



FEATURES

- ◆Wide 2:1 DC input range
- ◆In/out capacitance 1000pF
- ◆Protections : Short circuit / Overload / Over voltage
- ◆1500VDC I/O isolation for D/D
- ◆Cooling by free air convection
- ◆Built-in remote ON-OFF control
- ◆100% full load burn-in test
- ◆Fixed switching frequency at 225KHz
- ◆Lost cost
- ◆MTBF>1000Khours
- ◆High reliability and compatibility
- ◆3 year warranty

MODEL SELECTION

WRB^①24^②12^③Y^④QD^⑤-40W(3334)^⑥

- ① Product Series ② Input Voltage
 ③ Output Voltage ④ Wide (2:1) Input Range
 ⑤ 2"x2"DIP Package Style
 ⑥ Rated Power(Output current)

APPLICATIONS

The WRA(B)-YQD-40W Series of DC/DC converters has been designed for a wide range of applications including communications, industrial systems and battery powered mobile equipments. Key features are high power density and 2:1 wide input ranges of 18~36 VDC and 36~72 VDC.(But also can do high power density and 4:1 ultrawide input ranges of 9~36 VDC and 18~72 VDC.)



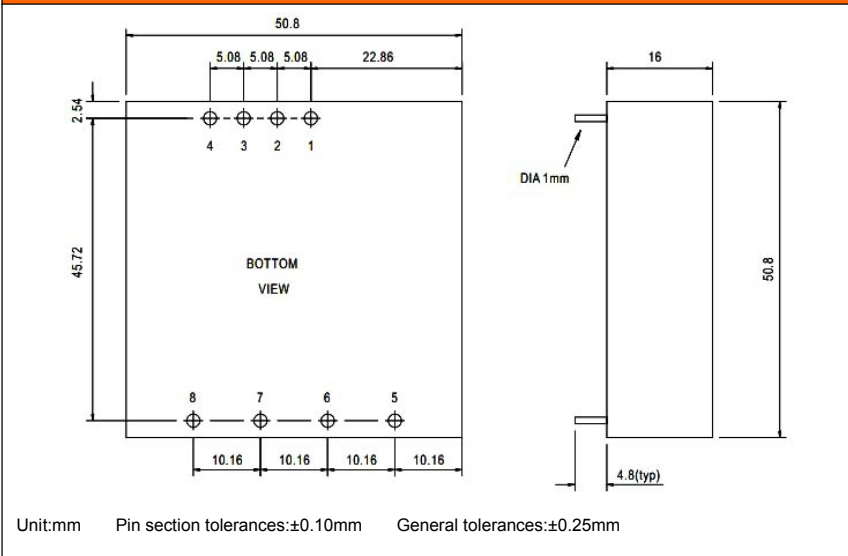
SELECTION GUIDE

| Order code | Input voltage range (VDC) | Output voltage (VDC) | Output current max.(mA) | Efficiency typ.(%) |
|----------------|---------------------------|----------------------|-------------------------|--------------------|
| WRA1205YQD-40W | 9~18 | ±5 | ±4000 | 78 |
| WRA1212YQD-40W | 9~18 | ±12 | ±1667 | 82 |
| WRA1215YQD-40W | 9~18 | ±15 | ±1334 | 80 |
| WRA1224YQD-40W | 9~18 | ±24 | ±834 | 83 |
| WRA2405YQD-40W | 18~36 | ±5 | ±4000 | 79 |
| WRA2412YQD-36W | 18~36 | ±12 | ±1500 | 86 |
| WRA2412YQD-40W | 18~36 | ±12 | ±1667 | 82 |
| WRA2415YQD-40W | 18~36 | ±15 | ±1334 | 83 |
| WRA2424YQD-40W | 18~36 | ±24 | ±834 | 78 |
| WRA4805YQD-40W | 36~72 | ±5 | ±4000 | 80 |
| WRA4812YQD-40W | 36~72 | ±12 | ±1667 | 84 |
| WRA4815YQD-40W | 36~72 | ±15 | ±1334 | 85 |
| WRA4824YQD-40W | 36~72 | ±24 | ±834 | 78 |
| WRB1205YQD-40W | 9~18 | 5 | 8000 | 79 |
| WRB1212YQD-40W | 9~18 | 12 | 3334 | 80 |
| WRB1215YQD-40W | 9~18 | 15 | 2666 | 80 |
| WRB1224YQD-40W | 9~18 | 24 | 1667 | 85 |
| WRB2405YQD-40W | 18~36 | 5 | 8000 | 82 |
| WRB2412YQD-36W | 18~36 | 12 | 3000 | 87 |
| WRB2412YQD-40W | 18~36 | 12 | 3334 | 82 |
| WRB2415YQD-40W | 18~36 | 15 | 2666 | 83 |
| WRB2424YQD-40W | 18~36 | 24 | 1667 | 78 |
| WRB4805YQD-40W | 36~72 | 5 | 8000 | 80 |
| WRB4812YQD-40W | 36~72 | 12 | 3334 | 84 |
| WRB4815YQD-40W | 36~72 | 15 | 2666 | 85 |
| WRB4824YQD-40W | 36~72 | 24 | 1667 | 79 |

