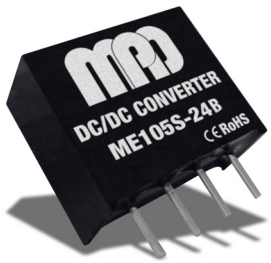
ME100B

1W, Ultra-Miniature, Single Output, SIP, DC/DC Converters



Key Features:

- 2W Output Power
- Miniature SIP Case
- -40°C to +105°C Temp
- 1500VDC Isolation
- Single Outputs
- >3.5 Mhour MTBF
- 27 Standard Models
- Short Circuit Protected
- 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, See Note 5	3.3 VDC Input	2.97	3.3	3.63	VDC
	5 VDC Input	4.5	5	5.5	VDC
	12 VDC Input	10.8	12	13.2	VDC
	15 VDC Input	13.5	15	16.5	VDC
	24 VDC Input	21.6	24	26.4	VDC
Reflected Ripple Current	--	--	15	--	mA
Input Filter			Capacitance Filter		

Output

Parameter		Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy		See Tolerance Graphs				
Line Regulation	3.3 VDC Output	Vin Change of 1%	--	±1.5	--	%
	Other Outputs		--	±1.2	--	
Load Regulation	3.3 VDC	10%-100% Load	--	10	--	%
	5 VDC		--	8	--	
	9 VDC		--	8	--	
	12 VDC		--	7	--	
	15 VDC		--	6	--	
	24 VDC		--	6	--	
Ripple & Noise, See Note 2		20 MHz bandwidth, peak-peak	--	45	70	mVp-p
Temperature Coefficient		Full load	--	--	±0.03	% / °C
Output Short Circuit		Continuous, self-recovery				

General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage	60 seconds	1500	--	--	VDC
Isolation Resistance	500 VDC	1000	--	--	MΩ
Isolation Capacitance	100 KHz /0. 1V	--	20	--	pF
Switching Frequency	Full load, nominal input voltage	--	220	--	kHz

Physical

Case Size	See mechanical diagrams on page X
Case Material	Back Plastic; flame-retardant an heat resistance (UL94V-0)
Weight	0.056 oz (1.58g) Typ.

Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL-HDBK-217F@25 °C	3.5	--	--	MHours

Absolute Maximum Ratings

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Voltage Surge (1 Sec)	3.3 VDC Input	-0.7	--	5	VDC
	5 VDC Input	-0.7	--	9	VDC
	12 VDC Input	-0.7	--	18	VDC
	15 VDC Input	-0.7	--	--	VDC
	24 VDC Input	-0.7	--	30	VDC
Lead Temperature	1.5 mm from Case for 10 Sec.	--	--	300	°C

Caution: Exceeding Absolute Maximum Ratings may damage the module. These are not continuous operating ratings.

