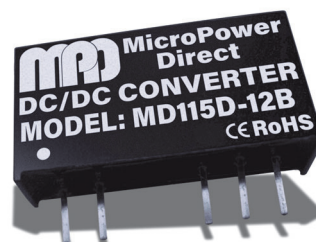
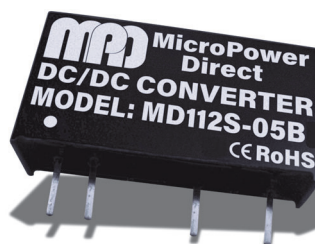


MD100B

Highly Reliable, SIP7 DC/DC Converter



Key Features:

- Up to 89% Efficient
- 3000VDC Isolation Voltage
- Wide Operating Temperature Range
- Pin Method Compliant with International Standards
- Multiple Input And Output Voltage Options

Electrical Specifications

Specifications typical @ +25°C, nominal input voltage & rated output current, unless otherwise noted. Specifications subject to change without notice.

Input		Min.	Typ.	Max.	Units
Parameter	Conditions				
Input Voltage Range	3.3VDC input	2.97	3.3	3.63	VDC
	5VDC input	4.5	5	5.5	
	12VDC input	10.8	12	13.2	
	15VDC Input	13.5	15	16.5	
	24VDC input	21.6	24	26.4	
Reflected Ripple Current			15		mA
Input Filter			Capacitance Filter		

Output		Min.	Typ.	Max.	Units
Parameter	Conditions				
Output Voltage Accuracy	See Figure 1				
Linear Regulation	Input Voltage Variation $\pm 1\%$	3.3VDC	--	± 1.5	%
		Others	--	± 1.2	
Load Regulation	10% - 100% load	3.3VDC output	--	10	%
	10% - 100% load	5VDC output	--	8	
	10% - 100% load	9VDC output	--	8	
	10% - 100% load	12VDC output	--	7	
	10% - 100% load	15VDC output	--	6	
	10% - 100% load	24VDC output	--	6	
Ripple & Noise, See Note 4	20MHz Bandwidth(peak-peak)	--	45	100	mV
Temperature Coefficient	Full Load	--	± 0.03	--	% / °C
Output Short-Circuit	Continuous, Self-Recovery				

General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage	Input-Output, Test Time 1 Minute, Leakage Current Less Than 1mA	3000	--	--	VDC
Isolation Resistance	Input-Output, Insulated Voltage 500VDC	1000	--	--	M Ω
Isolation Capacitance	Input-Output, 100KHz/0.1V	--	20	--	pF
Switching Frequency	Full Load, Nominal Input Voltage	--	220	--	kHz

EMI Characteristics

Parameter	Standard	Level
EMI Compliance	Conducted Emission (CE), See Figure 6	CISPR32/EN55032
	Radiated Emission (RE), See Figure 6	CISPR32/EN55032
EMS Compliance	Electrostatic Discharge (ESD)	IEC/EN61000-4-2

Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Derating When Operating Temperature $\geq 85^\circ\text{C}$, (See Figure 2)	-40	--	105	°C
Storage Temperature Range		-55		125	°C
Cooling	Free Air Convection				
Humidity	Non-condensing		--	95	%RH

Physical

Case Material	Black Plastic; Flame-Retardant and Heat-Resistant (UL94V-0)				
Case Size	19.60 x 6.00 x 10.10 mm (See Mechanical Diagrams on Page 4)				
Weight			0.07(2.05)		Oz(g)

