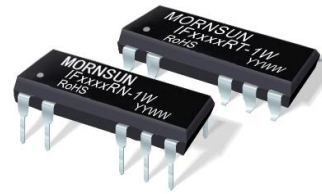


IF_RN-1W & IF_RT-1W Series

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



multi-country patent protection **RoHS**

FEATURES

Small Footprint, Very thin package
3KVDC Isolation
Temperature Range: -40°C to +85°C
No Heat sink Required
High Power Density
No External Component Required
Industry Standard Pinout
Pin-out compatible with DCP01 Series
Short circuit protection
RoHS Compliance

PRODUCT PROGRAM

| Part Number | Input | | Output | | | Efficiency (% , Typ.) | Package |
|-------------|---------------|-----------|---------------|--------------|-----|-----------------------|---------|
| | Voltage (VDC) | | Voltage (VDC) | Current (mA) | | | |
| | Nominal | Range | | Max | Min | | |
| IF0505RN-1W | 5 | 4.75-5.25 | 5 | 200 | 20 | 70 | DIP |
| IF0505RT-1W | | | 5 | 200 | 20 | 70 | SMD |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

APPLICATIONS

The IF_RN-1W & IF_RT-1W 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 $\leq \pm 5\%$);
- 2) Where isolation is necessary between input and output (isolation voltage $\leq 3000\text{VDC}$);
- 3) Where the regulation of the output voltage and the output ripple noise are not demanding.

Such as: purely digital circuits, ordinary low frequency analog circuits, and IGBT power device driving circuits.

COMMON SPECIFICATION

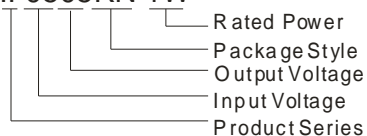
| Item | Test Conditions | Min | Typ. | Max | Units |
|--------------------------|--------------------------------|----------------------|------|-----|---------|
| Storage humidity | | | | 95 | % |
| Operating temperature | | -40 | | 85 | °C |
| Storage temperature | | -55 | | 125 | |
| Temp. rise at full load | | | 15 | 25 | |
| Lead temperature | 1.5mm from case for 10 seconds | | | 260 | |
| Short circuit protection | | Continuous | | | |
| Cooling | | Free air convection | | | |
| Package material | | Epoxy Resin(UL94-V0) | | | |
| MTBF | | 3500 | | | K hours |
| Weight | | | 1.4 | | g |

ISOLATION SPECIFICATIONS

| Item | Test Conditions | Min | Typ. | Max | Units |
|-----------------------|---------------------------------|------|------|-----|-------|
| Isolation voltage | Tested for 1 minute and 1mA max | 3000 | | | VDC |
| Isolation resistance | Test at 500VDC | 1000 | | | MΩ |
| Isolation Capacitance | | | 25 | | pF |

MODEL SELECTION

IF0505RN-1W



MORNSUN Science & Technology co.,Ltd.

Address: 2th floor 6th building, Huangzhou Industrial District, Guangzhou, China
Tel: 86-20-38601850
Fax: 86-20-38601272
<http://www.mornsun-power.com>

OUTPUT SPECIFICATIONS

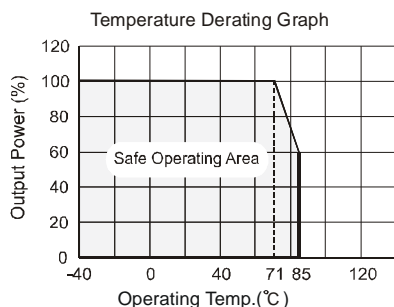
| Item | Test Conditions | Min | Typ. | Max | Units |
|-------------------------|----------------------------------|-----|------|------------|-------|
| Output power | | 0.1 | | 1 | W |
| Line regulation | For V_{in} change of $\pm 5\%$ | | | ± 0.25 | % |
| Load regulation | 10% to 100% load | | | ± 1 | |
| Output voltage accuracy | 100% full load | | | ± 3 | |
| Temperature drift | Nominal input, 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.

