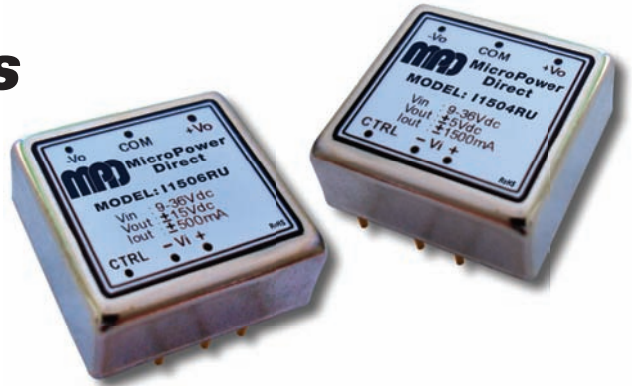


# I1500RU Series

## Ultra-Miniature 15W Wide 4:1 Input Range DC/DC Converters



### Key Features:

- 15W Output Power
- 4:1 Input Range
- Ultra- Miniature Case
- Remote On/Off Control
- 1,600 VDC Isolation
- >560 kHour MTBF
- Standard Pin-Out

RoHS



### 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	75.0	
Under Voltage Lockout, 24 VDC Input	Module Off		7.0		VDC
	Module On		8.5		
Under Voltage Lockout, 48 VDC Input	Module Off		15.0		VDC
	Module On		17.0		
Input Filter	π (Pi) Filter				

#### Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy			±1.0		%
Line Regulation	Vin = Min to Max			±0.2	%
	Single Output			±0.5	%
Load Regulation, See Note 1	Dual Output			±1.0	
	See Note 2			100	mV P - P
Ripple & Noise (20 MHz)	See Note 2			100	mV P - P
Output Power Protection			170		%
Transient Recovery Time , See Note 3			250		μSec
Transient Response Deviation	50% Load Step Change		±3.0		%
Temperature Coefficient			±0.02		%/°C
Output Short Circuit	Continuous (Autorecovery)				

#### General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage		1,600			VDC
Isolation Resistance	500 VDC	1,000			MΩ
Isolation Capacitance				1,200	pF
Switching Frequency			375		kHz

#### Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-40	+25	+85	°C
	Case			+105	°C
Storage Temperature Range		-40		+105	°C
Cooling	Free Air Convection				
Derating	See Curve				
Humidity	RH, Non-condensing			95	%

#### Physical

Case Size	1.00 x 1.00 x 0.39 Inches (25.4 x 25.4 x 9.9 mm)				
Case Material	Nickel Coated Copper With Non-Conductive Base (UL94-V0)				
Weight	0.64 Oz (18g)				

#### Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	560			kHours

#### Absolute Maximum Ratings

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Voltage Surge (1 Sec)	24 VDC Input	-0.7		50.0	VDC
	48 VDC Input	-0.7		100.0	
Lead Temperature	1.5 mm From Case For 10 Sec			260	°C

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

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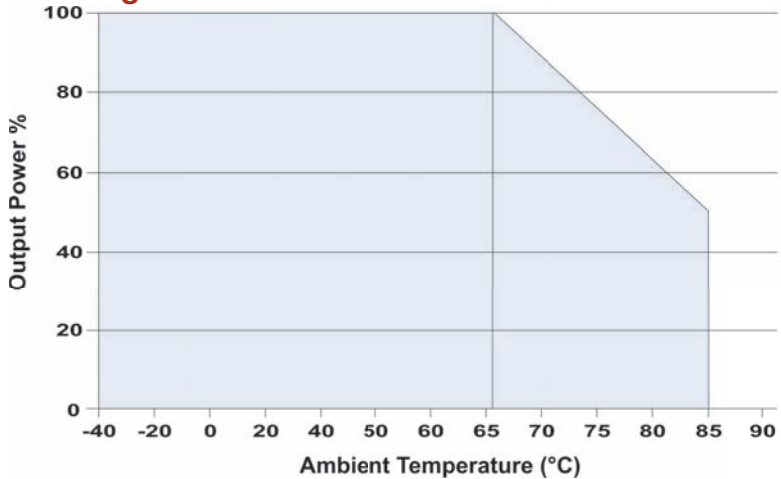
Model Number	Input				Output			Over Voltage Protection (VDC)	Efficiency (% Typ)	Capacitive Load (µF Max)	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Current (mA)		Voltage (VDC)	Current (mA, Max)	Current (mA, Min)				
	Nominal	Range	Full-Load	No-Load							
I1501RU	24	9.0 - 36.0	647	15	3.3	4,000	0.0	3.9	86	1,000	3,000
I1502RU	24	9.0 - 36.0	727	15	5.0	3,000	0.0	6.2	87	1,000	4,000
I1503RU	24	9.0 - 36.0	747	15	12.0	1,300	0.0	15.0	88	330	4,000
I1504RU	24	9.0 - 36.0	710	15	15.0	1,000	0.0	18.0	89	220	4,000
I1505RU	24	9.0 - 36.0	744	15	±5.0	±1,500	±0.0	±6.2	85	±470	4,000
I1506RU	24	9.0 - 36.0	718	15	±12.0	±625	±0.0	±15.0	88	±220	4,000
I1507RU	24	9.0 - 36.0	710	15	±15.0	±500	±0.0	±18.0	89	±100	4,000
I1511RU	48	18.0 - 75.0	331	10	3.3	4,000	0.0	3.9	84	1,000	1,500
I1512RU	48	18.0 - 75.0	368	10	5.0	3,000	0.0	6.2	86	1,000	2,000
I1513RU	48	18.0 - 75.0	378	10	12.0	1,300	0.0	15.0	87	330	2,000
I1514RU	48	18.0 - 75.0	360	10	15.0	1,000	0.0	18.0	88	220	2,000
I1515RU	48	18.0 - 75.0	376	10	±5.0	±1,500	±0.0	±6.2	84	±470	2,000
I1516RU	48	18.0 - 75.0	363	10	±12.0	±625	±0.0	±15.0	87	±220	2,000
I1517RU	48	18.0 - 75.0	359	10	±15.0	±500	±0.0	±18.0	88	±100	2,000

