

ME200B

2W, Ultra-Miniature SIP Case, DC/DC Converters



Key Features:

- 2W Output Power
- Ultra-Miniature SIP Case
- -40°C to +105°C Operating Temperature Range
- 1500VDC Isolation
- Single Outputs
- >3.5 Mhour MTBF
- Single Output Models
- 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	5 VDC Input	4.5	5	5.5	VDC
	12 VDC Input	10.8	12	13.2	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	--	±1.5	--	%
	Other Outputs	--	±1.2	--	
Load Regulation	3.3 VDC	--	20	--	%
	5 VDC	--	20	--	
	12 VDC	--	15	--	
	15 VDC	--	12	--	
	24 VDC	--	6	--	
Ripple & Noise, See Note 2	20 MHz bandwidth	--	75	200	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

Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	See Fig 1	-40	--	+105	°C
Storage Temperature Range	--	-55	--	+125	°C
Cooling	Free air convection				
Humidity, See Note 6	Non condensing	--	--	95	%RH

Physical

Case Size	See mechanical diagrams on page 3				
Case Material	Back Plastic; flame-retardant and heat resistance (UL94V-0)				
Weight	0.056 oz (1.59g) 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)	5 VDC Input	-0.7	--	9	VDC
	12 VDC Input	-0.7	--	18	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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Model Selection Guide

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							
ME205S-05B	5	4.5 - 5.5	500	8	5.0	400	0.0	80	15	2400	1000
ME205S-09B	5	4.5 - 5.5	500	8	9.0	222	0.0	80	15	1000	1000
ME205S-12B	5	4.5 - 5.5	500	8	12.0	167	0.0	80	15	560	1000
ME205S-15B	5	4.5 - 5.5	500	8	15.0	133	0.0	80	15	560	1000
ME205S-24B	5	4.5 - 5.5	500	8	24.0	83	0.0	80	15	220	1000
ME212S-09B	12	10.8 – 13.2	200	8	9.0	222	0.0	80	15	1000	400

Typical Characteristic Curves

Temperature Derating Curve

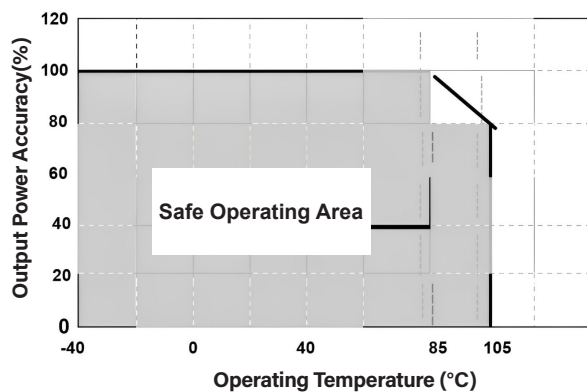


Fig. 1

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 4. 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 "Recommended Capacitive Load Value Table" for safe and reliable operation.
3. For EMC typical recommended circuit, See Figure 5.
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. All index test methods are based on our company's enterprise standards.

Output Regulation Curve (Nominal Input Voltage)

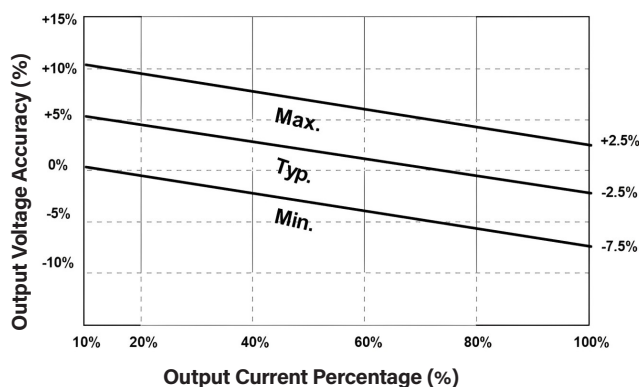


Fig. 2

Output Regulation Curve (3.3VDC output) (Nominal Input Voltage)

