MICRODC
Professional Power Module

WRA-ZMD-30W & WRB-ZMD -30W Series

30W, WIDE INPUT, ISOLATED & REGULATED DUAL/SINGLE OUTPUT DC-DC CONVERTER

FEATURES

- ◆Wide (4:1) Input Range
- ◆30 Watt
- ◆1500VDC DC I/O Isolation
- ◆Operating Temperature: -40℃～+85℃
- ◆2" x 1"Metal Case
- ◆Regulated Output
- ◆Single, Dual and Triple Output
- ◆Metal shielding package
- ◆Continuous Short Circuit Prot.
- ◆MTBF>1000Khours

MODEL SELECTION

WRB①24②05③Z④MD⑤-30W(6000)⑥

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

APPLICATIONS

The WRA-ZMD-30W&WRB-ZMD-30W series is a family of cost effective 30W, single and dual output DC-DC converters with an ultra wide input range of 4:1. These converters are encapsulated in nickel coated brass 2"x1" case with high performance features: 1500VDC input/output isolation voltage, continuous short circuit protection with automatic restart and tight line / load regulation, over current protection, over voltage protection, over temperature protection, high efficiency operation and soft start.

RoHS MICRODC Green Technology CE REACH

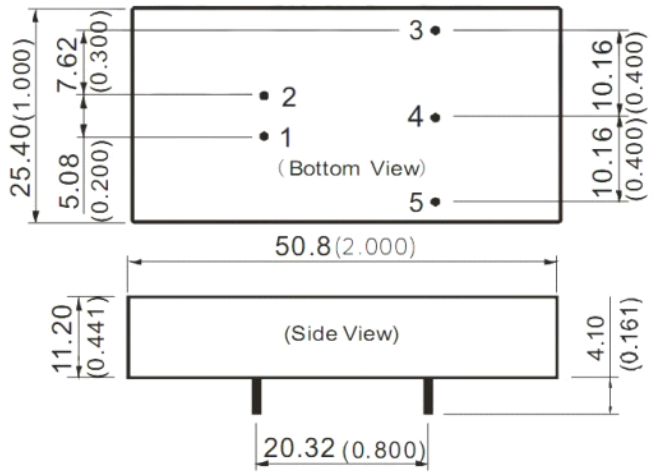
SELECTION GUIDE

Order	Input Voltage (VDC)	Input Current No Load (mA)	Input Current Full Load (mA)	Output Voltage (VDC)	Output Current Full Load (mA)	Efficiency (%)	Capacitor Load (uF)[2]
WRB2403ZMD-7500	9-36	60	1185	3.3	7500	89	20000
WRB2405ZMD-30W	9-36	100	1420	5	6000	91	14000
WRB2412ZMD-30W	9-36	30	1436	12	2500	90	2000
WRB2415ZMD-30W	9-36	30	1420	15	2000	91	2000
WRB4803ZMD-7500	18-72	50	593	3.3	7500	89	20000
WRB4805ZMD-30W	18-72	60	702	5	6000	91	14000
WRB4812ZMD-30W	18-72	30	718	12	2500	90	2000
WRB4815ZMD-30W	18-72	30	710	15	2000	90	2000
WRA2405ZMD-30W	9-36	120	1437	± 5	± 3000	90	3000
WRA2412ZMD-30W	9-36	30	1453	± 12	± 1250	89	1300
WRA2415ZMD-30W	9-36	40	1437	± 15	± 1000	89	1300
WRA4805ZMD-30W	18-72	70	710	± 5	± 3000	91	3000
WRA4812ZMD-30W	18-72	30	718	± 12	± 1250	90	1300
WRA4815ZMD-30W	18-72	40	718	± 15	± 1000	90	1300

