MORNSUN
Industrial DC&AC converter professional

WRA_CS-3W & WRB_CS-3W Series

3W, WIDE INPUT, ISOLATED & REGULATED DUAL/SINGLE OUTPUT DC-DC CONVERTER

multi-country patent protection **RoHS**

FEATURES

Miniature SIP Package
Wide (2:1) Input Range
Regulated Outputs
I/0 Isolation 1500VDC
Short Circuit Protection(automatic recovery)
Internal SMD construction
Operating Temperature: -40°C to +85°C
External On/Off control
RoHS Compliance

APPLICATIONS

The WRA_CS-3W & WRB-CS-3W Series are specially designed for applications where a wide range input voltage 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 wide range
2) Where isolation is necessary between input and output
3) Where the regulation of the output voltage and the output ripple noise are demanded.

MODEL SELECTION

WRA1205CS-3W

- Rated Power
- Package Style
- Output Voltage
- Input Voltage
- Product Series

MORNSUN Science& Technology Ltd.
Address: 2th floor 6th building, Huangzhou Industrial District, Guangzhou, China
Tel: 86-20-38601850
Fax: 86-20-38601272
Http://www.mornsun-power.com

PRODUCT PROGRAM

Part Number	Input			Output			Efficiency (%, Typ)
	Voltage (VDC)			Voltage (VDC)	Current (mA)		
	Nominal	Range	Max*		Max	Min	
WRA1205CS-3W	12	9.0-18	22	±5	±300	±30	78
WRA1209CS-3W				±9	±167	±17	79
WRA1212CS-3W				±12	±125	±13	80
WRA1215CS-3W				±15	±100	±10	80
WRB1205CS-3W				5	600	60	78
WRB1209CS-3W				9	333	33	79
WRB1212CS-3W				12	250	25	80
WRB1215CS-3W				15	200	20	80
WRA2405CS-3W	24	18-36	40	±5	±300	±30	78
WRA2409CS-3W				±9	±167	±17	79
WRA2412CS-3W				±12	±125	±13	80
WRA2415CS-3W				±15	±100	±10	81
WRB2405CS-3W				5	600	60	78
WRB2409CS-3W				9	333	33	79
WRB2412CS-3W				12	250	25	80
WRB2415CS-3W				15	200	20	81

* Input voltage can't exceed this value, or will cause the permanent damage.

COMMON SPECIFICATION

Operating Temperature Range	-40°C to +85°C
Storage Temperature Range	-50°C to +125°C
Storage Humidity Range	≤ 95%
Cooling	Free Air Convection
Temperature Rise at Full Load	15°C (Typ.), 35°C (Max)
Lead Temperature (1.5mm from case for 10 seconds)	300°C(Max)
Isolation voltage (60Sec)	1.5KVDC
Isolation resistance	>1GΩ
Isolation capacitance (100kHz,1V)	80PF (Typ.)
No-load Power Consumption	100mW (Typ.)
Output Short Circuit Protection	Continuous, Automatic Recovery
Case Material	Plastic (UL94-V0)
MTBF	>1,000,000 hours
Weigh	6g

Note:

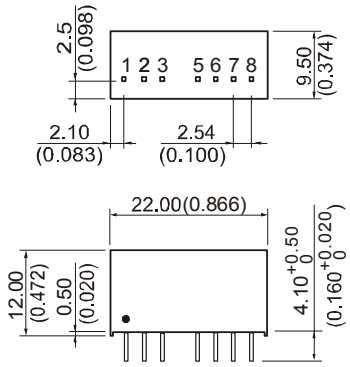
1.All specifications measured at T_A=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
2.Operation under 10% load will not damage the converter; However, they may not meet all specification listed.

