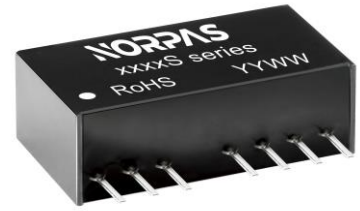


FEATURES

1. Package Type: SIP8
2. Operating Temperature Range: -40°C - +85°C
3. Isolation Voltage: 1500VDC
4. 2:1 Wide Input Voltage Range
5. High efficiency up to 88%
6. With the input undervoltage protection, output short circuit protection and output overcurrent protection mechanism
7. Fields of application: industry, industrial control,
8. instrumentation, communication, rail transit, etc



**3 years
Warranty**

Selection Guide

Part No.	Input Voltage (VDC)		Output		Full Load Efficiency% (Min./Typ.)	Capacitive Load Max. (µF)
	Nominal (Range)	Maximum	Voltage (VDC)	Current Max.(mA)		
MFB1203S-10WR3	12 (9-18)	20	3.3	2400/0	81/83	2200
MFB1205S-10WR3			5	2000/0	84/86	2200
MFB1209S-10WR3			9	1111/0	84/86	680
MFB1212S-10WR3			12	833/0	84/86	470
MFB1215S-10WR3			15	667/0	84/86	330
MFB1224S-10WR3			24	417/0	84/86	220
MFB2403S-10WR3	24 (18-36)	40	3.3	2400/0	83/85	2200
MFB2405S-10WR3			5	2000/0	86/88	2200
MFB2409S-10WR3			9	1111/0	86/88	680
MFB2412S-10WR3			12	833/0	86/88	470
MFB2415S-10WR3			15	667/0	86/88	330
MFB2424S-10WR3			24	417/0	86/88	220

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit	
Input Current (full load/no load)	12VDC nominal input series, nominal input voltage	3.3VDC Output	--	777/35	796/50	mA
		5VDC Output	--	969/35	992/50	
		Other Output	--	969/9	992/18	
	24VDC nominal input series, nominal input voltage	3.3VDC Output	--	389/25	398/45	
		5VDC Output	--	474/25	485/45	
		Other Output	--	474/9	485/18	
Reflected Ripple Current		--	50	--		
Impulse Voltage	12VDC Nominal Input Series	-0.7	--	25	VDC	
	24VDC Nominal Input Series	-0.7	--	50		
Starting Voltage	12VDC Nominal Input Series	--	--	9		
	24VDC Nominal Input Series	--	--	18		
Input Undervoltage Protection	12VDC Nominal Input Series	5.5	6.5	--		
	24VDC Nominal Input Series	12	15.5	--		
Input Filter		Capacitance Filter				
Hot Plug		Unavailable				
CTRL	Module off	0-1.2V turn off				
	Module on	No connect or 3.5-12V on				

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit	
Output Voltage Accuracy	5% - 100% Load	--	±1.5	±2.0	%	
Linear Regulation	Full load, Input voltage from low limit to high limit	--	±0.25	±0.5		
Load Regulation	5% - 100% Load	--	±0.5	±1.0		
Transient Recovery Time	25% load step change	--	0.3	0.5	ms	
Transient Response Deviation		3.3VDC、5VDC Output	--	±5	±8	%
		Other Output	--	±3	±5	
Temperature Coefficient	Full Load	--	--	±0.03	%/°C	
Ripple & Noise	20MHZ Bandwidth,5% - 100% Load 5% - 100% Load	--	75	150	mVp-p	
Overcurrent Protection	Input Voltage Range	--	160	230	%Io	
Short-circuit Protection		Continuous, Self-Recovery				

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Insulation Voltage	Input-output, test time 1 minute, leakage current less than 1mA	1500	--	--	VDC
Insulation Resistance	Input-output, insulated voltage 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output, 100KHz/0.1V	--	1000	--	pF
Operating Temperature	See Figure 1	-40	--	+85	°C
Storage Temperature		-55	--	+125	
Storage Humidity	Non-condensing	5	--	95	%RH
Pin welding can withstand the highest temperature	Soldering spot is 1.5mm away from case for 10 seconds	--	--	+300	°C
Switching Frequency	Full Load, Nominal Input Voltage	--	500	--	KHz
MTBF	MIL-HDBK-217F@25°C	>1000Kh			

Mechanical Specifications

Case Material	Black plastic; flame-retardant and heat-resistant (UL 94V-0 rated)
Package Dimensions	22.00 * 14.00*10.00 mm
Weight	4.8g (Typ.)
Cooling Method	Free air convection

