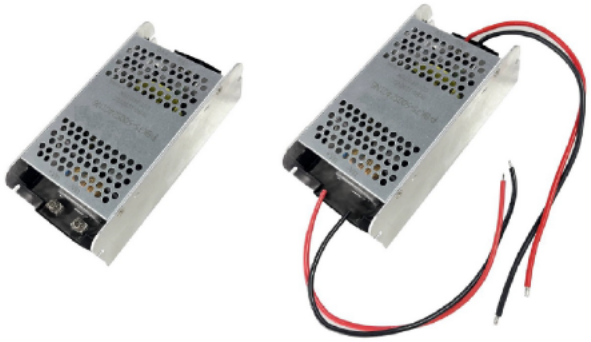
DC-DC Converter
PBK75-500SXXG(A)1N6 Series

Patron
Passive Elektronic

Typical Features

- ◆ Wide input voltage range: 80-1000VDC
- ◆ No load power consumption≤1W
- ◆ Transfer efficiency (typ. 87%)
- ◆ Protection 1: Input Anti-reverse connection
- ◆ Protection 2: Output over voltage, over current, short circuit
- ◆ Working temperature: -40℃- +85℃
- ◆ Input-Output Isolation voltage: 4000VAC
- ◆ Transient power: 120W (3S)
- ◆ Input voltage up to 1100VDC (transient, duration 3S)
- ◆ Comply with IEC62109 standard



Application Field

PBK75-500SXXG(A)1N6 Series *----- is a small-volume, high-efficiency power module to customers. It has 80-1000VDC ultra-wide and ultra-high voltage input, high efficiency, high reliability, and safe isolation DC-DC switching power module. The design refers to UL1714, CSA-C22.2 No.107.1, IEC/EN62109 standards. It can be widely used in power, instrumentation, photovoltaic power generation, and home appliance energy storage. It provides a stable working voltage for load equipment, and its built-in multiple protection functions can improve the safety performance of the power supply and its load when the module power supply is abnormal.*

Typical Product List

Certificate	Part No.	Output Specifications			Max Capacitive Load	Ripple & Noise 20MHz	Efficiency 500VDC (Typ.)
		Power	Voltage	Current	u F	mVp-p	%
		(W)	Vo(V)	Io(m A)			
-	PBK75-500S12G(A)1N6	75	12	6250	3000	300	87
-	PBK75-500S15G(A)1N6	75	15	5000	3000	300	87
-	PBK75-500S24G(A)1N6	75	24	3125	3000	300	89
-	PBK75-500S28G(A)1N6	75	28	2679	2000	300	89
-	PBK75-500S32G(A)1N6	75	32	2344	1500	350	89
-	PBK75-500S35G(A)1N6	75	35	2143	1500	350	89

Note: All models have a derivative model, the input and output form is the lead series: PBK75-500SXXGA1N6, and the rest of the performance is the same.

Note 1: The typical value of output efficiency is based on the product being aged at full load for half an hour.

Note 2: The full load efficiency (%, TYP) in the table fluctuates by ±2%. The full load efficiency is the total output power divided by the input power of the module.

Note 3: The ripple and noise test method uses the twisted pair test method. For specific test methods and matching, please refer to the following (Ripple & Noise Test Instructions).

Input Specification

Item	Operating Condition	Min.	Typ.	Max.	Unit
Input Voltage Range	DC Input	80	500	1000	VDC
Input Current	150VDC	-	-	0.70	A
	750VDC	-	-	0.15	
Surge Current	1000VDC	-	-	150	
Input under voltage Protection	Protection start	20	-	70	VDC
	Protection release	30	-	80	
Hot Plug	--	N/A			
Remote Control	--	N/A			
Recommended value of external fuse	--	4A/1000VDC, necessary			

Output Specification

Item		Operating Condition		Min.	Typ.	Max.	Unit
Voltage Accuracy		Full input voltage range, any load	Vo	-	±2.0	-	%
Line regulation		Nominal load	Vo	-	±1.0	-	
Load regulation		Nominal input voltage, 0%-100% load	Vo	-	±2.0	-	
Minimum Load		Single Output		0	-	-	%
Turn-on Delay Time		Nominal input voltage (full load)		-	2000	-	mS
Power-off Holding Time		Input 150VDC(full load)		-	5	-	
		Input 750VDC(full load)		-	20	-	
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				Self-recovery after short circuit is removed			Hiccup
Drift Coefficient		-		-	±0.02%	-	%/℃
Ripple & Noise		20MHz bandwidth (Peak-Peak)		-	-	350	mV
Over Current Protection		Nominal input voltage		≥110% Io, self recovery			Hiccup
Over Voltage Protection		Output 12VDC		≤20			VDC
		Output 15VDC		≤23			
		Output 24VDC		≤32			
		Output 28VDC		≤35			
		Output 32VDC		≤40			
		Output 35VDC		≤45			

