V·INFINITY

VRA3-DIP Series Dc-Dc Converter

Rev. 11-2006

Features

- Wide (2:1) input range
- Isolated & regulated 3W output
- Efficiency up to 82%
- Dual voltage output
- DIP package style
- metal package
- No heatsink required
- 1.5K Vdc isolation
- Pinout compatible with ERICSSON PKV
- MTBF >1,000,000 hours
- Temperature range: -40°C~+85°C
- Continuous short circuit protection
- RoHS Compliant

RoHS

Model Number	Input Voltage Nominal	Input Voltage Range	Input Voltage Max.	Output Voltage	Output Current Max.	Output Current Min.	Efficiency	Package Style
VRA3-D5-D5-DIP	5 Vdc	4.5~9 Vdc	11 Vdc	5 Vdc	300 mA	30 mA	72%	DIP
VRA3-D5-D9-DIP	5 Vdc	4.5~9 Vdc	11 Vdc	9 Vdc	165 mA	16 mA	73%	DIP
VRA3-D5-D12-DIP	5 Vdc	4.5~9 Vdc	11 Vdc	12 Vdc	125 mA	12 mA	77%	DIP
VRA3-D5-D15-DIP	5 Vdc	4.5~9 Vdc	11 Vdc	15 Vdc	100 mA	10 mA	79%	DIP
VRA3-D12-D5-DIP	12 Vdc	9~18 Vdc	22 Vdc	5 Vdc	300 mA	30 mA	75%	DIP
VRA3-D12-D9-DIP	12 Vdc	9~18 Vdc	22 Vdc	9 Vdc	165 mA	16 mA	79%	DIP
VRA3-D12-D12-DIP	12 Vdc	9~18 Vdc	22 Vdc	12 Vdc	125 mA	12 mA	80%	DIP
VRA3-D12-D15-DIP	12 Vdc	9~18 Vdc	22 Vdc	15 Vdc	100 mA	10 mA	81%	DIP
VRA3-D24-D5-DIP	24 Vdc	18~36 Vdc	40 Vdc	5 Vdc	300 mA	30 mA	78%	DIP
VRA3-D24-D9-DIP	24 Vdc	18~36 Vdc	40 Vdc	9 Vdc	165 mA	16 mA	80%	DIP
VRA3-D24-D12-DIP	24 Vdc	18~36 Vdc	40 Vdc	12 Vdc	125 mA	12 mA	81%	DIP
VRA3-D24-D15-DIP	24 Vdc	18~36 Vdc	40 Vdc	15 Vdc	100 mA	10 mA	82%	DIP
VRA3-D48-D5-DIP	48 Vdc	36~72 Vdc	80 Vdc	5 Vdc	300 mA	30 mA	76%	DIP
VRA3-D48-D9-DIP	48 Vdc	36~72 Vdc	80 Vdc	9 Vdc	165 mA	16 mA	81%	DIP
VRA3-D48-D12-DIP	48 Vdc	36~72 Vdc	80 Vdc	12 Vdc	125 mA	12 mA	81%	DIP
VRA3-D48-D15-DIP	48 Vdc	36~72 Vdc	80 Vdc	15 Vdc	100 mA	10 mA	82%	DIP

General Specifications

Output short circuit protection	continuous, auto recovery
Temperature rise at full load	15°C typ., 25°C max.
Cooling	Free air convection
Operating temperature range	-40°C to +85°C
Storage temperature range	-55°C to +125°C
Storage humidity range	<95%
Case material	Metal
MTBF	>1,000,000 hrs.

Isolation Specifications

Item	Test Conditions	Min.	Typ.	Max.
Isolation Voltage		1500 Vdc		
Isolation Resistance		>1000 MΩ		

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Output Specifications

Item	Test conditions	Min.	Typ.	Max.
Line Regulation	Input voltage from low to high		±0.2%	±0.5%
Load Regulation	From 10% to 100% load		±0.5%	±1%
Output voltage accuracy (Vo1)	5, 9V		±1%	±3%
	12, 15, 24V		±1%	±2%
Output voltage accuracy (Vo2)	5, 9V			±5%
	12, 15, 24V		±2%	±3%
Temperature drift	refer to recommended circuit			0.03%/°C
Ripple	20 Hz-400 Hz Bandwidth			50 mVp-p
Noise	DC-20MHz Bandwidth		100 mVp-p	150 mVp-p
Switching frequency	100% load		100-650 KHz	

Notes:

1. All specifications measured at TA=25 °C, humidity <75%, nominal input voltage and rated output load unless otherwise specified.
2. See recommended circuits below for more details.

