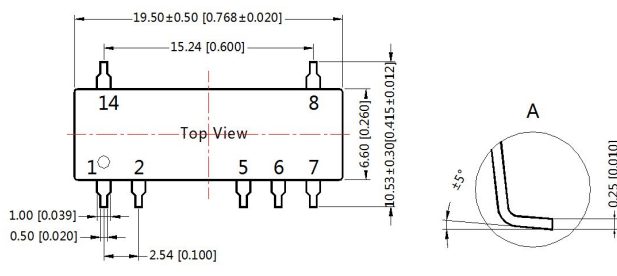
Note:
Unit: mm[inch]
Pin section tolerances: $\pm 0.10[\pm 0.004]$
General tolerances: $\pm 0.25[\pm 0.010]$

Pin-Out	
Pin	Function
1	Vin
2	GND
5	0V
6	+Vo
Others	NC

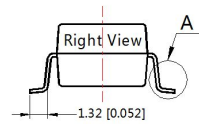
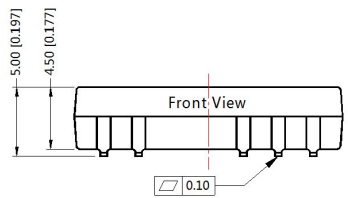
NC: Pin to be isolated from circuitry

IF_RT-1W series

THIRD ANGLE PROJECTION



Note: Grid 2.54*2.54mm



Note:
Unit: mm[inch]
Pin section tolerances: $\pm 0.10[\pm 0.004]$
General tolerances: $\pm 0.25[\pm 0.010]$

Pin-Out	
Pin	Function
1	Vin
2	GND
5	0V
6	+Vo
Others	NC

NC: Pin to be isolated from circuitry

Notes:

1. Packing information please refer to Product Packing Information which can be downloaded from www.mornsun-power.com. Packing bag number: 58200027;
2. If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
3. The maximum capacitive load offered were tested at input voltage range and full load;
4. Unless otherwise specified, parameters in this datasheet were measured under the conditions of $T_a=25^{\circ}\text{C}$, humidity<75%RH with nominal input voltage and rated output load;
5. All index testing methods in this datasheet are based on our Company's corporate standards;
6. We can provide product customization service, please contact our technicians directly for specific information;
7. Specifications are subject to change without prior notice.

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