SERIES: VWRAS2-SIP | DESCRIPTION: DC-DC CONVERTER

FEATURES

- 2 W isolated output
- wide input (2:1)
- industry standard 8 pin SIP package
- dual regulated outputs
- 1,500 V isolation
- short circuit protection
- wide temperature (-40~85°C)
- efficiency up to 79%



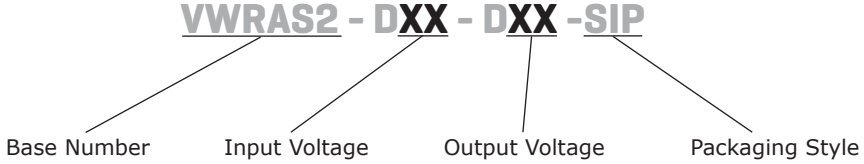
RoHS

MODEL

MODEL	input voltage typ (Vdc)	input voltage range (Vdc)	output voltage (Vdc)	output current min (mA)	output current max (mA)	output power max (W)	ripple and noise[1] max (mVp-p)	efficiency typ (%)
VWRAS2-D5-D5-SIP	5	4.5~9	±5	±20	±200	2	100	67
VWRAS2-D5-D9-SIP	5	4.5~9	±9	±11	±111	2	100	71
VWRAS2-D5-D12-SIP	5	4.5~9	±12	±8	±83	2	100	72
VWRAS2-D5-D15-SIP	5	4.5~9	±15	±7	±67	2	100	73
VWRAS2-D12-D5-SIP	12	9~18	±5	±20	±200	2	100	73
VWRAS2-D12-D9-SIP	12	9~18	±9	±11	±111	2	100	74
VWRAS2-D12-D12-SIP	12	9~18	±12	±8	±83	2	100	78
VWRAS2-D12-D15-SIP	12	9~18	±15	±7	±67	2	100	77
VWRAS2-D24-D5-SIP	24	18~36	±5	±20	±200	2	100	76
VWRAS2-D24-D9-SIP	24	18~36	±9	±11	±111	2	100	78
VWRAS2-D24-D12-SIP	24	18~36	±12	±8	±83	2	100	79
VWRAS2-D24-D15-SIP	24	18~36	±15	±7	±67	2	100	78
VWRAS2-D48-D5-SIP	48	36~72	±5	±20	±200	2	100	75
VWRAS2-D48-D9-SIP	48	36~72	±9	±11	±111	2	100	78
VWRAS2-D48-D12-SIP	48	36~72	±12	±8	±83	2	100	79
VWRAS2-D48-D15-SIP	48	36~72	±15	±7	±67	2	100	79

Notes: 1. ripple and noise are measured at 20 MHz BW

PART NUMBER KEY



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Please read our datasheet & drawing disclaimer here.

INPUT

parameter	conditions/description	min	typ	max	units
operating input voltage	5 V model	4.5	5	9.0	Vdc
	12 V model	9.0	12	18.0	Vdc
	24 V model	18.0	24	36.0	Vdc
	48 V model	36.0	48	72.0	Vdc

OUTPUT

parameter	conditions/description	min	typ	max	units
line regulation	input voltage from low to high		±0.2	±0.5	%
load regulation	measured from 10% load to full load		±0.5	±1.0	%
voltage accuracy	input voltage range refer to output load		±1	±3	%
switching frequency	100% load, input voltage range	180		500	kHz
temperature coefficient			±0.03		%/°C

PROTECTIONS

parameter	conditions/description	min	typ	max	units
short circuit protection	continuous				

SAFETY AND COMPLIANCE

parameter	conditions/description	min	typ	max	units
isolation voltage	for 1 minute at 1 mA max.	1,500			Vdc
isolation resistance	at 500 Vdc	1,000			MΩ
MTBF		1,000,000			hours
RoHS compliant	yes				

ENVIRONMENTAL

parameter	conditions/description	min	typ	max	units
operating temperature		-40		85	°C
storage temperature		-50		125	°C
storage humidity	non-condensing			95	%
temperature rise	at full load		15	35	°C
lead temperature	1.5 mm from case for 10 seconds			300	°C

