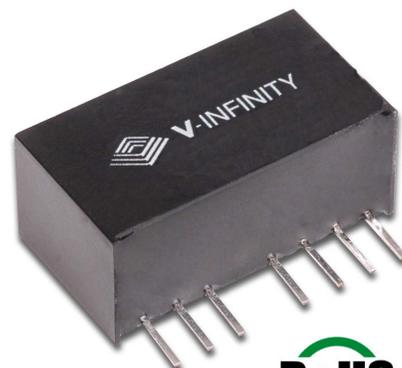


Description

Designed to convert a wide input voltage range into an isolated regulated voltage, the VWRAS1-SIP series is well suited for providing board-mount local supplies in a wide range of applications, including mixed analog/digital circuits, test & measurement equip., process/machine controls, datacom/telecom fields, etc...

Features

- Wide (2:1) input range
- High efficiency to 78%
- Regulated
- Dual voltage output
- I/O Isolation 1500VDC
- No heatsink required
- Short circuit protection
- Remote on/off
- MTBF >1,000,000 hrs
- Temperature range: -40°C~+85°C



Model Number	Input Voltage			Output Voltage	Output Current		Efficiency	Package Style
	Nominal	Range	Max.		Max.	Min.		
VWRAS1-D5-D5-SIP	5 Vdc	4.5~9.0 Vdc	11 Vdc	±5 Vdc	±100 mA	±0 mA	70%	SIP
VWRAS1-D5-D9-SIP	5 Vdc	4.5~9.0 Vdc	11 Vdc	±9 Vdc	±55 mA	±0 mA	71%	SIP
VWRAS1-D5-D12-SIP	5 Vdc	4.5~9.0 Vdc	11 Vdc	±12 Vdc	±42 mA	±0 mA	73%	SIP
VWRAS1-D5-D15-SIP	5 Vdc	4.5~9.0 Vdc	11 Vdc	±15 Vdc	±33 mA	±0 mA	72%	SIP
VWRAS1-D5-D24-SIP	5 Vdc	4.5~9.0 Vdc	11 Vdc	±24 Vdc	±21 mA	±0 mA	71%	SIP
VWRAS1-D12-D5-SIP	12 Vdc	9.0~18.0 Vdc	22 Vdc	±5 Vdc	±100 mA	±0 mA	73%	SIP
VWRAS1-D12-D9-SIP	12 Vdc	9.0~18.0 Vdc	22 Vdc	±9 Vdc	±55 mA	±0 mA	76%	SIP
VWRAS1-D12-D12-SIP	12 Vdc	9.0~18.0 Vdc	22 Vdc	±12 Vdc	±42 mA	±0 mA	78%	SIP
VWRAS1-D12-D15-SIP	12 Vdc	9.0~18.0 Vdc	22 Vdc	±15 Vdc	±33 mA	±0 mA	78%	SIP
VWRAS1-D12-D24-SIP	12 Vdc	9.0~18.0 Vdc	22 Vdc	±24 Vdc	±21 mA	±0 mA	77%	SIP
VWRAS1-D24-D5-SIP	24 Vdc	18.0~36.0 Vdc	40 Vdc	±5 Vdc	±100 mA	±0 mA	76%	SIP
VWRAS1-D24-D9-SIP	24 Vdc	18.0~36.0 Vdc	40 Vdc	±9 Vdc	±55 mA	±0 mA	77%	SIP
VWRAS1-D24-D12-SIP	24 Vdc	18.0~36.0 Vdc	40 Vdc	±12 Vdc	±42 mA	±0 mA	78%	SIP
VWRAS1-D24-D15-SIP	24 Vdc	18.0~36.0 Vdc	40 Vdc	±15 Vdc	±33 mA	±0 mA	78%	SIP
VWRAS1-D24-D24-SIP	24 Vdc	18.0~36.0 Vdc	40 Vdc	±24 Vdc	±21 mA	±0 mA	78%	SIP
VWRAS1-D48-D5-SIP	48 Vdc	36.0~72.0 Vdc	80 Vdc	±5 Vdc	±100 mA	±0 mA	73%	SIP
VWRAS1-D48-D9-SIP	48 Vdc	36.0~72.0 Vdc	80 Vdc	±9 Vdc	±55 mA	±0 mA	75%	SIP
VWRAS1-D48-D12-SIP	48 Vdc	36.0~72.0 Vdc	80 Vdc	±12 Vdc	±42 mA	±0 mA	77%	SIP
VWRAS1-D48-D15-SIP	48 Vdc	36.0~72.0 Vdc	80 Vdc	±15 Vdc	±33 mA	±0 mA	77%	SIP
VWRAS1-D48-D24-SIP	48 Vdc	36.0~72.0 Vdc	80 Vdc	±24 Vdc	±21 mA	±0 mA	76%	SIP

Note:

