Typical Features

- Ultra-wide input voltage range 200-1200VDC(6:1)
- Input anti-reverse, under voltage protection
- Output short circuit, over-current, over-voltage protection
- Input/Output Isolation Voltage 4000VDC
- High efficiency, high reliability, low ripple
- Applied for Photovoltaic, high-voltage DC Conversions
- Operating Temperature: -30°C~+70°C
- Industrial grade design, international standard size

Application Field

BK40-650SXXW2N4 Series *is regulated DC-DC converters with an ultra-wide DC input of 200-1200VDC. The products feature high efficiency, high reliability. This type of power supply is widely used in renewable energy industries such as photovoltaic, power generation, energy storage, inverters and high-voltage DC conversions. The converters 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

Part No	Power	Output Voltage/Current		Output Efficiency	Max. Capacitive Load
		Voltage	Current	(Input 600VDC) %/TYP	(uF)
	(W)	(V)	(mA)		
BK40-650S12W2N4	40	12	3333	83%	1200
BK40-650S15W2N4		15	2667	84%	1000
BK40-650S24W2N4		24	1667	85%	800

Note

1: Due to space limit, above is only a part of our product list, please contact our sales team for more items.

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

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

Input Specifications

Item	Operating Condition	Min.	Typ.	Max.	Unit
Input Voltage Range	--	200	600	1200	VDC
		Please refer to Input Voltage Dearting Curve at Back			
Input Current	200VDC@100% Load	--	--	250	mA
	600VDC@100% Load	--	--	82	
	1200VDC@100% Load	--	--	43	

Input Under-Voltage Protection	Start point	175	--	185	VDC
	Release point	187	--	197	
Input no-load Current	Output no load	--	--	0.6	mA
External Fuse Recommend	--	4A/1500VDC Slow fusing, necessary			

Output Specification

Item	Operating Condition		Min.	Typ.	Max.	Unit
Voltage Accuracy	0%~100% Load		--	±2.0	±3.0	%
Minimum Load	Full Input voltage range		10	--	--	
Line Regulation			--	±1.0	±1.5	
Load Regulation	20%~100% nominal load		--	±2.0	±3.0	
Ripple & Noise	20MHz bandwidth (peak peak value)		--	100	250	mV
Temperature Coefficient	--		--	±0.03	--	%
Turn On Delay Time	Normal temperature @ output full load		--	2000	--	mS
Power off holding time	Normal temperature @ output full load	500VDC Input	--	5	--	
		1000VDC Input	--	10	--	
Turn on overshoot	0%~100% Load		--	--	10	%
Dynamic Response Overshoot Range	25%-50%-25% 50%-75%-50%		--	±5.0	±6.0	
Dynamic Response Recovery time			--	--	500	mS
Output Protection	over-current	Full input voltage range	⩾110%Io, Burp, Self recovery			
	over-voltage		Feedback clamp limit			
	Short-circuit		Continuous @ Burp			

General Specification

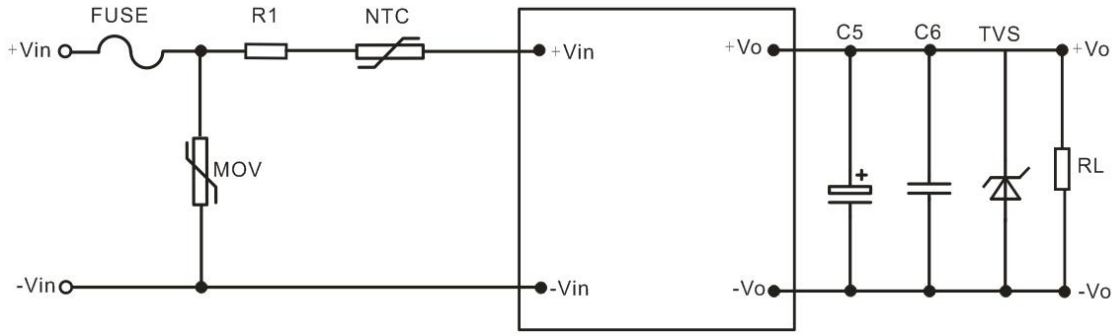
Item		Operating Condition	Min.	Typ.	Max.	Unit
Isolation Voltage	Input-Output	test 1min, leakage current ⩽5mA	4000	--	--	VDC
Insulation Resistance		500VDC	--	100	--	MΩ
Operating Temperature		--	-30	--	+70	°C
		Refer to Temperature Derating Curve at back				
Storage Temperature		--	-40	--	85	
Case Temperature Rise		Ta=30℃@ Output 100% load	--	54	--	
Storage Humidity		--	--	--	95	%RH
Soldering Temperature		Wave-soldering	260±5℃, time: 5-10S			

