Typical Features

- ◆ Ultra-wide input voltage range 100-1000VDC
- ◆ No-load power consumption≤0.4W
- ◆ Switching Frequency: 65KHz
- ◆ Efficiency up to 85% (Typ.)
- ◆ Protections of anti-reverse, over-voltage, over-current & short circuit
- ◆ Isolation voltage: 4000VAC
- ◆ Compliant with IEC/EN62368
- ◆ Conform to CE & RoHS regulation
- ◆ Encapsulated in plastic case, flame class UL94V-0

Application Field

BK15-500SXXH2N6 *series -- are ultra-wide input voltage from 100 to1000VDC, high efficiency & reliability DC/DC converters provided by Aipu. They can be widely used in solar power system, high-voltage inverter and so on, performance with stable voltage output and multi-protections to keep the load safety while operating at abnormal conditions. Additional circuit for EMC is recommended in this data sheet for the application with higher EMC requirement.*

Typical Product List

Certificate	Model	Output Specification			Capacitive Load Max. (200-1000VDC)	Ripple & Noise 20MHz (MAX)	Efficiency @Full load 500VDC (Typ.)
		Power	Voltage	Current			
		(W)	Vo(V)	Lo(mA)	(u F)	mVp-p	%
-	BK15-500S12H2N6	15	12	1250	2000	200	82
-	BK15-500S15H2N6	15	15	1000	2000	200	82
-	BK15-500S24H2N6	15	24	625	800	200	85

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 ±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.

Note 4: Please contact with Aipu sales for other output voltages requirement in this series but not in this table.

Input Specifications

Item	Operating Condition	Min.	Typ.	Max.	Unit
Switching Frequency	--	--	65	70	KHz
Input Voltage Range	DC Input	100	500	1000	VDC
Input Current	100VDC	--	0.305	--	A
	500VDC	--	0.06	--	
Surge Current	200VDC	--	7	--	A
	600VDC	--	20	--	

No-load Power	Input 500VDC	--	--	0.40	W
Recommended External Fuse	--	2A / 1000V, necessary			
Hot Plug	--	N / A			
Remote Control	--	N / A			

Output Specifications

Item		Operating Condition	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		Input full voltage range	--	±2.0	±3.0	%
Line Regulation		Input rated load	--	±0.5	±1.2	
Load Regulation		Input rated voltage, 20%~100% load	--	±1.0	±2.0	
Minimum Load		Single Output	10	--	--	
Turn-on delay		Input 100VDC (Full load)	--	5000	--	mS
		Input 1000VDC (Full load)	--	1000	--	
Power off Holde up time		Input 500VDC (Full load)	10			
Dynamic Response	Overshoot	25%-50%-25% 50%-75%-50%	-6.0	-	6.0	%
	Recovery		-	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%	--	%/℃
Over current protection		Input 200-1000VDC	≥110%Io self-recovery			Hiccup
Output Over-voltage protection		12V	≤16			VDC
		15V	≤19			
		24V	≤32			

General Specifications

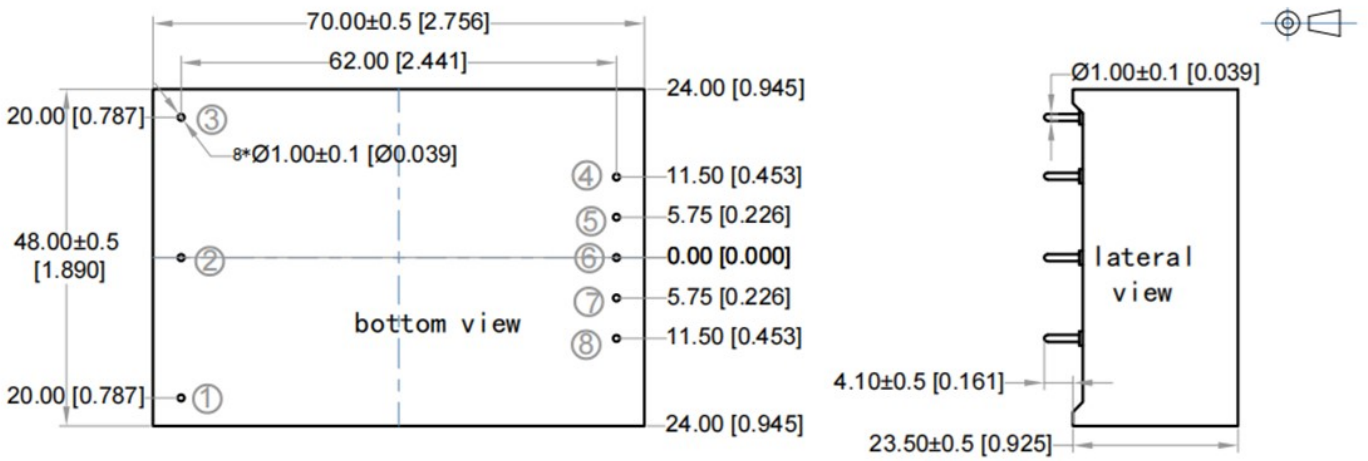
Item	Operating Condition	Min.	Typ.	Max.	Unit
Operating Temperature	--	-30	--	+70	℃
	Please refer to the Temperature Derating Curve				
Storage Temperature	--	-40	--	+85	
Soldering Temperature	Wave-soldering	260±5℃，time: 5-10S			
	Manual-soldering	380±10℃，time: 4-7S			
Relative Humidity	No condensing	--	--	90	%RH
Isolation Voltage	Input-Output, Test time: 1min, leakage current≤0.5mA	4000	--	--	VAC
Insulation Resistance	Input-Output@DC500V	100	--	--	MΩ