Over Temperature Protection	Over temperature protection starts	60	-	75	℃
	Over temperature protection release	55	-	70	

General Specification

Item		Operating Condition	Min.	Typ.	Max.	Unit
Switching Frequency		-	-	65	-	KHz
Operating Temperature		--	-40	--	+85	℃
Storage Temperature		-	-40	--	+85	℃
Soldering Temperature		Wave-soldering	260±4℃, time 5-10S			
		Manual-welding	360±8℃, time 4-7S			
Storage Humidity		-	-	-	95	%RH
Isolation Voltage	I/P-O/P	≤10.0mA/1Min	4000	-	-	VAC
	Input-PE	≤10.0mA/1Min	4000	-	-	
	Output-PE	≤5.0mA/1Min	2000	-	-	
Insulation resistance	I/P-O/P	500VDC	100	-	-	MΩ
	Input-PE		100	-	-	
	Output-PE		100	-	-	
Vibration		-	10-55Hz,10G,30Min,alongX,Y,Z			
Safety Standard		-	UL1714,IEC/EN62109-1,CSA-C22.2 No.107.1			
MTBF		-	MIL-HDBK-217F 25℃＞300,000H			

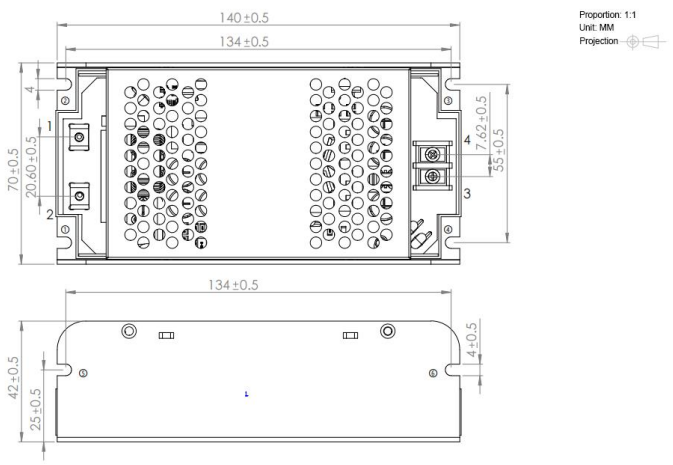
Physical Specifications

Case Material		Metal
Dimension	-	140.0X70.0X42.0mm
Weight		450g（TYP）
Cooling Method		Free air convention

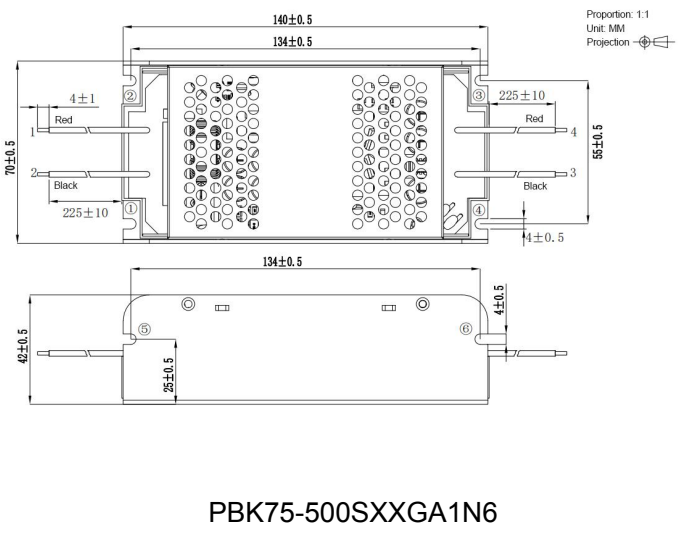
EMC Characteristics

Total Item		Sub Item	Test Standard	Class
EMC	EMI	CE	CISPR32/EN55032	CLASS A @100% load CLASS B @60% load
		RE	CISPR32/EN55032	CLASS A @100% load CLASS B @60% load
	EMS	ESD	IEC/EN61000-4-2	Contact ±6KV/Air ±8KV Perf. Criteria A
		RS	IEC/EN61000-4-3	10V/m Perf. Criteria A
		Surge	IEC/EN61000-4-5	line to line ±1KV/ line to PE ±2KV Perf. Criteria B
		EFT	IEC/EN61000-4-4	±2KV Perf. Criteria B
		CS	IEC/EN61000-4-6	10Vr.m.s Perf. Criteria A

