AIPUPUWER®

DC/DC Converter BK15-800SXXW2N6(-T)(-TS)(-TS1) Series



Typical Features

- Wide input voltage range 200-1500VDC
- ◆ No load power consumption ≤0.5W
- Efficiency 82% (Typ.)
- Switching frequency 65KHz
- Input anti-reverse, under-voltage protections
- Output short circuit, over-current, over-voltage protections
- Isolation voltage 4000VDC
- High Efficiency & Reliability, low Ripple & Noise
- Application for Solar electric power generation, high-voltage frequency conversion



Application Field

BK15-800SXXW2N6(-T)(-TS)(-TS1) Series --- Compact size & high-efficiency DC-DC module converters with wide input voltage range, low ripple, low temperature rise, low standby power consumption, high reliability, safety isolated and good EMC performance. This series of products can be widely used in the fields of solar electric power generation, home energy storage and industry control, etc. The multi-protection functions can keep the power supply and the load safety under abnormal conditions. The additional circuit for EMC is recommended in this data sheet for the application with higher EMC requirement.

Typical Product List

0		Output Specifications			Max.	Ripple & Noise	Efficiency
Sertii	Dort No	Power	Voltage	Current	Capacitive	20MHz	@800VDC/ full
lica	T art No				Load	(Max.)	load (Typ.)
ť		(W)	Vo (V)	lo (mA)	u F	mVp-p	%
UL	BK15-800S12W2N6(-T)(-TS)(-TS1)	15	12	1250	1000	250	82
UL	BK15-800S15W2N6(-T)(-TS)(-TS1)	15	15	1000	680	250	83
UL	BK15-800S24W2N6(-T)(-TS)(-TS1)	15	24	625	470	250	85

In the part numbers, the suffix-T is for a kind of chassis packaging with terminals, -TS & -TS1 are for a kind of packaging with DIN Rail.

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 \pm 2% of the typical value in this table. Efficiency=Full output power/Input power*100%

Note 3 - The ripple and noise are tested by the twisted pair method, please refer to the following Ripple & Noise test instructions.

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

Input Specifications					
Item	Operating Condition	Min.	Тур.	Max.	Unit
Input Voltage Range	DC input	200	800	1500	VDC
	Input 200VDC	-	-	0.090	
Input Current	Input 800VDC	-	-	0.025	A
	Input 1500VDC	-	-	0.015	

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Nalaadaa		motion					0.5	۱۸/
Start protection			-	-	0.5	VV		
Input Under	-Voltage P	rotection	Becovery		80	-	130	VDC
Short circuit current		1			90	-	150	•
Short circuit current					-	-	3	A
Recommer	nded Exterr	nal Fuse	-		3A			
Input Anti-	reverse pro	otection	-					
Hot Plug - NA								
Output Sp	ecificatio	ons						
	ltem		Operating Condition		Min.	Тур.	Max.	Unit
Volta	ige Accurac	су	Input full voltage range, any Load	Vo	-	±2.0	±3.0	
Line	Regulation	n	Rated load	Vo	-	±1.0	-	
Load	d Regulatio	n	Input rated voltage, 0%~100% load	Vo	-	±2.0	-	%
Min	imum Loac	ł	Single output		0	-	-	
Turn-c	on Delay Ti	me	800VDC Input		-	2000	-	
Power	off hold up	time	800VDC Input		-	100	-	mS
Dynamic Overshoot Range		ot Range	25%-50%-25% 50%-75%-50%		-5.0	-	+5.0	%
Response Recovery Time		ery Time			-5.0	-	+5.0	mS
Output Overshoot		ot	F H · · · · ·			%		
Output Sho	rt-circuit Pr	rotection	Full input voltage range		Contin	Hiccup		
Temperature Drift Coefficient		efficient	-		-	±0.02%	-	%/°C
Over-cu	rrent Prote	ction	Full input voltage range		≥110	Hiccup		
			Output 12VDC					
Over-vo	Itage Prote	ction	Output 15VDC			VDC		
			Output 24VDC					
General S	pecificat	ions						
	ltem		Operating Condition		Min.	Тур.	Max.	Unit
Switching Frequency		ncy	_		-	65	-	KHz
Operating Temperature		ature	Refer to the Temperature Derating Curve		-30	-	+70	
Storage Temperature		ture	-		-40	-	+85	°C
Case Temperature Rise		Rise	Ta=30℃@ Output 100% load		-	55°	-	°C
			Wave-soldering		260±4℃, time 5-10S			1
Solderir	Soldering Temperature		Manual-soldering					
Storage Humidity		ty	-		-	-	95	%RH
Isolation \	solation Voltage Input- test 1min, leakage current ≤5mA		4	4000	-	-	VDC	
Insulation Re	esistance	Output	@500VDC		100	-	-	MΩ
Altitude -			-		-	-	5000	m

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Pin function Definition								
Pin No.	1	2	3	4	5	6		
Single output	-Vin	+Vin	NC	NP	-Vo	+Vo		
Description	Input V-	Input V+	No connection	No Pin	Output V-	Output V+		

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-T Packaging Dimensions





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42. 00MAX

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lateral view

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Ripple& Noise Test Instruction (Twisted Test Method, 20MHz bandwidth)

1, The 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 at the Sample Mode.

2, The 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 $30 \text{cm} \pm 2 \text{ cm}$) 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.



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Product Performance Curves



Note 1 - The output power should be derated based on the input voltage derating curve at 200~300VDC/1400~1500VDC.

Note 2 - This product should operate at a natural air condition, please contact us if it need be used at a closed space.

Typical Circuit for Application



Output Volt.	FUSE	MOV	R1	NTC	C5	C6	TVS	
12V	3A/1500DC (Necessary)	20D182K	4.7 Ω/10W	5Ω/6A/	100uF/25V	1uF/50V 1206	SMBJ18A	
15V		6500A	Wire-wound		100uF/25V		SMBJ20A	
24V		(Necessary)	Resistor	150	100uF/50V		SMBJ30A	
Note – A UL approved surge protection device (VPR/MLV=4000V Max) should be connected at the input for the application								

Recommended Circuit for EMC



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Component	Description Recommended Value		Remarks	
	Cut off the input in case converter operating	TBD by customer based on the		
FUSE	under abnormal condition	actual current value	Necessary	
R1(current-limiting resistor)	Suppress the start-up transient surge current	4.7Ω/10W Wire-wound resistor		
NTC	Suppress the surge current	5Ω/6A/15D		
MOV (Metal Oxide Varistor)	Absorb the surges	20D182K/6500A		
X1/X2/X3(CBB Capacitor)	Suppress the differential mode interference	1.0uF/630VDC	Optional according to the actual application	
LCM (CMC)		10mH/0.8A		
Y1/Y2/Y3/Y4 (Y Capacitor)	Suppress the Common mode interference	Y1/222M/1500VDC		
C1/C2/C3/C4(E-Cap)	Low-frequency filtering	47uF/450V		
R2/R3/R4/R5 (SMD Resistor)	Voltages balance	1MΩ/1W		

Application Notice

1. The products should be used according to the specifications in this data sheet, otherwise it could be permanently damaged.

- 2. A fuse should be connected at input.
- 3. The product performance in this data sheet cannot be guaranteed if it works at a lower load than the minimum load defined.
- 4. The product performance in this data sheet cannot be guaranteed if it works under over-load condition.

5. Unless otherwise specified, all values or indicators in this data sheet are tested at Ta=25°C, humidity<75%RH, rated input voltage and rated load.

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

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

8. Aipupower can provide customization service.

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