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MICROPOWER DIRECT

Model Selection Guide

UL	Model Number	Input				Output			Full Load Efficiency (%, Typ)	Reflected Ripple Current (mA Typ)	Capacitive Load (μF, Max) (See Note2)	Fuse Rating Slow-Blow (mA) (See Note1)
		Voltage (VDC)		Current (mA)		Voltage (VDC)	Current (mA, Max)	Current (mA, Min)				
		Nominal	Range	Full-Load	No-Load							
	ME103S-03B	3.3	2.97 – 3.63	370	3	3.3	303	0.0	82	15	2400	1200
	ME103S-05B	3.3	2.97 – 3.63	370	3	5.0	200	0.0	83	15	2400	1200
	ME103S-09B	3.3	2.97 – 3.63	370	3	9.0	111	0.0	84	15	1000	1200
	ME103S-12B	3.3	2.97 – 3.63	370	3	12.0	84	0.0	85	15	560	1200
	ME105S-03B	5	4.5 - 5.5	230	3	3.3	303	0.0	82	15	2400	750
▪	ME105S-05B	5	4.5 - 5.5	230	3	5.0	200	0.0	87	15	2400	750
	ME105S-09B	5	4.5 - 5.5	230	3	9.0	111	0.0	86	15	1000	750
▪	ME105S-12B	5	4.5 - 5.5	230	3	12.0	84	0.0	88	15	560	750
	ME105S-15B	5	4.5 - 5.5	230	3	15.0	67	0.0	88	15	560	750
	ME105S-24B	5	4.5 - 5.5	230	3	24.0	42	0.0	89	15	220	750
	ME112S-03B	12	10.8 – 13.2	99	3	3.3	303	0.0	84	15	2400	300
	ME112S-05B	12	10.8 – 13.2	99	3	5.0	200	0.0	88	15	2400	300
	ME112S-09B	12	10.8 – 13.2	99	3	9.0	111	0.0	87	15	1000	300
	ME112S-12B	12	10.8 – 13.2	99	3	12.0	84	0.0	89	15	560	300
	ME112S-15B	12	10.8 – 13.2	99	3	15.0	67	0.0	88	15	560	300
	ME112S-24B	12	10.8 – 13.2	99	3	24.0	42	0.0	89	15	220	300
	ME115S-03B	15	13.5 – 16.5	78	3	3.3	303	0.0	85	15	2400	250
	ME115S-05B	15	13.5 – 16.5	78	3	5.0	200	0.0	85	15	2400	250
	ME115S-09B	15	13.5 – 16.5	78	3	9.0	111	0.0	88	15	1000	250
	ME115S-12B	15	13.5 – 16.5	78	3	12.0	84	0.0	89	15	560	250
	ME115S-15B	15	13.5 – 16.5	78	3	15.0	67	0.0	89	15	560	250
	ME124S-03B	24	21.6 – 26.4	50	3	3.3	303	0.0	84	15	2400	150
	ME124S-05B	24	21.6 – 26.4	50	3	5.0	200	0.0	87	15	2400	150
	ME124S-09B	24	21.6 – 26.4	50	3	9.0	111	0.0	89	15	1000	150
	ME124S-12B	24	21.6 – 26.4	50	3	12.0	84	0.0	88	15	560	150
	ME124S-15B	24	21.6 – 26.4	50	3	15.0	67	0.0	88	15	560	150
	ME124S-24B	24	21.6 – 26.4	50	3	24.0	42	0.0	89	15	220	150
	* ME105S-05B, -12B have UL/cUL 62368 recognition (UL certificate). Contact factory for safety standard status of other models.											

Typical Characteristic Curves

Output Regulation Curve

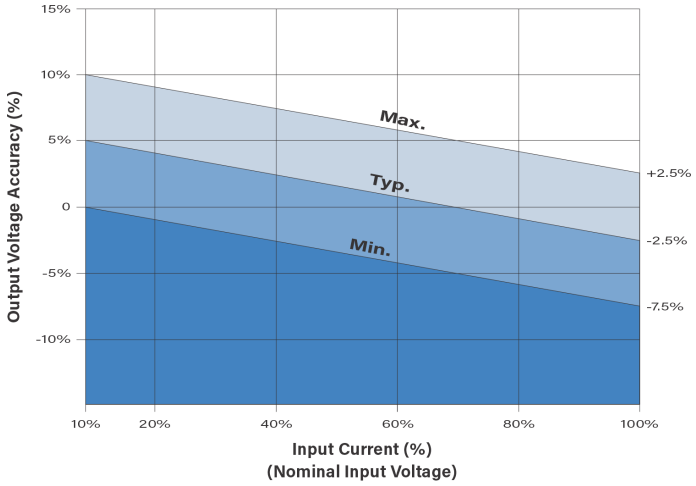


Fig. 1

Notes:

1. 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.
2. 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.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 above for safe and reliable operation.
3. For EMC typical recommended circuit, See Figure 6.
4. 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).
5. The input voltage cannot exceed the specified range value, otherwise permanent and irreparable damage may be caused.
6. 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.
7. 7. All index test methods are based on our company's enterprise standards.