	Manual-welding	400±10℃,time: 4-10S			
Switching Frequency	--	--	65	--	KHz
Altitude	--			2000	m
MTBF	--	SR-332@25℃＞250000H			

Physical Specification

Case Material		Plastic Case
Package Dimensions	Horizontal package	89.0X63.5X25.0mm
Product Weight		236g(TYP)
Cooling method		Free air convection

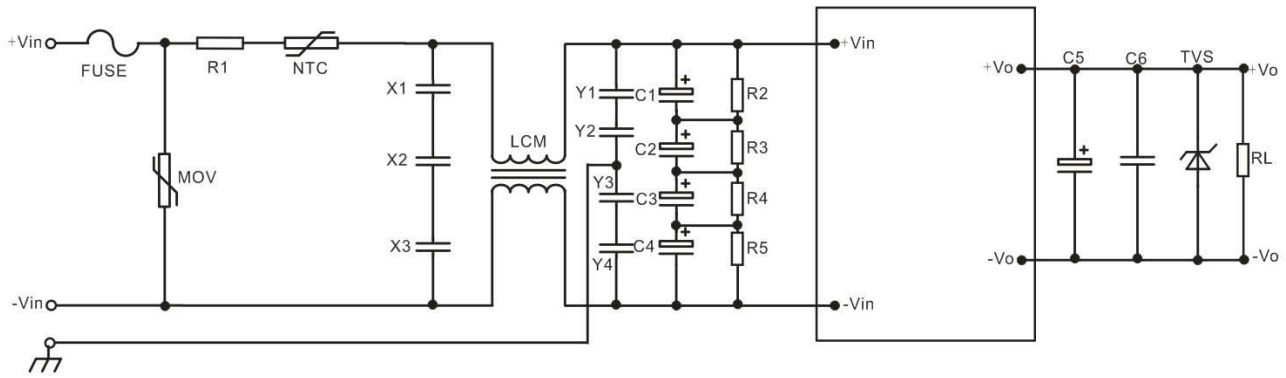
Typical Application Circuit



Output Voltage	FUSE	MOV	NTC	C5	C6	TVS
12V	4A/1500DC necessary	20D162K	10D-20	470uF/25V	1uF/50V 1206	SMBJ18A
15V				330uF/50V		SMBJ20A
24V				220uF/50V		SMBJ30A

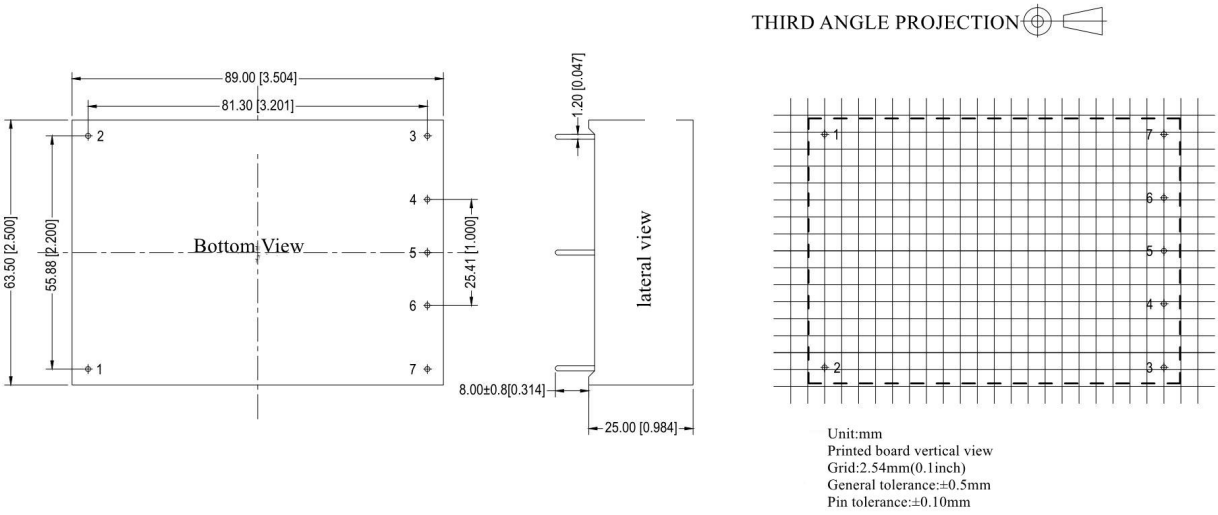
Note: The output filer capacitor C5 is electrolytic capacitor, recommended high frequency and low resistance electrolytic one. For capacitance and current of capacitor please refer to the manufacture's datasheet. The capacitance withstand voltage value should be higher 80%. C6 is ceramic capacitor, to remove high frequency noise. TVS is a recommended component to protect post-circuits (if converter fails)

