

### FEATURES

- ◆ 12 WATTS OUTPUT POWER
- ◆ OUTPUT CURRENT UP TO 3.5A
- ◆ STANDARD 31.8×20.3×10.2MM
- ◆ HIGH EFFICIENCY UP TO 88%
- ◆ 2:1 WIDE INPUT VOLTAGE RANGE
- ◆ FIVE-SIDED CONTINUOUS SHIELD
- ◆ FLXG SWITCHING FREQUENCY (400KHZ)
- ◆ STANDARD 24 PIN DIP PACKAGE
- ◆ I/O ISOLATION 1500 VDC
- ◆ CE MARK MEETS 2009/11/12
- ◆ COMPLIANT TO RoHS BSTDG13061091RC-4

### APPLICATIONS

The WRA(B)-YD-12W series offer 12 watts of output power From a package in an IC compatible 24pin DIP configuration. WRA(B)-YD-12W series have 2:1 wide input voltage of 9-18,18-36 and 36-72VDC.

The WRA(B)-YD-12W have features 1500VDC of isolation, short circuit protection and as well as five sided shielding.

### SELECTION GUIDE

Order code	Input			Output			Efficiency <sup>3</sup> (%.Typ.)
	Voltage(VDC)		Current(mA) No load <sup>2</sup>	Voltage (VDC)	Current(mA)		
	Nominal	Range			Max.	Min.	
WRB1202YD-12W	12	9-18	50mA	2.5	3500	0mA	82
WRB1203YD-12W	12	9-18	60mA	3.3	3500	0mA	84
WRB1205YD-12W	12	9-18	53mA	5.1	2400	0mA	86
WRB1212YD-12W	12	9-18	15mA	12	1000	0mA	86
WRB1215YD-12W	12	9-18	17mA	15	800	0mA	86
WRA1205YD-12W	12	9-18	24mA	±5	±1200	0mA	82
WRA1212YD-12W	12	9-18	19mA	±12	±500	0mA	87
WRA1215YD-12W	12	9-18	24mA	±15	±400	0mA	87
WRB2402YD-12W	24	18-36	36mA	2.5	3500	0mA	83
WRB2403YD-12W	24	18-36	36mA	3.3	3500	0mA	85
WRB2405YD-12W	24	18-36	35mA	5.1	2400	0mA	87
WRB2412YD-12W	24	18-36	16mA	12	1000	0mA	87
WRB2415YD-12W	24	18-36	17mA	15	800	0mA	87
WRA2405YD-12W	24	18-36	15mA	±5	±1200	0mA	83
WRA2412YD-12W	24	18-36	15mA	±12	±500	0mA	88
WRA2415YD-12W	24	18-36	18mA	±15	±400	0mA	88
WRB4802YD-12W	48	36-72	10mA	2.5	3500	0mA	83
WRB4803YD-12W	48	36-72	14mA	3.3	3500	0mA	85
WRB4805YD-12W	48	36-72	23mA	5.1	2400	0mA	87
WRB4812YD-12W	48	36-72	11mA	12	1000	0mA	87
WRB4815YD-12W	48	36-72	5mA	15	800	0mA	87
WRA4805YD-12W	48	36-72	6mA	±5	±1200	0mA	83
WRA4812YD-12W	48	36-72	6mA	±12	±500	0mA	88
WRA4815YD-12W	48	36-72	6mA	±15	±400	0mA	88

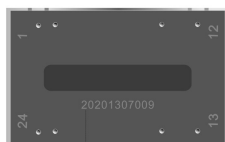
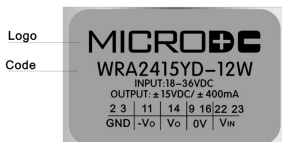
NOTE(Apply to this data):

- 1.MIL-HDBK-217F Notice2 @Ta=25°C, Full load(ground, Benign, controlled environment).
2. Typical value at nominal input voltage and no load.
3. Typical value at nominal input voltage and full load.
4. The ON/OFF control pin voltage is referenced to -INPUT.
5. The WRA(B)-YD-12W series can meet EN55022 Class a with parallel an external capacitor to the input pins. Recommend: 12Vin:6.8µF/50V. 24Vin:4.7µF/50. 48Vin:2.2µF/100V.
6. An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5. The filter capacitor Power Mate suggest: Nippon chemi-con KY series, 220/100V, ESR 48MΩ.

