

### Typical Feature

- ◆ Wide input voltage range 4:1, Output Power 30W
- ◆ Transfer Efficiency up to 89%
- ◆ Output super-fast start up
- ◆ Continuous Short Circuit protection, Self-recovery
- ◆ Input under voltage, output over voltage, short circuit, over current protection
- ◆ Switching Frequency 280KHz
- ◆ Isolation Voltage 2500VAC
- ◆ Operating Temperature: -40°C~+85°C
- ◆ International Pin-out



### Application Field

DD30-32S12B3R5 customized product by 30W output power, isolation voltage 2500VAC, and has input under voltage, output over voltage, short circuit, over current protection functions. It can be widely used in industrial control, instrumentation, communications, electricity, IoT and other fields. When the product is used in a harsh electromagnetic compatibility environment, please refer to the application circuit provided by our company.

### Typical Product List

Certificate	Part No	Input Voltage Range(VDC)		Output Voltage/Current (Vo/Io)		Max. Capacitive Load (uF)	Ripple & Noise (mV) Max.	Efficiency (%) @nominal input, output full load	
		Nominal	Range	Voltage (VDC)	Current (mA)Max. / Min.			Min	Typ

Note: The maximum capacitive load refers to the capacitance capacity of the output that is allowed to be connected when the power supply is started at full load. Beyond this capacity, the power supply may not be able to start;

### Input Specification

Stand-by Consumption	1W@Vin=48VDC	
Input Filter	Π filter	
Input Under-voltage protection	13VDC Typ	
Ctrl*	Module turn-on	Ctrl suspended or TTL high level (3.3-12VDC)
	Module turn-off	Ctrl connect to -Vin or low level(0-1.2VDC)
	Input current when switched off	5mA (Typ)

Note: \*The voltage of CTRL pin is relative to -Vin pin.

**Output Specification**

Output Voltage Accuracy	Input voltage range, 0%~100% load	±1% Typ ; ±3% Max
Line Regulation	Nominal load, full voltage range	±0.3% Typ; ±0.5% Max
Load Regulation	10% ~ 100% nominal load	±0.5% Typ; ±1% Max
Ripple & Noise	20MHz, twisted pair method	50mV Typ; 100mV Max
O/P Over-voltage Protection	120%~200%Vo	
Output Over-load Protection	110%~250%Io	
O/P Short circuit Protection	continuous, self-recovery	
Output voltage adjustment	With trim pin, ±10%(Max)	
Dynamic Response	25% nominal load step change $\Delta V_o/\Delta t$	±3% Typ, ±5% Max /500us
Output start-up overshoot voltage	Input voltage range, 0%~100% load	≤10% Vo

Note: Ripple & noise test by the twisted pair test method. For details, please refer to the Design and Application Circuit Reference.

