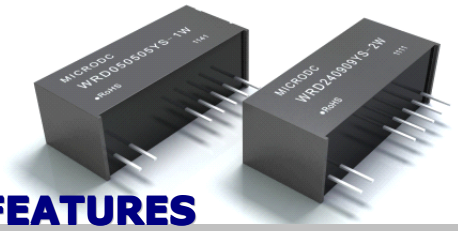
MICRODC
Professional Power Module

WRD-YS-1W&WRD-YS-2W Series

1W&2W,WIDE INPUT,ISOLATED&REGULATED Twin Output DC / DC Converter



FEATURES

- ◆RoHS compliant
- ◆Miniature SIP Package
- ◆Operating temperature: -40℃to+85℃
- ◆2:1 wide input voltage range
- ◆UL 94V-0 package material
- ◆No heatsink required
- ◆Industry standard pinout
- ◆1KVDC isolation
- ◆Continuous Short Circuit Protection
- ◆Internal SMD construction

MODEL SELECTION

WRD①05②05③05④Y⑤ S⑥-1W⑦

①Product Series ②Input Voltage
③Output Voltage 1st ④Output Voltage 2st
⑤Wide Input ⑥SIP Package
⑦Rated Power

APPLICATIONS

The WRD_YS-1W & WRD_YS-2W 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 range≤2:1);

2) Where isolation is necessary between input and output (Isolation Voltage ≤ 1000VDC);

3) Where isolation is necessary between Vout1 and Vout2 (Isolation Voltage ≤ 1000VDC);

4) Where the regulation of the output voltage and the output ripple noise are demanded.

SELECTION GUIDE

Order code	Input				Output			Efficiency (%,Typ)
	Voltage(VDC)			No-load (mA,Typ)		Current(mA)		
	Nominal	Range	Max.*		Voltage (VDC)	Max.	Min.	
WRD050505YS-1W	5	4.5-9.0	11	40	5/5	100/100	10/10	70
WRD050909YS-1W	5	4.5-9.0	11	40	9/9	55/55	5/5	71
WRD051212YS-1W	5	4.5-9.0	11	40	12/12	42/42	4/4	73
WRD051515YS-1W	5	4.5-9.0	11	40	15/15	33/33	3/3	72
WRD050505YS-2W	5	4.5-9.0	11	40	5/5	200/200	20/20	67
WRD050909YS-2W	5	4.5-9.0	11	40	9/9	111/111	11/11	71
WRD051212YS-2W	5	4.5-9.0	11	40	12/12	83/83	8/8	72
WRD051515YS-2W	5	4.5-9.0	11	40	15/15	67/67	7/7	73
WRD120505YS-1W	12	9.0-18	22	20	5/5	100/100	10/10	73
WRD120909YS-1W	12	9.0-18	22	20	9/9	55/55	5/5	76
WRD121212YS-1W	12	9.0-18	22	20	12/12	42/42	4/4	78
WRD121515YS-1W	12	9.0-18	22	20	15/15	33/33	3/3	78
WRD120505YS-2W*	12	9.0-18	22	20	5/5	200/200	20/20	75
WRD120909YS-2W*	12	9.0-18	22	20	9/9	111/111	11/11	77
WRD121212YS-2W*	12	9.0-18	22	20	12/12	83/83	8/8	80
WRD121515YS-2W*	12	9.0-18	22	20	15/15	67/67	7/7	79
WRD240505YS-1W	24	18-36	40	10	5/5	100/100	10/10	76
WRD240909YS-1W	24	18-36	40	10	9/9	55/55	5/5	77
WRD241212YS-1W*	24	18-36	40	10	12/12	42/42	4/4	78
WRD241515YS-1W	24	18-36	40	10	15/15	33/33	3/3	77
WRD240505YS-2W	24	18-36	40	10	5/5	200/200	20/20	76
WRD240909YS-2W	24	18-36	40	10	9/9	111/111	11/11	78
WRD241212YS-2W*	24	18-36	40	10	12/12	83/83	8/8	80
WRD241515YS-2W*	24	18-36	40	10	15/15	67/67	7/7	79
WRD480505YS-1W	48	36-72	80	5	5/5	100/100	10/10	73
WRD480909YS-1W*	48	36-72	80	5	9/9	55/55	5/5	75
WRD481212YS-1W*	48	36-72	80	5	12/12	42/42	4/4	77
WRD481515YS-1W*	48	36-72	80	5	15/15	33/33	3/3	77
WRD480505YS-2W	48	36-72	80	5	5/5	200/200	20/20	75
WRD480909YS-2W*	48	36-72	80	5	9/9	111/111	11/11	78
WRD481212YS-2W	48	36-72	80	5	12/12	83/83	8/8	79
WRD481515YS-2W*	48	36-72	80	5	15/15	67/67	7/7	78

