Typical Features

- ◆Wide input voltage range 4:1,output power 12W
- ◆Transfer Efficiency up to 86%
- ◆Stand-by Power Consumption as low as 0.1W
- ◆Output super-fast start up
- ◆Long-term short circuit protection, automatic recovery
- ◆Protection: Input under voltage, output over voltage, short circuit, over current
- ◆Switching Frequency 280KHz
- ◆Isolation Voltage 1500VDC
- ◆Operating Temperature: -40°C~+85°C
- ◆International standard pin-out

PDD12-XXEXXA3C2 series ------ is a newly developed DIP standard 1X1 package, 12W output power, ultra-wide voltage 4:1 input range, ultra-low standby power consumption, dual-channel isolated output, DC-DC module power supply, which can be widely used in industrial control, instrumentation, communications, power, Internet of Things and other fields. When the product is used in an environment with relatively harsh electromagnetic compatibility, please refer to the application circuit provided by our company.

Typical Product List

Part No	Input Voltage Range (VDC)		Output Voltage/Current (VDC/mA)		Input Current (mA) @Nominal Voltage		Max. Capacitive Load	Ripple & Noise mVp-p (mV)		Efficiency (%)	
	Nominal	Range	Vo1	Vo2	Full load (mA)	No Load (mA)	u F	Typ	Max	Min	Typ.
PDD12-18E0507A3C2	24	9-36	5/1000	7/1000	581	5	10000	75	150	84	86

Note 1: C means with control pin, N means without control pin;

Note 2: Maximum capacitive load refers to the capacitance capacity that the output allows to be connected when the power supply starts at full load. If the capacity exceeds this, the power supply may not start;

Note 3: Due to limited space, the above is only a partial list of products. If you need products outside the list, please contact our sales department.

Input Specifications

Item	Working conditions	Min	Typ.	Max	Unit
Standby power consumption	Input voltage range	/	0.1	/	W
Input Under-Voltage Protection	/	/	7	/	VDC
Hot Plug	/	Unavailable			
Input filter	/	π filter			

CTRL	Module is turned on	CTRL is left floating or connected to high level（3.5V-12VDC）
	Module shutdown	CTRL connected to-Vin or low level（0-1.2VDC）
	Input current at shutdown	5mA (TYP)
*Ctrl controls the voltage on the pin relative to the input -Vin pin.		

Output Specification

Items	Test Conditions		Min	Typ.	Max	Unit
Output Voltage Accuracy	Input voltage range, 0%~100% load condition	Vo1	/	±1	±3	%
	Input voltage range, two output power balance	Vo2	/	±3	±6	%
Voltage Regulation	Full voltage range, nominal load	Vo1	/	±0.3	±0.5	%
		Vo2		±2	±3	%
Load Regulation	10% ~ 100% rated load, dual output power level	Vo1	/	±0.5	±1	%
		Vo2		±3	±6	%
Ripple & Noise	0%-100%load, 20MHz bandwidth		/	75	150	mVp-p
Dynamic recovery time	25% nominal load step, nominal input voltage		/	300	500	us
Dynamic response deviation			/	±5	±8	%
Output start-up overshoot voltage	10% ~ 100% rated load, dual output power balance		/	/	10	%Vo
Output voltage adjustable (Trim)	Input voltage range		Unavailable			
Output over-voltage Protection			110	150	200	%Vo
Output over-current Protection			110	150	220	%Io
Short circuit Protection			Hiccup,continuous, self-recovery			

Note:

1. Dynamic response is only for the main circuit;
2. If any circuit is short-circuited, both outputs will enter hiccup protection; the auxiliary circuit is allowed to be short-circuited only when the main circuit is under certain load conditions (10%-100% load); the main circuit can be short-circuited when the auxiliary circuit is under 0%-100% load.