SPECIFICATION

| | | | |
|------------------------|--|---|---------------------|
| OUTPUT | Ripple&Noise(max.) | (Note.2) | 100mVp-p |
| | Line Regulation | (Note.3) | ±0.5% |
| | Load Regulation | (Note.4) | ±0.5% |
| PROTECTION | Overload | Above 105% rated output power Protection type : Over power limiting, recovers automatically after fault condition is removed | |
| | Over Voltage | XX03 :3.8~4.95V | XX05 :5.75 ~ 7.5V |
| | | XX12:13.8 ~ 18V | XX15:17.25 ~ 22.5V |
| Short Circuit | Protection type : Shut off o/p voltage, clamping by zener diode Protection type : Constant current limiting, recovers automatically after fault condition is removed | | |
| FUNCTION | ON/OFF Control | Power on: CTRL ~Vin > 4.5-5.5VDC or open Power off: CTRL ~Vin <0.8VDC or short | |
| ENVIRONMENT | Working Temp. | -25℃~+85℃ (Refer to output load derating curve) | |
| | Storage Temp.,Humidity | -25℃~+85℃, 0~95% RH | |
| | Temp. Coefficient | ±0.03%/℃ (0~50℃) | |
| SAFETY&EMC (Note 5) | Safety Standards | Design refer to LVD | |
| | Isolation Voltage | I/P-O/P:1.5KVDC | |
| | Isolation Resistance | I/P-O/P:100M Ohms/500VDC | |
| OTHERS | MTBF | 280.4K hrs min. | MIL-HDBK-217F (25℃) |
| | Dimension | 50.8×50.8×16mm (2"×2"×0.63") (L×W×H) | |
| | Packing | 110g;150pcs/15.8Kg/0.97CUFT | |
| NOTE | 1. All parameters are specified at normal input, rated load, 2570% RH ambient. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor. 3.Line regulation is measured from low line to high line at rated load. 4.Load regulation is measured from 10% to 100%rated load 5. Please prevent the converter from operating in overload or short circuit condition for more than 30 seconds. | | |

Mechanical Specification



SINGLE OUTPUT(WRB-YQD-40W)

| Pin | Assignment | Pin | Assignment |
|-----|---------------|-----|------------|
| 1 | +Vin | 6 | +Vout |
| 2 | -Vin | 7 | -Vout |
| 3,5 | No pin | 8 | Trim |
| 4 | CTRL (ON/OFF) | | |

DUAL OUTPUT(WRA-YQD-40W)

| Pin | Assignment | Pin | Assignment |
|-----|---------------|-----|------------|
| 1 | +Vin | 5 | +Vout |
| 2 | -Vin | 6 | Common |
| 3 | No pin | 7 | -Vout |
| 4 | CTRL (ON/OFF) | 8 | Trim |

APPLICATION NOTE

Requirement on output load

In order to ensure the product operate efficiently and reliably, in addition to a max load (namely full load), a minimum load is specified for this kind of DC/DC converter. Make sure the specified range of input voltage is not exceeded, the minimum output load no less than 10% load. If the actual load is less than the specified minimum load, the output ripple may increase sharply while its efficiency and reliability will reduce greatly. If the actual output power is very small, please add an appropriate resistor as extra loading, or contact our company for other lower output power products.

Recommended Circuit

All the WR-YQD-40W Series have been tested according to the following recommended testing circuit before leaving factory. This series should be tested under load (see Figure 1).

If you want to further decrease the input/output ripple, you can increase capacitance properly or choose capacitors with low ESR. 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). General:

$$C_{in}: 10\mu F-47\mu F$$

$$C_{out}: 10\mu F/100mA$$

CTRL Terminal

When open or high impedance, the converter work well; When this pin is 'high'; the converter shutdown; It should be note that the input current (I_c) should between 5-10mA, exceeding the maximum 20mA will cause permanence damage to the converter.

The value of R Can be derived as follows :

$$R = \frac{V_C - V_D - 1.0}{I_c}$$

Input current

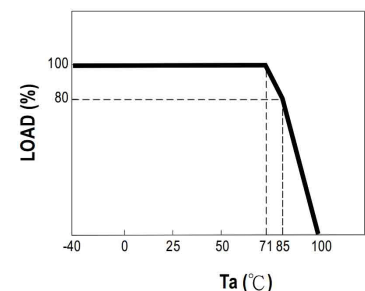
While using unstable power source, please ensure the output voltage and ripple voltage do not exceed indexes of the converter. The preceding power source must be able to provide for converter sufficient starting current I_p .

