



- ◆ Ultra Wide input voltage range 100-1000VDC (10:1)
- ◆ Against reverse protection, output over-current protection, short circuit protection
- ◆ High efficiency, low ripple&noise, short start-up time
- ◆ Input output isolation: 4000VDC
- ◆ Widely used in photovoltaic power generation, high-voltage inverter
- ◆ Operating Temperature: -30°C~ +70°C
- ◆ Industrial design, international pin out
- ◆ Customization service



**Application Field**

**BK15-500SXXH1N4** series --- is a 100-1000VDC ultra-wide ultra-high voltage input high-efficiency and high-reliability DC-DC switching regulated power supply module. It can be widely used in photovoltaic power generation and high-voltage frequency conversion and other occasions to provide stable power for load equipment. Working voltage, and its built-in multiple protection functions can improve the safety performance of the power supply and its load when the module power supply works abnormally.

**Typical Product List**

Model	Power (W)	Input Current (Input Nominal)	Output Voltage/Current		Output Efficiency (Input Nominal) %/TYP	Max. Capacitive Load (u F)
		Output full load	Voltage	Current		
		(mA)	(V)	(mA)		
BK15-500S05H1N4	15	36.6	5	3000	82	2000
BK15-500S12H1N4		36.2	12	1250	83	1000
*BK15-500S24H1N4		35.3	24	625	84	470
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Note 1: Due to space limitations, above is only a part of our product list, please contact our sales team for more items.

Note 2: "\*" is model under developing.

Note 3: The typical output efficiency is based on that product is full loaded and burned-in after half an hour.

Note 4: The fluctuation range of full load efficiency(% ,TYP) is ±2%, full load output efficiency= total output power/module's input power.

Note 5: The input end of the product needs to be connected in series with a current-limiting resistor (4.0 Ω /3W, wire-wound resistor) to suppress surge current. For details on the connection method, see the recommended peripheral circuits below.

**Input Specification**

Item	Operating Condition	Min.	Typ.	Max.	Unit
Input Voltage Range	--	100	500	1000	VDC
		Please refer to the Input Voltage Dearthng Curve at back			

Item	Operating Condition	Min.	Typ.	Max.	Unit
Input Current	100VDC@100% load	--	183	--	mA
	500VDC@100% load	--	36	--	
	1000VDC@100% load	--	19	--	
Input Anti-reverse Protection	--	Available			
Hot Plug	--	N/A			

### Output Specification

Item	Operating Condition	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	0%~100% load	--	±2.0	±3.0	%
Minimum Load	--	10	--	--	
Line Regulation	Input full load range	--	±0.5	±1.0	
Load Regulation	20%~100% nominal load, balance load	--	±1.0	±2.0	
Ripple & Noise	20MHz bandwidth (peak peak value)	--	200	300	mV
Temperature Coefficient	--	--	±0.05	--	%
Turn-on Delay Time	100VDC	--	600	--	mS
	500VDC	--	300	--	
	1000VDC	--	100	--	
Power-off Holding Time	500VDC	--	10	--	
Turn-on Overshoot	0%~100% load	--	10	--	
Output Over-current Protection	Input full voltage range	130	200	--	%
Dynamic Response Overshoot Range	25%-50%-25%	--	±5.0	±6.0	
Dynamic Response Recovery Time	50%-75%-50%	--	300	500	mS
Over-current Protection	--	≥110%Io, self-recovery			
Short Circuit Protection	Input 300-900VDC	continuous short circuit protection, self-recovery			

### General Specification

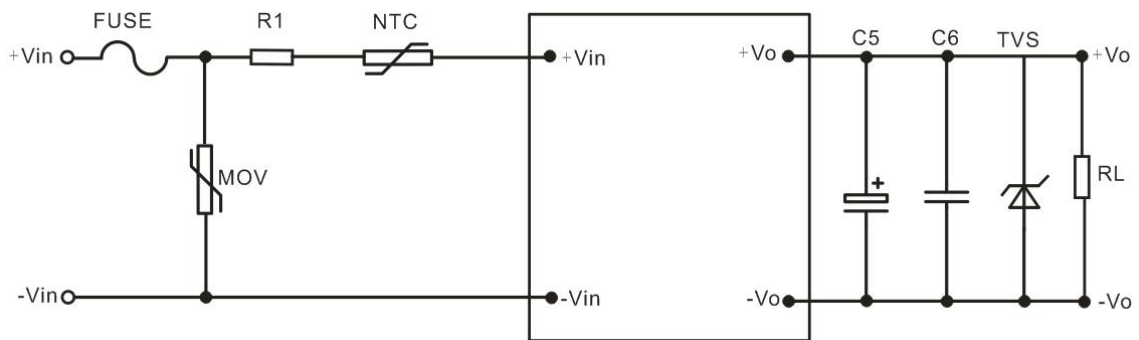
Item	Operating Condition	Min.	Typ.	Max.	Unit
Isolation Voltage	Input-Output Test time: 1min Leakage current < 0.5mA	4000	--	-	VDC
Insulation Resistance	Input-Output Test voltage: 500VDC	100	--	-	MΩ
Operating Temperature	--	-30	--	+70	℃
	Refer to Temperature Derating Curve, details see the Product Character Curve at back				
Storage Temperature	--	-40	--	+85	
Soldering Temperature	Wave-soldering	260±5℃, time: 5-10S			

