

# DC/DC Converter PDD60-300S12G2N6

## Typical Features

- ◆ Wide input voltage range 60-600VDC
- ◆ No load Power Consumption  $\leq 0.6W$
- ◆ Efficiency 84% (typ.)
- ◆ Over-voltage, over-current, short circuit protections
- ◆ Isolation voltage:4000Vac
- ◆ Compliant with IEC/EN61000
- ◆ Conform to RoHS regulation
- ◆ Plastic case enclosed, flame class UL94- V0
- ◆ PCB mounting



## Application Field

**PDD60-300S12G2N6** is a compact size, high efficiency DC/DC Converter. It has the advantages of wide input voltage range, low ripple, low temperature rise, low standby power consumption, high efficiency, high reliability, safety isolated and good EMC performance. It can be widely used in Solar power generation and home appliance energy storage and other fields. Additional circuit for EMC is recommended in this data sheet for the application with higher EMC requirement.

## Typical Product List

Certificate	Part No	Output Specification			Max. Capacitive Load	Ripple & Noise 20MHz (MAX)	Efficiency @full load 300VDC(Typ.)
		Power	Voltage	Current			
		(W)	Vo(V)	Io(mA)			
-	PDD60-300S12G2N6	60	12	5000	5400	200	84

Note 1: The typical value of efficiency is based on the product tested after half an hour burn-in at full load.

Note 2: The full load efficiency should be in  $\pm 2\%$  of the typical value in this table. The efficiency is calculated by the way that the full output power is divided by the input power.

Note 3: The ripple and noise are tested by the twisted pair method according to the Ripple & Noise Test Instructions in the manual.

## Input Specifications

Items	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	DC Input	60	300	600	VDC
Input Current	60VDC@70% load	-	-	1.0	A
	600VDC@100% load	-	-	0.3	
Surge Current	600VDC	-	80	-	
No Load Power Consumption	Input 60VDC	-	-	0.6	W
	Input 600VDC	-	-		
External fuse recommended	-	15A/1000VDC Time-delay fuse, necessary			
Hot plug	-	N/A			
Remote control	-	N/A			

**Output Specifications**

Item		Operating Conditions	Min.	Ty.	Max.	Unit
Voltage Accuracy		Full input voltage, any load	-	±2.0	-	%
Line Regulation		Rated load	-	±1.0	-	
Load Regulation		Rated input voltage, 20%~100% load	-	±1.0	-	
Minimum Load		Single output	0	-	-	%
Turn-on delay time		Input 300VDC (full load)	-	2000	-	mS
Power-off hold up time		Input 600VDC (full load)	3	-	-	mS
Dynamic Response	Overshoot range	25%~50%~25%	-5.0	-	+5.0	%
	Recovery time	50%~75%~50%	-5.0	-	+5.0	mS
Output Overshoot		Full input voltage range	≤10%Vo			%
Short Circuit Protection			continuous, self-recovery			Hiccup
Drift Coefficient		-	-	±0.02	-	%/°C
Over Current Protection		Full input voltage range	≥110% Io, self-recovery			Hiccup
Over Voltage Protection		-	≤25			VDC

**General Specifications**

Item		Operating Conditions	Min.	Ty.	Max.	Unit
Switching Frequency		-	-	65	-	KHz
Operating Temperature		Please refer to the temperature derating curve	-40	-	+40	°C
Storage Temperature		-	-40	-	+85	
Soldering Temperature		Wave soldering	260±5°C, time 5-10S			
		Manual soldering	380±10°C, time 4-7S			
Relative Humidity		-	-	-	95	%RH
Isolation Voltage	I/P-O/P	Test 1min, leakage current≤5mA	4000	-	-	VAC
EMC Standard		-	IEC/EN61000, 55032			
Vibration		-	10-55Hz, 10G, 30 Min, along X,Y,Z			
Safety Class		-	CLASS II			
Case flame class		-	UL94 V-0			
MTBF		MIL-HDBK-217F 25°C	>100,000H			