Applications:

The VRA3-DIP Series are specially designed for applications where 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 = 1500 Vdc)
3) Where the regulation of the output voltage and the output ripple noise are demanding.

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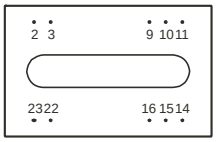
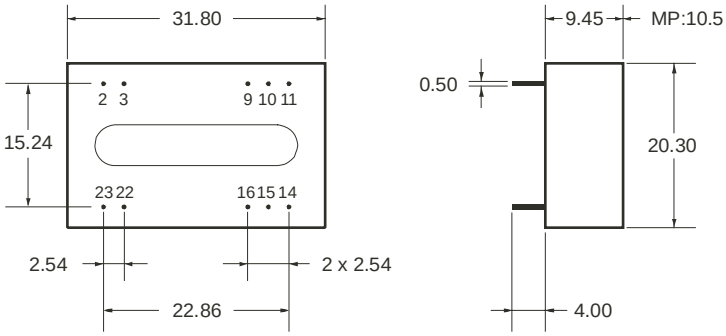
Pin Connections

Bottom View



Pin	Function
2,3	-Vin
10,15	NC
14	+Vo
11	-Vo
9,16	0V
22,23	Vin

Outline Dimensions & Recommended Footprint Details

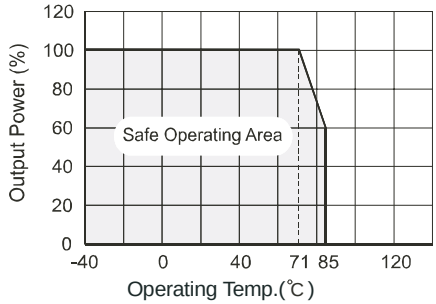


(Bottom View) (Side View)

Note: All Pins on a 2.54mm pitch; All Pin diameters are 0.50 mm(Tolerance:±0.10);

Typical Characteristics

Temperature Derating Graph



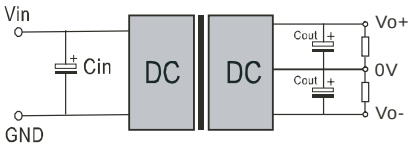
Application Note

Recommended circuit

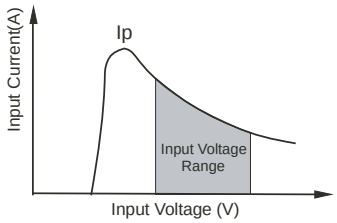
All the VRA3-DIP Series have been tested according to the following recommended testing circuit before leaving factory. This series should be tested under load. Never be tested under no load (see figures 1 & 2). If you want to further decrease the input/output ripple, you can increase capacitance properly or choose capacitors with low ESR. However, the capacitance should not be too high (external capacitor table). If you want to use the products in high EMI, please choose our metal packaged products.

Input Current

When it is used in unregulated power supply, be sure that the fluctuating range of the power supply and the rippled voltage do not exceed the module standard. Input current of power supply should afford the startup current of this kind of DC/DC module (see figure 2).



(Figure 1)



(Figure 2)

General: Cin: 5V,12V 100uF
24V,48V 47uF 22uF

Cout:100uF

Requirement on Output Load

To ensure this module operates efficiently and reliably, a minimum load is specified for this kind of DC/DC converter in addition to a maximum load (namely full load). During operation, make sure the specified range of input voltage is not exceeded, the minimum out put load is not less than **10%** of the full load, and that this product **should never be operated under no load**!!! If the actual load is below the specified minimum load, the output ripple of this type of DC/DC converter will increase drastically and at the same time efficiency & reliability of the circuit will decrease deeply .If the actual output power from the load in your circuit is very small, please connect a resistor with proper resistance at the output end to in parallel to increase the load, or use our company's other products with a lower rated output power.

The products cannot be used in parallel and in plug and play.

External Capacitor Table

Vout	Cout (Max)
5	500μF
9	240μF
12	150μF
15	120μF
24	100μF