### PRODUCT ID DESCRIPTION

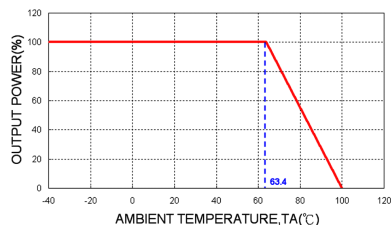
TOP

BOTTOM

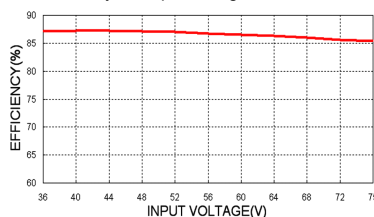


Product SN (Code-year-month-batch)

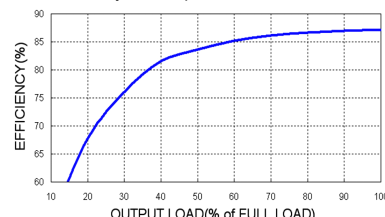
WRB4805YD-12W Derating Curve



WRB4805YD-12W Efficiency VS Input Voltage

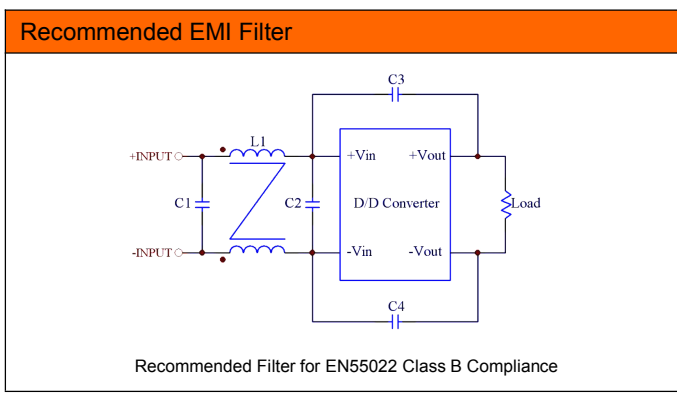
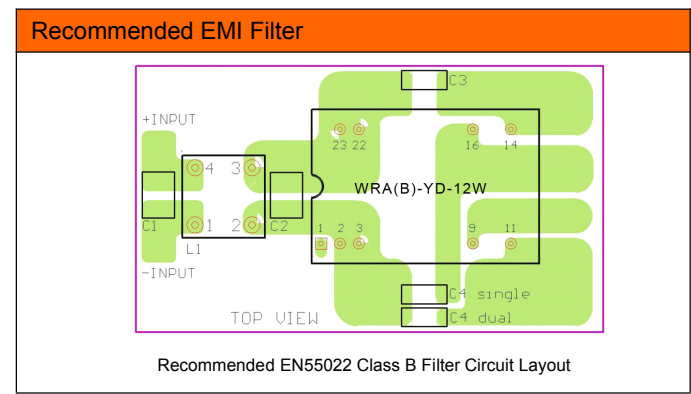


WRB4805YD-12W Efficiency VS Output Load



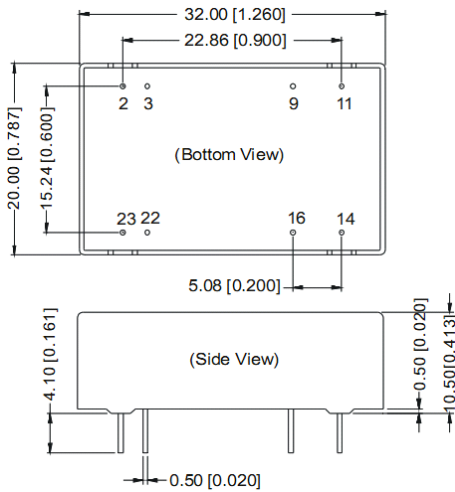
### TECHNICAL SPECIFICATION (All specifications are typical at nominal input, full load and 25°C otherwise noted)