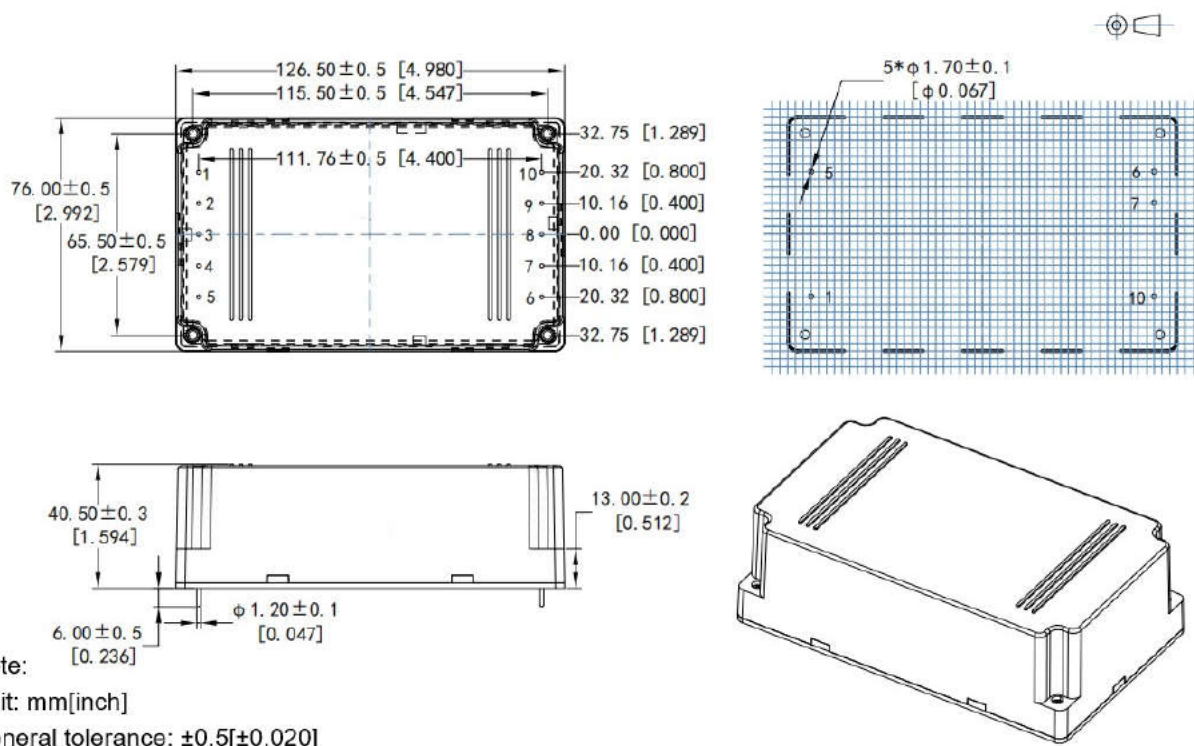
**Physical Characteristics**

Case Material		Plastic in Black, flame class UL94V-0			
Dimension	Horizontal	126.5X76.0X40.5 mm			
Product Weight		550g (TYP)			
Cooling Method		Natural air			

**EMC Performances**

Total-item	Sub-item	Standard	Class	
EMC	EMI	CE	Class A	
			Class B (with the Recommended circuit 2)	
		RE	Class A	
			Class B (with the Recommended circuit 2)	
	EMS	RS	IEC/EN61000-4-3	10V/m perf.Criteria A (with the Recommended circuit 2)
		CS	IEC/EN61000-4-6	10Vr.m.s perf.Criteria A (with the Recommended circuit 2)
		ESD	IEC/EN61000-4-2	Contact ±6KV/ Air ±8KV Perf.Criteria B (with the Recommended circuit 2)
		Surge	IEC/EN61000-4-5	Line to line ±2KV Perf.Criteria B (with the Recommended circuit 2)
		EFT	IEC/EN61000-4-4	±4KV Perf.Criteria B (with the Recommended circuit 2)
		PFMF	IEC/EN61000-4-8	10A/m Perf.Criteria A (with the Recommended circuit 2)

**Packaging Dimensions**



Packaging Code	L x W x H	
G	126.5X76.0X40.5 mm	4.980X2.992X1.594 inch

**Pin Definition**

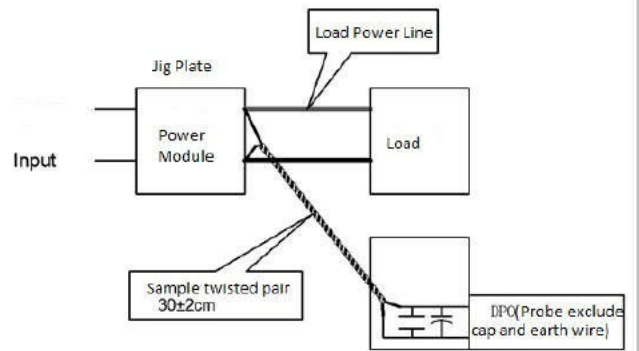
Pin No.	1	2	3	4	5	6	7	8	9	10
Single(S)	+Vin	NP	NP	NP	-Vin	+Vo	-Vo	NP	NP	NC
Function	Input V+	No pin	No pin	No pin	Input V-	Output V+	Output V-	No pin	No pin	No connection