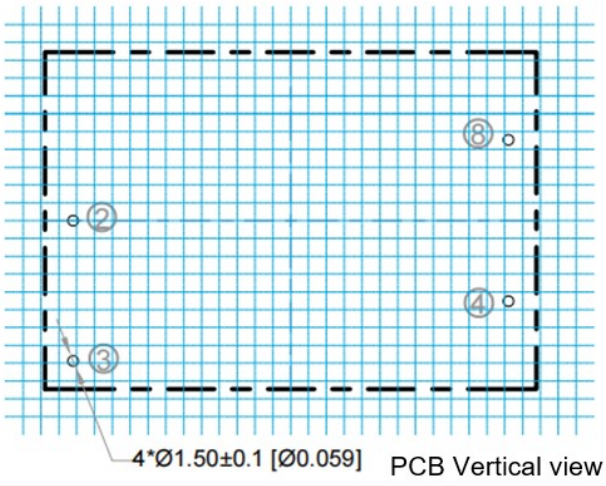
Safety Standard	--	IEC/EN62368
Vibration	--	10-55Hz,10G,30 Min, along X,Y,Z
Safety Class	--	CLASS Ⅱ
Flame class of case	--	UL94V-0
MTBF	MIL-HDBK-217F@25℃	＞300KH

Physical Characteristics

Case Material		Plastic in Black with flame class UL94V-0
Package Dimensions	Horizontal package	70.0X48.0X23.5mm
Product Weight		115g（TYP）
Cooling Method		Nature air

Mechanical Dimensions





Note:
Unit: mm[inch]
Grid: 2.54x2.54[0.10x0.10]
General tolerance: ±0.5[±0.020]

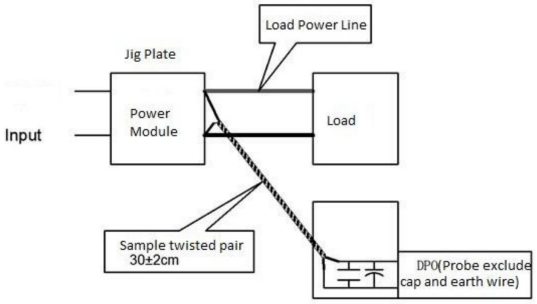
Packing code	L x W x H	
H2	70.0X48.0X23.5 mm	2.756X1.890X0.925 inch

Pin-out	1	2	3	4	5	6	7	8
Single(S)	NP	-Vin	+Vin	+Vo	NP	NP	NP	GND
Functions	No pin	Input V-	Input V+	Output V+	No pin	No pin	No pin	Output V-

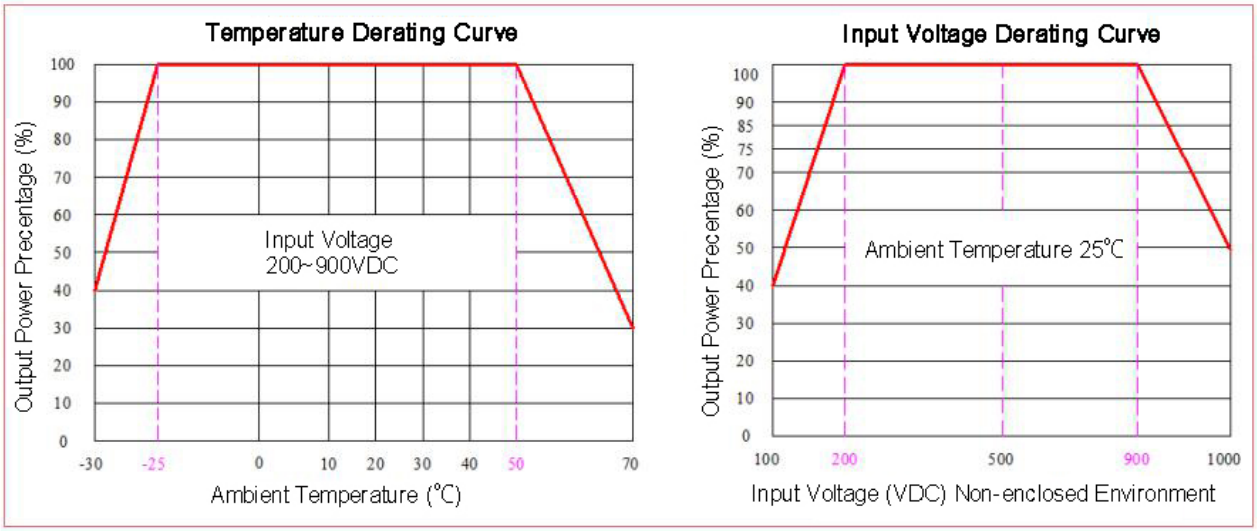
Ripple& Noise Test Instruction: (Twisted Pair Method, 20MHZ bandwidth)

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.

