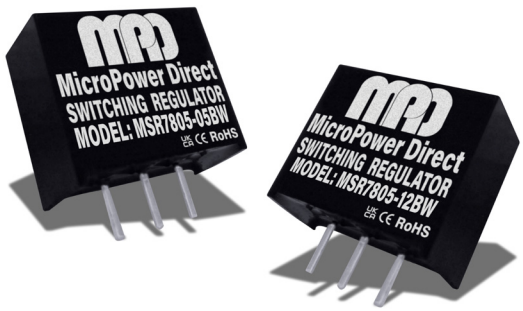
MSR7805BW

Ligh Weight, Compact, SIP3 DC/DC Converter



Key Features:

- **Up to 95% Efficient**
- **Supports Negative Output**
- **Wide Operating Temperature Range**
- **Multiple Input and Output Voltage Options**
- **Excellent Load Regulation Capability**
- **Low EMI**

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
No-Load Input Current	Positive output		0.2	1.5	mA
Input Filter	Capacitance Filter				
Reverse Polarity Input	Avoid / Not Protected				

Output

Parameter	Conditions		Min.	Typ.	Max.	Units
Output Voltage Accuracy	Full load, Input Voltage Range	3 VDC		±2	±4	%
		Others		±2	±3	
Line Regulation	Full Load, Input Voltage Range			±0.2	±0.4	%
Load Regulation	Nominal Vin, 10%-100% load	3.3/5 VDC output		±0.6		%
		Others		±0.3		
Ripple & Noise, See Note 5	Nominal Vin, 10% -100% load (20MHz)			20	75	mV P - P
Temperature Coefficient	-40°C to + 85°C				±0.03	%/°C
Transient Recovery Time	Nominal input voltage, 25% Load Step Change			0.2	1	*ms*
Transient Response Deviation				50	250	mV
Output Short Circuit	Nominal Input Voltage		Continuous, Self-Recovery			

General

Parameter	Conditions	Min.	Typ.	Max.	Units
Switching Frequency	Full load, nominal input voltage	550		850	kHz

EMI Characteristics

Parameter	Standard	Criteria	Level
Radiated Emissions (RE)	CISPR32/EN55032		B
Conducted Emissions (CE)	CISPR32/EN55032		B
ESD	IEC/EN 61000-4-2	B	±4KV Contact
RS	IEC/EN 61000-4-3	A	10V/m
EFT	IEC/EN 61000-4-4	B	±1KV
Surge	IEC/EN 61000-4-5	B	±1KV Line To Line
CS	IEC/EN 61000-4-6	A	3Vr.m.s

Environmental

Parameter	Conditions	Min.	Typ	Max.	Units
Operating Temperature Range	Temp. ≥ 85 °C Derating, See Fig. 1	-40		+85	°C
Storage Temperature Range		-55		+125	°C
Cooling	Free Air Convection				
Humidity, See Note 2	Non-Condensing			95	%RH

Physical

Case Size	See Mechanical Diagrams (Page 4)		11.60 x 7.55 x 10.16		mm
Case Material	Black Plastic; Flame-Retardant And Heat-Resistant (UL94 V-0 Rated)				
Weight			1.8		g

Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL-HDBK-217F@25°C	2000			k hours
Lead Temperature	Soldering spot is 1.5mm away from case for 10 seconds			300	°C

RoHS

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46 Eastman Street
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T: (781) 344-8226
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MICROPOWER DIRECT

www.micropowerdirect.com

Model Selection Guide

Model Number	Input		Output			Efficiency (%)		Capacitive Load (μF, Max) See Note 1
	Voltage (VDC)		Voltage (VDC)	Current (mA, Min)	Current (mA, Max)	Min.	Typ.	
	Nominal	Range						
MSR7805-03.3BW	24	4.75 - 36.0	3.3	0	500	80	86	680
MSR7805-05BW	24	6.5 - 36.0	5.0	0	500	84	90	680
	12	7.0 - 31.0	-5.0	0	-300	80	81	330
MSR7805-09BW	24	12.0 - 36.0	9	0	500	90	93	680
MSR7805-12BW	24	15.0 - 36.0	12.0	0	500	91	94	680
	12	8.0 - 24.0	-12	0	-150	84	85	330
MSR7805-15BW	24	19.0 - 36.0	15	0	500	93	95	680
	12	8.0 - 21.0	-15	0	-150	85	87	330

Notes:
1. Maximum capacitive loads are tested in the input voltage range and under full load conditions.
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. Our company can provide product customization, specific needs can directly contact our technical personnel.
4. All index test methods are based on our company's enterprise standards.

