

# I1000RU Series

## Ultra-Miniature 10W Wide 4:1 Input Range DC/DC Converters



### Key Features:

- 10W Output Power
- 4:1 Input Range
- Ultra- Miniature Case
- Remote On/Off Control
- 1,500 VDC Isolation
- >350 kHour MTBF
- Standard Pin-Out



### 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	
Start-Up Voltage	24 VDC Input			9.0	VDC
	48 VDC Input			18.0	
Under Voltage Shutdown	24 VDC Input			8.5	VDC
	48 VDC Input			17.0	
Input Filter	$\pi$ (Pi) Filter, Meets EN55022 Class A				

#### Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy			±1.0	±2.0	%
Output Voltage Balance	Dual Output , Balanced Loads		±1.0	±2.0	%
Line Regulation	Vin = Min to Max		±0.3	±1.0	%
Load Regulation	Iout = 15% to 100%		±0.5	±1.2	%
Ripple & Noise (20 MHz), See Note 1			60	100	mV P - P
	Over Line, Load & Temperature			150	
Transient Recovery Time, See Note 2			300	600	µSec
Transient Response Deviation	25% Load Step Change		±3.0	±6.0	%
Output Power Protection		110	150		%
Temperature Coefficient			±0.01	±0.02	%/°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		1,500		pF
Switching Frequency			450		kHz

#### Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-40	+25	+80	°C
Operating Temperature Range	Case			+100	°C
Storage Temperature Range		-50		+125	°C
Cooling	Free Air Convection				
Derating	See Curve				
Humidity	RH, Non-condensing			95	%

#### Physical

Case Size	1.00 x 1.00 x 0.40 Inches (25.4 x 25.4 x 10.16 mm)				
Case Material	Six-Sided Shielded Aluminum 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	350			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			Efficiency (% Typ)	Capacitive Load ( $\mu$ F Max)	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Current (mA)		Voltage (VDC)	Current (mA, Max)	Current (mA, Min)			
	Nominal	Range	Full-Load	No-Load						
I1001RU	24	9.0 - 36.0	352	30	3.3	2,200	330	86	560	1,000
I1002RU	24	9.0 - 36.0	496	30	5.0	2,000	300	84	560	1,000
I1003RU	24	9.0 - 36.0	483	30	12.0	830	125	86	150	1,000
I1004RU	24	9.0 - 36.0	474	30	15.0	660	100	87	150	1,000
I1005RU	24	9.0 - 36.0	496	30	$\pm$ 5.0	$\pm$ 1,000	$\pm$ 150	84	$\pm$ 220	1,000
I1006RU	24	9.0 - 36.0	477	30	$\pm$ 12.0	$\pm$ 410	$\pm$ 61	86	$\pm$ 100	1,000
I1007RU	24	9.0 - 36.0	474	30	$\pm$ 15.0	$\pm$ 330	$\pm$ 50	87	$\pm$ 100	1,000
I1011RU	48	18.0 - 75.0	180	20	3.3	2,200	330	85	560	500
I1012RU	48	18.0 - 75.0	248	20	5.0	2,000	300	84	560	500
I1013RU	48	18.0 - 75.0	241	20	12.0	830	125	86	150	500
I1014RU	48	18.0 - 75.0	237	20	15.0	660	100	87	150	500
I1015RU	48	18.0 - 75.0	248	20	$\pm$ 5.0	$\pm$ 1,000	$\pm$ 150	84	$\pm$ 220	500
I1016RU	48	18.0 - 75.0	238	20	$\pm$ 12.0	$\pm$ 410	$\pm$ 61	86	$\pm$ 100	500
I1017RU	48	18.0 - 75.0	237	20	$\pm$ 15.0	$\pm$ 330	$\pm$ 50	87	$\pm$ 100	500

Notes:

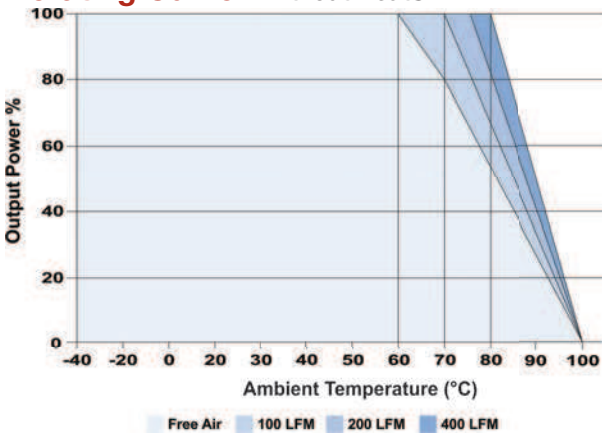
- Output ripple is measured with a 0.47  $\mu$ F ceramic capacitor connected across the outputs.
- Transient recovery is measured to within a 1% error band for a load step change of 75% to 100%.
- Operation at no-load will not damage the unit, but they may not meet all specifications.
- The On/Off Control input (Pin 3) is referenced to -Vin (Pin 2). If it is not used, the control pin should be left open. If the pin is shorted to -Vin, the unit will turn off.
- 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	2.5 VDC	50 VDC
Off	0.0 VDC	1.0 VDC
In. Current (on)		0.5 mA
In. Current (off)		-0.5 mA