EMC External Recommended Circuit



Component	Name	Recommended Value	Note
FUSE	Fuse	According to actual input current	Necessary
R1	Current limit resistor	6.8Ω/10W metal film resistor	
NTC	Thermistor	10D-20	
MOV	Varistor	20D162K	Add according to actual application
X1/2/3	CBB Capacitor	Use 3pcs:1.0μF/450V capacitors in series	
LCM	Common mode conductor	10mH/0.8A	
Y1/Y2/Y3/Y4	Y capacitor	Use 4pcs 2.2nF/400V capacitors in series	
C1/C2/C3/C4	electrolytic capacitor	100uF/400V	
R2/R3/R4/R5	Chip resistor	1MΩ/1W	

Dimenson



Pin-Out	1	2	3	4	5	6	7
Single(S)	-Vin	+Vin	NP	NP	-Vo	NP	+Vo

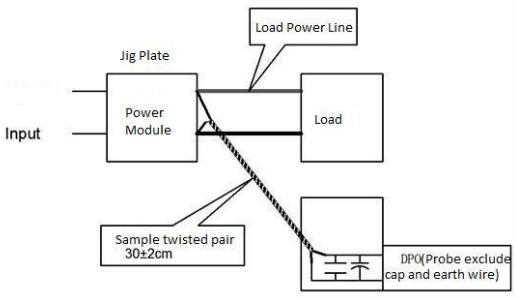
Code	L X W X H	
W2N4	89.00X63.50X25.0mm	3.504X2.500X0.984inch

Ripple& Noise Test: (Twisted Test Method 20MHz bandwidth)

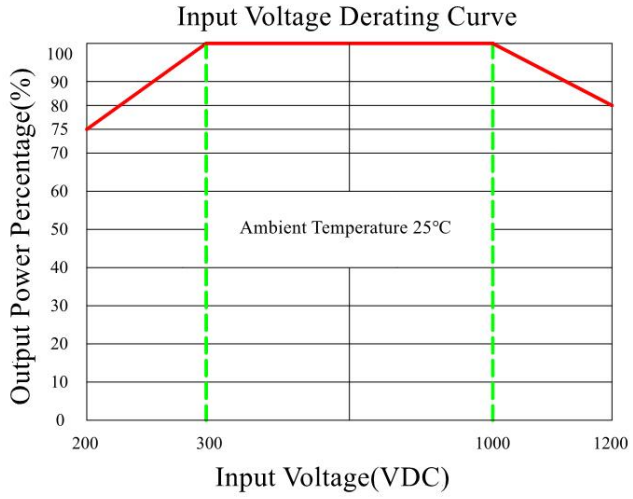
Test Method:

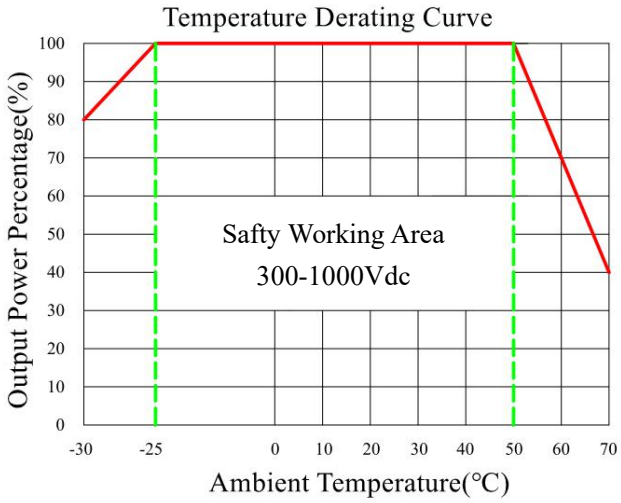
(1) 12# twisted pair to connect, Oscilloscope bandwidth set as 20MHz, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 10uF high frequency low resistance electrolytic capacitor in parallel, oscilloscope set as Sample pattern.

(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 within the specification range, otherwise it will cause permanent damage to the product;
2. The product input terminal must be connected to a fuse;
3. If the product works below the minimum required load, it cannot be guaranteed that the product performance meets all performance indicators in this manual;
4. If the product works beyond the product load range, it cannot be guaranteed that the product performance meets all performance indicators in this manual;
5. Unless otherwise specified, the above data are measured at Ta=25℃, humidity<75%, input nominal voltage and output rated load (electronic load);
6. All the above index test methods are based on our company's standards;

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