

I2000RW Series

Ultra-Miniature 20W Wide 2:1 Input Range DC/DC Converters



Key Features:

- 20W Output Power
- 2:1 Input Range
- Ultra-Miniature Case
- Optional Remote Control
- 1,600 VDC Isolation
- >800 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	12 VDC Input	9.0	12.0	18.0	VDC
	24 VDC Input	18.0	24.0	36.0	
	48 VDC input	36.0	48.0	75.0	
Input Filter	LC Filter				

Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy	Positive		±2.0		%
Line Regulation	V _{in} = Min to Max		±0.5		%
Load Regulation	I _{out} = 10% to 100%		±1.0		%
Ripple (20 MHz) (Note 1)	3.3V, 5V Output Models			75	mV P - P
	12V, 15V Output Models			100	
Noise (20 MHz) (Note 1)	3.3V, 5V Output Models			100	mV P - P
	12V, 15V Output Models			125	
Output Power Protection	See Note 2	120			%
Over Voltage Protection	Zener Diode Clamp				
Temperature Coefficient			±0.02		%/°C
Output Short Circuit	Continuous (Autorecovery)				

General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage	60 Seconds	1,600			VDC
Isolation Resistance	500 VDC	100			MΩ
Isolation Capacitance	100 kHz, 1V		1,000		pF
Switching Frequency	3.3V, 5V Output Models		450		kHz
	12V, 15V Output Models		300		

Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-40	+25	+85	°C
Operating Temperature Range	Case			+105	°C
Storage Temperature Range		-55		+105	°C
Cooling	Free Air Convection				
Derating	See Curve				
Humidity	RH, Non-condensing			95	%

Physical

Case Size	1.00 x 1.00 x 0.433 Inches (25.4 x 25.4 x 11.0 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	800			kHours

Absolute Maximum Ratings

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Voltage Surge (1 Sec)	12 VDC Input	-0.7		20.0	VDC
	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

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

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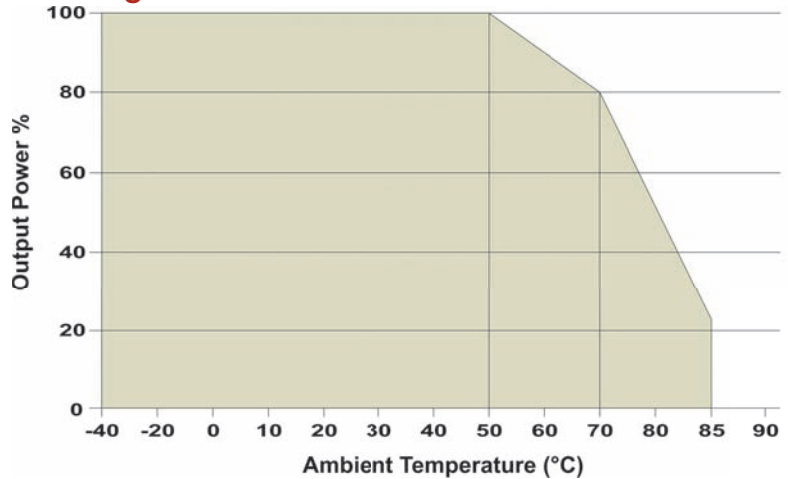
Model Number	Input				Output			Over Voltage Protection (VDC)	Efficiency (% Typ)	Capacitive Load (µF Max)	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Current (mA)		Voltage (VDC)	Current (mA, Max)	Current (mA, Min)				
	Nominal	Range	Full-Load	No-Load							
I2001RW	12	9.0 - 18.0	1,961	90	3.3	4,500	450	4.6	85	2,000	4,000
I2002RW	12	9.0 - 18.0	1,873	90	5.0	4,000	400	6.2	89	2,000	4,000
I2003RW	12	9.0 - 18.0	1,873	50	12.0	1,660	166	15.5	88	470	4,000
I2004RW	12	9.0 - 18.0	1,873	50	15.0	1,330	133	18.6	88	330	4,000
I2011RW	24	18.0 - 36.0	986	45	3.3	4,500	450	4.6	86	2,000	2,000
I2012RW	24	18.0 - 36.0	936	45	5.0	4,000	400	6.2	89	2,000	2,000
I2013RW	24	18.0 - 36.0	936	25	12.0	1,660	166	15.5	89	470	2,000
I2014RW	24	18.0 - 36.0	936	25	15.0	1,330	133	18.6	89	330	2,000
I2021RW	48	36.0 - 75.0	496	28	3.3	4,500	450	4.6	84	2,000	1,000
I2022RW	48	36.0 - 75.0	473	28	5.0	4,000	400	6.2	88	2,000	1,000
I2023RW	48	36.0 - 75.0	473	15	12.0	1,660	166	15.5	88	470	1,000
I2024RW	48	36.0 - 75.0	473	15	15.0	1,330	133	18.6	88	330	1,000

