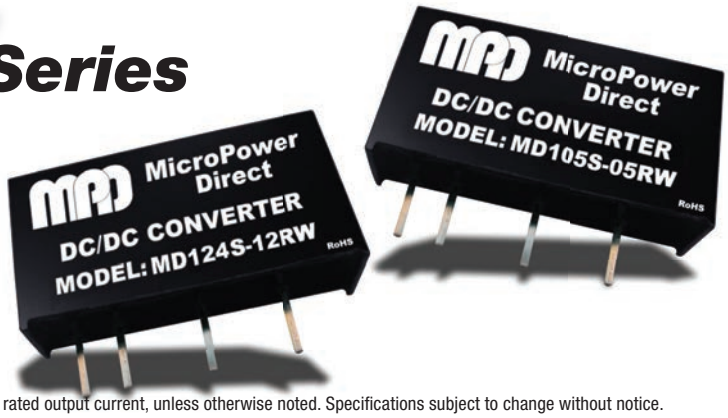
MD100RW Series

Wide 2:1 Input, 1W SIP Single & Dual Output DC/DC Converters



Key Features:

- 1W Output Power
- Wide 2:1 Input Range
- Miniature SIP Case
- 1,500 VDC Isolation
- 24 Standard Models
- >2.8 MHour MTBF
- -40°C to +85°C Operation
- Industry 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	5 VDC Input	4.5	5.0	9.0	VDC
	12 VDC Input	9.0	12.0	18.0	
	24 VDC Input	18.0	24.0	36.0	
	48 VDC Input	36.0	48.0	75.0	
Input Filter	5 VDC Input			4.5	VDC
	12 VDC Input			9.0	
	24 VDC Input			18.0	
	48 VDC Input			36.0	
Input Filter	Internal Capacitor				

Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy				±1.0	%
Line Regulation	For VIN Min to Max			±0.2	%
Load Regulation, For IOUT = 5% to 100%	Single Output			±1.0	%
	Dual Output			±1.0	
Load Regulation, For IOUT = 10% to 90%	Single Output			±0.5	%
	Dual Output			±0.8	
Ripple & Noise (20 MHz)	See Note 2			110	mV P - P
Transient Recovery Time	See Note 3	250			mSec
Transient Response Deviation			±3.0	±5.0	%
Temperature Coefficient				±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, 0.1V			50	pF
Switching Frequency			220		kHz

Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-40	+25	+85	°C
	Case			+100	
Storage Temperature Range		-55		+125	°C
Cooling	Free Air Convection				
Humidity	RH, Non-condensing			95	%

Physical

Case Size	See Mechanical Diagram (Page 2)
Case Material	Non-Conductive Black Plastic (UL-94V0)
Weight	0.07 Oz (2.1g)

Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	2.8			MHours

Absolute Maximum Ratings

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Voltage Surge (1 Sec)	5 VDC Input			15	VDC
	12 VDC Input			25	
	24 VDC Input			50	
	48 VDC Input			100	
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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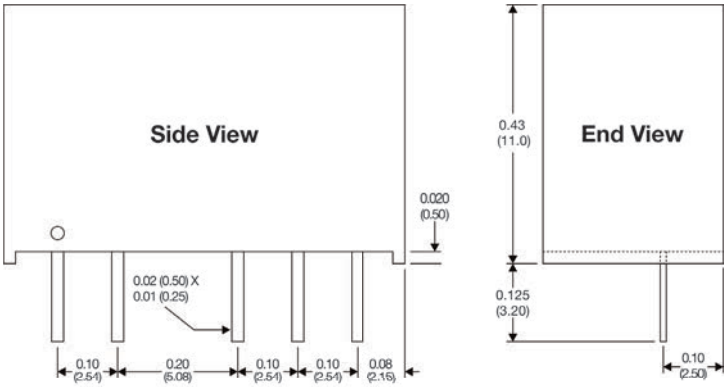
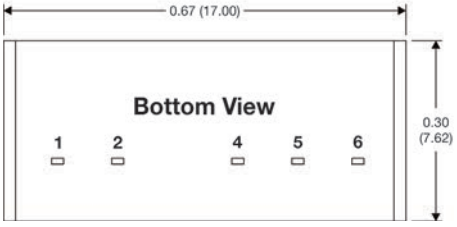
Model Selection Guide