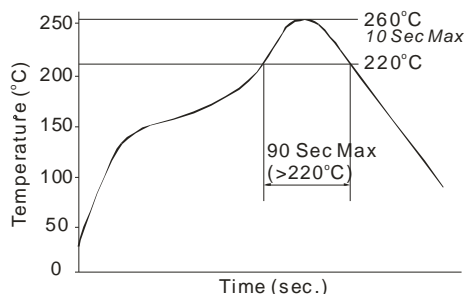
Note:

1. All specifications measured at $T_A=25^\circ\text{C}$, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
2. See below recommended circuits for more details.

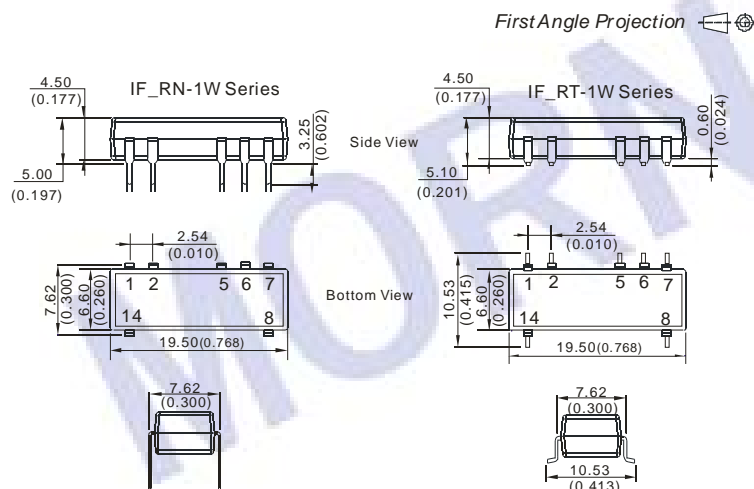
TYPICAL CHARACTERISTICS



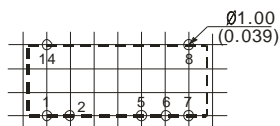
RECOMMENDED REFLOW SOLDERING PROFILE



OUTLINE DIMENSIONS & FOOTPRINT DETAILS



RECOMMENDED FOOTPRINT
Top view, grid: 2.54*2.54mm(0.1*0.1inch)

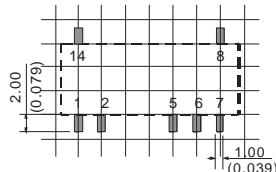


FOOTPRINT DETAILS

| Pin | Function |
|--------|----------|
| 1 | Vin |
| 2 | GND |
| 5 | 0V |
| 6 | +Vo |
| 7,8,14 | NC |

NC: No Connection

Note:
Unit:mm(inch)
Pin section:0.50*0.25mm(0.020*0.010inch)
Pin section tolerances:±0.10mm(±0.004inch)
General tolerances:±0.25mm(±0.006inch)



FOOTPRINT DETAILS

| Pin | Function |
|--------|----------|
| 1 | Vin |
| 2 | GND |
| 5 | 0V |
| 6 | +Vo |
| 7,8,14 | NC |

NC: No Connection

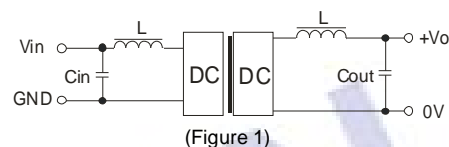
APPLICATION NOTE

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.

Recommended testing 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 | 4.7 |

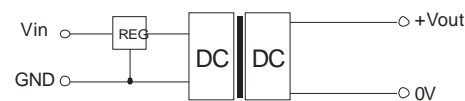
It's not recommended to connect any external capacitor in the application field with less than 0.5 watt output.

Overload Protection

Under normal operating conditions, the output circuit of these products has no protection against over load. 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 (Figure2).



No parallel connection or plug and play.