General Specification

Items	Test Conditions	Min	Typ.	Max	Unit
Switching Frequency	Operating mode（PWM）	/	280	/	KHz
Operating Temperature	Refer to temperature derating curve	-40	/	+85	℃
Storage Temperature	/	-55	/	+125	
Max Case Temperature	Refer to product characteristic curve	/	/	+105	
Pin resistance soldering temperature	The distance between the soldering point and the shell is 1.5mm, 10 seconds	/	/	300	
Relative Humidity	No condensation	5	/	95	%RH
Isolation Voltage	I/P-O/P, test for 1min, leakage current is less than 0.5mA	1500	/	/	VDC
	O/P-O/P, test for 1 minute, leakage current is less than 0.5mA	500	/	/	

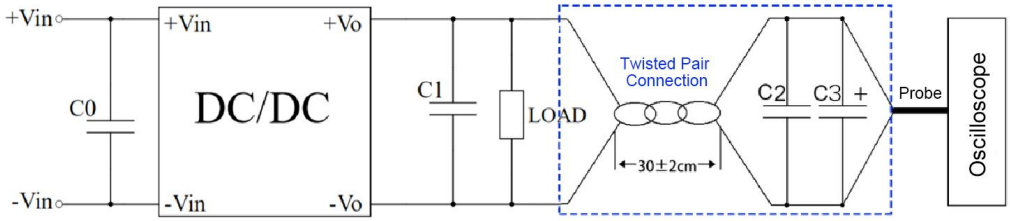
Insulation resistance	I/P-O/P, @500VDC	1000	/	/	MΩ
MTBF	MIL-HDBK-217F@25℃	1000	/	/	KHrs
Cooling method	Natural air cooling				
Shell material	Metal Aluminum				

Weight/ Dimension	Model No.	Weight (Typ)	L x W x H	
	PDD12-XXEXXA3(C)2	15g	25.4X25.40X13mm	1.00X1.00X0.492inch

EMC Characteristics

EMI	CE	CISPR32/EN55032	CLASS B	（EMC Recommended Circuit）
	RE	CISPR32/EN55032	CLASS B	（EMC Recommended Circuit）
EMS	ESD	IEC/EN61000-4-3	10V/m	Perf.Criteria A （EMC Recommended Circuit）
	RS	IEC/EN61000-4-6	3Vr.m.s	Perf.Criteria A （EMC Recommended Circuit）
	EFT	IEC/EN61000-4-2	Contact ±4KV Air ±6KV	Perf.Criteria B
	Surge	IEC/EN61000-4-5	±2KV	Perf.Criteria B （EMC Recommended Circuit）
	Pulse group immunity	IEC/EN61000-4-4	±2KV	Perf.Criteria B （EMC Recommended Circuit）

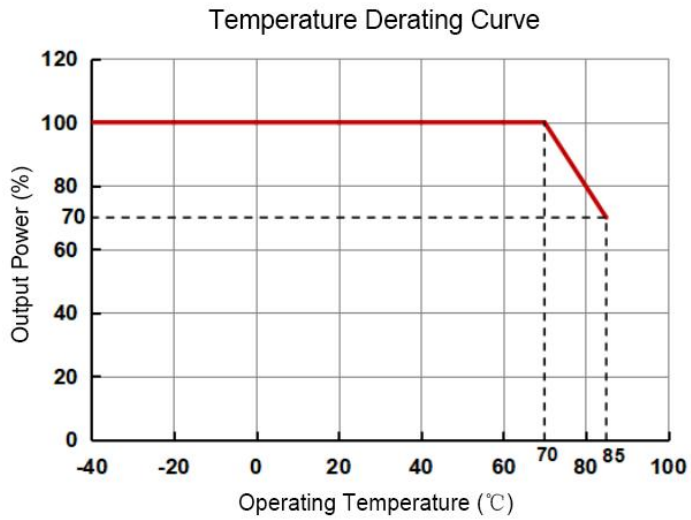
Ripple & Noise Test (Twisted Pair Method)