EMC Specifications

EMI	CE	CISPR32/EN55032 CLASS B (The recommended circuit is shown in Figure 3-②)	
	RE	CISPR32/EN55032 CLASS B (The recommended circuit is shown in Figure 3-②)	
EMS	ESD	IEC/EN61000-4-2 Contact±4KV	perf.Criteria B
	RS	IEC/EN61000-4-3 10V/m	Perf.Criteria A
	EFT	IEC/EN61000-4-4 ±2KV (The recommended circuit is shown in Figure 3-①)	Perf.Criteria B
	Surge	IEC/EN61000-4-5 line to line±2KV (The recommended circuit is shown in Figure 3-①)	Perf.Criteria B
	Cs	IEC/EN61000-4-6 3 Vr.m.s	Perf.Criteria A

Typical Characteristic Curves

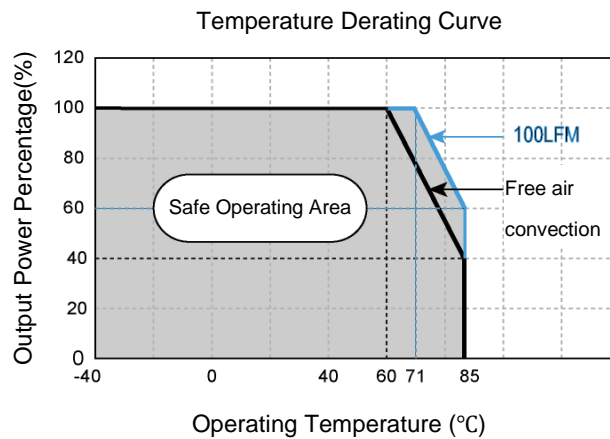
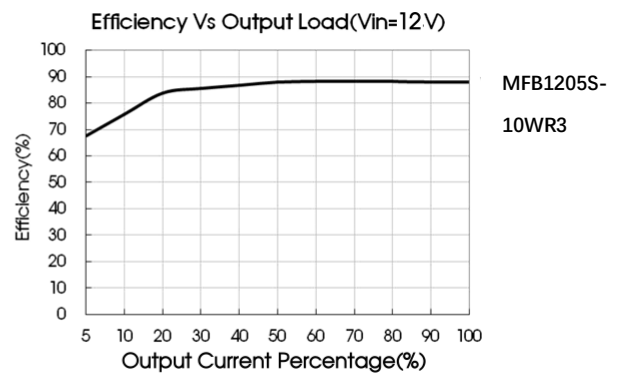
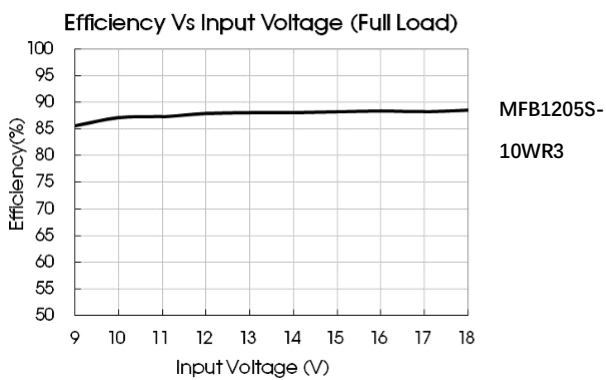
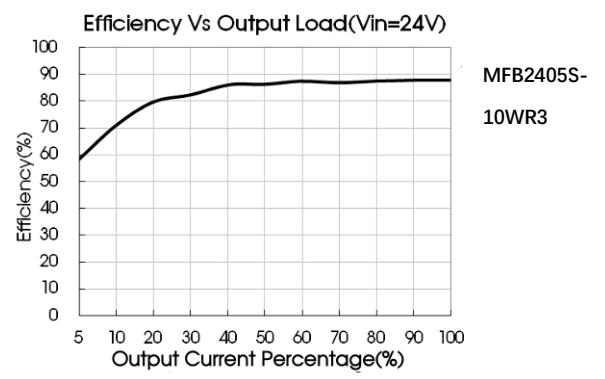
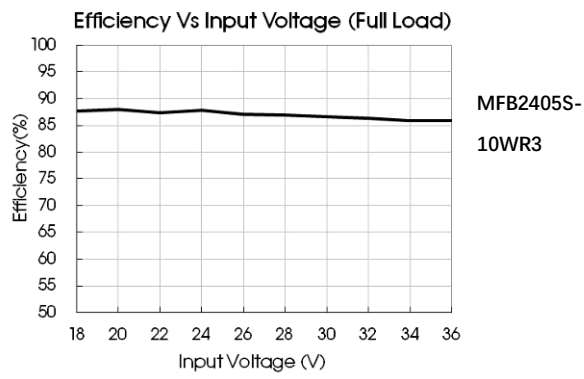