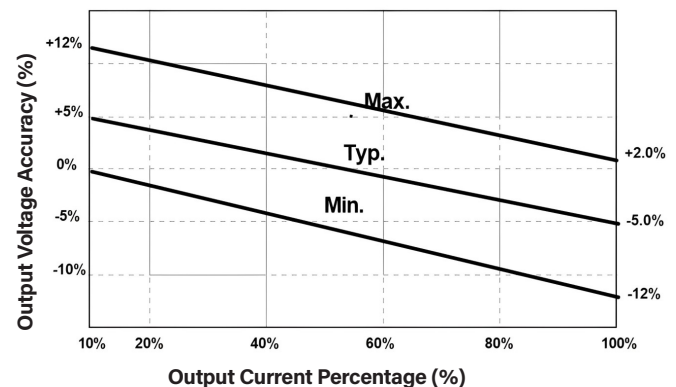


Fig. 3

Application Circuits

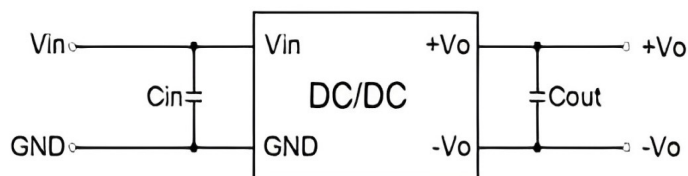


Fig. 4

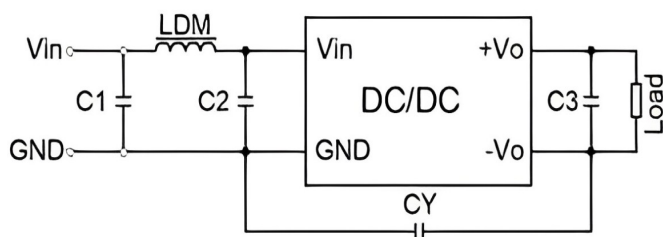


Fig. 5

Recommended Capacitive Load Value Table

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

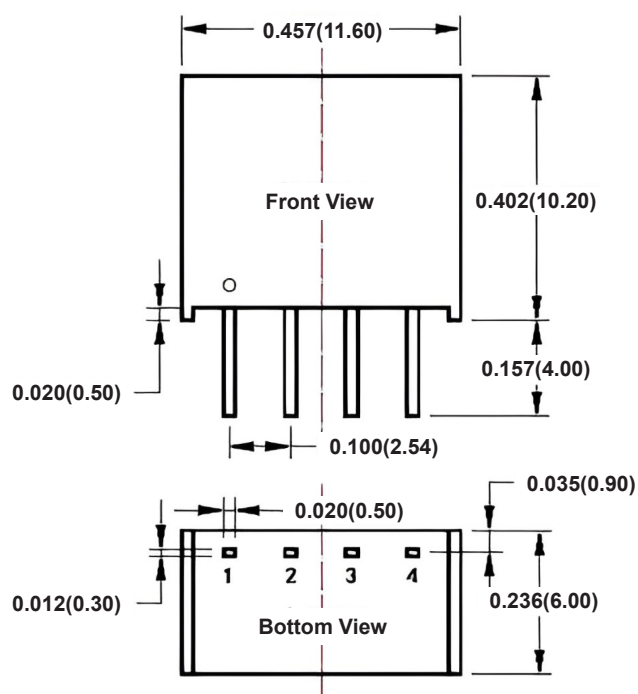
EMI Recommended Parameter Table

EMI	Input Voltage (VDC)	3.3/5/12/15/24
	C1	4.7μF /50V
	C2	4.7μF /50V
	C3	Refer to the Cout parameter in Fig. 4
	CY	1000pF/2kV
	LDM	6.8μH

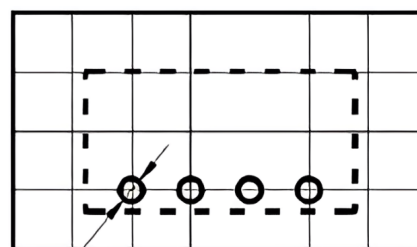
EMI Characteristics

Parameter	Standard	Criteria	Level
Radiated Emissions	CISPR32/EN 55032	--	Class B (See Fig. 5)
Conducted Emissions	CISPR32/EN 55032	--	Class B (See Fig. 5)
ESD	EN 61000-4-2	B	±6 kV Contact

Mechanical Dimensions



PCB Layout



Ø0.039(Ø1.0)

Note: The grid distance is 2.54mm*2.54mm

Pin Definition Table

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

Note:

Unit: inches(mm)

Pin section tolerances: ±0.004(±0.10)

General tolerances: ±0.020(±0.50)