	Manual-welding	380±10℃, time: 4-10S			
Switching Frequency	--	--	65	70	KHz
Max. Case Temperature	Within Temperature Derating Curve	--	--	+100	℃
Storage Humidity	No condensing	--	--	95	%RH
Mean Time Between Failure	--	MIL-HDBK-217F@25℃>300,000H			

### Physical Specifications

Case Material		Black Aluminum Case			
Package Dimensions	Horizontal package	70.0X48.0X23.5mm			
Product Weight		145g (TYP)			
Cooling Method		Free Air Convection			

### Typical Application Circuit

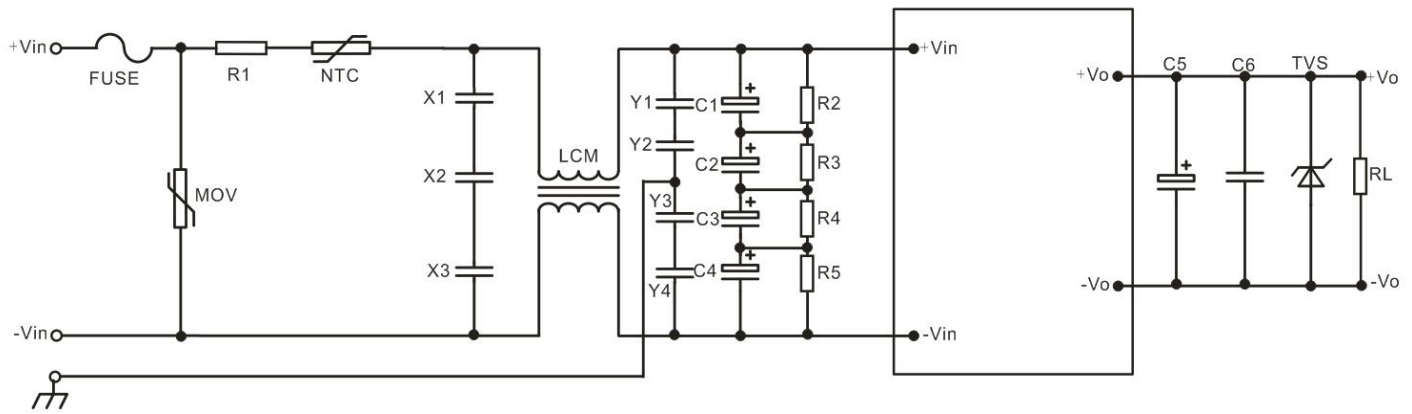


Output Voltage	C5	C6	TVS
5V	680uF/16V	1.0uF/50V/1206	SMBJ10A
12V	470uF/25V	1.0uF/25V/1206	SMBJ18A
24V	220uF/50V	0.1uF/50V/1206	SMBJ30A

#### Note:

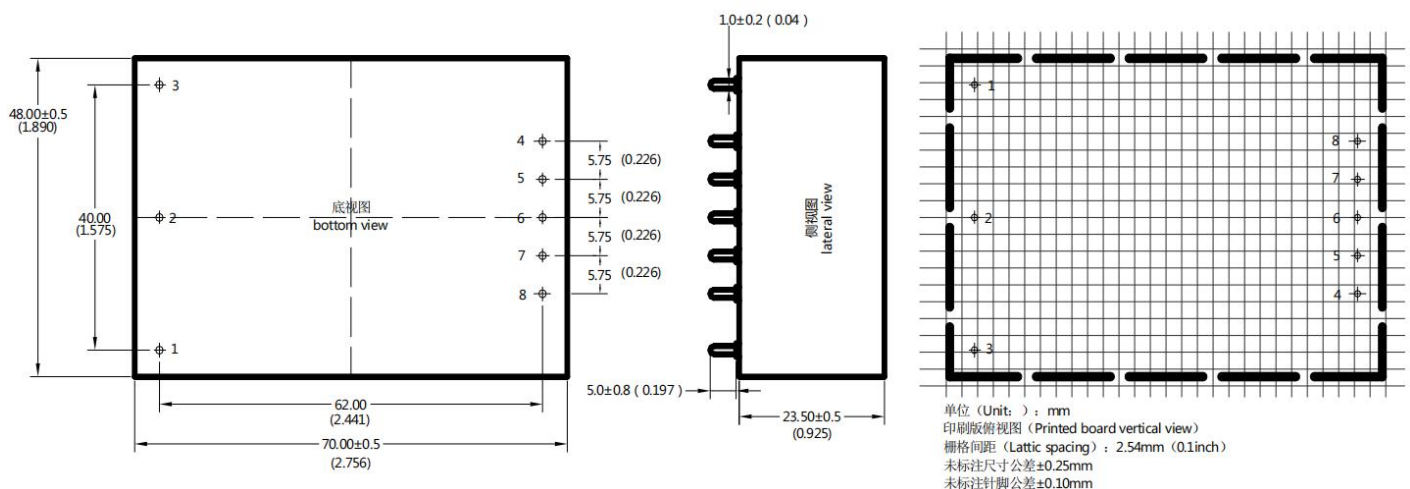
The output filter capacitor C5 is an electrolytic capacitor. It is recommended to use high-frequency, low-resistance electrolytic capacitors. For capacity and flowing current, please refer to the technical specifications provided by each manufacturer. The capacitor voltage is derated by 80%. C6 is a ceramic capacitor to remove high-frequency noise. The TVS tube protects the downstream circuit when the module is abnormal and is recommended to be used.