Notes:

- 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.
- Unit recovers automatically from an over power condition once the fault is removed.
- It is recommended that the units not be operated with a load under 10% of full load. 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.

	Min	Max
On	5.0 VDC	15.0 VDC
Off	0.0 VDC	0.3 VDC
In. Current (on)		-1 mA
In. Current (off)		1 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.

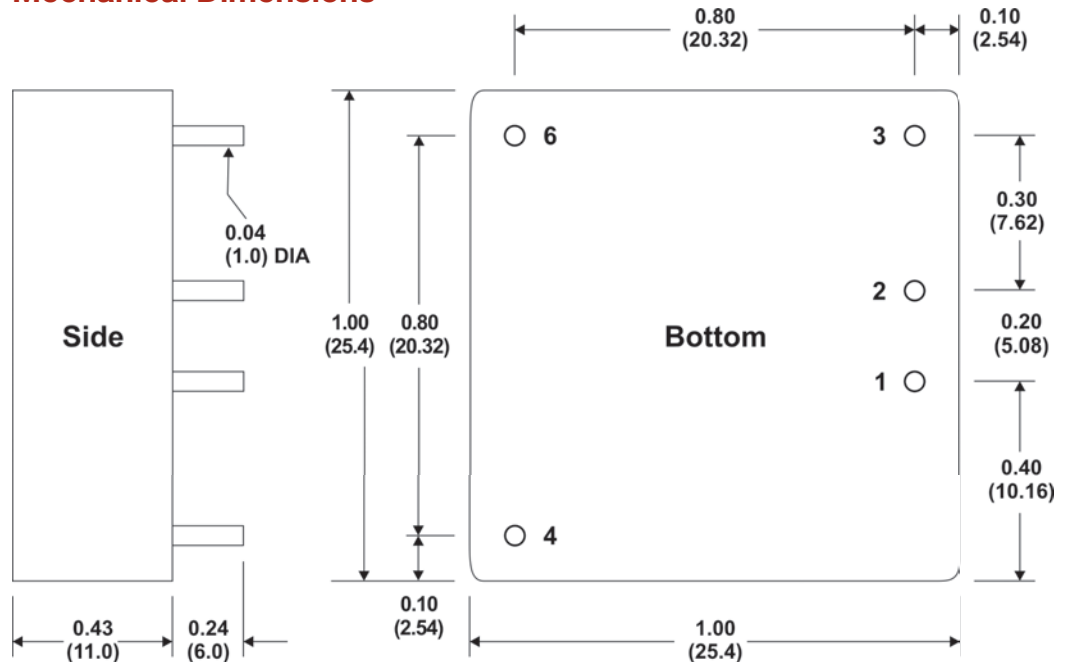
Derating Curve



Mechanical Dimensions

Pin Connections

Pin	Function
1	+Vin
2	-Vin
3	Control (Optional)
4	+Vout
5	No Pin
6	-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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