Reliability

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25°C	3500			kHours



RoHS

MicroPower Direct

46 Eastman Street
Unit 1
Easton, MA 02375
USA

T: (781) 344-8226
F: (781) 344-8481

E: sales@micropowerdirect.com
W: www.micropowerdirect.com



www.micropowerdirect.com

Model Selection Guide

www.micropowerdirect.com

Model Number	Input				Output			Full Load Efficiency (% , Min./ Typ)	Load Reg-ulation (% , Typ)	Output Capacitive Load (µF,Max.)
	Voltage (VDC)		Current (mA)		Voltage (VDC)	Current (mA, Max)	Current (mA, Min)			
	Nominal	Range	Full-Load	No-Load						
MD103S-03B	3.3	2.97-3.63	370	3	3.3	303	0	78/82	10	4000
MD103S-05B	3.3	2.97-3.63	370	3	5	200	0	80/83	8	4000
MD103S-09B	3.3	2.97-3.63	370	3	9	111	0	81/84	8	2000
MD103S-12B	3.3	2.97-3.63	370	3	12	84	0	82/85	7	1000
MD105S-03B	5	4.5-5.5	230	3	3.3	303	0	80/83	10	4000
MD105S-05B	5	4.5-5.5	230	3	5	200	0	84/86	8	4000
MD105S-09B	5	4.5-5.5	230	3	9	111	0	84/86	8	2000
MD105S-12B	5	4.5-5.5	230	3	12	84	0	85/88	7	1000
MD105S-15B	5	4.5-5.5	230	3	15	67	0	85/88	6	680
MD105S-24B	5	4.5-5.5	230	3	24	42	0	86/89	6	560
MD105D-05B	5	4.5-5.5	230	3	±5	±100	0	84/86	8	#2000
MD105D-09B	5	4.5-5.5	230	3	±9	±56	0	86/86	8	#1000
MD105D-12B	5	4.5-5.5	230	3	±12	±42	0	85/88	7	#560
MD105D-15B	5	4.5-5.5	230	3	±15	±34	0	85/88	6	#220
MD112S-03B	12	10.8-13.2	99	3	3.3	303	0	84/84	10	4000
MD112S-05B	12	10.8-13.2	99	3	5	200	0	82/86	8	4000
MD112S-09B	12	10.8-13.2	99	3	9	111	0	84/87	8	2000
MD112S-12B	12	10.8-13.2	99	3	12	84	0	84/87	7	1000
MD112S-15B	12	10.8-13.2	99	3	15	67	0	86/88	6	680
MD112S-24B	12	10.8-13.2	99	3	24	42	0	86/89	6	560
MD112D-03B	12	10.8-13.2	99	3	±3.3	±152	0	81/84	10	#2000
MD112D-05B	12	10.8-13.2	99	3	±5	±100	0	82/86	8	#2000
MD112D-09B	12	10.8-13.2	99	3	±9	±56	0	84/87	8	#1000
MD112D-12B	12	10.8-13.2	99	3	±12	±42	0	84/87	7	#560
MD112D-15B	12	10.8-13.2	99	3	±15	±34	0	86/88	6	#220
MD115S-05B	15	13.5-16.5	85	3	5	200	0	82/86	8	4000
MD115S-09B	15	13.5-16.5	85	3	9	111	0	84/87	8	2000
MD115S-12B	15	13.5-16.5	85	3	12	84	0	84/87	7	1000
MD115S-15B	15	13.5-16.5	85	3	15	67	0	86/88	6	680
MD115D-05B	15	13.5-16.5	85	3	±5	±100	0	82/86	8	#2000
MD115D-12B	15	13.5-16.5	85	3	±12	±42	0	84/87	7	#560
MD115D-15B	15	13.5-16.5	85	3	±15	±34	0	86/88	6	#220
MD124S-03B	24	21.6-26.4	51	3	3.3	303	0	82/84	10	4000
MD124S-05B	24	21.6-26.4	51	3	5	200	0	85/87	8	4000
MD124S-09B	24	21.6-26.4	51	3	9	111	0	85/88	8	2000
MD124S-12B	24	21.6-26.4	51	3	12	84	0	85/88	7	1000
MD124S-15B	24	21.6-26.4	51	3	15	67	0	85/88	6	680
MD124S-24B	24	21.6-26.4	51	3	24	42	0	86/89	6	560
MD124D-05B	24	21.6-26.4	51	3	±5	±100	0	85/87	8	#2000
MD124D-09B	24	21.6-26.4	51	3	±9	±56	0	85/88	8	#1000
MD124D-12B	24	21.6-26.4	51	3	±12	±42	0	85/88	7	#560
MD124D-15B	24	21.6-26.4	51	3	±15	±34	0	85/88	6	#220

