A200RHI Series

Very High Isolation, 2W Single & Dual Output DC/DC Converters



Key Features:

- 2W Output Power
- 8,000 VDC Isolation
- 2 µA Leakage Current Max
- Compact DIP Case
- Single & Dual Outputs
- Meets EN55022 Class A
- 600 kH MTBF
- Industry Standard Pin-Out

RoHS Compliant

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	5 VDC Input	4.5	5.0	5.5	VDC
	12 VDC Input	10.8	12.0	13.2	
	24 VDC Input	21.6	24.0	26.4	
Input Filter	π (Pi) Filter (Complies with EN55022 Class A)				
Reverse Polarity Input Current				0.5	A
Short Circuit Input Power				2,000	mW

Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy			±2.0	±4.0	%
Output Voltage Balance	Dual Output , Balanced Loads		±2.0	±4.0	%
Line Regulation	Vin = Min to Max		±0.3	±0.5	%
Load Regulation	Iout = 10% to 100%		±0.5	±1.0	%
Ripple & Noise (20 MHz) (Note 1)			30	50	mV P - P
Ripple & Noise (20 MHz)	Over Line, Load & Temp.			100	mV P - P
Ripple & Noise (20 MHz)				5	mV rms
Output Power Protection		120			%
Transient Recovery Time (Note 2)	50% Load Step Change			50	µSec
Transient Response Deviation				±6.0	%
Temperature Coefficient			±0.01	±0.02	%/°C
Output Short Circuit	Continuous				

General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage, Rated		5,600			VDC
Isolation Test Voltage	60 Seconds	6,000			VDC
Isolation Test Voltage	Flash Tested For 1 Second	8,000			VDC
Leakage Current	240 VAC, 60 Hz			2	µA
Isolation Resistance	500 VDC	10			GΩ
Isolation Capacitance	100 kHz, 1V		20	30	pF
Switching Frequency		25		80	kHz

Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range		-25		+60	°C
Operating Temperature Range		-25		+90	°C
Storage Temperature Range		-40		+125	°C
Cooling	Free Air Convection				
Humidity	RH, Non-condensing			95	%

Physical

Case Size	1.25 x 0.80 x 0.40 Inches (31.8 x 20.3 x 10.2 mm)
Case Material	Non-Conductive Black Plastic (UL94-V0)
Weight	0.42 Oz (12g)

Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	600			kHours

Absolute Maximum Ratings

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Voltage Surge (1 Sec)	5 VDC Input	-0.7		7.5	VDC
	12 VDC Input	-0.7		15.0	
	24 VDC Input	-0.7		30.0	
Lead Temperature	1.5 mm From Case For 10 Sec			260	°C
Internal Power Dissipation	All Models			2,000	mW

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

MicroPower Direct
292 Page Street
Suite D
Stoughton, MA 02072
USA

T: (781) 344-8226
F: (781) 344-8481
E: sales@micropowerdirect.com
W: www.micropowerdirect.com