General: $I_p \leq 1.6 \cdot I_{in-max}$

No parallel connection or plug and play

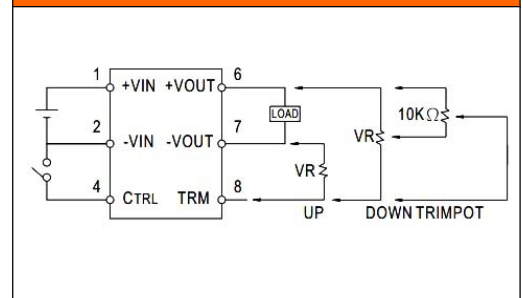
TYPICAL CHARACTERISTICS

Temperature Derating Graph



AMBIENT TEMPERATURE (°C)

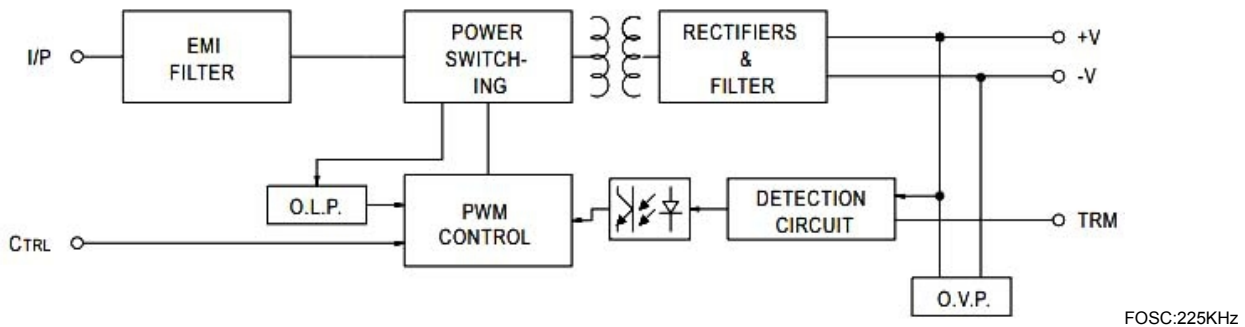
External Output Trimming



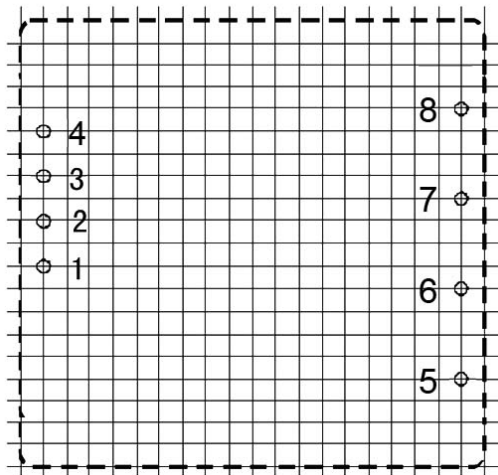
ON/OFF Control Pin

CONTROL INPUT.....PIN4
 CONTROL COMMON.....PIN2
 LOGIC COMPATIBILITY.....CMOS OR OPEN COLLECTOR TTL
CONTROL VOLTAGE
 ON.....+5.5VDC min OR OPEN CIRCUIT
 OFF.....+2.5VDC max. OR SHORT TO PIN2

OUTLINE DIMENSIONS & FOOTPRINT DETAILS



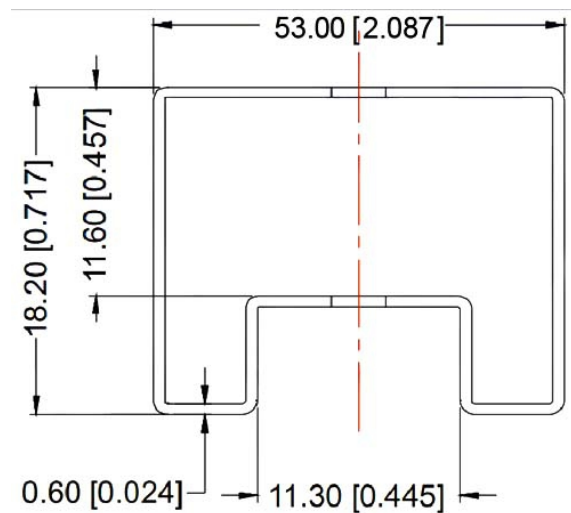
RECOMMENDED FOOTPRINT



Grid:2.54×2.54mm(0.1×0.1inch)

Diameter:1.00mm(0.039inch)

TUBE OUTLINE DIMENSIONS



Unit :mm[inch]

General tolerances:±0.50mm[±0.020inch]

L=230mm[9.055inch] Tube Quantity: 7pcs

RoHS COMPLIANT INFORMATION

This series is compatible with RoHS soldering systems with a peak wave solder temperature of 300° C for 10 seconds.

The pin termination finish on the SIP package type is Tin Plate, Hot Dipped over Matte Tin with Nickel Preplate. The DIP types are Matte Tin over Nickel Preplate. Both types in this series are backward compatible with Sn/Pb soldering systems.

REACH COMPLIANT INFORMATION

This series has proven that this product does not contain harmful chemicals, it also has harmful chemical substances through the registration, inspection and approval.