New Energy DC/DC Converter
BK25-500SXXH1N4

Typical Features

- ◆ Ultra-wide input voltage range 100-1000VDC(10:1)
- ◆ Input anti-reverse, output over-voltage, short circuit protections
- ◆ No load current 1.0mA Min
- ◆ Isolation voltage 4000VDC
- ◆ Efficiency up to 85%(TYP.)
- ◆ Application in solar power generation, high-voltage inverter
- ◆ Operating Temperature: -30℃- +70℃
- ◆ Industrial design, international standard dimension

Application Field

BK25-500SXXH1N4 *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.*

Typical Product List

Certificate	Part No.	Output Specifications			Max. Capacitive Load	Ripple & Noise 20MHz (MAX)	Efficiency@ full load /500Vdc (Typ.)
		Power	Voltage	Current			
		(W)	Vo(V)	Io(mA)	(uF)	mVp-p	%
-	*BK25-500S12H1N4	25	12	2084	1500	250	82
-	*BK25-500S15H1N4	25	15	1667	1000	250	83
-	BK25-500S24H1N4	25	24	1042	680	250	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. Efficiency=Output power/Input power*100%.

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.

Note 5: * marked part has been developed in process.

Input Specifications

Item	Operating Condition	Min.	Typ.	Max.	Unit
Input Voltage Range	DC input	100	500	1000	VDC
Input Current	100VDC@100% load	--	305	--	mA
	500VDC@100% load	--	60	--	
	1000VDC@100% load	--	31	--	
Stand-by power Consumption	Output no load, rated input	--	--	0.4	W
Input Filter	--	Π filter			
Hot Plug	--	NA			
Remote Control	--	NA			

Output Specifications

Item	Operating Condition	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Input full voltage range ,0%~100% load	--	±2.0	±3.0	%
Line Regulation	Rated load	--	±0.5	±1.2	
Load Regulation	20%~100% load, rated input voltage	--	±1.0	±2.0	
Minimum Load	Single output	10	--	--	
Turn-on delay time	Input 100VDC	--	5000	--	mS
	Input 500VDC	--	1500	--	
	Input 1000VDC	--	1000	--	
Power off Holde up time	Input 500VDC	--	10	--	
Dynamic Response Overshoot	25%-50%-25% 50%-75%-50%	--	±5.0	±6.0	%
Dynamic Response recovery time		--	300	500	mS
Output Overshoot	Input full voltage range	≤10%Vo			%
Short circuit protection	Input 100-700VDC	Continuous protection, self-recovery			Hiccup
Temperature Coefficient	--	--	±0.05%	--	%/℃
Ripple & Noise	20MHz bandwidth (peak-peak value)	--	200	250	mV
Over-current protection	Input 200-1000VDC	≥110%Io, Self-recovery			Hiccup

