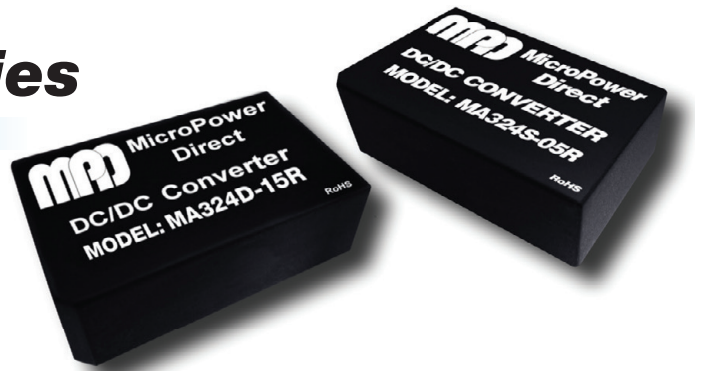


MA300R Series

Regulated, 3W DIP Single & Dual Output DC/DC Converters



Key Features:

- 3W Output Power
- Compact DIP Case
- Tight Regulation
- Single & Dual Outputs
- 1,500 VDC Isolation
- >700 kHour MTBF
- 15 Standard Models
- Industry Standard Pin-Out

RoHS



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	10.80	12.0	13.20	
	24 VDC Input	21.60	24.0	26.40	
Short Circuit Input Power				2,000	mW
Input Filter	Pi (π) Filter				
Conducted EMI	EN 55022 Class A				

Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy				± 2.0	%
Output Voltage Balance			± 1.0	± 3.0	%
Line Regulation	$V_{IN} = \text{Min to Max}$		± 0.2	± 0.5	%
Load Regulation	$I_{OUT} = 0\% \text{ to } 100\%$		± 0.2	± 0.5	%
Ripple & Noise (20 MHz)	See Note 1			60	mV P - P
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			M Ω
Isolation Capacitance	100 kHz, 1V		300		pF
Switching Frequency			300		kHz

Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-40	+25	+85	°C
Operating Temperature Range	Case			+95	°C
Storage Temperature Range		-55		+125	°C
Cooling, See Note 2	Free Air Convection				
Humidity	RH, Non-condensing			95	%

Physical

Case Size	See Mechanical Drawing (Page 2)				
Case Material	Non-Conductive Black Plastic (UL94-V0)				
Weight	0.43 Oz (12.4g)				

Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	700			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	
	24 VDC Input	-0.7		30	
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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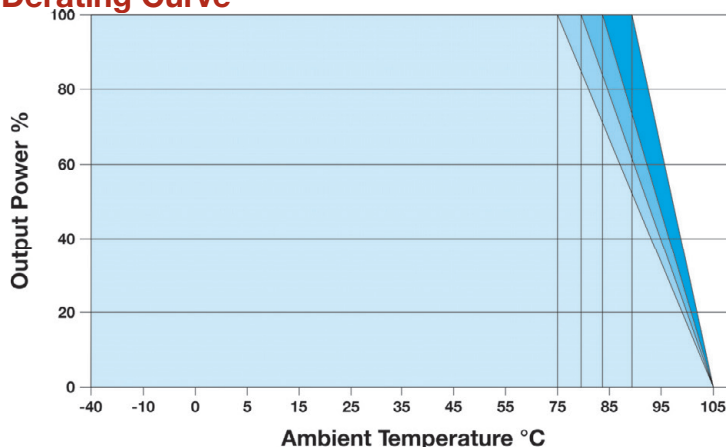
www.micropowerdirect.com

