

## 1. Description

DxxSxxM1P series are specially designed for Galvanic isolation in distributed power system. The application fields: special equipment, electronics, industrial, communication, Internet , automobiles, etc. This module has the following characteristics.

### Product Features

1. No-load input current as low as 8 mA
2. Continuous short-circuit protection
3. High efficiency up to 85%
4. I/O Isolation test voltage: 1.5k VDC/min, 3k VDC/ 1s
5. Complies with UL62368/EN62368/BS



3 years  
Warranty

### Selection Guide

Product Model	Input Voltage (VDC)	Nominal Output voltage/Current	Efficiency (%/Typ.)	Max. Capacitive Load (μF)
D03S03M1P	3.3	3.3V/0.303A	79	2400
D03S05M1P		5V/0.2A	82	2400
D05S03M1P	5	3.3V/0.303A	74	2400
D05S05M1P		5V/0.2A	82	2400
D05S09M1P		9V/0.111A	83	1000
D05S12M1P		12V/0.83A	83	560
D05S15M1P		15V/0.67A	83	560
D05S24M1P		24V/0.42A	85	220
D12S03M1P	12	3.3V/0.303A	79	2400
D12S05M1P		5V/0.2A	80	2400
D12S09M1P		9V/0.111A	80	1000
D12S12M1P		12V/0.83A	80	560
D12S15M1P		15V/0.67A	81	560
D12S24M1P		24V/0.42A	81	220
D15S05M1P	15	5V/0.2A	80	2400
D15S15M1P		15V/0.67A	81	560
D24S05M1P	24	5V/0.2A	79	2400
D24S09M1P		9V/0.111A	81	1000
D24S12M1P		12V/0.83A	81	560
D24S15M1P		15V/0.67A	81	560

## 2.Environmental Specifications

Item	Min.	Typ.	Max.	Unit	Remarks
Operating temperature	-55		105	°C	Baseplate temperature
Storage temperature	-55		125	°C	
Pin Soldering Resistance Temperature	-	-	300	°C	Soldering time shall not exceed 10 seconds

## 3. Electrical Specifications

Input Specifications	Condition	Minimum	Typical	Maximum	Unit
Input Voltage Range	$I_{out}=0\sim 100\%I_o$	-10	-	10	%Vnom

Surge Voltage	3.3VDC Input Series test time 1s	-0.7	-	5	V
	5VDC Input Series test time 1s	-0.7	-	9	
	12VDC Input Series test time 1s	-0.7	-	18	
	15VDC Input Series test time 1s	-0.7	-	20	
	24VDC Input Series test time 1s	-0.7	-	30	
No-load Current	Nominal Input Voltage 3.3VDC	-	30	-	mA
	Nominal Input Voltage 5VDC	-	20	-	
	Nominal Input Voltage 12VDC	-	8	-	
	Nominal Input Voltage 15VDC	-	8	-	
	Nominal Input Voltage 24VDC	-	8	-	

Output Specifications	Condition		Minimum	Typical	Maximum	Unit
Output accuracy	Full load		See Tolerance Envelope			%Vo
Linear Regulation	Full load	3.3V	-	-	±1.5	%
		Other output	-	-	±1.2	
Load Regulations	10% - 100% load	3.3V	-	±15	±20	
		5V		±10	±15	
		9V		±8	±10	
		12V		±7	±10	
		15V		±6	±10	
		24V		±5	±10	
Output Ripple & Noise	Full load BW=20MHz	Other output	-	30	75	mV
		24V	-	-	120	
Efficiency	Nominal input voltage full load		Refer to Selection Guide			%

General Specifications		Condition	Minimum	Typical	Maximum	Unit
Isolation Resistance		Add 500VDC between input and output, between input and shell, between output and shell for 10s	100	-	-	MΩ
Operating Frequency		Full load	-	250	-	kHz
Isolation Voltage	Input-Output	t=1min,set the leakage current to 1mA	1500	-	-	VDC
	Input-Housing		500	-	-	
	Output-Housing		500	-	-	

Physical characteristics	
Dimension	11.60*6.00*10.16mm
Weight	1.3g (Type)
Cooling Method	Conduction Heat Dissipation

## 4. Typical Applications

### 4.1 Typical Application

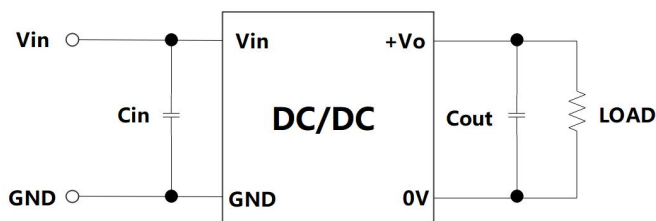


Fig.1 Typical application circuit

Input and/or output ripple can be further reduced, by connecting a filter capacitor from the input and/or output terminals to ground as shown in Typical application circuit.