## EMC External Recommended Circuit



Component	Function	Recommended Value	Note
FUSE	Protect circuit when circuit fails	According to customer's request	Must add
R1	Reject surge current at startup	4.0Ω/3W Wire-wound resistor	
NTC	Reject Surge Current	5D-15	
MOV	Absorb lightning surge	20D152K	According to the actual application requirements to select additional
X1/X2/X3	Reject different mode interference	474K/275V	
LCM	Reject the common mode interference	10mH/1000mA	
Y1/Y2/Y3/Y4		2.2nF/400V	
C1/C2/C3/C4	Low frequency Filter	10uF/400V	
R2/R3/R4/R5	Average Voltage, ensure the equal voltage of capacitance	1MΩ/0.25W	

## Dimension and Pin out Specifications



Pin out Specification:

Pin-out	1	2	3	4	5	6	7	8
Single (S)	NC	-Vin	+Vin	+Vo	NC	NC	NC	-Vo

## Dimension

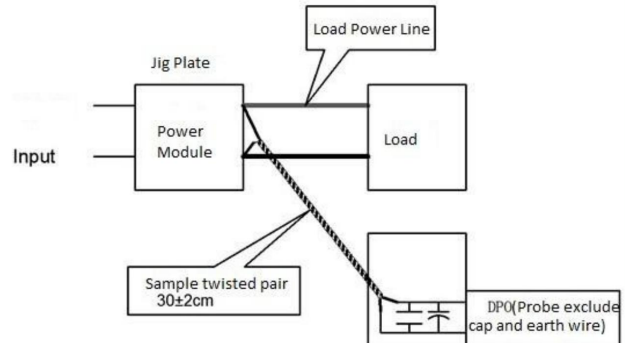
Packing code	L x W x H	
H1N4	70.0X48.0X23.5 mm	2.756X1.890X0.925inch

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

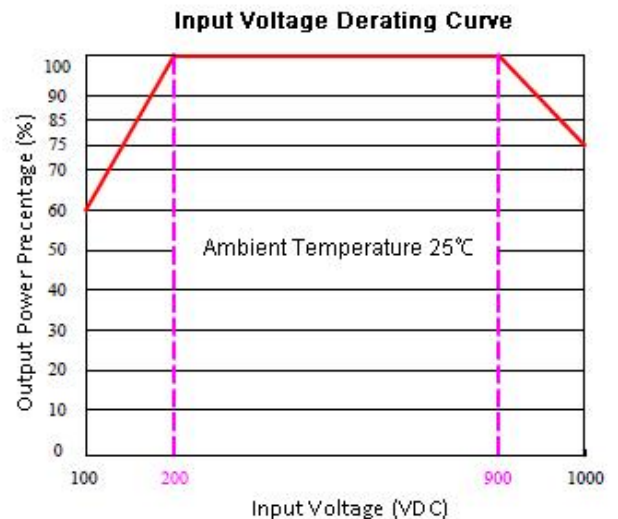
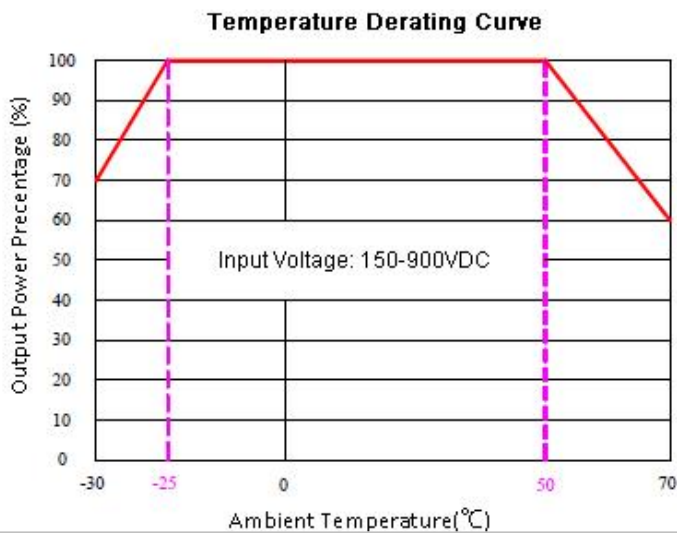
Test Method:

(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 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  $T_a=25^{\circ}\text{C}$ , humidity<75% when inputting nominal voltage and outputting rated load(pure resistance load);
- 6.All index testing methods in this datasheet are based on our Company's corporate standards.
- 7.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;
- 8.We can provide customized product service;
- 9.The product specification may be changed at any time without prior notice.