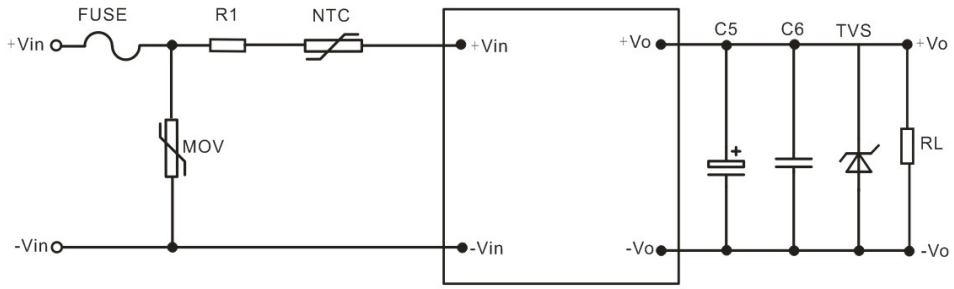


Product Performance Curve



Note 1: The output power should be derated based on the input voltage derating curve at 100~200/900~1000VDC.
Note 2: This product should operate at a natural air condition, please contact us if it need be used at a closed space.

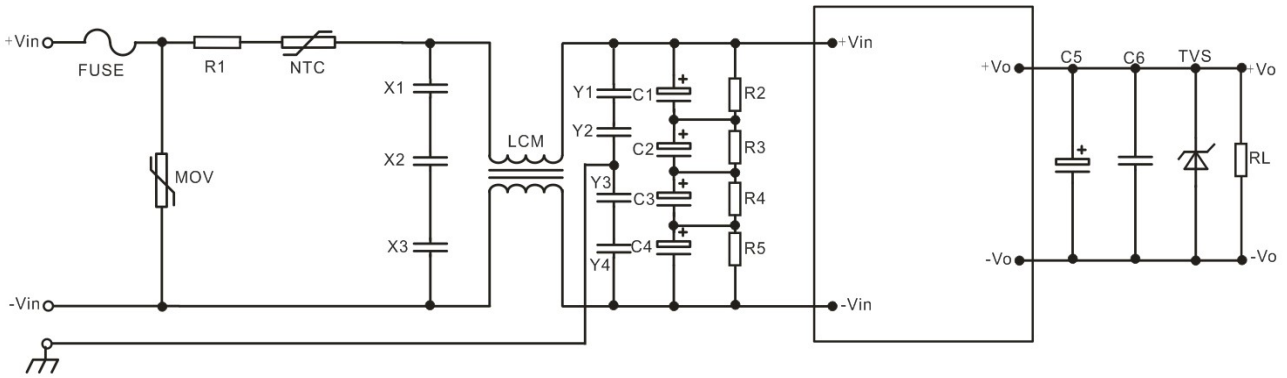
Typical Application Circuit



Output Voltage	C5	C6	TVS
12V	330uF/35V	0.2uF/50V/1206	SMBJ18A
15V	330uF/35V	0.2uF/50V/1206	SMBJ18A
24V	220uF/50V	0.1uF/50V/1206	SMBJ28A

Note: A high-frequency, low-resistance electrolytic capacitor is recommended for C5, the capacitance and current can be checked from the technical specifications of the manufacturer. It's withstand voltage derating should be >80%. C6 is a ceramic capacitor to suppress the high-frequency noise. The TVS is recommended to protect the output circuit at abnormal condition.

Recommended EMC Circuit



Component	Function	Recommended Value	Remarks
FUSE	Shut off the input when the module operating at abnormal condition	TBD according to the actual input current	Necessary
R1	Suppress the start-up transient surge current	300Ω/10W (Cement resistor)	
NTC	Suppress the surge current	5D-15	
MOV	Absorb the surges	20D152K/6500A	Optional according to the actual application
X1/X2/X3	Suppress the differential mode interference	X1/105K/440VAC	
LCM	Suppress the Common mode interference	8mH/0.8A	
Y1/Y2/Y3/Y4		Y1/222M/400VAC	
C1/C2/C3/C4	Low frequency Filter	200uF/400V	
R2/R3/R4/R5	Voltages balance	1MΩ/2W	

Note:

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℃, humidity<75%RH, rated input voltage and rated load (pure resistance load).

6. All values or indicators in this manual had been tested based on Aipupower test specifications.

7.The specifications are specially for the parts listed in this manual, any other non-standard model performances could be out of the specifications. Please contact our technician for specific requirement.

8. Aipupower can provide customization service.

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