

### Typical Features

- ◆ Ultra Wide input voltage range 100-1000VDC
- ◆ No-load consumption  $\leq 0.4W$
- ◆ Switching Frequency: 65KHz
- ◆ Transfer efficiency up to 85% (Typ.)
- ◆ Protection: against reverse, over-voltage protection, over-current, short circuit protection
- ◆ Isolation voltage: 4000VAC
- ◆ Meet IEC/EN623668 test standard
- ◆ Comply with CE & RoHS certification
- ◆ Fully enclosed plastic case, complied with UL94V-0 level



### Application Field

**BK15-500SXXH2N6 series** -- are regulated output DC/DC converters offered by Aipu. It features ultra-high voltage input of 100-1000VDC, high efficiency and high reliability. It can be widely used in photovoltaic power generation, high-voltage inverter and so on, which provide stable operating voltage to the equipment and improve the power and the load's safety performance with multiple protection when working under abnormal conditions.

### Typical Product List

Model	Output Specification			Max. Capacitive Load	Ripple & Noise 20MHz (MAX)	Efficiency@Full load, 150VDC (Typ.)
	Power	Voltage 1	Current 1			
	(W)	Vo1 (V)	Lo1 (mA)			
BK15-500S12H2N6	15	12	1250	2000	200	82
*BK15-500S24H2N6		24	625	680	200	85

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  $\pm 2\%$ , full load output efficiency= total output power/module's input power.

Note 5: The test method for ripple and noise adopts the twisted pair test method. Please see the following (ripple & noise test instructions) for specific test methods and combinations.

### Input Specification

Item	Operating Condition	Min.	Typ.	Max.	Unit
Switching Frequency	--	--	65	70	KHz
Input Voltage Range	DC Input	100	500	1000	VDC
Item	Operating Condition	Min.	Typ.	Max.	Unit
Input Current	100VDC	--	0.305	--	A

	500VDC	--	0.06	--	
Surge Current	200VDC	--	7	--	A
	600VDC	--	20	--	
No-load Consumption	Input 500VDC	--	--	0.40	W
Recommended Value for External Fuse	--	2A / 1000V, necessary			
Hot Plug	--	N / A			
Remote Control	--	N / A			

## Output Specification

Item	Operating Condition	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Input full voltage range	--	±2.0	±3.0	%
Line Regulation	Input full load range	--	±0.5	±1.2	
Load Regulation	20%~100% nominal load, balance load	--	±1.0	±2.0	
Minimum Load	Single Output	10	--	--	
Turn-on delay time	Input 100VDC (Full load)	--	5000	--	mS
	Input 1000VDC (Full load)	--	1000	--	
Power off Holding time	Input 500VDC (Full load)	10			
Dynamic Response	25%-50%-25%	Overshoot Range: ≤±6.0			%
	50%-75%-50%	Recovery Time: ≤500			mS
Output Overshoot	Input full voltage range	≤10%Vo			%
Short circuit protection	Input 100-700VDC	Continuous short circuit protection, self-recovery			Hiccup
Drift coefficient	--	--	±0.05%	--	%/°C
Over current protection	Input 200-1000VDC	≥110%Io self-recovery			Hiccup
Output Over-voltage protection	12V	≤16			VDC

## General Specification

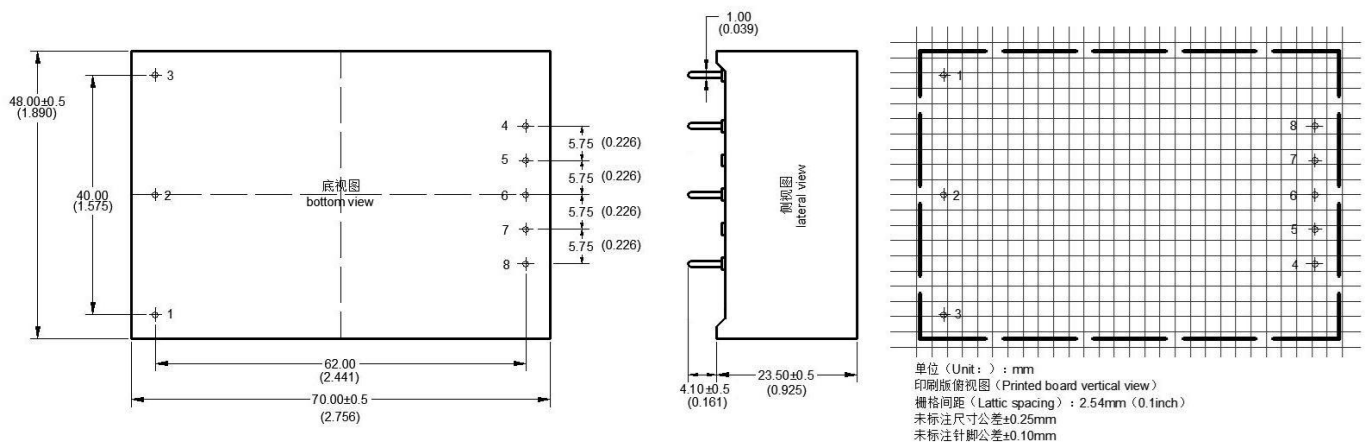
Item	Operating Condition	Min.	Typ.	Max.	Unit
Operating Temperature	--	-30	--	+70	°C
	Refer to Temperature Derating Curve, details see the Product Character Curve at back				
Storage Temperature	--	-25	--	+85	
Soldering Temperature	Wave-soldering	260±5°C, time: 5-10S			
	Manual-welding	380±10°C, time: 4-7S			
Relative Humidity	No condensing	--	--	90	%RH
Isolation Voltage	Input-Output, Test time: 1min, leakage current≤0.5mA	4000	--	--	VAC
Insulation Resistance	Input-Output@DC500V	100	--	--	MΩ

