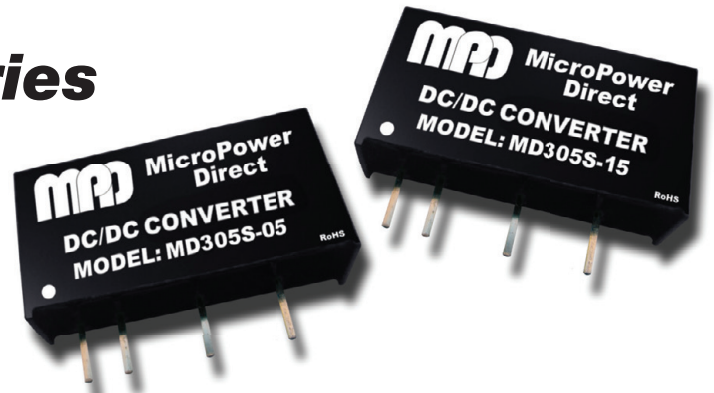


MD300S Series

Miniature 3W Single Output, SIP DC/DC Converters



Key Features:

- 3W Output Power
- Miniature SIP Case
- 1,000 VDC Isolation
- Single Outputs
- >2.0 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	4.50	5.0	5.50	VDC
	12 VDC Input	10.80	12.0	13.20	
	24 VDC Input	21.60	24.0	26.40	
Reverse Polarity Input Current				0.5	A
Internal Power Dissipation			700		mW
Input Filter	Internal Capacitor				

Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy			±5.0		%
Line Regulation	For V _{IN} Change of 1%		±1.01	±1.2	%
Load Regulation, See Note 1	See Model Selection Guide				
Ripple & Noise (20 MHz), See Note 2			60	100	mV P - P
Temperature Coefficient			±0.03	±0.03	%/°C
Output Short Circuit	Momentary (0.5 Sec.)				

General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage	60 Seconds	1,000			VDC
Isolation Resistance	500 VDC	1,000			MΩ
Isolation Capacitance	100 kHz, 1V		60	120	pF
Switching Frequency			60		kHz

Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-40	+25	+85	°C
Operating Temperature Range	Case			+100	°C
Storage Temperature Range		-50		+125	°C
Cooling, See Note 3	Free Air Convection				
Humidity	RH, Non-condensing			95	%

Physical

Case Size	See Mechanical Drawing (Page 2)				
Case Material	Non-Conductive Black Plastic (UL-94V0)				
Weight	0.07 Oz (2.2g)				

Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	2.0			MHours

Absolute Maximum Ratings

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Voltage Surge (1 Sec)	5 VDC Input	-0.7		9.0	VDC
	12 VDC Input	-0.7		18.0	
	24 VDC Input	-0.7		30.0	
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.

RoHS



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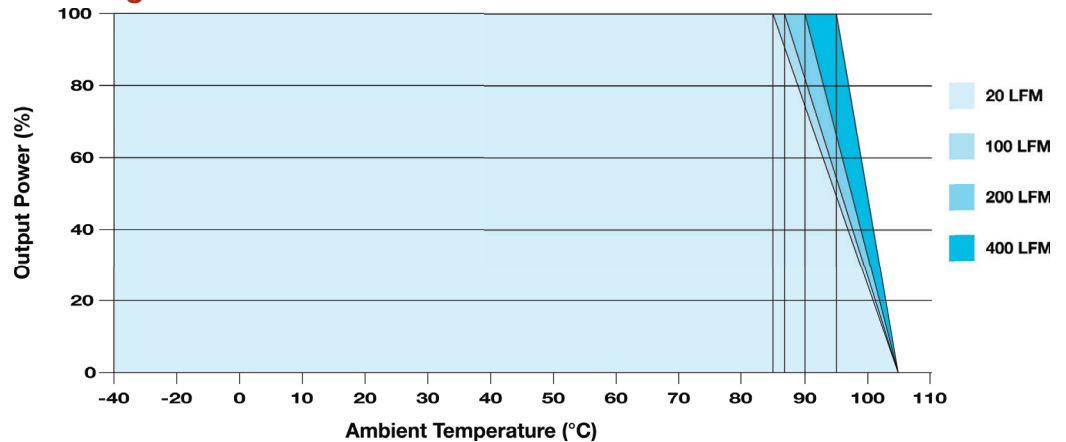