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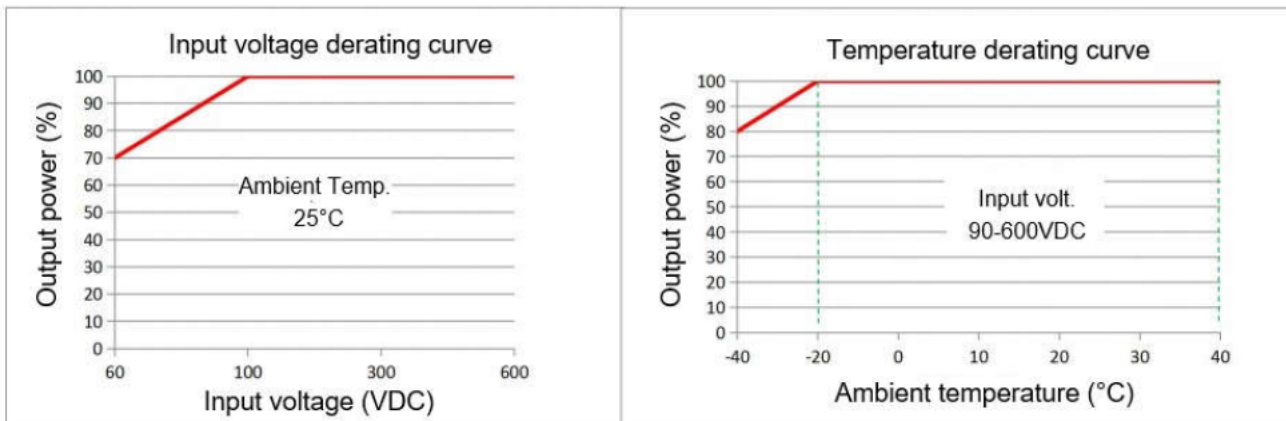
## Ripple & Noise Test Instruction (Twisted Pair Method, 20MHz bandwidth)

1) Ripple noise test need 12# twisted pair cables, an oscilloscope which bandwidth should be set to 20MHz, 0.1uF polypropylene capacitor and 10uF high-frequency low-resistance electrolytic capacitor are connected in parallel with the probes (100M bandwidth). The oscilloscope should be set on the Sample Mode.

2) The output ripple noise test diagram is shown on the right. The converter output connects to the electronic load by the jig with cables which size should be defined according to the output current value. The twisted pair (length 30cm±2 cm) should be connected in parallel with the load, the location is as close as possible to the output pins or terminals. The test can be started after input power on.



## Product performance curve

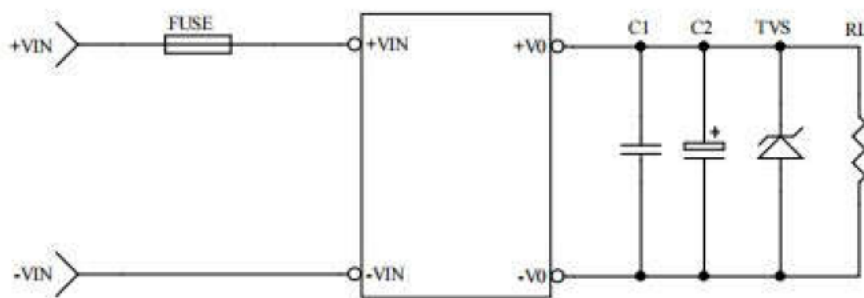


Note 1: The output power should be derated based on the input voltage derating curve at 60~100VDC.

Note 2: This product should operate at a natural air condition, please contact us if it need be used at a closed space.

## Recommended Circuits for Application

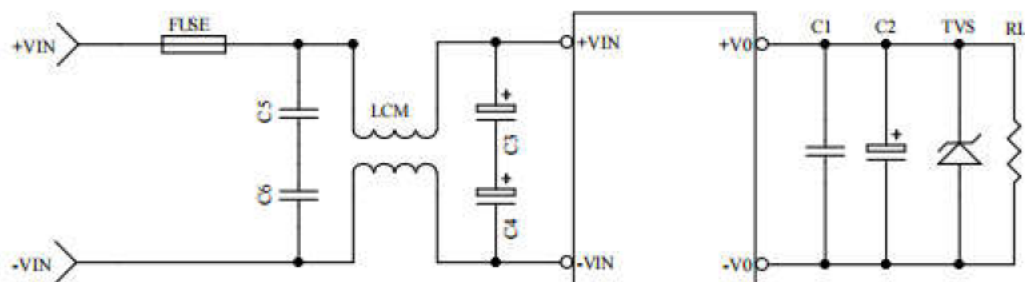
### 1. Typical Application Circuit



Circuit 1

Part No.	FUSE	C1	C2	TVS
PDD60-300S12G2N6	15A/1000VDC, Time-delay fuse, necessary	1206/1uF/50V	220uF/25V	SMBJ15A

**2. Recommended EMC circuits**



Circuit 2

Part No.	FUSE	C5, C6	C3, C4	LCM	C1	C2	TVS
PDD60-300S12G2N6	15A/1000VDC, time-delay	X2/104K/ 275VAC	10uF/ 450VDC	TD1212-15mH/ 1-1.5A(Flat wire choke)	1206/1uF/50V	220uF/25V	SMBJ15A

**Application Notice:**

- 1.The products should be used according to the specifications in this manual, otherwise it could be permanently damaged.
- 2.A fuse should be used at input.
- 3.The product performances in this manual cannot be guaranteed if it works at a lower load than the minimum load defined.
- 4.The product performances in this manual cannot be guaranteed if it works at over-load condition.
- 5.Unless otherwise specified, all values or indicators in this manual are tested at Ta=25°C, humidity<75%RH, rated input voltage and rated load (pure resistance load).