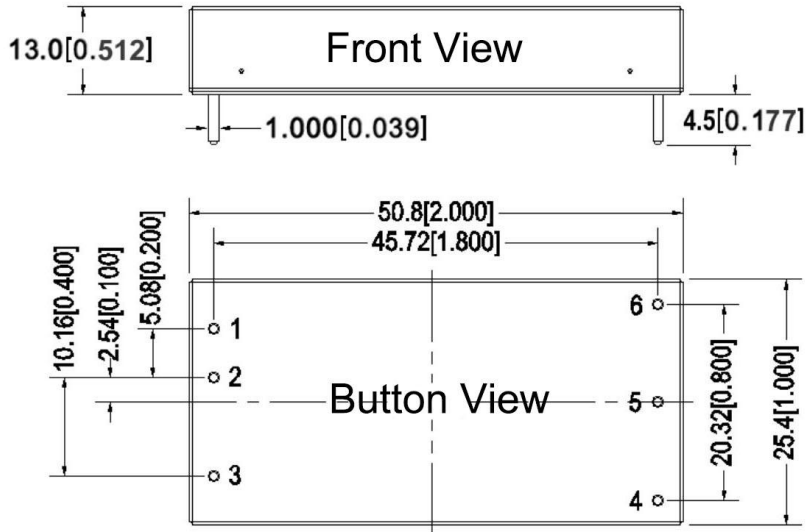
**General Specification**

Switching Frequency	Typical	280KHz
Operating Temperature	Refer to Temperature Derating Curve	-40°C ~ +85°C
Storage Temperature	-	-55°C ~ +125°C
Relative Humidity	No condensing	5%~95%
Case Material	--	Aluminum Metal Case
Cooling Method	--	natural cooling
Isolation Voltage	Input to Output	2500VAC ≤ 5mA / 1min
Insulation resistance	Input to Output	500VDC ≥ 1000MΩ
MTBF	MIL-HDBK-217F 25°C	2X10 <sup>5</sup> Hrs
Weight	Average	30g

**EMC Characteristics**

Total Item	Sub Item	Test Standard	Class	
EMC	EMI	CE	CISPR32/EN55032 CLASS B (see recommended circuit Photo3)	
		RE	CISPR32/EN55032 CLASS B (see recommended circuit Photo3)	
	EMS	RS	IEC/EN61000-4-3	10V/m Perf.Criteria B (see recommended circuit Photo3)
		CS	IEC/EN61000-4-6	3Vr.m.s Perf.Criteria B (see recommended circuit Photo3)
		ESD	IEC/EN61000-4-2	Contact / ±4KV Perf.Criteria B
		Surge	IEC/EN61000-4-5	±2KV Perf.Criteria B (see recommended circuit Photo3)
		EFT	IEC/EN61000-4-4	±2KV Perf.Criteria B (see recommended circuit Photo3)

**Package Dimension**



Note:  
Unit:mm[inch]  
Pin diameter tolerance:  $\pm 0.10[\pm 0.004]$   
General tolerances: $\pm 0.50[\pm 0.020]$

Packing Code	L x W x H
B3	50.8X 25.4X13 mm

**Pin Definition**

Pin-Out	1	2	3	4	5	6
DD30-32S12B3R5	+Vin	-Vin	Ctrl	Trim	GND	+Vo

**Ripple & Noise Test (Twisted pair method 20MHz bandwidth)**

**Ripple& Noise Test:**

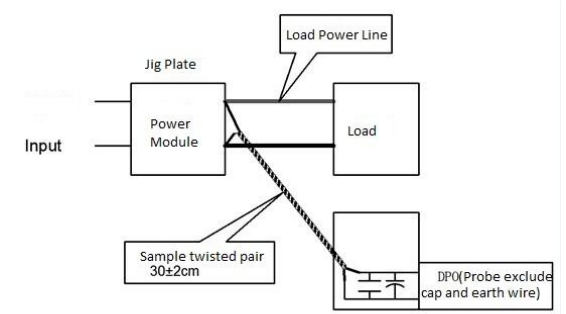
1. 12# twisted pair to connect, Oscilloscope bandwidth set as 20MHz, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 10uF high frequency low resistance electrolytic capacitor in parallel, oscilloscope set as Sample pattern.

2. Output Ripple &Noise Test Method:

Input terminal connect to power supply, output terminal connect to electronic load through jig plate, Use 30cm±2 cm sampling line, Power line selected from corresponding diameter wire with insulation according to the flow of output current.

**Note:**

1. Dual output products with balanced load test;
2. The maximum capacitive load is measured under pure resistive full load conditions;
3. Our company can provide overall power supply solutions or product customization; due to limited space, if you have any other questions, please contact our relevant personnel.



