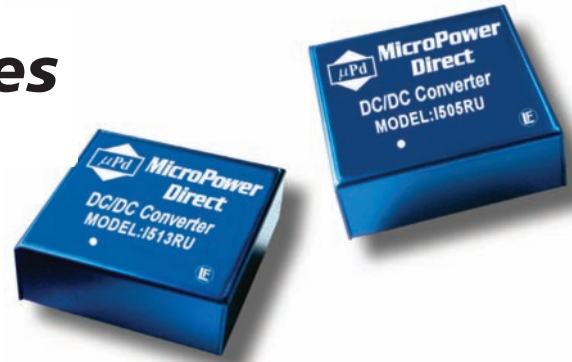


1500RU Series

4:1 Input, 5W Ultra-Miniature DC/DC Converters



Key Features:

- 5W Output Power
- 4:1 Input Range
- Miniature Case
- Single & Dual Outputs
- 1,500 VDC Isolation
- >1 MHour MTBF
- 16 Standard Models
- **LOWEST COST!!**



RoHS Compliant

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Electrical Specifications

Specifications typical @ +25°C, nominal input voltage & rated output current, unless otherwise noted. Specifications subject to change without notice.

Input

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Voltage Range	24 VDC Input	9.0	24.0	36.0	VDC
	48 VDC Input	18.0	48.0	72.0	
Input Filter	LC Filter				
Reverse Polarity Input Current				1.0	A

Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy	Positive		±1.0	±3.0	%
	Negative		±3.0	±5.0	
Output Voltage Balance	Dual Output , Balanced Loads			±1.0	%
Line Regulation	Vin = Min to Max		±0.2	±0.5	%
Load Regulation	Iout = 10% to 100%		±0.5	±1.0	%
Ripple (20 MHz) (Note 1)			30	50	mV P - P
Noise (20 MHz) (Note 1)			75	150	mV P - P
Output Power Protection		120			%
Temperature Coefficient			±0.02	±0.03	%/°C
Output Short Circuit	Continuous (Autorecovery)				

General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage	60 Seconds	1,500			VDC
Isolation Resistance	500 VDC	1,000			MΩ
Isolation Capacitance	100 kHz, 1V		100		pF
Switching Frequency			300		kHz

Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-40	+25	+85	°C
Storage Temperature Range		-55		+125	°C
Cooling	Free Air Convection				
Humidity	RH, Non-condensing			95	%

Physical

Case Size	1.08 x 1.08 x 0.38 Inches (25.4 x 25.4 x 9.6 mm)				
Case Material	Metal With Non-Conductive Base (UL94-V0)				
Weight	0.52 Oz (15g)				

Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	1.0			MHours

Absolute Maximum Ratings

Parameter	Conditions	Min.	Typ.	Max.	Units
	24 VDC Input	-0.7		40.0	
	48 VDC Input	-0.7		80.0	
Lead Temperature	1.5 mm From Case For 10 Sec			300	°C
Internal Power Dissipation	All Models			450	mW

Caution: Exceeding Absolute Maximum Ratings may damage the module. These are not continuous operating ratings.

Model Selection Guide

Model Number	Input				Output			Efficiency (% Typ)	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Current (mA)		Voltage (VDC)	Current (mA, Max)	Current (mA, Min)		
	Nominal	Range	Full-Load	No-Load					
I501RU	24	9.0 - 36.0	270	25	5.0	1,000	100	77	700
I502RU	24	9.0 - 36.0	260	25	12.0	420	42	80	700
I503RU	24	9.0 - 36.0	257	25	15.0	333	33	81	700
I504RU	24	9.0 - 36.0	285	25	24.0	200	20	73	700
I505RU	24	9.0 - 36.0	278	25	±5.0	±500	±50	75	700
I506RU	24	9.0 - 36.0	270	25	±12.0	±200	±20	77	700
I507RU	24	9.0 - 36.0	264	25	±15.0	±166	±16	79	700
I508RU	24	9.0 - 36.0	257	25	±24.0	±104	±10	81	700
I511RU	48	18.0 - 72.0	131	20	5.0	1,000	100	79	350
I512RU	48	18.0 - 72.0	127	20	12.0	420	42	82	350
I513RU	48	18.0 - 72.0	122	20	15.0	333	33	85	350
I514RU	48	18.0 - 72.0	121	20	24.0	200	20	86	350
I515RU	48	18.0 - 72.0	139	20	±5.0	±500	±50	75	350
I516RU	48	18.0 - 72.0	133	20	±12.0	±200	±20	78	350
I517RU	48	18.0 - 72.0	127	20	±15.0	±166	±16	82	350
I518RU	48	18.0 - 72.0	122	20	±24.0	±104	±10	85	350