Temperature Derating Curve

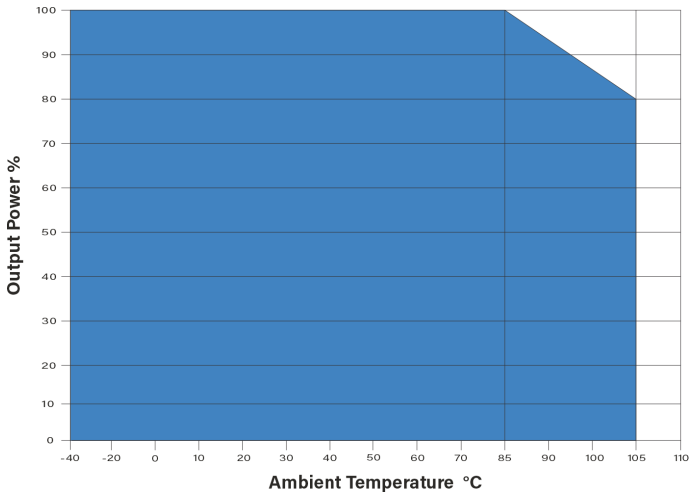


Fig. 2

Environmental					
Parameter	**Conditions**	**Min.**	**Typ.**	**Max.**	**Units**
Operating Temperature Range	See Fig 2	-40	--	+105	°C
Storage Temperature Range	--	-55	--	+125	°C
Cooling	Free air convection				
Humidity, See Note 6	Non condens-	--	--	95	%RH