Safety Standard	--	IEC/EN62368
Vibration	--	10-55Hz,10G,30Min,along X,Y,Z
Safety Class	--	CLASS II
Case Class	--	UL94V-0
Mean Time Between Failure	--	MIL-HDBK-217F@25℃>300,000H

## Physical Specifications

Case Material	Black Aluminum Case	
Package Dimensions	70.0X48.0X23.5mm	
Product Weight	115g (TYP)	
Cooling Method	Free Air Convection	

## Dimension and Pin out Specifications



Note:

If the definition of each pin of the power module is inconsistent with the selection manual, the markings on the physical label should prevail.

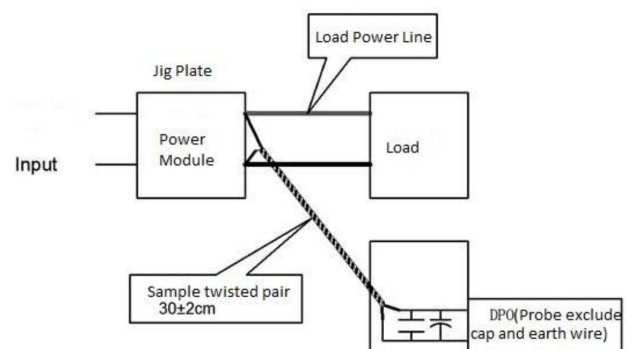
Packing code			L x W x H						
H2			70.0X48.0X23.5 mm				2.756X1.890X0.925inch		
Pin-out	1	2	3	4	5	6	7	8	9
Single (S)	NC	-Vin	+Vin	+Vo	NC	NC	NC	GND	NC

