

1500ERW Series

Ultra-Miniature 5W Single & Dual Output DC/DC Converters



Key Features:

- 5W Output Power
- 2:1 Input Range
- Miniature Case
- Single & Dual Outputs
- 1,500 VDC Isolation
- >1 MHour MTBF
- 32 Standard Models
- **LOWEST COST!!**



RoHS Compliant

MicroPower Direct

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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	12 VDC Input	9.0	12.0	18.0	VDC
	15 VDC Input	12.0	15.0	24.0	
	24 VDC Input	18.0	24.0	36.0	
	48 VDC input	36.0	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	±2.0	
Ripple (20 MHz) (Note 1)			30	50	mV P - P
Noise (20 MHz) (Note 1)			100	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		150		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 (5V 12V & 24V Input Models)	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
Input Voltage Surge (1 Sec)	12 VDC Input	-0.7		20.0	VDC
	15 VDC Input	-0.7		30.0	
	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					
I501ERW	12	9.0 - 18.0	556	25	5.0	1,000	100	75	1,500
I502ERW	12	9.0 - 18.0	541	25	9.0	556	56	77	1,500
I503ERW	12	9.0 - 18.0	527	25	12.0	420	42	79	1,500
I504ERW	12	9.0 - 18.0	514	25	15.0	333	34	81	1,500
I505ERW	12	9.0 - 18.0	556	25	±5.0	±500	±50	75	1,500
I506ERW	12	9.0 - 18.0	541	25	±9.0	±278	±28	77	1,500
I507ERW	12	9.0 - 18.0	527	25	±12.0	±210	±21	79	1,500
I508ERW	12	9.0 - 18.0	514	25	±15.0	±166	±17	81	1,500
I511ERW	15	12.0 - 24.0	450	20	5.0	1,000	100	74	700
I512ERW	15	12.0 - 24.0	427	20	9.0	556	56	78	700
I513ERW	15	12.0 - 24.0	417	20	12.0	420	42	80	700
I514ERW	15	12.0 - 24.0	412	20	15.0	333	34	81	700
I515ERW	15	12.0 - 24.0	444	20	±5.0	±500	±50	75	700
I516ERW	15	12.0 - 24.0	427	20	±9.0	±278	±28	78	700
I517ERW	15	12.0 - 24.0	416	20	±12.0	±210	±21	82	700
I518ERW	15	12.0 - 24.0	406	20	±15.0	±166	±17	85	700
I521ERW	24	18.0 - 36.0	278	12.5	5.0	1,000	100	75	700
I522ERW	24	18.0 - 36.0	267	12.5	9.0	556	56	78	700
I523ERW	24	18.0 - 36.0	254	12.5	12.0	420	42	80	700
I524ERW	24	18.0 - 36.0	245	12.5	15.0	333	34	81	700
I525ERW	24	18.0 - 36.0	278	12.5	±5.0	±500	±50	75	700
I526ERW	24	18.0 - 36.0	267	12.5	±9.0	±278	±28	78	700
I527ERW	24	18.0 - 36.0	254	12.5	±12.0	±210	±21	82	700
I528ERW	24	18.0 - 36.0	245	12.5	±15.0	±166	±17	85	700
I531ERW	48	36.0 - 72.0	134	6.25	5.0	1,000	100	78	350
I532ERW	48	36.0 - 72.0	129	6.25	9.0	556	56	81	350
I533ERW	48	36.0 - 72.0	124	6.25	12.0	420	42	84	350
I534ERW	48	36.0 - 72.0	123	6.25	15.0	333	34	85	350
I535ERW	48	36.0 - 72.0	133	6.25	±5.0	±500	±50	78	350
I536ERW	48	36.0 - 72.0	128	6.25	±9.0	±278	±28	81	350
I537ERW	48	36.0 - 72.0	124	6.25	±12.0	±210	±21	84	350
I538ERW	48	36.0 - 72.0	122	6.25	±15.0	±166	±17	85	350

Other input/output combinations are available (i.e. 24 VDC). Contact the factory for details at: sales@micropowerdirect.com

Notes:

- When measuring output ripple, it is recommended that an external ceramic capacitor (approx approx 1 μF to 10 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.
- 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
12 VDC	100 μF	5 VDC	100 μF
15 VDC	100 μF	9 VDC	100 μF
24 VDC	10 μF	12 VDC	100 μF
48 VDC	10 μF	15 VDC	100 μF

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, 18V, 24V or 30 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.

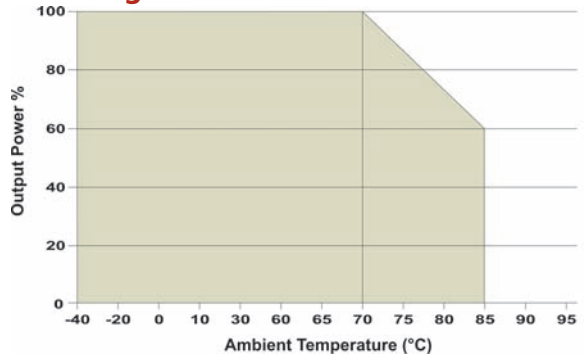
Pin Connections

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

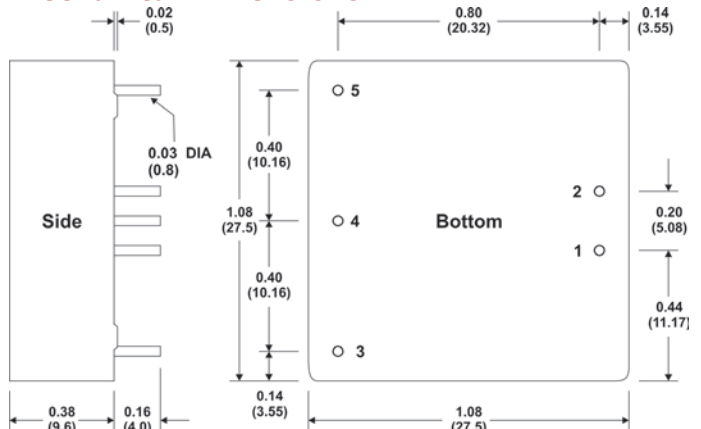
Notes:

- 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

Derating Curve



Mechanical Dimensions



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