

Patent Protection RoHS

WRA_CS-1W & WRB_CS-1W Series 1W, WIDE INPUT, ISOLATED & REGULATED DUAL/SINGLE OUTPUT DC-DC CONVERTER

FEATURES

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

APPLICATIONS

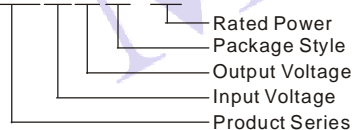
The WRA_CS-1W & WRB_CS-1W Series are specially designed for applications where a wide range input voltage power supplies are isolated from the input power supply in a distributed power supply system on a circuit board.

These products apply to:

- 1) Where the voltage of the input power supply is wide range (voltage ranges \leq 2:1);
- 2) Where isolation is necessary between input and output(Isolation Voltage \leq 1500VDC);
- 3) Where the regulation of the output voltage and the output ripple noise are demanded.

MODEL SELECTION

WRA2412CS-1W



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PRODUCT PROGRAM

Part Number	Input			Output			Efficiency (% , Typ.)
	Voltage (VDC)		No Load (mA)(Typ)	Voltage (VDC)	Current (mA)		
	Nominal(Range)	Max*			Max	Min	
WRA0505CS-1W	5 (4.5-9.0)	11	40	±5	±100	±10	71
WRA0509CS-1W				±9	±55	±5	72
WRA0512CS-1W				±12	±42	±4	73
WRA0515CS-1W				±15	±33	±3	73
WRB0503CS-1W				3.3	303	30	66
WRB0505CS-1W				5	200	20	70
WRB0509CS-1W				9	111	11	72
WRB0512CS-1W				12	83	8	73
WRB0515CS-1W				15	67	7	72
WRB0524CS-1W				24	42	4	70
WRA1205CS-1W	12 (9.0-18)	22	20	±5	±100	±10	75
WRA1209CS-1W				±9	±55	±5	76
WRA1212CS-1W				±12	±42	±4	77
WRA1215CS-1W				±15	±33	±3	76
WRB1203CS-1W				3.3	303	30	68
WRB1205CS-1W				5	200	20	75
WRB1209CS-1W				9	111	11	77
WRB1212CS-1W				12	83	8	78
WRB1215CS-1W				15	67	7	78
WRB1224CS-1W				24	42	4	77
WRA2405CS-1W	24 (18-36)	40	10	±5	±100	±10	76
WRA2409CS-1W				±9	±55	±5	77
WRA2412CS-1W				±12	±42	±4	78
WRA2415CS-1W				±15	±33	±3	78
WRB2403CS-1W				3.3	303	30	70
WRB2405CS-1W				5	200	20	73
WRB2409CS-1W				9	111	11	76
WRB2412CS-1W				12	83	8	78
WRB2415CS-1W				15	67	7	76
WRB2424CS-1W				24	42	4	77
WRA4805CS-1W	48 (36-72)	80	5	±5	±100	±10	75
WRA4809CS-1W				±9	±55	±5	76
WRA4812CS-1W				±12	±42	±4	78
WRA4815CS-1W				±15	±33	±3	78
WRB4803CS-1W				3.3	303	30	71
WRB4805CS-1W				5	200	20	73
WRB4809CS-1W				9	111	11	75
WRB4812CS-1W				12	83	8	78
WRB4815CS-1W				15	67	7	76
WRB4824CS-1W				24	42	4	78

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

Note: 1.Models listed with strike-through text have been officially discontinued.

2.Operation under 10% load will not damage the converter; However, they may not meet all specification listed.

COMMON SPECIFICATION

Item	Test Conditions	Min	Typ.	Max	Units
Storage humidity				95	%
Operating temperature		-40		85	°C
Storage temperature		-50		125	
Temp. rise at full load			15	35	
Lead temperature	1.5mm from case for 10 seconds			300	
Isolation voltage	Tested for 1 minute and 1mA max	1500			VDC
Isolation resistance	Test at 500VDC	1000			MΩ
Isolation capacitance	Input/Output, 100KHz/1V		80		pF
Cooling		Free Air Convection			
Short circuit protection		Continuous, automatic recovery			
Case Material		Plastic(UL94-V0)			
MTBF		1000			K hours
Weight			5.5		g

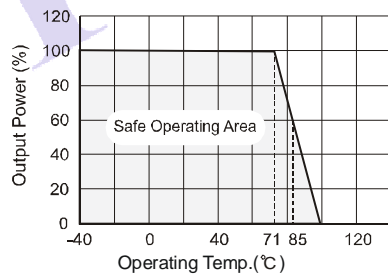
OUTPUT SPECIFICATIONS

Item	Test Conditions	Min	Typ.	Max	Units
Output voltage accuracy	Input voltage range refer to output load		±1	±3	%
Load regulation	10% to 100% load (WRB_CS-1W)		±0.5	±0.75	
	10% to 100% load (WRA_CS-1W)		±0.5	±1.0	
Line regulation	Input voltage from low to high		±0.2	±0.5	%/°C
Temperature drift (Vout)	Refer to recommended circuit			±0.03	%/°C
Ripple & Noise	20MHz Bandwidth		25	100	mVp-p
Switching Frequency	Input voltage range 100% load	180-550(PFM)			KHz

Note:

1. Test ripple and noise by "parallel cable" method. See detailed operation instructions at Testing of Power Converter section, application notes.
2. See the recommended circuits for more details.