Notes:

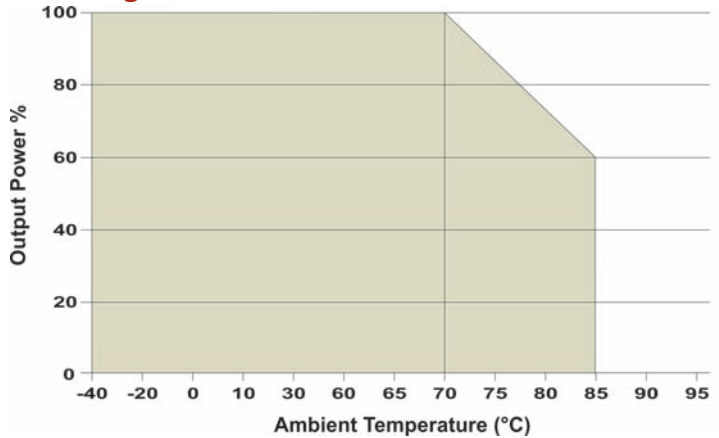
- When measuring output ripple, it is recommended that an external ceramic capacitor (approx approx 1 μ F to 10 μ F) be placed from the +Vout pin to the -Vout pin for single output units and from each output to common for dual output units.
- These units should not be operated with a load under 10% of full load. Operation at no-load may cause damage to the unit.
- These converters are specified for operation without external components. However, in some applications the addition of input/output capacitors will enhance stability and reduce output ripple. Recommended capacitor values are:

Vin	Input Capacitor	Vout	Output Capacitor
24 VDC	100 μ F	5 VDC	100 μ F
48 VDC	100 μ F	12 VDC	100 μ F
		15 VDC	100 μ F
		24 VDC	100 μ F

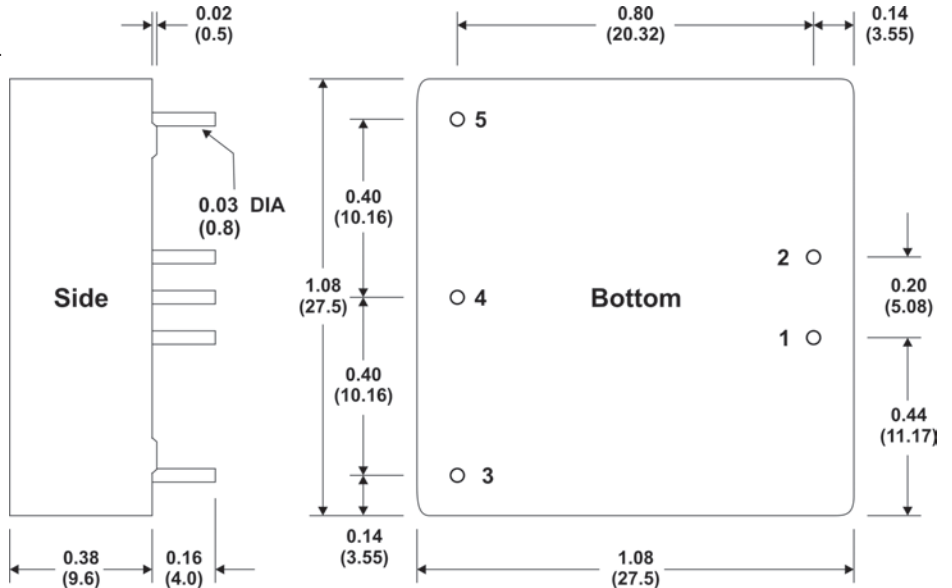
For applications requiring very low output noise levels, a simple LC filter should be effective.

- Dual output units may be connected to provide a 10V, 24V, 30V or 48 VDC output. To do this, connect the load across the positive (+Vout) and negative (-Vout) outputs and float the output common.
- It is recommended that a fuse be used on the input of a power supply for protection. See the Model Selection table above for the correct rating.

Derating Curve



Mechanical Dimensions



Pin Connections

Pin	Single	Dual	Pin	Single	Dual
1	+Vin	+Vin	4	No Pin	Common
2	-Vin	-Vin	5	-Vout	-Vout
3	+Vout	+Vout			

Notes:

- All dimensions are typical in inches (mm)
- Tolerance x.xx = ± 0.01 (± 0.25)
- Pin 1 is marked by a "dot" on the top of the unit



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