OUTPUT SPECIFICATIONS

Item	Test Conditions	Min	Typ	Max	Units
Output Voltage Accuracy	Refer To Recommended Circuit		±1	±3	%
Load Regulation	10% To 100% Load (WRB_CS-3W)		±0.5	±0.75	
	10% To 100% Load (WRA_CS-3W)*		±0.5	±1.0	
Line Regulation	Input Voltage From Low To High		±0.2	±0.5	
Temperature Drift (Vout)	Refer To Recommended Circuit			±0.03	%/°C
Ripple & Noise	20MHz Bandwidth		50	100	mVp-p
Switching Frequency	100% Load, Input Voltage	200-500(PFM)			KHz

*Note: Dual output models unbalanced load(25/100%): ±5%Max

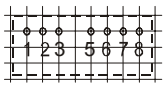
OUTLINE DIMENSIONS & RECOMMENDED FOOTPRINT & FOOTPRINT DETAILS



Note:
Unit:mm(inch)
Pin section:0.50*0.30mm(0.020*0.012inch)
Pin tolerances:±0.10mm(±0.004inch)
General tolerances:±0.25mm(±0.010inch)

First Angle Projection

RECOMMENDED FOOTPRINT
Top view,grid:2.54mm(0.1inch), diameter:1.00mm
Dual Output & Single Output



FOOTPRINT DETAILS

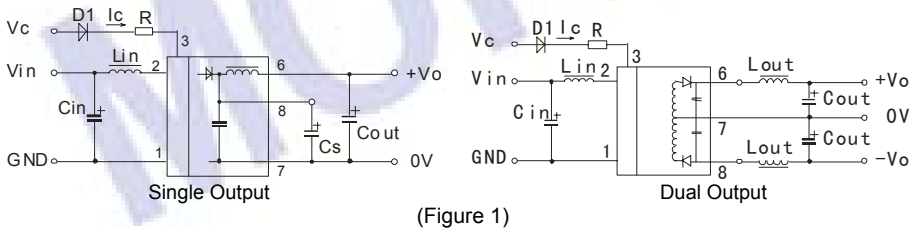
Pin	Single	Dual
1	GND	GND
2	Vin	Vin
3	CTRL	CTRL
5	NC	NC
6	+Vo	+Vo
7	OV	OV
8	CS	-Vo

NC:No Connection

APPLICATION NOTE

Recommended 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).



(Figure 1)

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:

Cin: 12V 100uF
24V 10uF~47uF
Cout: 100uF(Typ.)
Lin: 4.7μH -120μH
Lout: 2.2μH-10μH

External Capacitor Table(Table 1)

Single Vout(VDC)	Cout (uF)(Max)	Dual Vout(VDC)	Cout (uF) (Max)
5	2200	±5	±560
9	1000	±9	±470
12	820	±12	±330
15	680	±15	±220

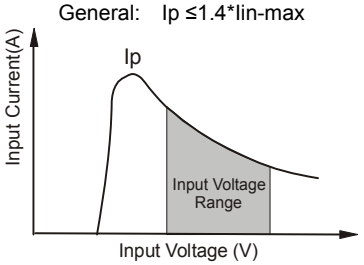
CTRL Terminal

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 (Ic) should between 5-10mA, exceeding the maximum 20mA will cause permanence damage to the converter。The value of R Can be derived as follows: $R=\frac{Vc-V_{\text{n}}-1.0}{IC}$.

Input current

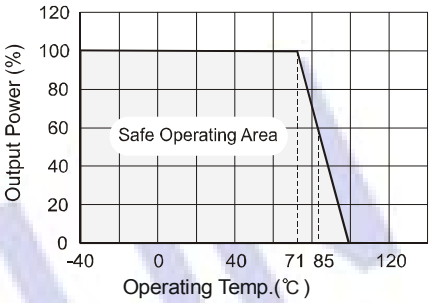
While using unstable power source, please ensure the output voltage and ripple voltage do not excced indexes of the converter. The preceding power source must be able to provide for converter sufficient starting current Ip (Figure 2).

General: Ip ≤1.4*Iin-max



(Figure 2)

Typical Temperature Curve



No parallel connection or plug and play.