Dimension and Pin-Function



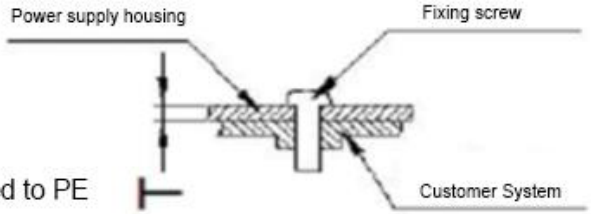
PBK75-500SXXG1N6



PBK75-500SXXGA1N6

Installation location	Recommended screw specifications	T	Torque (MAX)
① - ⑥	M3	1.5mm	0.4N.m

Note:
Unit: mm [inch]
Wiring diameter: 24-12AWG
Tightening torque: Max 0.4N.m
The installation holes can be connected to PE



Packing code	L x W x H	
G	140.0X70.0X42.0mm	5.512X2.756X1.654inch

Pin-Function

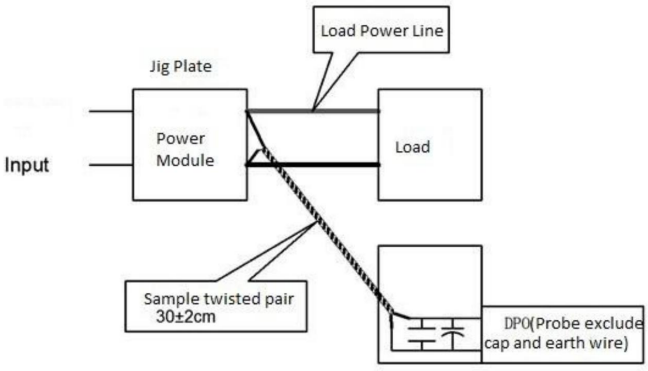
Pin-Out	1 (RED)	2 (BLACK)	3 (BLACK)	4 (RED)	Mounting Hole①-⑥
Single(S)	+Vin	-Vin	-Vo	+Vo	PE

Ripple& Noise Test: (Twisted Pair Method 20MHZ bandwidth)

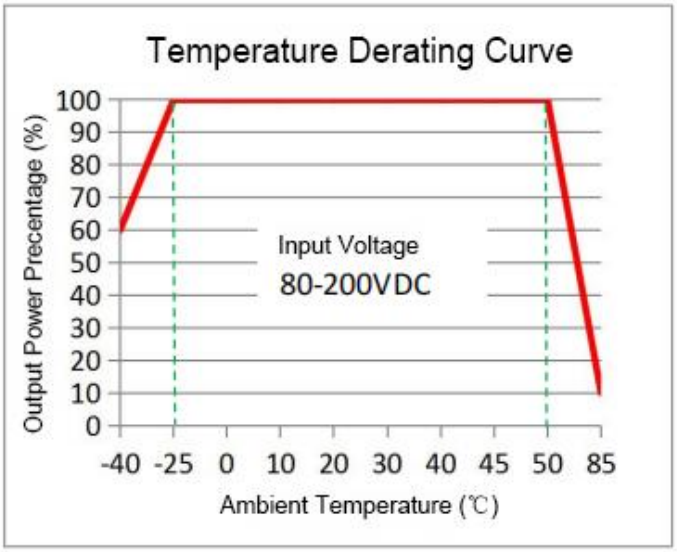
Test Method:

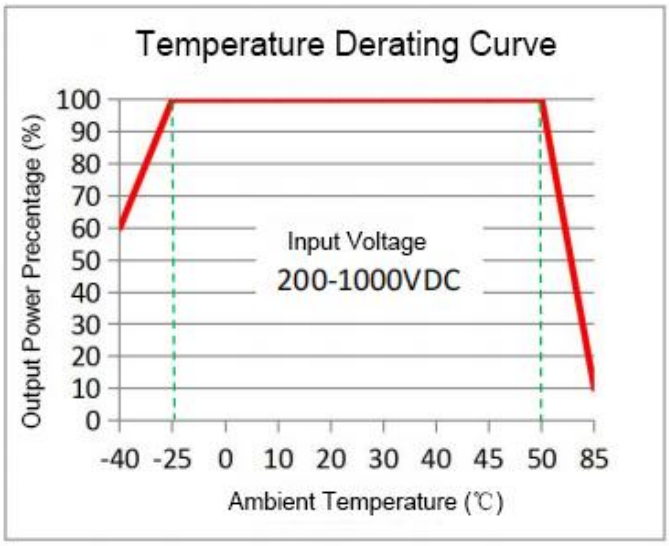
(1) 12# twisted pair to connect, Oscilloscope bandwidth set as 20MHz, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 10uF high frequency low resistance electrolytic capacitor in parallel, oscilloscope set as Sample pattern.