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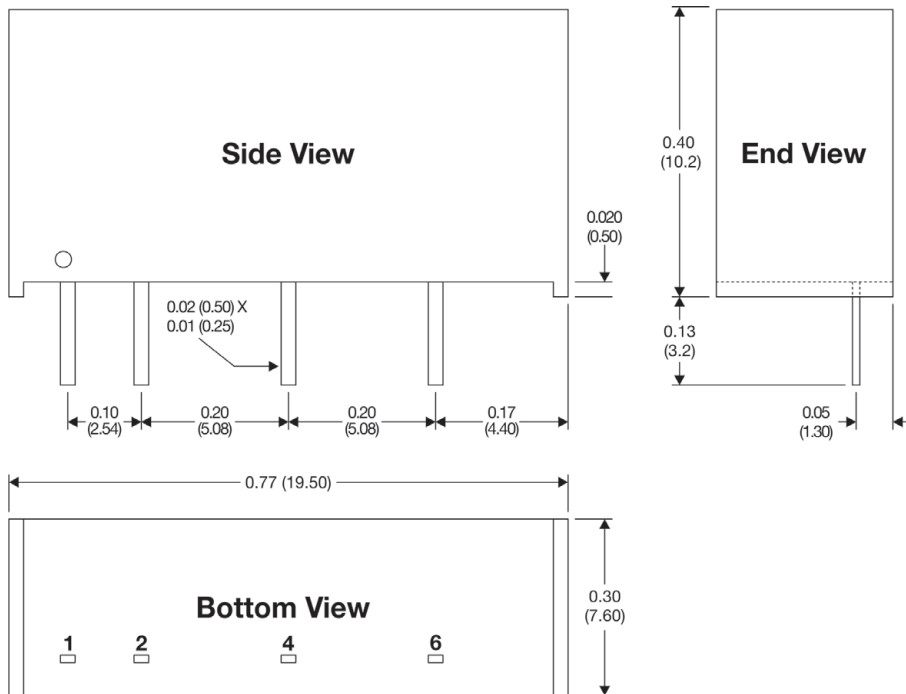
Model Number	Input				Output			Load Regulation % Typ.	Output Capacitive Load (μ F Max)	Efficiency (% Typ)	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Current (mA)		Voltage (VDC)	Current (mA, Max)	Current (mA, Min)				
	Nominal	Range	Full-Load	No-Load							
MD305S-05	5	4.5 - 5.5	723	50	5.0	600	12.0	8.0	220	83	2,000
MD305S-09	5	4.5 - 5.5	689	50	12.0	333	6.0	7.0	220	87	2,000
MD305S-12	5	4.5 - 5.5	701	50	15.0	250	4.5	7.0	220	85	2,000
MD305S-15	5	4.5 - 5.5	686	50	24.0	200	3.0	6.0	220	87	2,000
MD312S-05	12	10.8 - 13.2	298	40	5.0	600	12.0	6.0	220	84	1,000
MD312S-09	12	10.8 - 13.2	285	40	12.0	333	6.0	5.0	220	87	1,000
MD312S-12	12	10.8 - 13.2	284	40	15.0	250	4.5	4.5	220	88	1,000
MD312S-15	12	10.8 - 13.2	281	40	24.0	200	3.0	4.0	220	88	1,000
MD324S-05	24	21.6 - 26.4	152	30	5.0	600	12.0	5.8	220	82	500
MD324S-09	24	21.6 - 26.4	147	30	12.0	333	6.0	4.8	220	85	500
MD324S-12	24	21.6 - 26.4	146	30	15.0	250	4.5	4.3	220	85	500
MD324S-15	24	21.6 - 26.4	147	30	24.0	200	3.0	3.5	220	85	500

- Notes:
1. Output load regulation is specified for a load change of 20% to 100%.
 2. When measuring output ripple & noise, it is recommended that an external ceramic capacitor (0.33 μ F typ.) be placed from the +Vout to the -Vout pins.
 3. Free air convection is typically 20 LFM. The units should not be operated in still air (0 LFM).
 4. Operation at no load will not damage these units, however, they may not meet all specifications.
 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



Mechanical Dimensions



Pin Connections

Pin	Function
1	+VIN
2	-VIN
4	-VOUT
6	+VOUT

- Notes:
- All dimensions are typical in inches (mm)
 - Tolerance x.xx = ± 0.01 (± 0.25)
 - Pin 1 is marked by a "dot" or indentation on the unit



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