**Product Characteristic Curve**

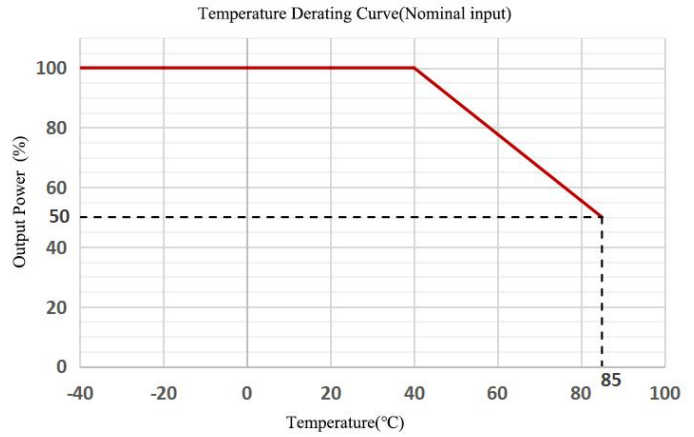
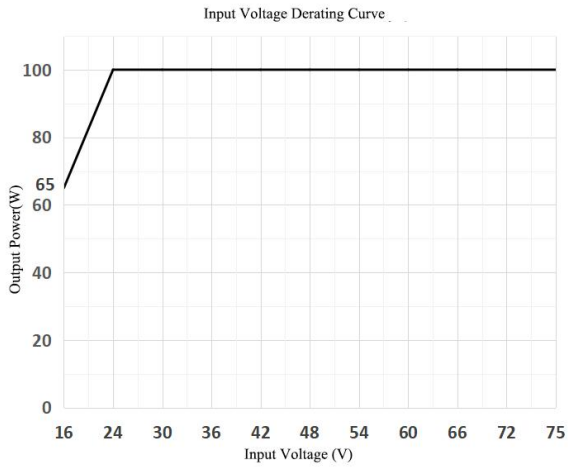
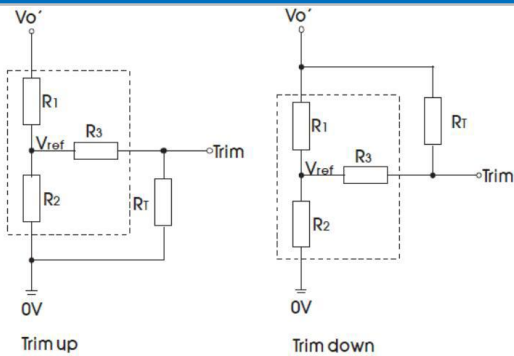


Photo 1:Product Derating Curve

Note: During the actual application of the product, it is necessary to ensure that the surface temperature of the shell is  $\leq 110^{\circ}\text{C}$ , to determine that the product is in a stable working range.

### The usage of Trim and Calculating Trim resistor values



Calculating Trim resistor values:

$$\text{up: } R_T = \frac{\alpha R_2}{R_2 - \alpha} - R_3$$

$$\alpha = \frac{V_{ref}}{V_{o'} - V_{ref}} \cdot R_1$$

$$\text{down: } R_T = \frac{\alpha R_1}{R_1 - \alpha} - R_3$$

$$\alpha = \frac{V_{o'} - V_{ref}}{V_{ref}} \cdot R_2$$

$R_T$  = Trim Resistor value;  
 $\alpha$  = self-defined parameter, no actual meaning;  
 $V_{o'}$  is the actual voltage to increase or decrease;

The usage circuit of the Trim circuit(dashed line shows internal resistor network)

$V_o$ (VDC)	$R_1$ (K $\Omega$ )	$R_2$ (K $\Omega$ )	$R_3$ (K $\Omega$ )	$V_{ref}$ (V)
12	18	4.7	33	2.5

### Design and Application Reference

1、DC/DC recommended test circuit:

All products of this series are tested according to the recommended test circuit (Figure 2) before leaving the factory.