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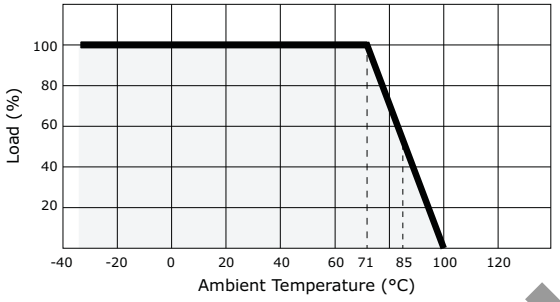
DERATING CURVES

1. output power vs. ambient temperature

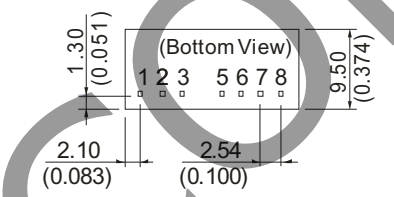


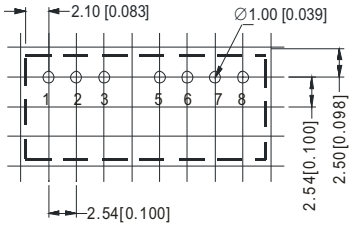
MECHANICAL

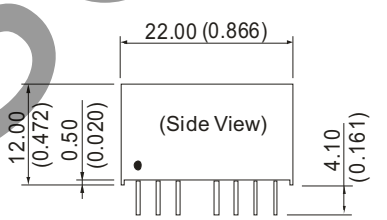
parameter	conditions/description	min	typ	max	units
dimensions	0.866 x 0.374 x 0.472 (22.00 x 9.50 x 12.00 mm)				inch
case material	plastic (UL94-V0)				
weight			5.5		g

MECHANICAL DRAWING

units: mm [inches]
tolerance: ±0.25 [±0.010]
pin section tolerance: ±0.10 mm [±0.004]







PIN CONNECTIONS	
PIN	FUNCTION
1	GND
2	+Vin
3	CTRL
5	NC
6	+Vo
7	0 V
8	-Vo

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APPLICATION NOTES

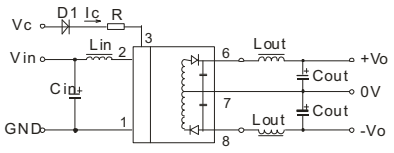
1. **CTRL Terminal**
When open or high impedance,the converter work well; When this pin is 'high'; the converter shutdown; It should be noted that the input current (Ic) should between 5-10mA, exceeding the maximum 20mA will cause permanent damage to the converter. The value of R can be derived as follows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

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

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).

Figure 1



Vin (Vdc)	Cin (μF)	Lin (μH)	Cout (μF)	Lout (μH)
5	100	4.7~120	100	2.2~10
12	100	4.7~120	100	2.2~10
24	10~22	4.7~120	100	2.2~10
48	10~22	4.7~120	100	2.2~10

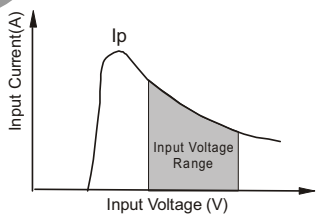
However, the capacitance of the output filter capacitor must be proper. If the capacitance is too big, a startup problem might arise. To ensure safe and reliable operation see Table 1 for the maximum capacitance of each channel of output.

Table 1

Vout (Vdc)	Cout (μF)
±5	560
±9	470
±12	330
±15	270

2. **Input Curent**
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.

General: Ip ≤1.4*Iin-max



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

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Note: 1. All specifications measured at Ta = 25°C, humidity <75%, nominal input voltage and rated output load unless otherwise specified.

REVISION HISTORY

rev.	description	date
1.0	initial release	11/10/2010
1.01	new template applied	04/16/2012
1.02	V-Infinity branding removed	09/10/2012
1.03	updated recommended circuit table	02/19/2013
1.04	corrected input voltage range data, updated spec	08/22/2013

The revision history provided is for informational purposes only and is believed to be accurate.

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