Output Specifications				Input Specifications		
Output power	12Watts,max.			Input voltage range	12VDC nominal input	9-18VDC
Voltage accuracy	±1.2%				24VDC nominal input	18-36VDC
Minimum load	0%				48VDC nominal input	36-72VDC
Line regulation	LL to HL at Full Load	Single	±0.2%	Input filter	Pi type	
		Dual	±0.5%	Input surge voltage	12VDC input	36VDC 100mS,max
					24VDC input	50VDC 100mS,max
					48VDC input	100VDC 100mS,max
Load regulation	No Load to Full Load	Single(DIP)	±0.5%	Input reflected ripple current	20mA-p-p	
		Dual (DIP)	±1%	Start up time	Nominal input and power up	450mS
		(2.5Vo only)	±1%		constant resistive load	
Cross regulation(Dual)	Asymmetrical load 25%/100% FL	±5%		Start-up voltage	12VDC input	9VDC
Ripple and noise	20MHz bandwidth	See table			24VDC input	18VDC
Temperature coefficient	±0.02%/°C,max.				48VDC input	36VDC
Transient response recovery time 25% load step change	250			Shutdown voltage	12VDC input	8VDC
					24VDC input	16VDC
					48VDC input	33VDC
Over voltage protection	2.5VDC output	3.9VDC		Remote ON/OFF <sup>4</sup>	DC-DC ON	Open or 3.0V<Vr<12V
zener diode clamp(only single)	3.3VDC output	3.9VDC		(Positive logic)	DC-DC-OFF	Short or 0V<Vr<1.2V
	5.1VDC output	6.2VDC		Input current of remote control pin	Nominal input	-0.5mA ~ 0.5mA
	12VDC output	15VDC		Remote off state input current	Nominal input	2.5mA
	15VDC output	18VDC				
Over load protection	% of FL at nominal input	150%		<b>Environmental Specifications</b>		
Short circuit protection	Continuous,automatics recovery			Operating ambient temperature	-40°C ~ +85°C (with derating)	
				Maximum case temperature	100°C	
				Storage temperature range	-55°C ~ +105°C	
				Thermal impedance	Nature convection	20°C/Watt
				Thermal shock	MIL-STD-810F	
				Vibration	MIL-STD-810F	
				Relative humidity	5% to 95% RH	
<b>General Specifications</b>				<b>EMC Characteristics</b>		
Efficiency	See table			EMI <sup>5</sup>	EN55022	Class A
Isolation voltage	Input to Output	1500VDC,min. 1minute		ESD	EN61000-4-2	Air ± 8KV perf.Criteria A
Isolation resistance	10 <sup>9</sup> ohms,min.					Contact ± 6KV
Isolation capacitance	1200pF, max.			Radiated immunity	EN61000-4-3	10V/m perf.Criteria A
Switching frequency	400KHZ ± 10%			Fast transient <sup>6</sup>	EN61000-4-4	± 2KV perf.Criteria A
Approvals and standard	IEC60950-1,UL60950-1,EN60950-1			Surge <sup>6</sup>	EN61000-4-5	± 1KV perf.Criteria A
Case material	Nickel-coated copper			Conducted immunity	EN61000-4-5	10 Vr.m.s perf.Criteria A
Base material	Non-conductive black plastic					
Potting material	Epoxy (UL94-V0)					
Dimensions	1.25 X 0.80 X 0.40 Inch (31.8 X 20.3 X 10.2 mm)					
Weight	18g(0.62oz)					
MTBF <sup>1</sup>	MIL-HDBK-217F	7.575x10 <sup>5</sup> hrs				



### OUTLINE DIMENSIONS & FOOTPRINT DETAILS

#### MECHANICAL DIMENSIONS



Note:

Unit:mm[inch]

Pin section tolerances:±0.10mm[±0.004inch]

General tolerances:±0.25mm[±0.010inch]

#### FOOTPRINT DETAILS

Pin	Single	Dual
2、3	GND	GND
9	NC	0V
11	NC	-Vo
14	+Vo	+Vo
16	0V	0V
22、23	Vin	Vin

NC:No connection

**When the environment temperature is higher than 71°C, the product output power should be less than 60% of the rated power.**

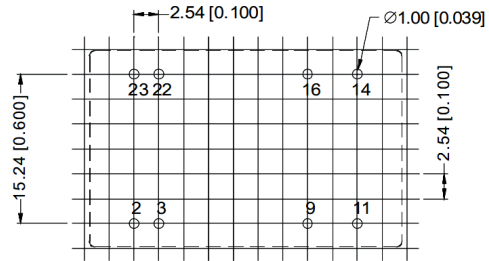
**No parallel connection or plug and play.**

**Use dual output simultaneously,forbid pening output pin (0V) to use as single output.**

Note:

1. The load shouldn't be less than 10%, otherwise ripple will increase dramatically.
2. Operation under 10% load will not damage the converter; However, they may not meet all specification listed.
3. All specifications measured at Ta=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
4. In this data sheet, all the test methods of indications are based on corporate standards.
5. Only typical models listed, other models may be different, please contact our technical person for more details.

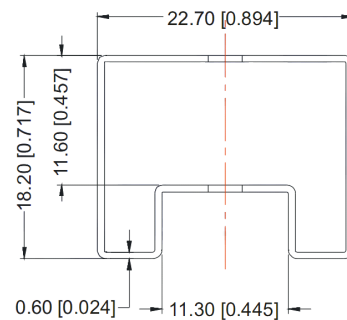
#### RECOMMENDED FOOTPRINT



#### RECOMMENDED FOOTPRINT

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

#### TUBE OUTLINE DIMENSIONS



Note:

Unit :mm[inch]

General tolerances:±0.50mm[±0.020inch]

L=530mm[20.866inch] Tube Quantity: 15pcs

L=220mm[8.661inch] Tube Quantity: 6pcs