C1:100uF/100V; C2:100uF/50V

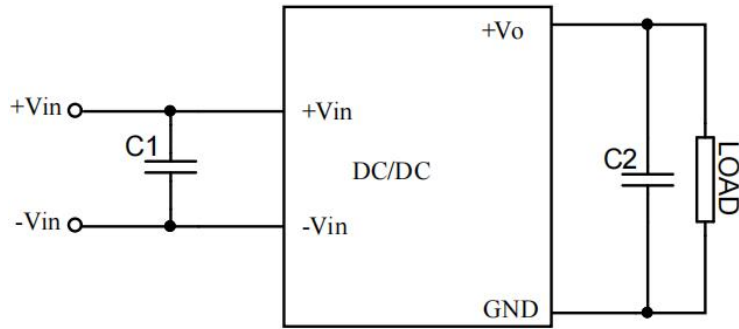


Photo 2: Recommended test circuit

2.EMC external recommended circuit

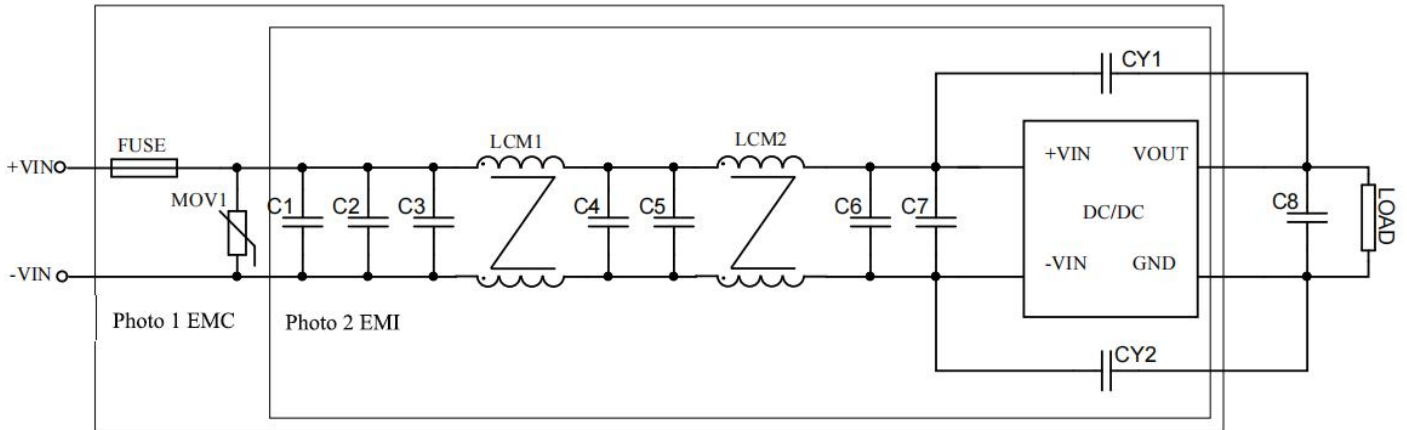


Photo 3

Recommend Specs

Components	DD30-32S12B3R5
FUSE	According to customer's request
MOV1	14D101K
C1/C7	470uF/100V
C2/C3/C4/C5/C6	10uF/100V
C8	100uF/50V
LCM1	5mH
LCM2	250uH
CY1,CY2	2.2nF/400VAC

**Note:**

1. The product should be used under the specification range, otherwise it will cause permanent damage to it.
2. If the product worked beyond the load range or below the minimum load, we cannot ensure that the performance of product is in accordance with all the indexes in this manual;
3. Unless otherwise specified, data in this datasheet should be tested under conditions of  $T_a=25^{\circ}\text{C}$ , humidity<75% when inputting nominal voltage and outputting rated load(pure resistance load);
4. All index testing methods in this datasheet are based on our Company's corporate standards
5. The performance indexes of the product models listed in this manual are as above, but some indexes of non-standard model products will exceed the above-mentioned requirements, and please directly contact our technician for specific information;
6. We can provide customized product service;
7. The product specification may be changed at any time without prior notice.