Choosing suitable filter capacitor values is very important for a smooth operation of the modules, particularly to avoid start-up problems caused by capacitor values that are too high. For recommended input and output capacitor values refer to Recommended parameter table.

Recommended parameter table

Vin	3.3/5VDC	12VDC	15VDC	24VDC
Cin	10uF/16V	2.2uF/25V	2.2uF/25V	1uF/50V
Vo	3.3/5VDC	9/12VDC	15VDC	24VDC
Cout	10uF/16V	2.2uF/25V	2.2uF/25V	1uF/50V

The above parameters can be adjusted according to the actual system application requirements, select the appropriate parameter values.

### 4.2 EMC Recommended Circuit Diagram

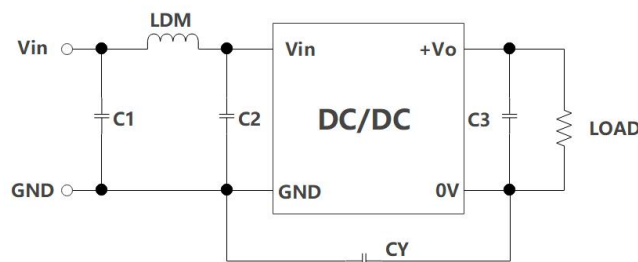


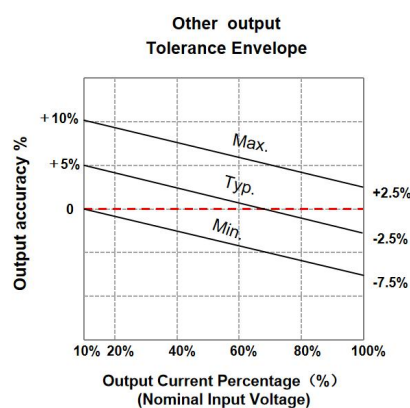
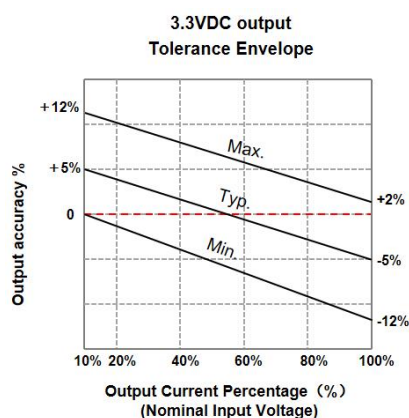
Fig.2 EMC recommended circuit diagram

Recommended parameter table

C1	4.7uF/50V
C2	4.7uF/50V
C3	See Typical application circuit Cout
CY	1nF/4000V
LDM	6.8uF

The above parameters can be adjusted according to the actual system application requirements, select the appropriate parameter values.