Temperature Derating Curve

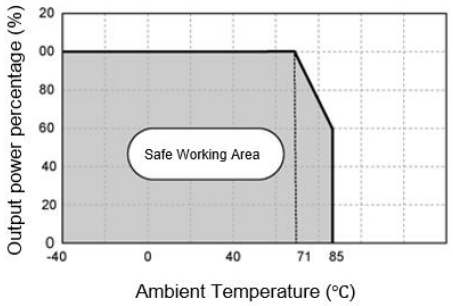
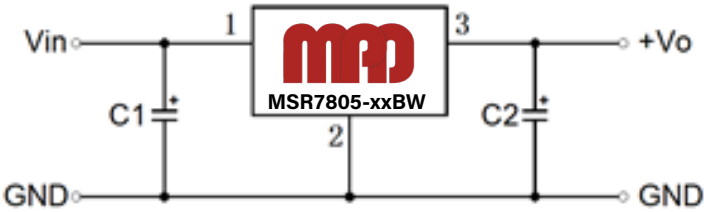
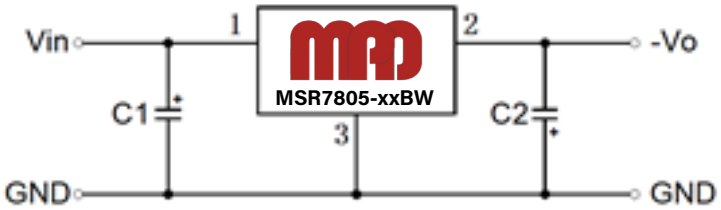


Fig. 1

Typical Application Circuit: Positive Output



Typical Application Circuit: Negative Output



Note:
1. In general, we can be combined with the use of the product environment external capacitor C1 and C2(C3 and C4), and the capacitor position should be close to the pin end of the product.
2. Capacity Value Reference Table is C1 and C2 (C3 and C4).The capacity can be appropriately increased according to the need, or the tantalum capacitor with low ESR and electrolytic capacitor can be used.
3. When the product is used in the application circuit shown in Figure 3, it is recommended to add inductor LDM to reduce the interference between products. The recommended value of LDM is 10μH.
4. This product does not support hot swap and the output terminals cannot be used in parallel.
5. If the output ripple needs to be further reduced, we can attach an "LC" filter network to the output, the recommended value of L is 10μH-47μH, this is shown in "LC" Filter Application Circuit.

Typical Application Circuit: Positive and Negative Output

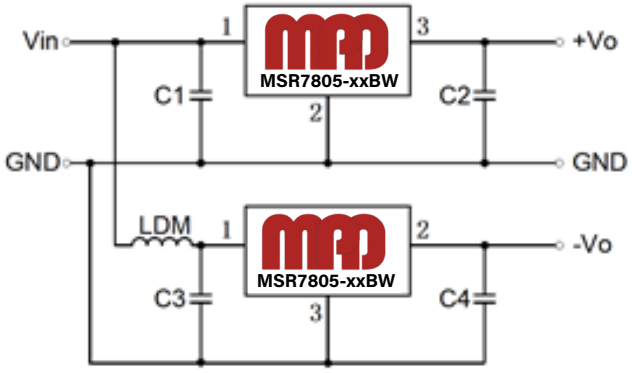
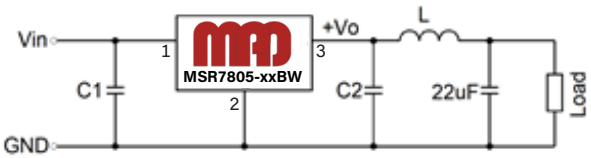


Table 1

Model Number	C1/C3 (Ceramic)	C2/C4 (Ceramic Capacitor)
MSR7805-033BW	10μF/50V	22μF/10V
MSR7805-05BW	10μF/50V	22μF/10V
MSR7805-09BW	10μF/50V	22μF/16V
MSR7805-12BW	10μF/50V	22μF/25V
MSR7805-15BW	10μF/50V	22μF/25V