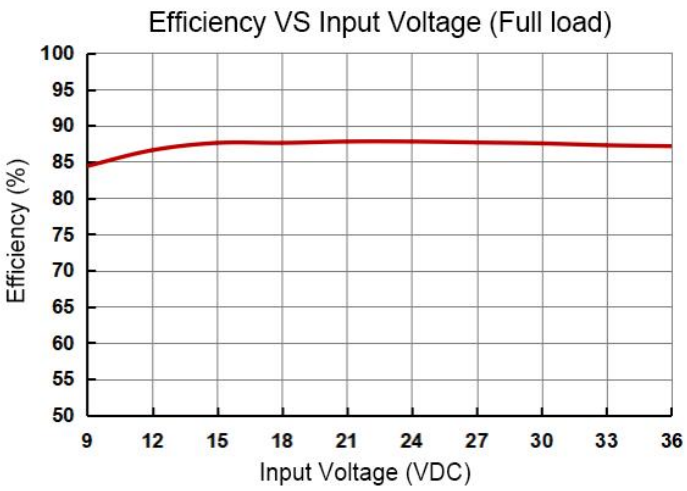


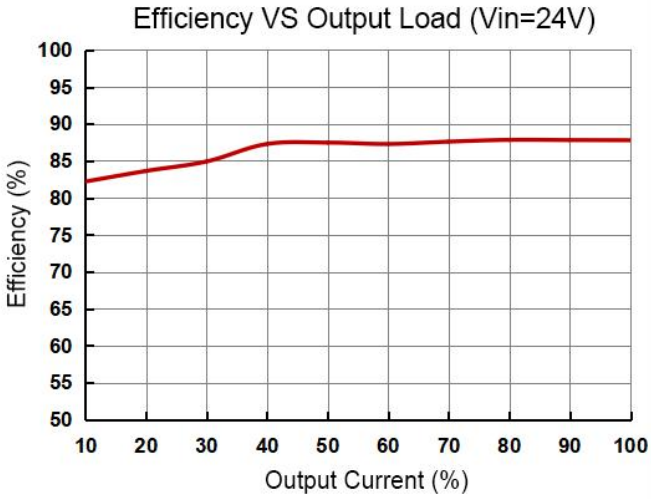
Test conditions:

1. Ripple noise is connected using 12# twisted pair cable, oscilloscope sampling uses sampling mode, oscilloscope bandwidth is set to 20MHz, 100M bandwidth probe is used, probe cap and ground clip are removed; and C2 (0.1uF) polypropylene capacitor and C3 (10uF) high frequency low resistance electrolytic capacitor are connected in parallel at the probe end of the twisted pair cable, and the capacitance values of C0 and C1 refer to the design application circuit data;
2. Ripple noise test: The module input end (INPUT) is connected to the input power supply, and the power supply output is connected to the electronic load (LOAD) through the power line. The test is sampled from the power supply output port using a 30±2 cm twisted pair cable alone, and connected to the oscilloscope probe according to polarity.
3. Dual-channel output product with balanced load test;

Characteristic Curve



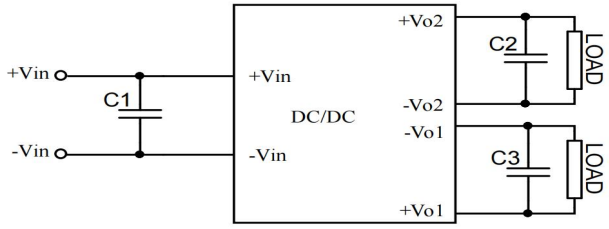




Design and Application Reference

Recommended Circuit

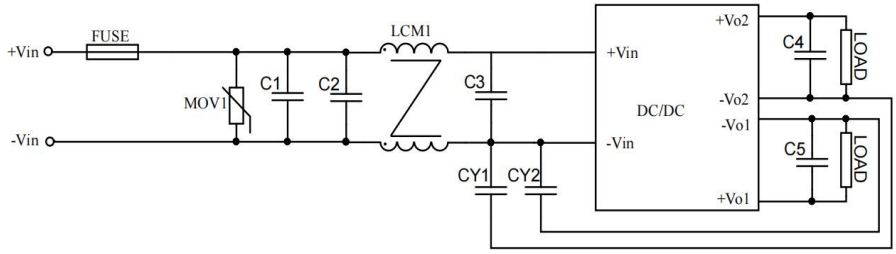
1. This series of module power supplies are tested according to this peripheral circuit before leaving the factory. Increasing the capacity of C0 or C1 can reduce the output ripple, but the output capacity must be less than the maximum capacitive load;