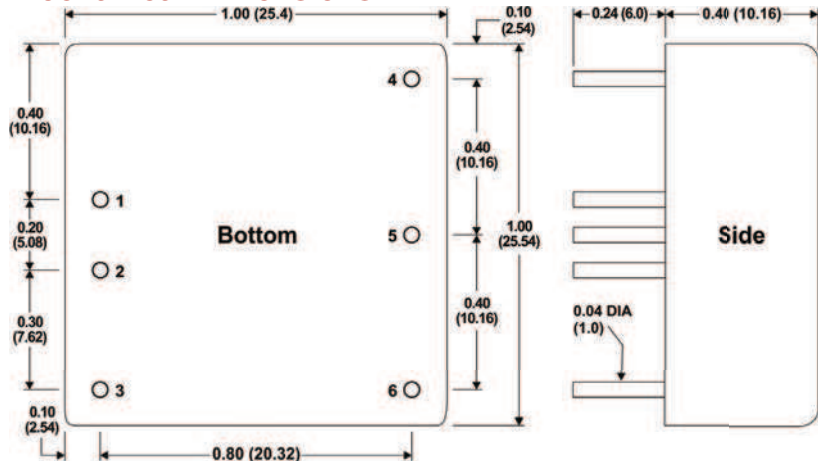
Pin Connections

Pin	Single	Dual	Pin	Single	Dual
1	+Vin	+Vin	4	+Vout	+Vout
2	-Vin	-Vin	5	No Pin	Common
3	Remote ON/OFF		6	-Vout	-Vout

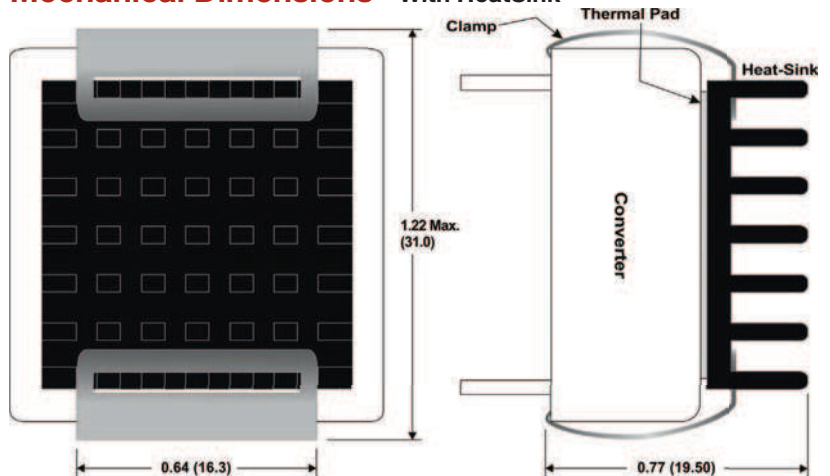
Derating Curve - Without HeatSink



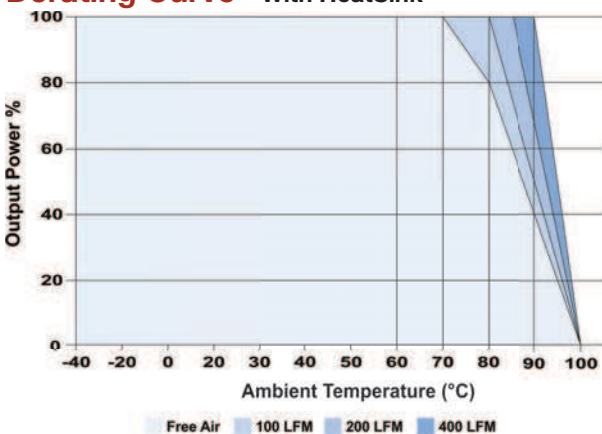
Mechanical Dimensions



Mechanical Dimensions - With HeatSink



Derating Curve - With HeatSink



Notes:

- All dimensions are typical in inches (mm)
- Tolerance x.xx =  $\pm$ 0.01 ( $\pm$ 0.25)



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