"LC" Filter Application: Positive Output



"LC" Filter Application: Negative Output

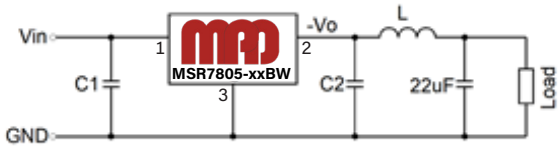
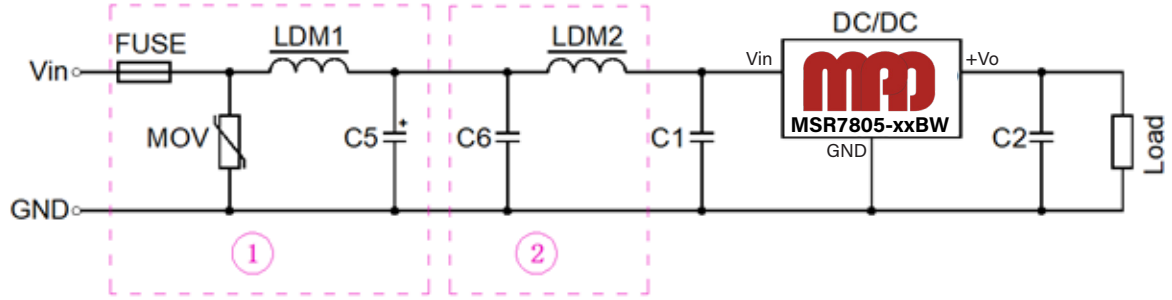


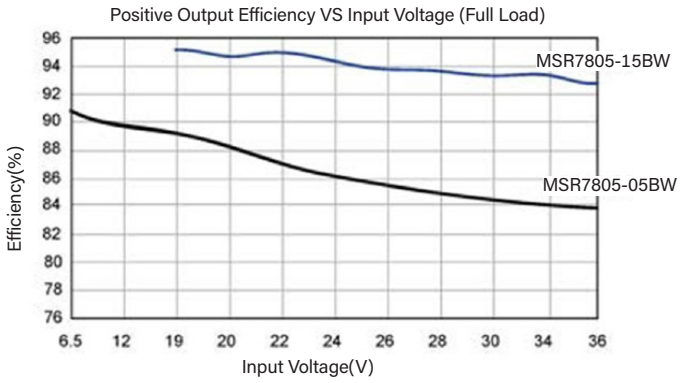
Table 2

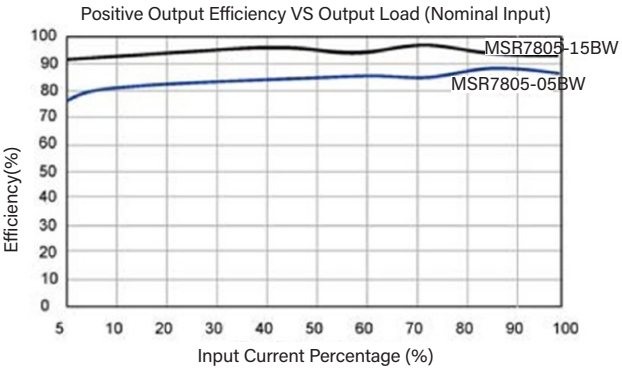
FUSE	According To The Customer's Actual Input
MOV	20D470K
LDM1	82μH
C5	680μF /50V
C1/C2	Refer to table 1
C6	4.7μF /50V
LDM2	12μH