### 5.Tolerance Envelope Diagram



### 6.Dimension and terminal definition

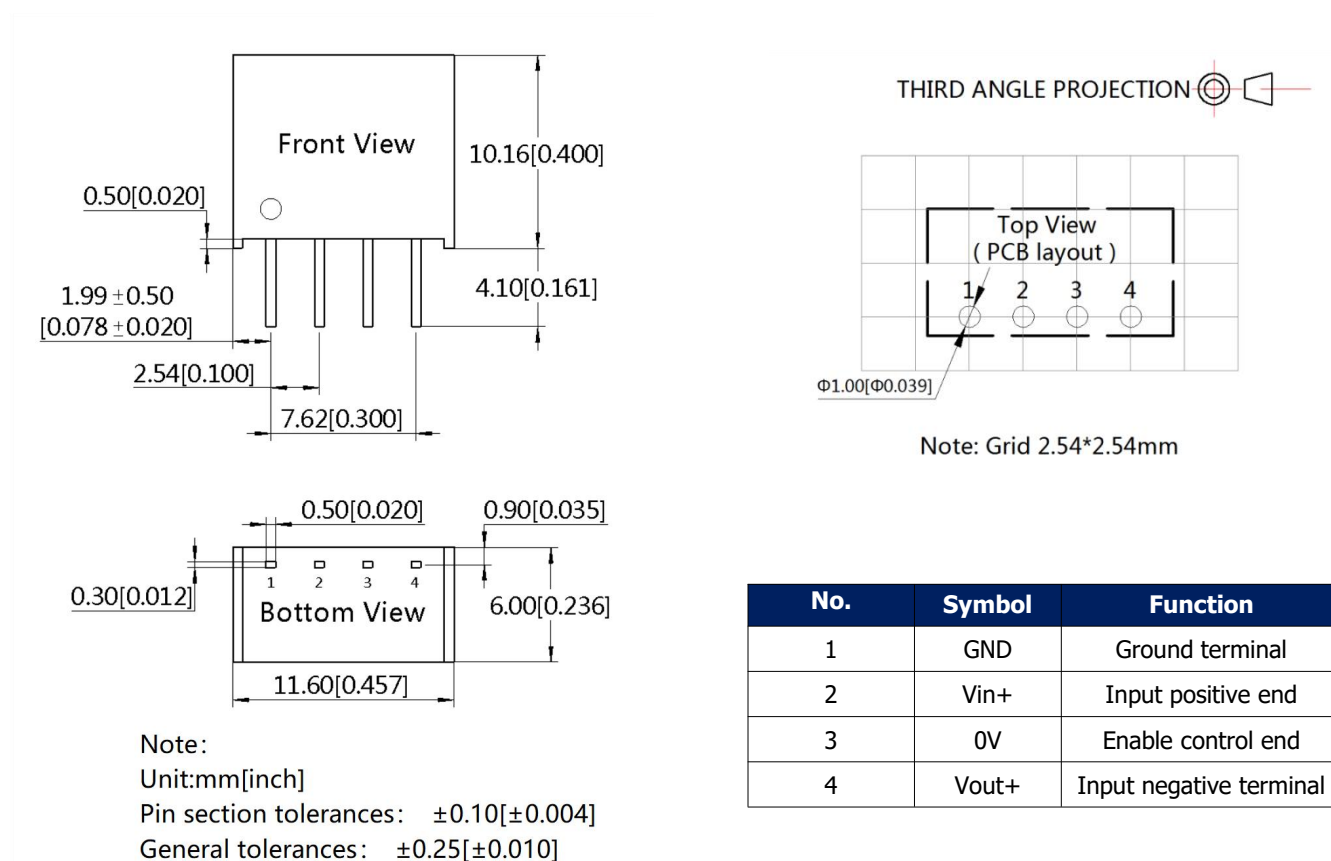


Fig.3 Terminal Arrangement (Top View, Pin Up) and Appearance Dimension

### 7. Precautions

- Do not reverse the polarity of the power supply. Pay attention to the input voltage range, which is  $-10\sim 10\%V_{nom}$ ;
- Please use wide PCB leads or thick wires between the power module and the load, and keep the line voltage drop below 1%  $V_o$  to ensure that the output voltage of the power module remains within the specified range;
- The measurement of voltage must be conducted at the root of the module terminals, eliminating the measurement errors caused by the test tooling fixtures;
- The impedance of the lead may cause output voltage oscillation or large ripple. Please make sufficient evaluation before use;
- Prevent product collision;
- Pay attention to the "1" pin (or ESD) identification, and weld according to the correct installation direction on the board;
- Heat sink or other heat dissipation measures should be installed to ensure that the shell temperature is lower than the maximum operating temperature specified by the product. The operating temperature range of the product is:  $-55^{\circ}\text{C}\leq T_C\leq 105^{\circ}\text{C}$ ;
- Lead welding temperature is less than  $300^{\circ}\text{C}$ , and welding time should not exceed 10 seconds;

Note:

- Our products shall be classified and stored according to ISO17501 and relevant environmental laws and regulations after being scrapped, and shall be handled by qualified units;
- Except for special instructions, all indicators in this manual are measured when  $T_a = 25^{\circ}\text{C}$ , humidity  $< 75\%$ , nominal input voltage 24V and output rated load;
- The test methods of all indicators in this manual are based on the company's enterprise standards;
- Our company can provide customized products, specific needs can directly contact our technical personnel;
- If the product involves multi-brand materials, please refer to the manufacturer's standards for differences such as different colors.

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