Notes:

1. The input voltage cannot exceed the specified range value, otherwise permanent and irreparable damage may be caused.
2. Unless otherwise specified, the parameters in this datasheet were measured at 25°C, humidity 40%~75%, input nominal voltage and output pure resistance mode under full load.
3. All index test methods are based on our company's enterprise standards.
4. To further reduce input and output ripple, a capacitor filtering network can be connected at the input and output terminals. The application circuit is shown in Figure 5.

5. However, care should be taken to select a suitable filter capacitor. If the capacitance is too large, it is likely to cause start-up problems. For each output, the recommended capacitive load values are shown in Table 1 for safe and reliable operation.
6. For EMC typical recommended circuit, See Figure 6
7. In order to ensure that the module can work efficiently and reliably, the minimum output load should not be less than 10% of the rated load when used. If the power required is really small, connect a resistor in parallel to the output end (the sum of the power consumed by the resistance and the power actually used is greater than or equal to 10% of the rated power).

Typical Characteristic Curves

Output Regulation Curve

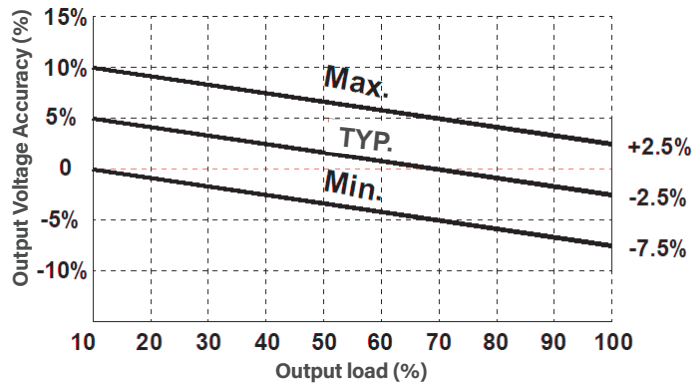


Fig. 1

Temperature Derating Curve

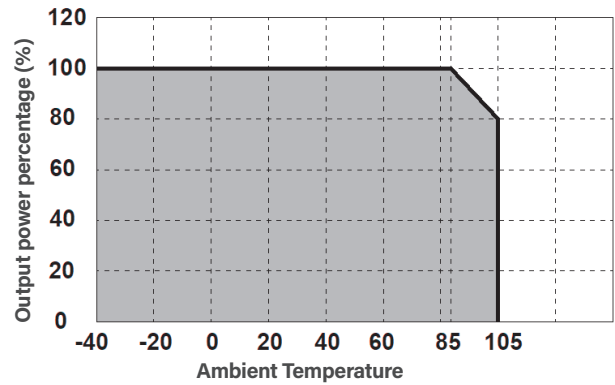


Fig.2

Efficiency VS Input Voltage Curve (Full Load)

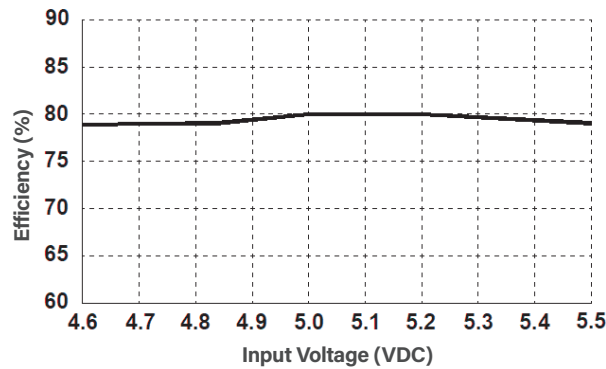


Fig. 3

Efficiency VS Output Load Curve (VIN=5V)