## 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

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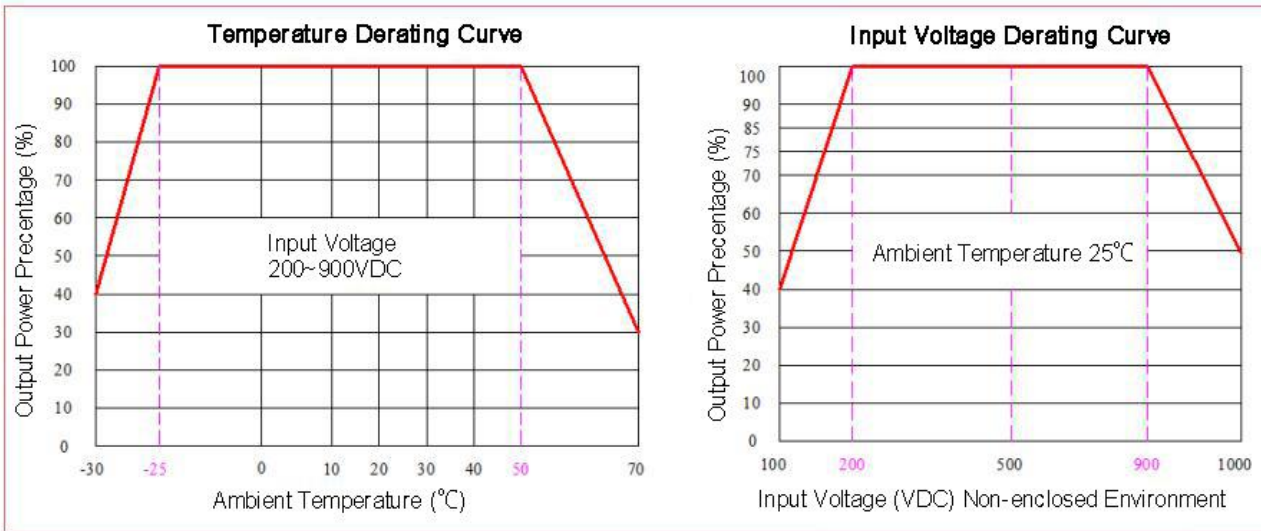
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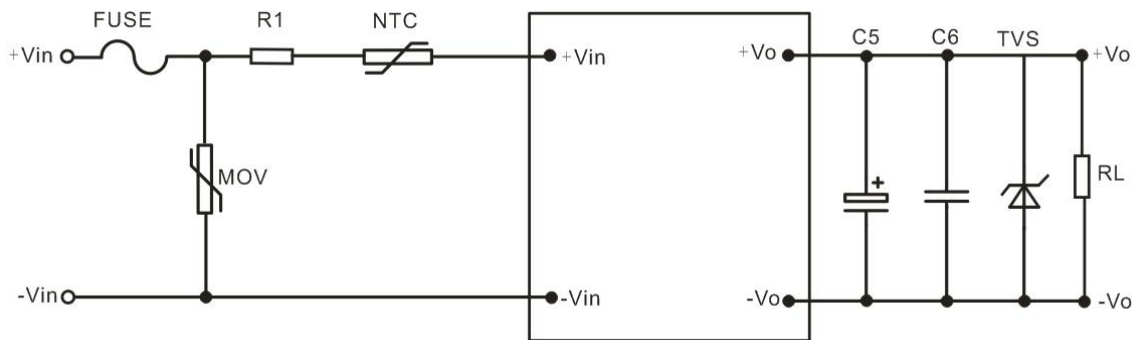
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Note 1: When the input voltage is 100~1000VDC and the temperature is -30~70°C, voltage derating is required based on the input voltage derating curve.

Note 2: This product is suitable for use in a natural wind cooling environment. If it is used in a closed environment, please contact our company.

### Typical Application Circuit

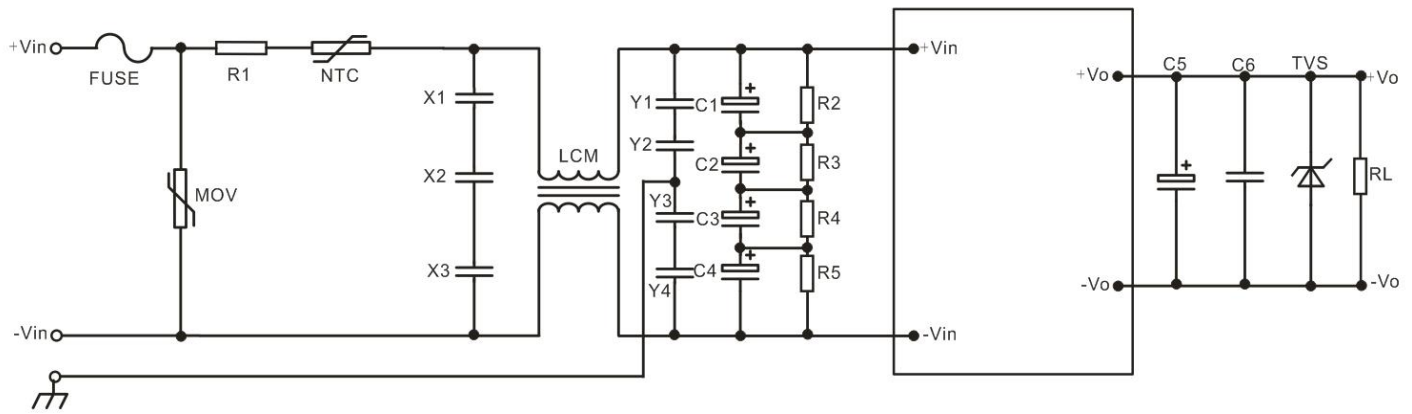


Output Voltage	C5	C6	TVS
12V	330uF/35V	0.2uF/50V/1206	SMBJ18A
24V	220uF/50V	0.1uF/50V/1206	SMBJ28A

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 withstand voltage derating of the capacitor is greater than 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	300Ω/10W Metal oxide film resistance	
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	1.0μF/450V	
LCM	Reject the common mode interference	8mH/0.8A	
Y1/Y2/Y3/Y4		2.2nF/400V	
C1/C2/C3/C4	Low frequency Filter	200uF/400V	
R2/R3/R4/R5	Average Voltage,ensure the equal voltage of capacitance	1MΩ/2W	

### 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.