General Specifications

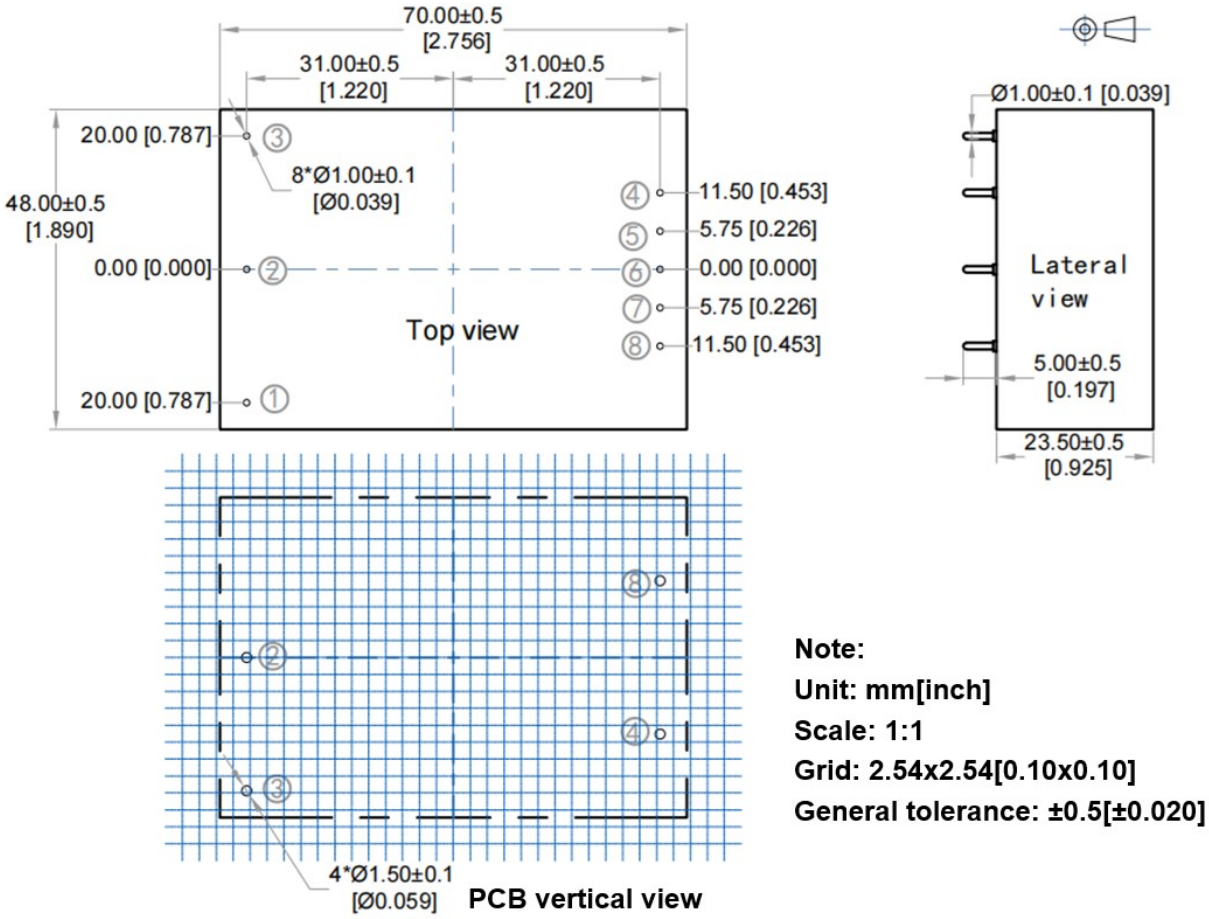
Item	Operating Condition	Min.	Typ.	Max.	Unit
Operating Temperature	--	-30	--	+70	℃
	Please refer to the Temperature Derating Curve				
Storage Temperature	--	-40	--	+85	
Case Temperature	Operating at temperature derating	--	--	+100	
Soldering Temperature	Wave soldering	260±5℃, time 5-10S			
	Manual soldering	360±10℃, time 4-7S			
Shortage Humidity	No condensing	--	--	95	%RH
Switching Frequency	--	--	65	70	KHz
Isolation Voltage	Input-Output, Test 1min, leakage current≤5mA	4000	--	--	VDC
Insulation Resistance	Input-Output, @500VDC	100	--	--	MΩ
Vibration	--	10-55Hz,10G,30 Min, along X,Y,Z			
MTBF	MIL-HDBK-217F@25℃	＞300KH			

Physical Characteristics

Case Material		Aluminum in Black
Package Dimensions	Horizontal package	70.0X48.0X23.5mm

Product Weight		155g(TYP)
Cooling Method		Nature air

Mechanical Dimensions



Note:
Unit: mm[inch]
Scale: 1:1
Grid: 2.54x2.54[0.10x0.10]
General tolerance: ±0.5[±0.020]