EMC Recommended Circuit

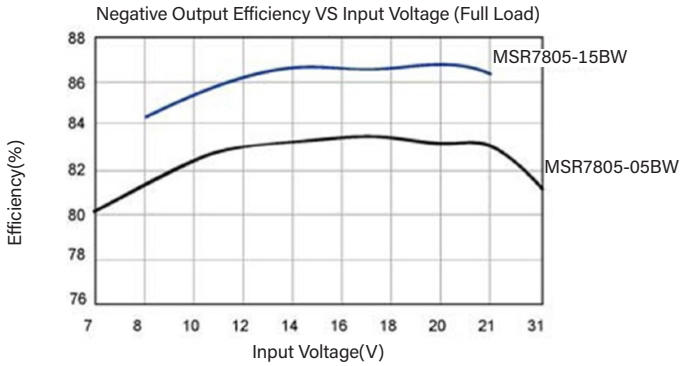


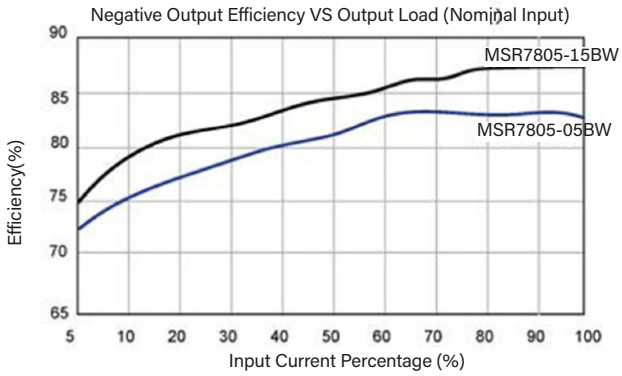
Characteristic Curves: Positive Output





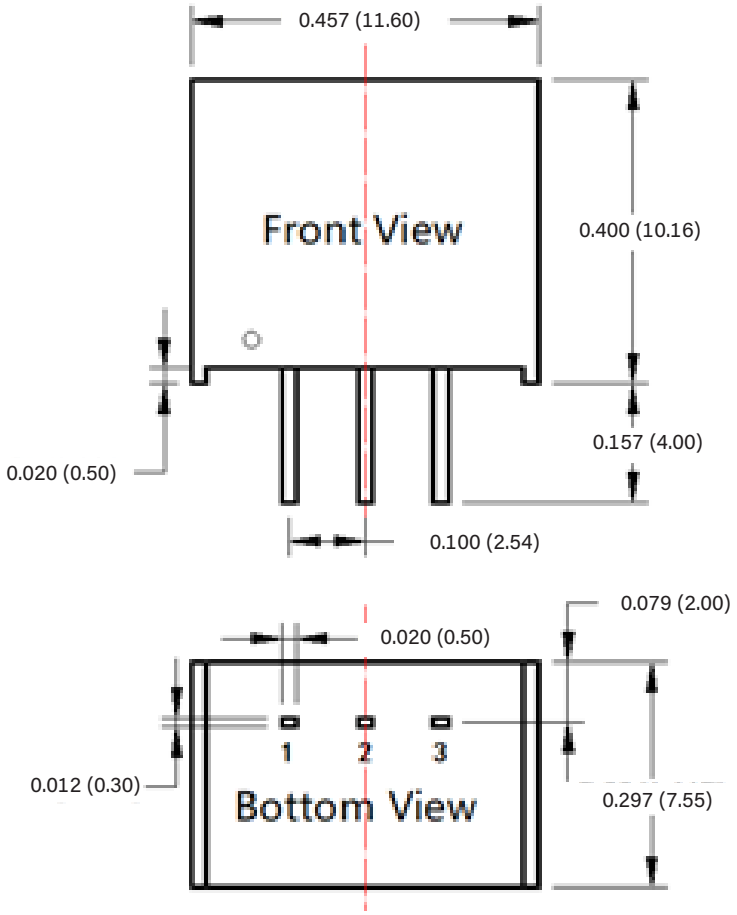
Characteristic Curves: Negative Output



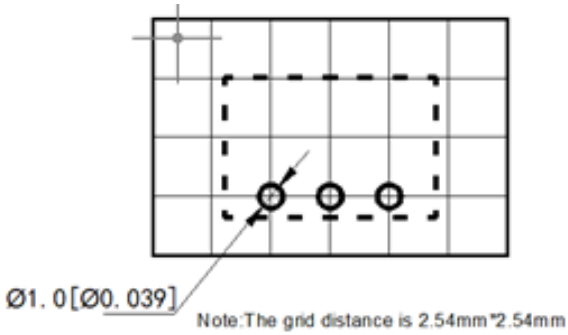


Mechanical Dimensions

Dimensions



Pin Definition Table



Pin Connections

Positive Output

Pin	Function
1	VIN
2	GND
3	+VOUT

Negative Output

Pin	Function
1	VIN
2	-VOUT
3	GND

Note:
Unit: Inch (mm)
Pin diameter tolerances: ± .004 (±0.10)
General tolerances: ±.020 (±.50)