TYPICAL TEMPERATURE CURVE



APPLICATION NOTE

CTRL Terminal

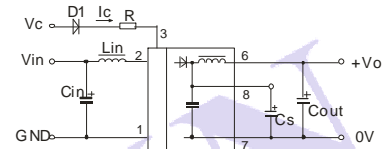
When open or high impedance, the converter work well; When this pin is 'high'; the converter shutdown; It should be note that the input current (Ic) should between 5-10mA, exceeding the maximum 20mA will cause permanence damage to the converter. The value of R Can be derived as follows:

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

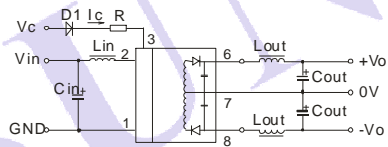
Recommended circuit

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).

Single Output



Dual Output



(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:

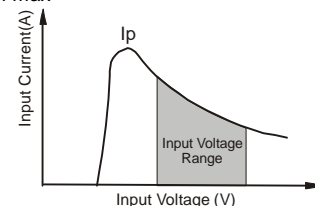
- Cin: 5V,12V 100μF
 24V,48V 10uF-47μF
 Cout: 100μF(Typ.)
 Lin: 4.7μH-120μH
 Lout: 2.2μH-10μH
 Cs: 10μF-22μF

External Capacitor Table(Table 1)

Single Vout (VDC)	Cout (μF)(Max)	Dual Vout (VDC)	Cout (μF) (Max)
3.3	1000	-	-
5	820	±5	470
9	680	±9	330
12	560	±12	270
15	470	±15	100
24	330	-	-

Input current

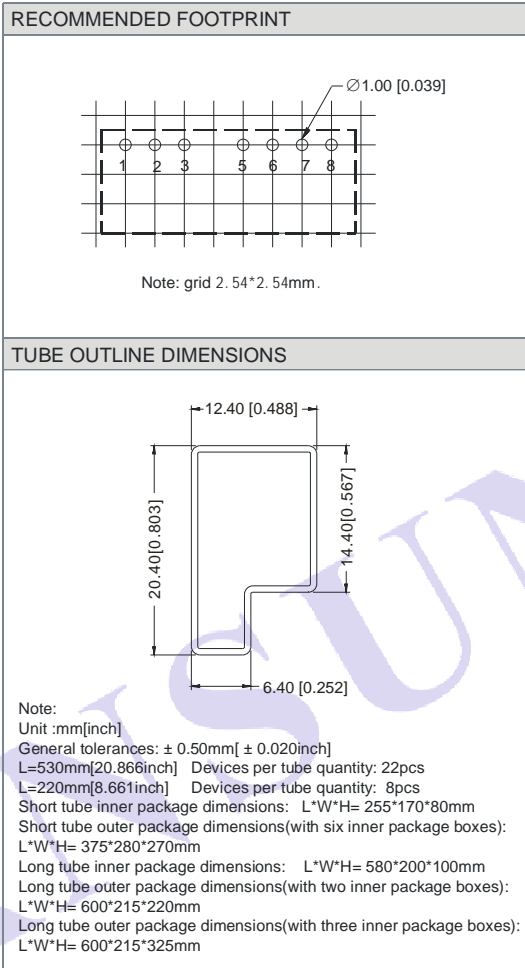
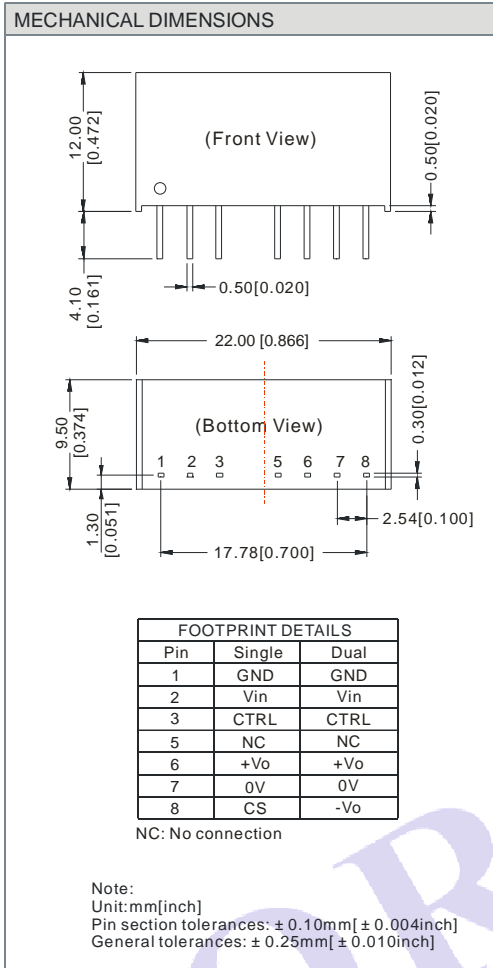
While using unstable power source, please ensure the output voltage and ripple voltage do not exceed indexes of the converter. The preceding power source must be able to provide for converter sufficient starting current Ip (Figure 2).General: Ip ≤ 1.4*lin-max



(Figure 2)

No parallel connection or plug and play.

OUTLINE DIMENSIONS & FOOTPRINT DETAILS



Note:

1. All specifications measured at T_a=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
2. In this datasheet, all the test methods of indications are based on corporate standards.
3. Only typical models listed, other models may be different, please contact our technical person for more details.