Packaging code	L x W x H	
H1	70.0X48.0X23.5 mm	2.756X1.890X0.925 inch

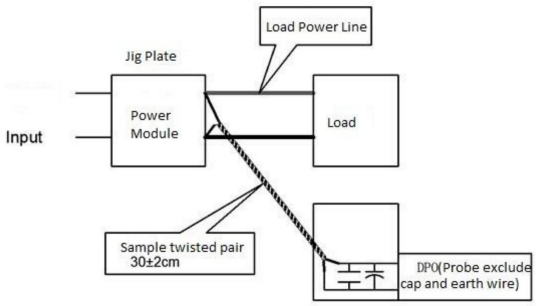
Pin definition

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

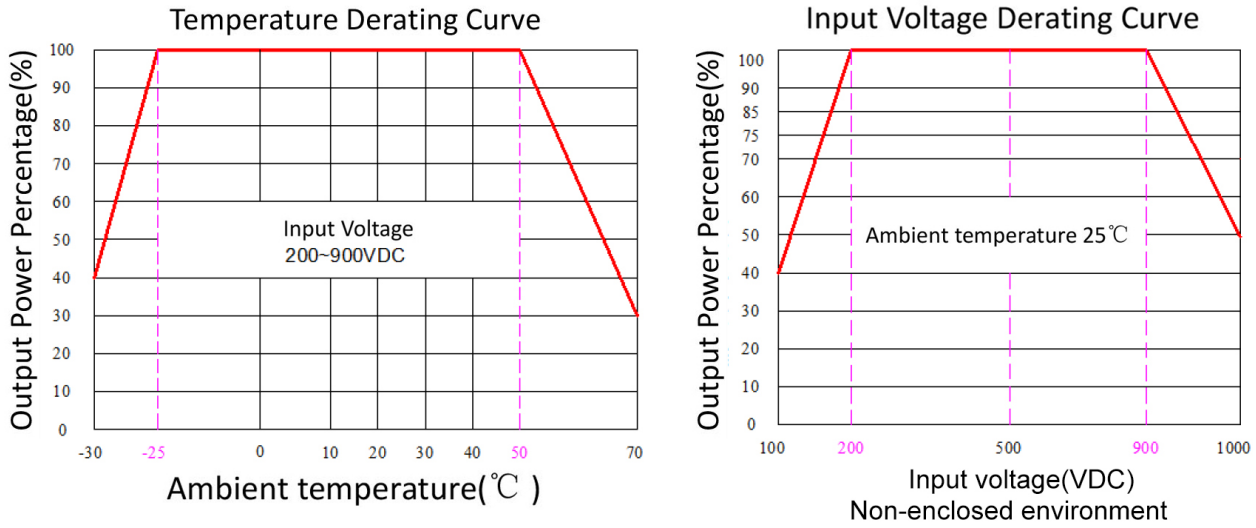
Ripple& Noise Test Instruction: (Twisted Pair Method, 20MHZ bandwidth)

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.



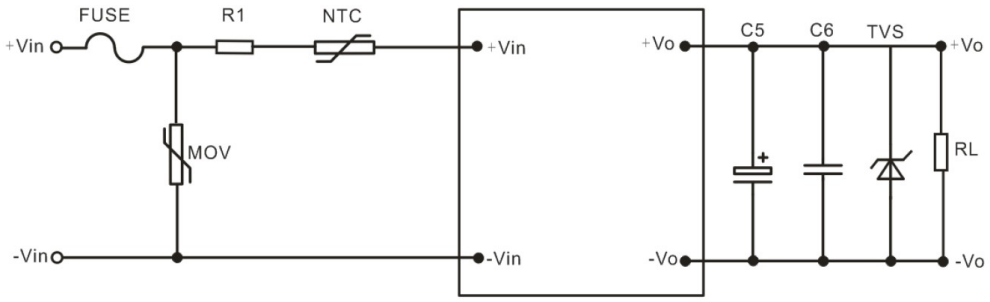
Product Performance Curve



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.

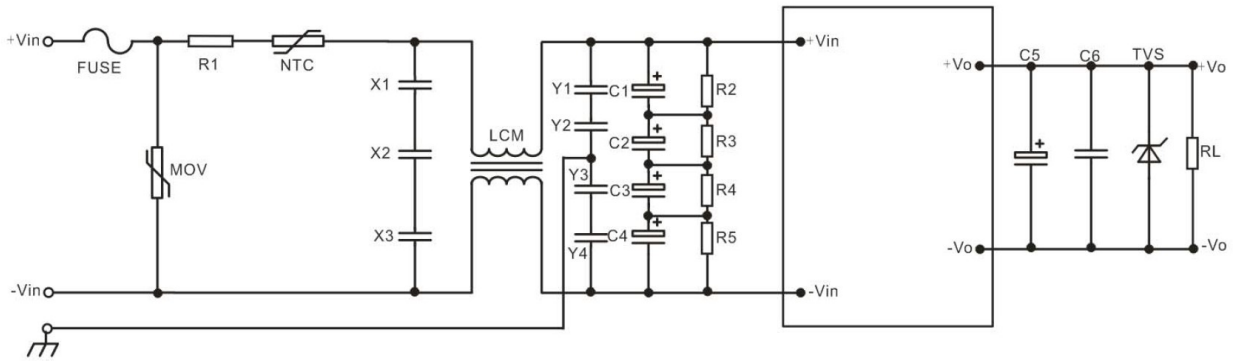
Typical Application Circuit



Output Voltage	C5	C6	TVS
12V	470uF/25V	1.0uF/25V/1206	SMBJ15A
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	220uF/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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