Notes:

- Output load regulation is specified for a load change of 0% to 100%.
- When measuring output ripple, it is recommended that an external ceramic capacitor (approx 0.1 µF) be placed from the +Vout pin to the -Vout pin for single output units and from each output to common for dual output units.
- Transient recovery is measured to within a 1% error band for a 25% load step change of 75% to 50% to 25%.
- All models meet the EMC requirements of EN55022 Class A & EN61000-4-2/3/4/5/6/8 Criteria A; with the minimum addition of external components. Contact the factory for recommended filter capacitor values.
- Operation at no-load will not damage the unit, but they may not meet all specifications.
- The On/Off Control input (Pin 3) is referenced to -Vin (Pin 1). If it is not used, the control pin should be left open. Shorting Pin 3 and Pin 2 will shut the unit off. The off idle current is typically 5 mA.
- 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.

	Min	Max
On	3.0 VDC	12.0 VDC
Off	0.0 VDC	1.2 VDC

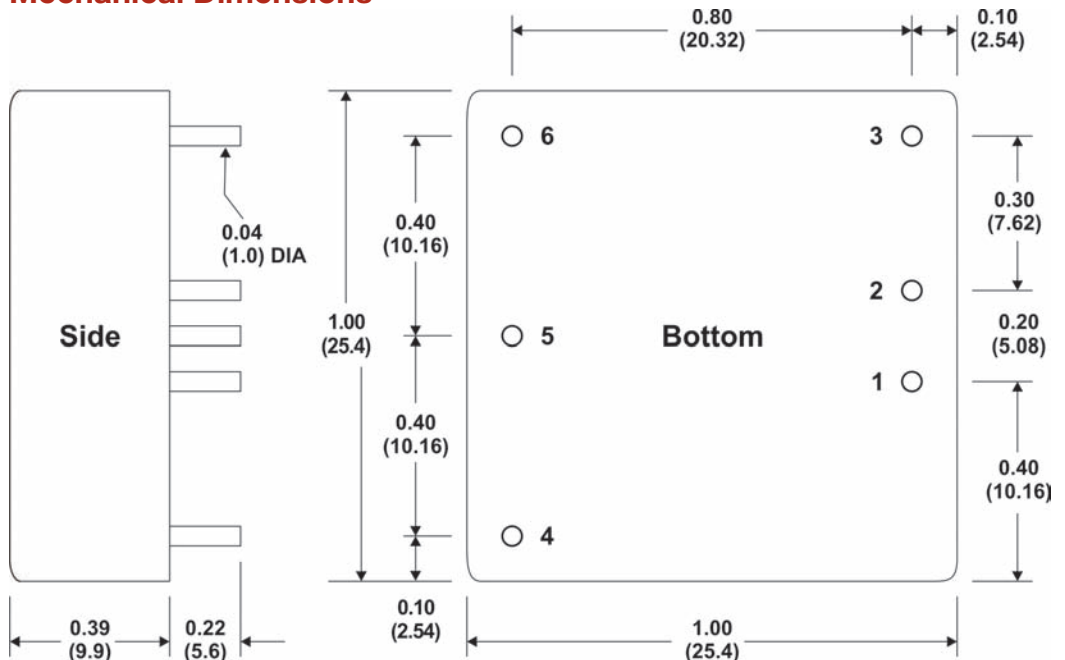
Derating Curve



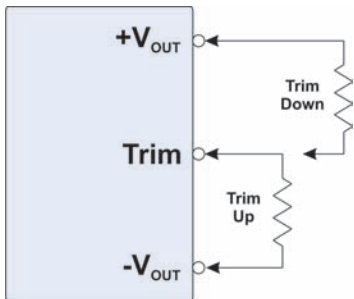
Pin Connections

Pin	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	Control	Control
4	+Vout	+Vout
5	Trim	Common
6	-Vout	-Vout

Mechanical Dimensions



External Trim



The output voltage on single output models may be adjusted by approximately ±10%. To do so, external trim resistors should be connected as shown above.

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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