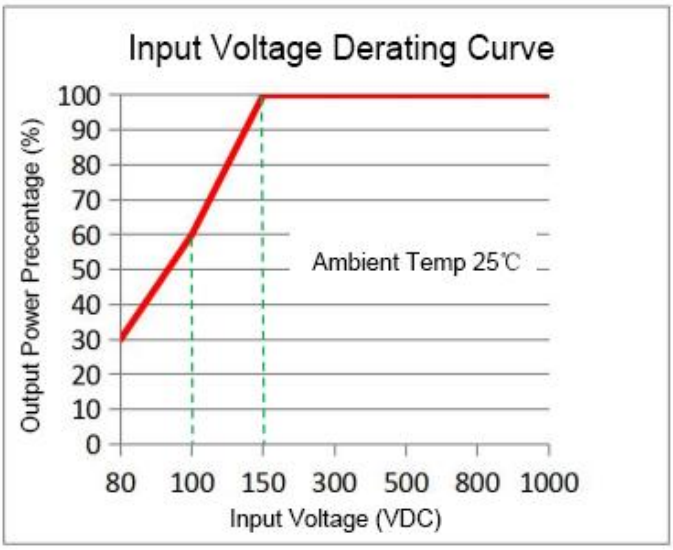
(2) Input terminal connect to power supply, output terminal connect to electronic load through jig plate, Use 30cm±2 cm sampling line, Power line selected from corresponding diameter wire with insulation according to the flow of output current.

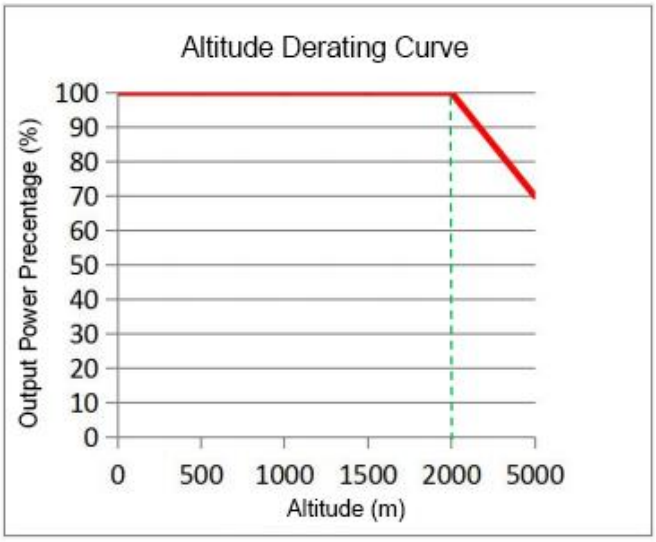


Product Characteristic Curve





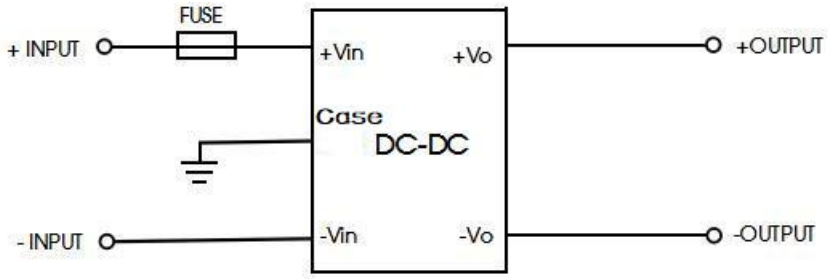




Note 1: The input voltage is 80~150VDC, and the voltage must be derated based on the input voltage derating curve.

Note 2: This product is suitable for use in a natural air cooling environment. Please contact us if it is used in a closed environment.

Design Reference Application



Component Code	Component	Recommended Value
FUSE	fuse	4A/1000VDC, necessary

Note:

1.The product should be used under the specification range, otherwise it will cause permanent damage to it.

2.Product's input terminal should connect to fuse;

3.If the product operated below the minimum load request, we cannot ensure that the performance of product is in accordance with all the indexes in this manual;

4.If the product worked beyond the load range, we cannot ensure that the performance of product is in accordance with all the indexes in this manual;

5.Unless otherwise specified, data in this datasheet are tested under conditions of **Ta=25**℃, **humidity<75%** when inputting nominal voltage and outputting rated load(pure resistance load);

6.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, please directly contact our technician for specific information;

7.The product specification may be changed at any time without prior notice.