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

ISOLATION SPECIFICATIONS

Parameter	Test conditions	Min.	Typ.	Max.	Unit
Isolation test voltage	Flash tested for 1 minute and 1mA max(Vin/Vout)	1000			VDC
Isolation resistance	Test at Viso=500VDC(Vin/Vout)	1000			MΩ
Isolation capacitance	100KHz,1V		80		PF

RoHS MICRODC Green Technology

CE REACH

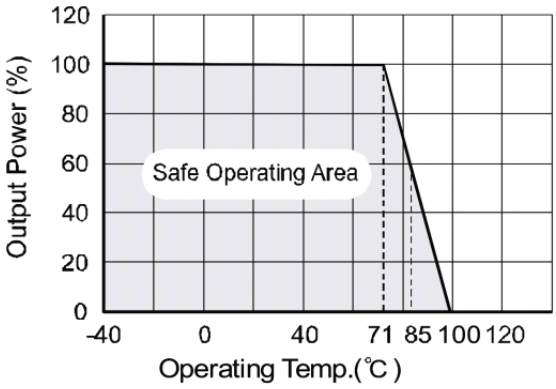
OUTPUT SPECIFICATIONS

Parameter	Test conditions	Min	Typ.	Max	Unit
Main output voltage accuracy	Refer to recommended circuit		±1	±3	%
Vice output voltage accuracy	Refer to recommended circuit		±3	±5	%
Load regulation	10% to 100% full load		±0.5	±1 *	%
Line regulat ion	Input voltage from low to high		±0.2	±0.5	%
Temperature drift (Vout)	Refer to recommended circuit			±0.03	%/℃
Ripple & Noise**	20MHz Bandwidth		50	100	mVp-p
Switching frequency	100% load, input voltage range		300		KHz

*Dual output models unbalanced load: ±5%.

** Test ripple and noise by "parallel cable" method. See detailed operation instructions at Testing of Power Converter section, application notes.

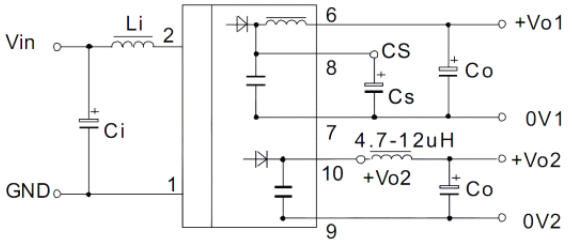
TYPICAL TEMPERATURE CURVE



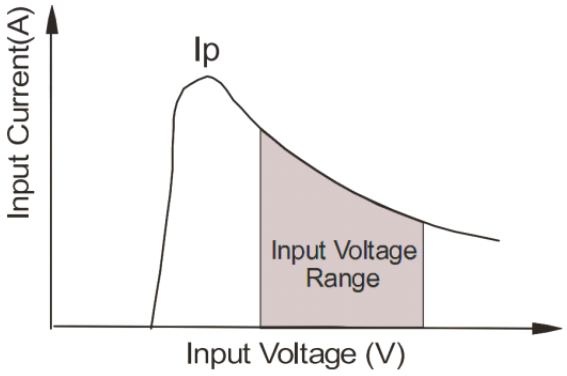
COMMON SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Units
Storage humidity range				95	%
Operating temperature		-40		85	℃
Storage temperature		-55		125	
Lead temperature	1.5mm from case for 10 seconds			300	
Temp.rise at full load			15		
No-load power consumption			0.1		W
Case material		Plastic(UL94-V0)			
Short circuit protection		Continuous			
Cooling		Free air convection			
MTBF		1000			K hours
Weight			5.8		g

RECOMMENDED CIRCUIT



(Figure 1)



(Figure 2)

EXTERNAL CAPACITOR TABLE (TABLE 1)

Vout	2W :Cout	1W :Cout
(VDC)	(μF)	(μF)
5	680	470
9	470	330
12	330	220
24	220	100

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.