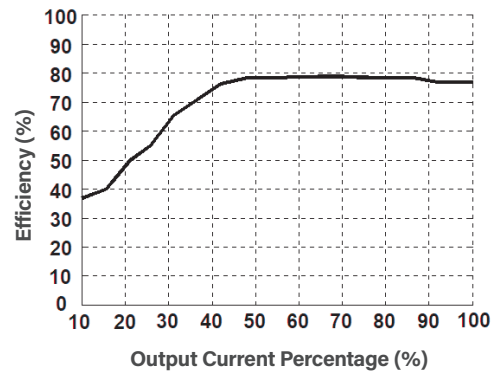


Fig. 4

Application Circuits

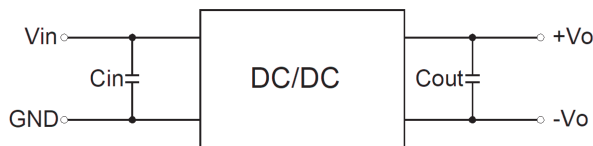


Fig. 5

Recommended Capacitive Load Value Table

Vin	Cin	Vo	Cout
3.3/5VDC	4.7uF/16V	3.3/5VDC	10uF/16V
12VDC	2.2uF/25V	9VDC	4.7uF/16V
15VDC	2.2uF/25V	12VDC	2.2uF/25V
24VDC	1.0uF/50V	15VDC	1.0uF/25V
--	--	24VDC	0.47uF/50V

Table. 1

EMC Typical Recommended Circuit

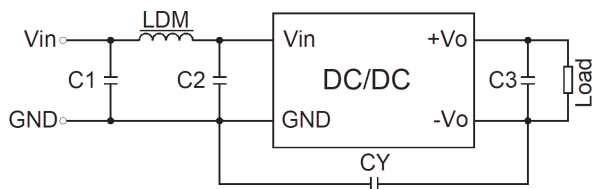


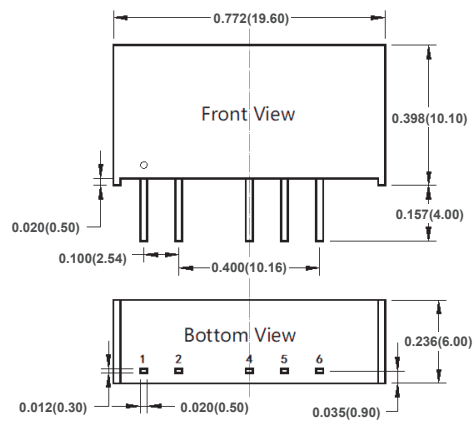
Fig. 6

EMI Recommended Parameter Table

EMI	C1	4.7uF / 50V
	C2	4.7uF / 50V
	C3	Refer to the Cout parameter in Figure 5
	CY	1000pF/2kV
	LDM	6.8uH

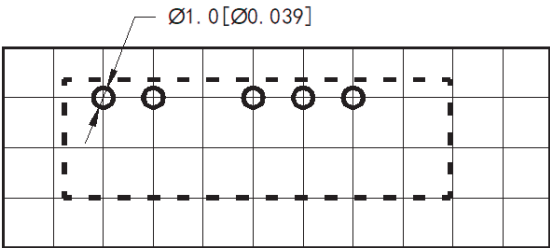
Table. 2

Mechanical Dimensions



Note:
Unit: inch(mm)
Pin Section Tolerances= $\pm 0.004 (\pm 0.10)$
General Tolerances= $\pm 0.020 (\pm 0.50)$

PCB Printing Layout



Note:
The grid distance is 2.54*2.54 mm

Pin Connections

Pin	Function Single	Function Double
1	Vin	Vin
2	GND	GND
4	-Vo	-Vo
5	No Pin	COM
6	+Vo	+Vo

Table. 3