Figure 1





Circuit Design and Application

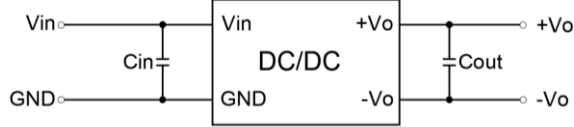


Figure 2

Recommended Capacitive Load Value Table

Cin(μ F)	Cout(μ F)
47	22

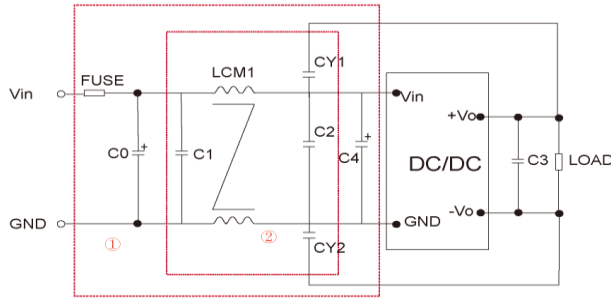


Figure 3

EMI Recommended Parameter Table

Model	Vin:12V	Vin:24V
FUSE	Select according to the actual input current of the customer	
C0、C4	330uF/35V	330uF/50V
C1、C2	10 μ F/50V	
LCM1	470uH	
C3	Refer to the Cout parameter in Figure 2	
CY1、CY2	1nF/2000VDC	

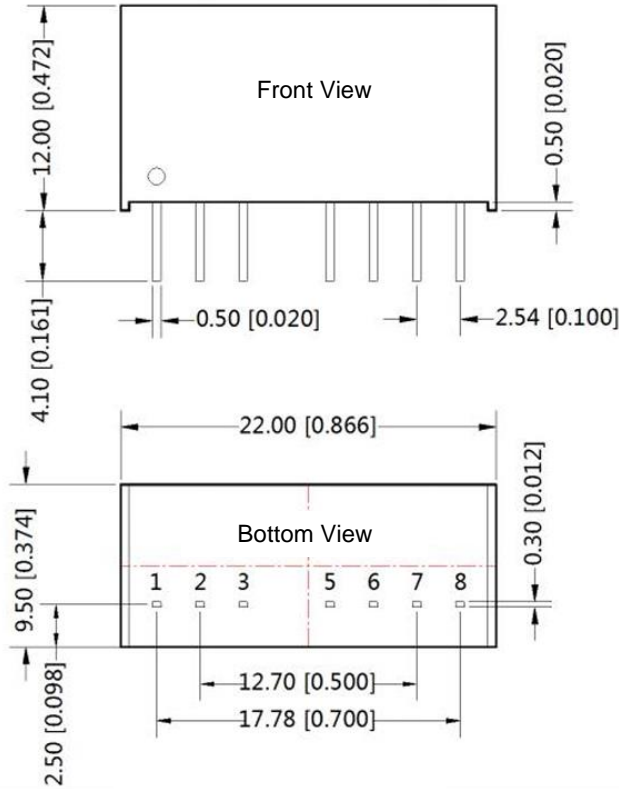
Note: Part 1 in Figure 3 is for EMC testing; The second part is used for EMI filtering, which can be selected according to the demand

Note:

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.

Dimensions and Recommended Layout

Dimensions



Note:

Unit: mm[inch]

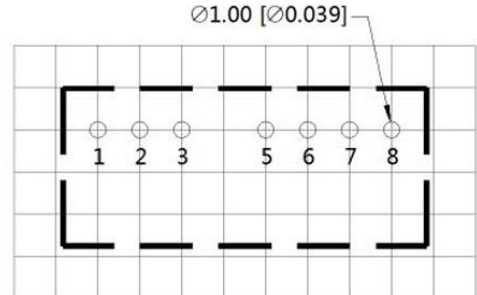
Pin section tolerances: ± 0.10 [± 0.004]

General tolerances: ± 0.50 [± 0.020]

Note:

1. If the product works under the minimum required load, it cannot guarantee that the performance of the product complies with all the performance indicators in this manual;
2. The maximum capacitive load is tested under the input voltage range and full load condition;
3. Unless otherwise stated, all indexes in this manual are measured at $T_a=25^\circ\text{C}$, humidity $<75\%\text{RH}$, nominal input voltage and rated output load;
4. All index testing methods in this manual are based on the enterprise standards of the company;
5. Our company can provide product customization, specific needs can directly contact our technical staff;

PCB Printing Layout & Pin Definition Table



Note: The grid distance is 2.54mm*2.54mm

Pin	Function (single)
1	GND
2	Vin
3	CTRL
5	NC
6	+Vo
7	0V
8	CS

NC: Cannot be connected to any electrical connection