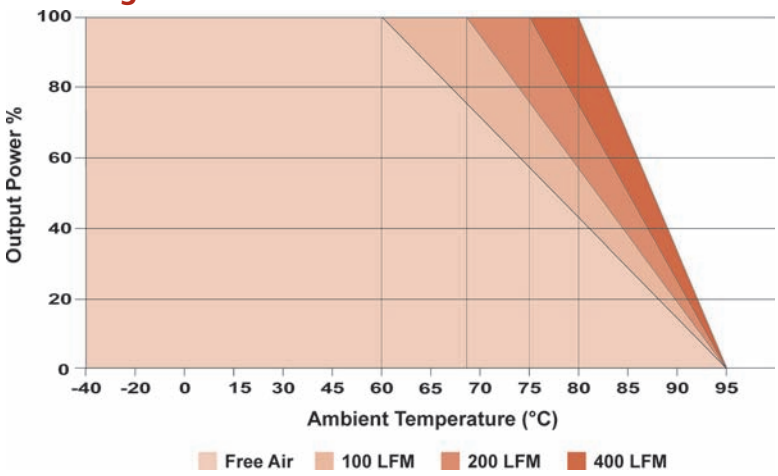
Model Selection Guide

Model Number	Input					Output			Efficiency (%, Typ)	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Current (mA)		Reflected Ripple Current (mA, Typ)	Voltage (VDC)	Current (mA, Max)	Current (mA, Min)		
	Nominal	Range	Full-Load	No-Load						
A201RHI	5	4.5 - 5.5	645	100	15	5.0	400	0.0	62	1,000
A202RHI	5	4.5 - 5.5	629	100	15	12.0	165	0.0	63	1,000
A203RHI	5	4.5 - 5.5	623	100	15	15.0	133	0.0	64	1,000
A204RHI	5	4.5 - 5.5	476	100	15	±5.0	±100	±0.0	42	1,000
A205RHI	5	4.5 - 5.5	699	100	15	±12.0	±83	±0.0	57	1,000
A206RHI	5	4.5 - 5.5	695	100	15	±15.0	±66	±0.0	57	1,000
A211RHI	12	10.8 - 13.2	269	50	8	5.0	400	0.0	62	500
A212RHI	12	10.8 - 13.2	262	50	8	12.0	165	0.0	63	500
A213RHI	12	10.8 - 13.2	260	50	8	15.0	133	0.0	64	500
A214RHI	12	10.8 - 13.2	185	50	8	±5.0	±100	±0.0	45	500
A215RHI	12	10.8 - 13.2	281	50	8	±12.0	±83	±0.0	59	500
A216RHI	12	10.8 - 13.2	280	50	8	±15.0	±66	±0.0	59	500
A221RHI	24	21.6 - 26.4	134	30	3	5.0	400	0.0	62	250
A222RHI	24	21.6 - 26.4	131	30	3	12.0	165	0.0	63	250
A223RHI	24	21.6 - 26.4	130	30	3	15.0	133	0.0	64	250
A224RHI	24	21.6 - 26.4	93	30	3	±5.0	±100	±0.0	45	250
A225RHI	24	21.6 - 26.4	143	30	3	±12.0	±83	±0.0	58	250
A226RHI	24	21.6 - 26.4	142	30	3	±15.0	±66	±0.0	58	250

Notes:

1. When measuring output ripple, it is recommended that an external 0.33 μF ceramic capacitor be placed from the +Vout pin to the -Vout pin for single output units and from each output to common for dual output units. For noise sensitive applications, the use of 1.5 μF capacitors will reduce the output ripple.
2. Transient recovery is measured to within a 1% error band for a load step change of 50% to 100%.
3. Dual output units may be connected to provide a 10 VDC, 24 VDC or 30 VDC output. To do this, connect the load across the positive (+Vout) and negative (-Vout) outputs and float the output common.
4. The converter should be connected to a low ac-impedance source. An input source with a highly inductive impedance may affect the stability of the converter. In applications where the converter output loading is high and input power is supplied over long lines, it may be necessary to use a capacitor on the input to insure start-up.
   In this case, it is recommended that a low ESR (ESR <1.0Ω at 100 kHz) capacitor be mounted close to the converter. For 5V input units a 4.7 μF is recommended, and for 12V & 24V units a 2.2 μF.
5. It is recommended that a fuse be used on the input of a power supply for protection. See the table above for the correct rating.

Derating Curve



Capacitive Load

Single Output (μF Max)	Dual Output (μF Max)
470	±220

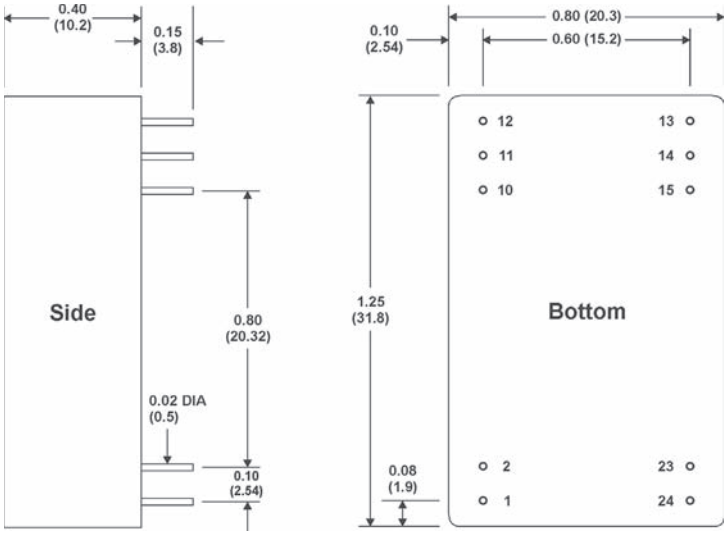
Pin Connections

Pin	Single	Dual
1, 2	+Vin	+Vin
10, 11	No Pin	Common
12	-Vout	No Pin
13	+Vout	-Vout
15	No Pin	+Vout
23, 24	-Vin	-Vin

Mechanical Notes:

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

Mechanical Dimensions



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292 Page Street Ste D Stoughton, MA 02072 • TEL: (781) 344-8226 • FAX: (781) 344-8481 • E-Mail: sales@micropowerdirect.com