Model Number	Input				Output			Efficiency (%, Typ)	Capacitive Load (µF, Typ)	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Current (mA)		Voltage (VDC)	Current (mA, Max)	Current (mA, Min)			
	Nominal	Range	Full-Load	No-Load						
MD105S-05RW	5	4.5 - 9.0	263	40	5.0	200	0	76	1,680	500
MD105S-12RW	5	4.5 - 9.0	259	40	12.0	83	0	77	820	500
MD105S-15RW	5	4.5 - 9.0	254	40	15.0	67	0	79	680	500
MD105S-24RW	5	4.5 - 9.0	265	40	24.0	42	0	76	470	500
MD105D-12RW	5	4.5 - 9.0	262	40	±12.0	±42	0	77	470	500
MD105D-15RW	5	4.5 - 9.0	254	40	±15.0	±33	0	78	330	500
MD112S-05RW	12	9.0 - 18.0	108	20	5.0	200	0	77	1,680	250
MD112S-12RW	12	9.0 - 18.0	108	20	12.0	83	0	77	820	250
MD112S-15RW	12	9.0 - 18.0	105	20	15.0	67	0	80	680	250
MD112S-24RW	12	9.0 - 18.0	109	20	24.0	42	0	77	470	250
MD112D-12RW	12	9.0 - 18.0	106	20	±12.0	±42	0	79	470	250
MD112D-15RW	12	9.0 - 18.0	106	20	±15.0	±33	0	78	330	250
MD124S-05RW	24	18.0 - 36.0	54	10	5.0	200	0	77	1,680	120
MD124S-12RW	24	18.0 - 36.0	52	10	12.0	83	0	80	820	120
MD124S-15RW	24	18.0 - 36.0	52	10	15.0	67	0	80	680	120
MD124S-24RW	24	18.0 - 36.0	55	10	24.0	42	0	77	470	120
MD124D-12RW	24	18.0 - 36.0	53	10	±12.0	±42	0	80	470	120
MD124D-15RW	24	18.0 - 36.0	52	10	±15.0	±33	0	80	330	120
MD148S-05RW	48	36.0 - 75.0	27	7.0	5.0	200	0	77	1,680	60
MD148S-12RW	48	36.0 - 75.0	27	7.0	12.0	83	0	78	820	60
MD148S-15RW	48	36.0 - 75.0	27	7.0	15.0	67	0	78	680	60
MD148S-24RW	48	36.0 - 75.0	28	7.0	24.0	42	0	76	470	60
MD148D-12RW	48	36.0 - 75.0	27	7.0	±12.0	±42	0	79	470	60
MD148D-15RW	48	36.0 - 75.0	26	7.0	±15.0	±33	0	79	330	60

Notes:
1. The specified maximum capacitive load is for each output.
2. When measuring output ripple, it is recommended that an external 0.47 µF ceramic capacitor be placed in parallel from the +Vout pin to the -Vout pin for single output models, or from each output to common for dual output models.
3. Transient recovery is measured to within a 1% error band for a load step change of 25%.
4. Free air convection is typically 20 LFM. These units should not be operated in still air (0 LFM).
5. Operation at no load will not damage these units, however, they may not meet all specifications.
6. Exceeding the absolute rating could damage the unit.
7. 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.

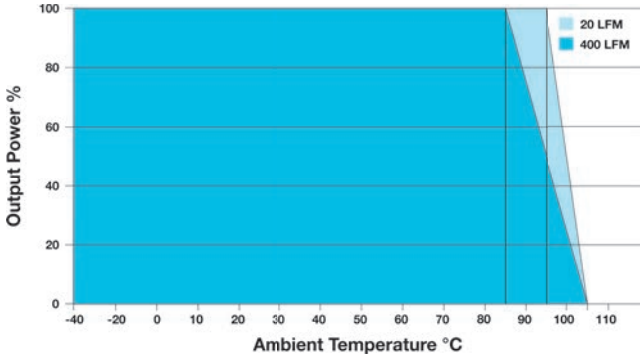
Mechanical Dimensions





Notes:
- All dimensions are typical in inches (mm)
- Tolerance x.xx = ±0.02 (±0.50)
- Pin 1 is marked by a "dot" or indentation on the unit

Derating Curve



Pin Connections

Pin	Single
1	-Vin
2	+Vin
4	+Vout
5	No Pin
6	-Vout

Pin	Dual
1	-Vin
2	+Vin
4	+Vout
5	Common
6	-Vout

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