APPLICATION NOTE

1) CS Pin

By connecting a low ESR capacitor between this terminal and the pin-7(Figure 1), the output ripple and noise may be further improved. Generally, the capacitance is no greater than 47uF.

2) Requirement on Output Load

To ensure this module can operate efficiently and reliably, During operation, the minimum output load is not less than 10% of the full load, If the actual load is less than the specified minimum load, the output ripple may increase sharply. 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.

3) Recommended Circuit

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

Cin: 5V & 12V 100μF
24V & 48V 10μF-47μF

Lin: 10μH-120μH

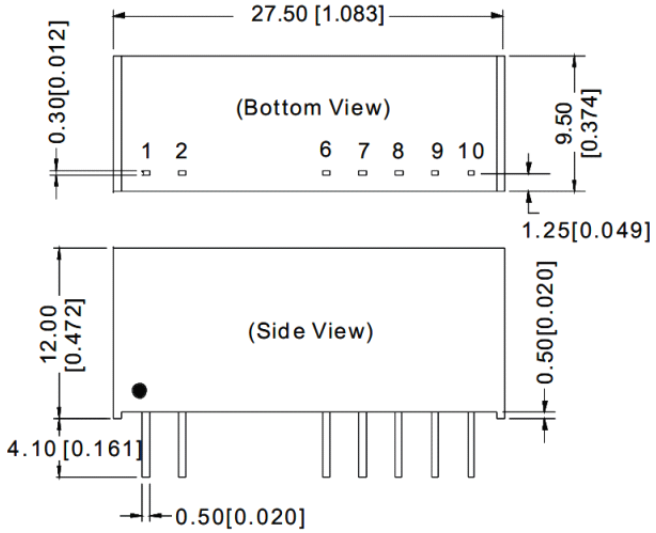
Cout: 100μF(TYP)

4) 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*Iin-max

5) No parallel connection or plug and play

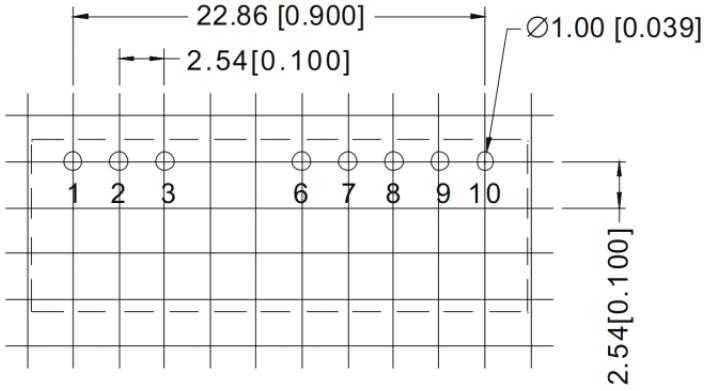
MECHANICAL DIMENSIONS



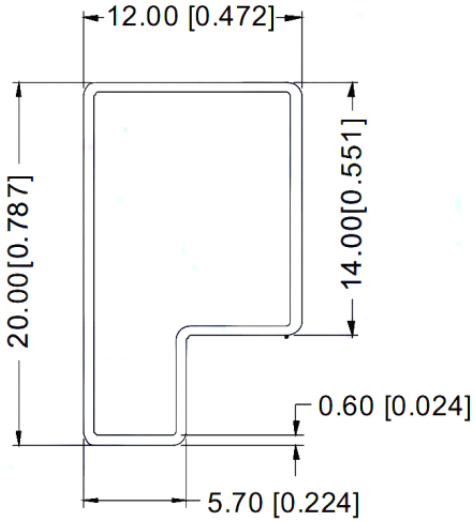
Note:
Uni t:mm[inch]
Pin sect ion tolerances:±0.10mm[±0.004inch]
General tolerances:±0.25mm[±0.010inch]

FOOTPRINT DETAILS	
PIN	FUNCTION
1	GND
2	Vin
6	+V01
7	0V1
8	CS
9	0V2
10	+V02

RECOMMENDED FOOTPRINT



TUBE OUTLINE DIMENSIONS



Note:
Unit :mm[inch]
General tolerances:±0.50mm[±0.020inch]
L=530mm[20.866inch] Tube Quantity: 18pcs
L=220mm[8.661inch] Tube Quantity: 8pcs

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 datasheet, 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.

MICRODC
Professional Power Module

Microdc Professional Power Module,Inc.
Tel:0086-20-86000646 E-mail:tech@microdc.cn
Website:http://www.microdc.cn

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.