Parameter Description:

Components	Parameter
C1	100uF/50V
C2、C3	100uF/16V

2. Recommended EMC external circuits:

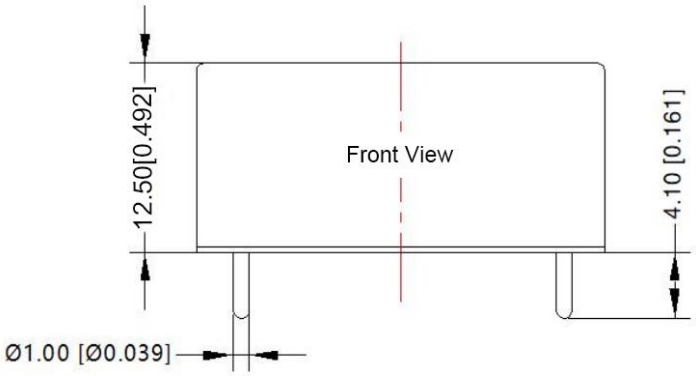


EMC Recommended Circuit

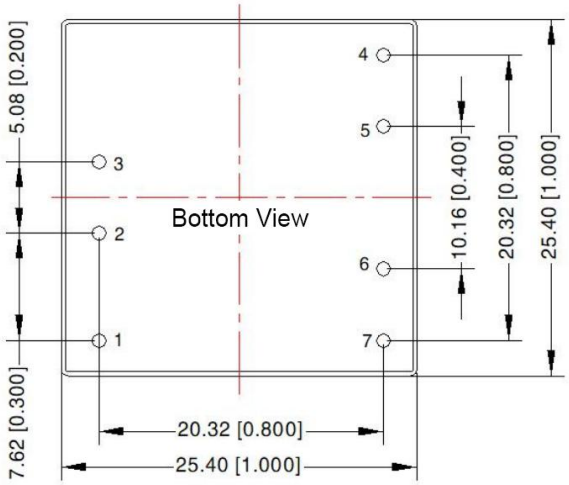
Parameter Description:

Components	PDD12-XXEXXA3C2
FUSE	Choose according to customer needs
MOV1	14D560K
C1	470uF/50V
LCM1	5mH
C2,C3	10uF/50V
C4,C5	100uF/25V
CY1,CY2	2.2nF/2000V

A3 Package(without Heat Sink)



Unit:mm[inch]
Pin tolerance:±0.10[±0.004]
General tolerance:±0.50[±0.020]



Pin Definition

Pin	1	2	3	4	5	6	7
PDD12-XXEXXA3C2	Ctrl	-Vin	+Vin	+Vo2	-Vo2	-Vo1	+Vo1
PDD12-XXEXXA3C2	NP	-Vin	+Vin	+Vo2	-Vo2	-Vo1	+Vo1

Note:

1. The product should be used within the specification range, otherwise it will cause permanent damage to the product;
2. If the product works below the minimum required load, it cannot be guaranteed that the product performance meets all the performance indicators in this manual;
3. If the product works beyond the product load range, it cannot be guaranteed that the product performance meets all the performance indicators in this manual;
4. Unless otherwise specified, the above data are measured at Ta=25℃, humidity<75%, input nominal voltage and output rated load (pure resistance load);
5. All the above index test methods are based on our company's standards;
6. The above are the performance indicators of the product models listed in this manual. Some indicators of non-standard model products will exceed the above requirements. For specific circumstances, please contact our technical personnel directly;
7. Our company can provide product customization;
8. Product specifications are subject to change without prior notice. Please pay attention to the latest manual published on our official website.

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