Input Specifications	
Voltage Range	4:1 Ultra Wide Input (see table)
Input Filter	PI Type
Input Reflected Ripple Current[1]	20 mA pk-pk
Start up Time (Nom. Vin and constant resistive load)	30mS, typ.
Output Specifications	
Voltage Accuracy	± 1%(main out)
Voltage Adjustability (only Single Output)	± 10%, max.
Short Circuit Protection	Indefinite (hiccup, automatic recovery)
Over Load Protection	150% of FL, typ.
Line Regulation	± 0.5% (single&dual)±1%
Load Regulation (0% - 100%)	± 0.5% (single)±1% / ±5% (dual main / aux)
Cross Regulation[3]	± 5% (dual)
Ripple&Noise (20Mhz bandwidth / 1.0uF – pk-pk)	100 mV (single&dual) 50
Temperature Coefficient	± 0.02% / °C
Transient Recovery Time[4]	250us, typ.
Transient Response Deviation[4]	± 3%, max.
General Specifications	
I/O Isolation Voltage (3 sec.)	1500 VDC
I/O Isolation Capacitance	1500 pF, typ.
I/O Isolation Resistance	1000 M Ohm, min.
Switching Frequency	330 kHz, typ.
Humidity	95% rel H
Reliability Calculated MTBF (MIL-HDBK-217F)	>435 khrs (single&dual out)
Physical Specifications	
Case Material	Nickel Coated Copper
Potting / Base Material	Epoxy / Plastic (UL94V-0 rated)
Weight	~ 31g, typ.
Environment Specifications	
Operating Temperature	-40 to +50°C (for 100% - ambient)
Maximum Case Temperature	105°C
Storage Temperature	-40 to +125°C
Cooling	Free Air Convection (10mm distance required)
RoHS Conform	Soldering 260°C, max. (1.5mm from case 10s.)

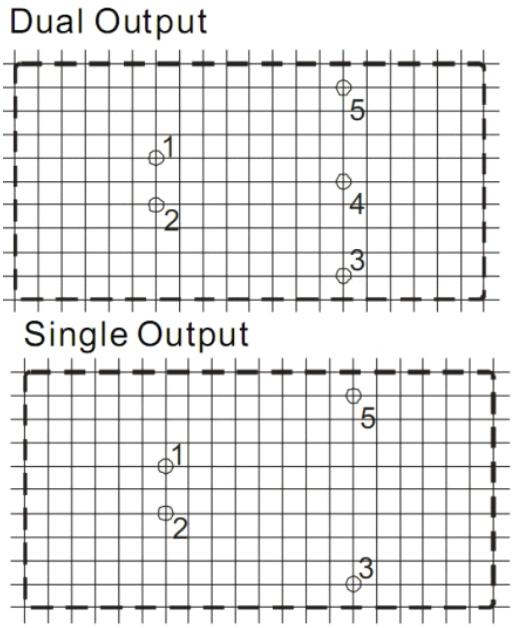
OUTLINE DIMENSIONS & FOOTPRINT DETAILS

MECHANICAL DIMENSIONS



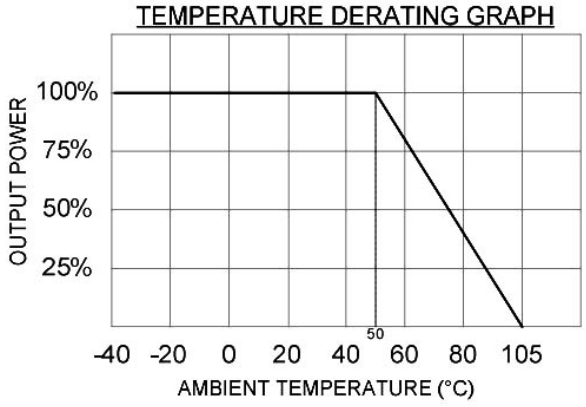
Note:
Unit:mm[inch]
Pin section tolerances:±0.10mm[±0.004inch]
General tolerances:±0.25mm[±0.010inch]

RECOMMENDED FOOTPRINT

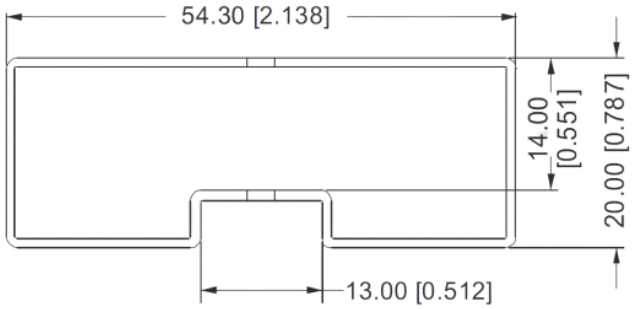


RECOMMENDED FOOTPRINT
Top view,grid:2.54mm(0.1inch)
diameter:1.00mm(0.039inch)