Model Number	Input				Output			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						
MA305S-05R	5.0	4.5 - 5.5	857	90	5.0	600	0.0	70	470	1,500
MA305S-12R	5.0	4.5 - 5.5	769	90	12.0	250	0.0	78	100	1,500
MA305S-15R	5.0	4.5 - 5.5	769	90	15.0	200	0.0	78	100	1,500
MA305D-12R	5.0	4.5 - 5.5	769	90	±12.0	±125	0.0	78	±100	1,500
MA305D-15R	5.0	4.5 - 5.5	769	90	±15.0	±100	0.0	78	±100	1,500
MA312S-05R	12	10.8 - 13.2	338	45	5.0	600	0.0	74	470	750
MA312S-12R	12	10.8 - 13.2	313	45	12.0	250	0.0	80	100	750
MA312S-15R	12	10.8 - 13.2	313	45	15.0	200	0.0	80	100	750
MA312D-12R	12	10.8 - 13.2	309	45	±12.0	±125	0.0	81	±100	750
MA312D-15R	12	10.8 - 13.2	305	45	±15.0	±100	0.0	82	±100	750
MA324S-05R	24	21.6 - 26.4	167	22	5.0	600	0.0	75	470	350
MA324S-12R	24	21.6 - 26.4	156	22	12.0	250	0.0	80	100	350
MA324S-15R	24	21.6 - 26.4	156	22	15.0	200	0.0	80	100	350
MA324D-12R	24	21.6 - 26.4	154	22	±12.0	±125	0.0	81	±100	350
MA324D-15R	48	21.6 - 26.4	152	22	±15.0	±100	0.0	82	±100	350

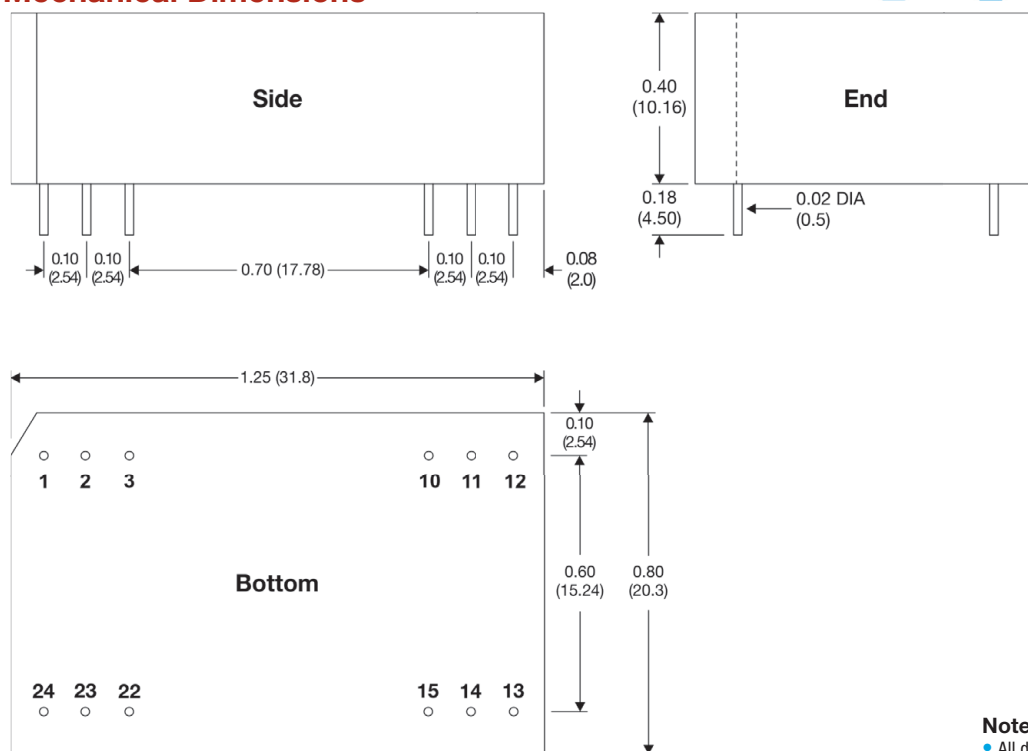
Notes:

- When measuring output ripple & noise, it is recommended that an external ceramic capacitor (0.33 μF typ.) be placed from the +Vout to the -Vout pins for single output units and from each output to common for dual output models.
- Free air convection is typically 20 LFM. The units should not be operated in still air (0 LFM).
- Exceeding the absolute ratings could damage the unit.
- 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	Single	Dual
1	+VIN	+VIN
2	NC	-VOUT
3	NC	Common
10	-VOUT	Common
11	+VOUT	+VOUT
12	-VIN	-VIN
13	-VIN	-VIN
14	+VOUT	+VOUT
15	-VOUT	Common
22	NC	Common
23	NC	-VOUT
24	+VIN	+VIN

NC: No Connection

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 side of the unit



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