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

Output Specifications

Item	Test conditions	Min.	Typ.	Max.	Units
1W Output power				1	W
Output voltage accuracy	Refer to recommended circuit		±1	±3	%
Line Regulation	Input Voltage from low to high		±0.2	±0.5	%
Load Regulation	10% to 100% full load		±0.5	±1.0	%
Temperature drift	Refer to recommended circuit			0.03	%/°C
Output ripple	20 Hz Bandwidth		50	80	mVp-p
Output noise	DC-20MHz Bandwidth		80	100	mVp-p
Switching frequency	100% load, nominal input	100K		600K	Hz

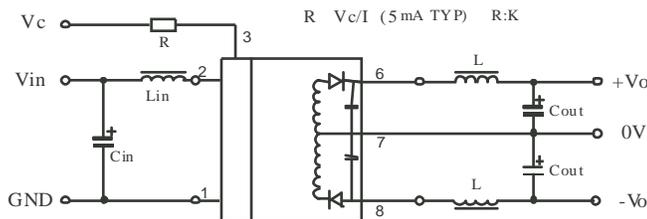
General Specifications

Output short circuit protection	Continuous
Temperature rise at full load	15°C typ., 35°C max.
Cooling	Free air convection
No-load power consumption	100mW (typical)
Operating temperature range	-40°C to +85°C
Storage temperature range	-50°C to +125°C
Soldering temperature	300°C (1.5mm from case for 10sec.)
Storage humidity range	<95%
Case material	Plastic (UL94-V0)
MTBF	>1,000,000 hrs.

Isolation Specifications

Item	Test Conditions	Min.	Typ.	Max.	Units
Isolation Voltage	Flash tested for 1 min.	1500			Vdc
Isolation Resistance	Test at 500 Vdc	1000			M Ω
Isolation Capacitance	Input/Output		80		PF

Typical Characteristics



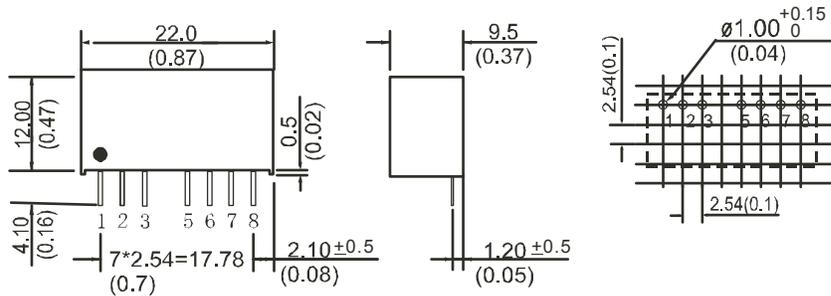
Recommended circuit

It is best to test with full load and not to test without load. To further reduce output ripple, you may increase the external capacitor, choose a capacitor with low ESR, or add external inductor to the circuit as shown on the left.

General:

Cin: 5V, 12V 100μF
 24V, 48V 10μF or 22μF
 Cout: 100μF (typ)
 Lin: 4.7μH-120 μH

Outline Dimensions & Recommended Layout Pattern



Pin	Function
1	GND
2	Vin
3	CTRL
5	NC
6	+Vo
7	0V
8	-Vo

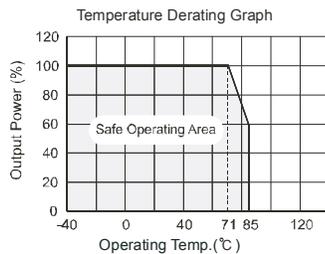
Note: All Pins on a 2.54mm pitch; All Pin diameters are 0.50 mm.

Application Notes:

- All of the VWRAS1-SIP Series have been tested according to the following recommended testing circuit before leaving the factory. This series should be tested under load(Figure 1). If you want to further decrease the input/output ripple, you can increase capacitance properly or choose capacitors with low ESR. However, the capacitance should not be too high(Table 2).

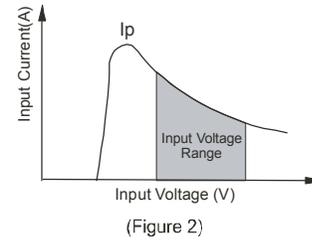
Table 2

Vout	Cout (Max)
±5	±330
±9	±220
±12	±100
±15	±47
±24	±22

Figure 1


- NC Terminals
Unless otherwise specified, NC terminals of all series are used for converter's interior circuit connection, and are not allowed connection of any external circuit.;
- CTRL Terminal
When open or high impedance, the converter will work well; When this pin is 'high'; the converter will shutdown; It should be noted that the input current should remain between 5-10mA,exceeding the maximum 20mA will cause permanent damage to the converter.

- Input current
Nominal input voltage range. The input current of the power supply must be sufficient to the startup current (I_p) of the DC/DC module (Figure 2)



- Output Load
In order to ensure the product operates efficiently and reliably, make sure the specified range of input voltage is not exceeded.

No parallel connection or plug and play.