Efficiency VS Input Voltage Curve (Full Load): ME105S-05B

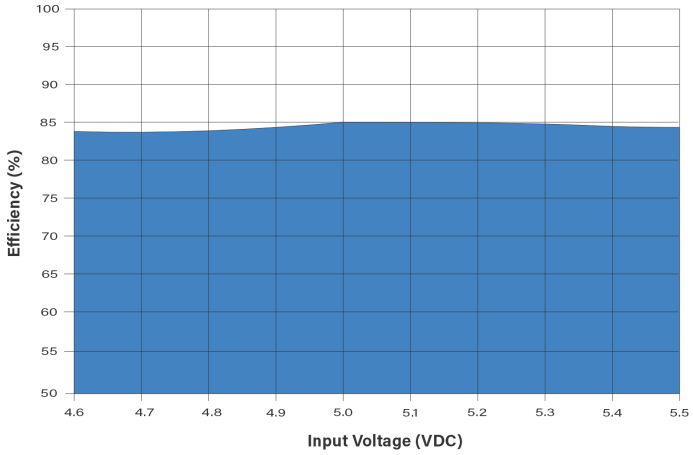


Fig. 3

Efficiency VS Output Load Curve(Vin=5V): ME105S-05B

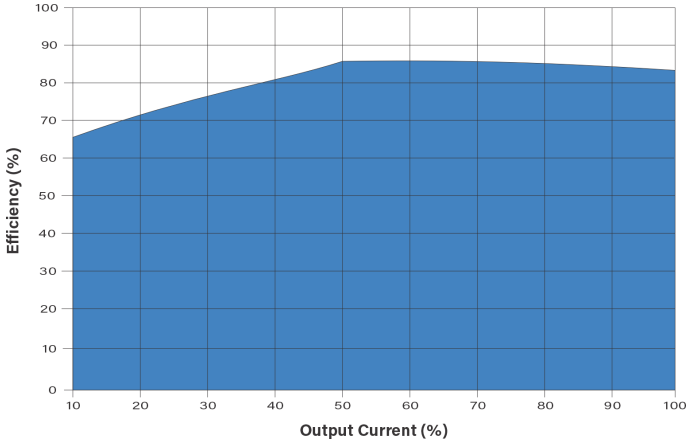


Fig. 4

Application Circuits

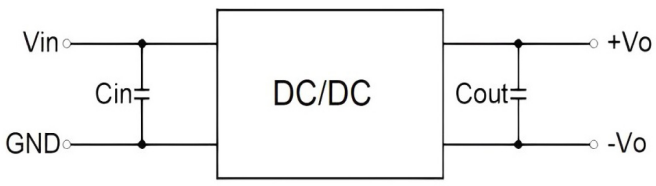


Fig. 5

Recommended Capacitive Load Value Table			
Vin	Cin	Vo	Cout
3.3/5VDC	4.7uF/16V	3.3/5VDC	10μF/16V
12VDC	2.2uF/25V	9VDC	4.7μF/16V
15VDC	2.2uF/25V	12VDC	2.2μF/25V
24VDC	1.0uF/50V	15VDC	1.0μF/25V
--	--	24VDC	0.47μF/50V

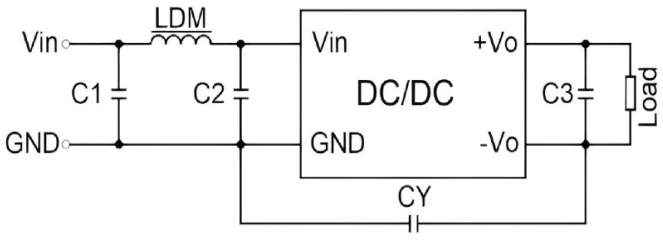


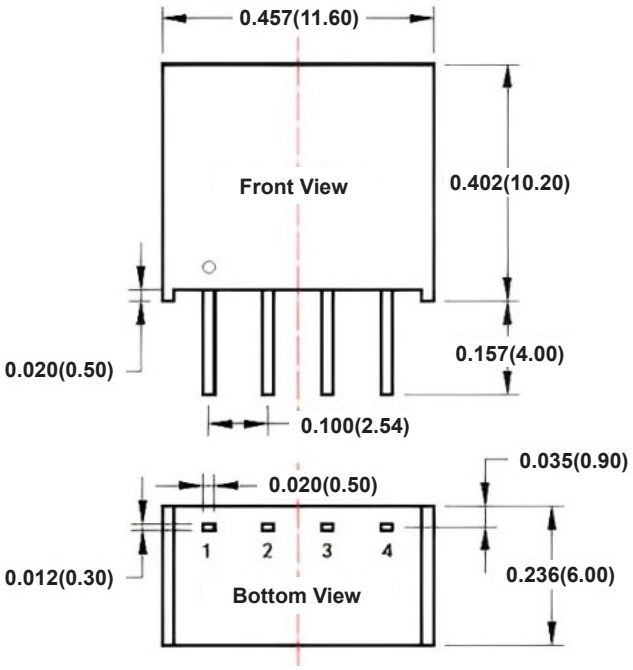
Fig. 6

EMI Recommended Parameter Table		
EMI	C1	4.7μF /50V
	C2	4.7μF /50V
	C3	Refer to the Cout parameter in Figure 5
	CY	1000pF/2kV
	LDM	6.8μH

EMI Characteristics

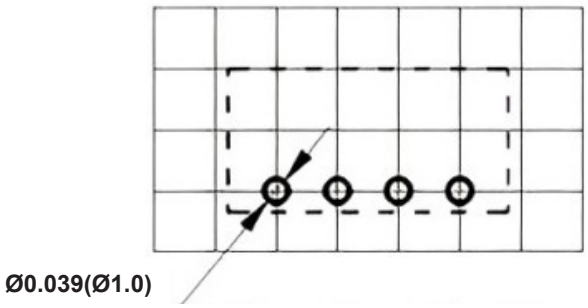
Parameter	Standard	Criteria	Level
Radiated Emissions	CISPR32/EN 55032	--	Class B
Conducted Emissions	CISPR32/EN 55032	--	Class B
ESD	EN 61000-4-2	B	±6 kV Contact

Mechanical Dimensions



Note:
Unit: inches(mm)
Pin section tolerances: ±0.004(±0.10)
General tolerances: ±0.020(±0.50)

PCB Layout



Note: The grid distance is 2.54mm*2.54mm

Pin Definition Table

Pin	Function
1	GND
2	Vin
3	-Vo
4	+Vo