TEMPERATURE DERATING GRAPH



TUBE OUTLINE DIMENSIONS



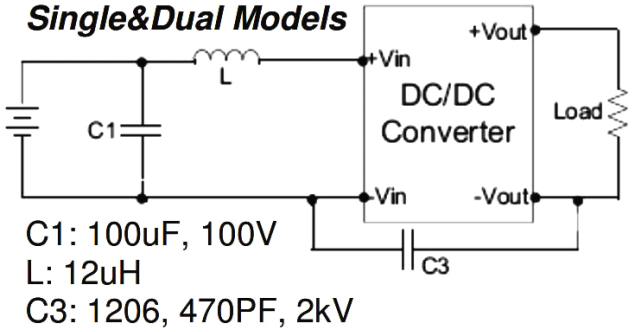
Unit :mm[inch]
General tolerances:±0.50mm[±0.020inch]
L=230mm[9.055inch] Tube Quantity: 7pcs

PIN CONNECTIONS

	SINGLE	DUAL
1	GND	GND
2	Vin	Vin
3	+Vout	+Vout
4	NC	0V
5	0V	- Vout

EMI Filter

Input filter components (C1, C3, L) are used to help meet conducted emissions requirement. These components should be mounted as close as possible to the module; all leads should be minimized to decrease radiated noise.

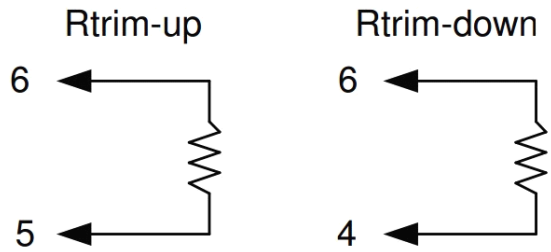


EMC SPECIFICATIONS

Radiated Emissions	EN 55022	CLASS A
Conducted Emissions[5]	EN 55022	CLASS A
ESD	EN 61000-4-2	Perf. Criteria A
RS	EN 61000-4-3	Perf. Criteria A
EFT[6]	EN 61000-4-4	Perf. Criteria A
Surge[6]	EN 61000-4-5	Perf. Criteria A
CS	EN 61000-4-6	Perf. Criteria A
PFMF	EN 61000-4-8	Perf. Criteria A

External Output Trimming

Output can be externally trimmed.
(Single output models only!)



Over Voltage Protection(Zender diode clamp)

3.3 Vout:	3.9 V
5 Vout	6.2 V
5.1 Vout	6.2 V
12 Vout	15 V
15 Vout	18 V
± 5 Vout	± 6.2 V
± 12 Vout	± 15 V
± 15 Vout	± 18 V

Under Input Voltage Lockout (typ.)

24 Vin Models	Module ON/OFF 8.6V / 7.9V
48 Vin Models	Module ON/OFF 17.8V / 16V

Remote ON/OFF Control[7]

ON:	3 -12 VDC or open circuit
OFF:	0 – 1.2 VDC or short circuit PIN2 and PIN3
OFF idle current:	5mA, typ.

1 = Measured Input reflected ripple current with a simulated source inductance of 12uH.

2 = Tested by minimal Vin and constant resistive load.

3 = Dual: One load is 25% to 100% load, the other load is 100% load, the output voltage variable rate is within ±5%.

4 = Tested by nominal Vin and 25% load step change (75% - 50% - 25% of Io)

5 = The WRA-ZMD-30W&WRB-ZMD-30W series can meet EN55022 Class A With an external filter in parallel with the input pins.

6 = An external filter capacitor is required if the module has to meet EN61000-4-4 and EN61000-4-5

7 = The remote on/off control pin is referenced to －Vin (Pin2).