

85-305VAC wide voltage input, Isolated, single output, DIP package

## FEATURES

- Wide voltage input 85-305VAC/100-430VDC
- High power density, high conversion efficiency
- Output low ripple noise
- With Equipped with short circuit, overcurrent and other protection functions, high reliability
- Isolation voltage 4000VAC
- EMI meets CISPR32/EN55032 CLASS B
- Meets IEC/EN62368/EN60355 certification standards



AW10-BSxx series product is a small-sized pin type potting module power supply. Application areas: power electronics, industrial control, new energy, Internet of Things, security, smart home, etc.

## Selection Table

Part NO	Output Power Max	Output Voltage	Output Current	peak current	Efficiency at 230VAC(%) Typ.	Capacitive Load (uF) Max.
AW10-BS03	10W	3.3V	3000mA	4000mA	82%	6500uF
AW10-BS05	10W	5V	2000mA	3000mA	84%	5000uF
AW10-BS09	10W	9V	1115mA	1670mA	85%	3000uF
AW10-BS12	10W	12V	835mA	1250mA	85%	2000uF
AW10-BS15	10W	15V	670mA	1000mA	85%	1500uF
AW10-BS24	10W	24V	420mA	625mA	86%	680uF

## Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	AC input	85	/	305	VAC
	DC input	100	/	430	VDC
Input Frequency		47	/	63	Hz
Input Current	115VAC input, fully loaded	/	/	0.25	
	230VAC input, fully loaded	/	/	0.15	A
Inrush Current	Temperature 25°C, input 230V	/	40	/	
Hot swappable	No support				

## Output characteristic parameters

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		/	±2	/	
Line Regulation	Full load, input voltage changes from (Vmin – Vmax)	/	±0.5	/	%
Load Regulation	230VAC, load changes from (0% - 100%)	/	±1	/	
Output Hold-up Time	230VAC, 100% load	/	50	/	ms
Temperature Coefficient	under rated load	/	±0.02	/	%/°C
Ripple & Noise <sup>①</sup>	20MHz bandwidth (peak-to-peak value)	/	120	/	mVp-p
Overcurrent protection	120%-200%Io, self recovery				
Short circuit protection	Hiccup type, capable of long-term short circuit and self recovery				

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Overvoltage protection	Output 3.3V/5V	≤7.5V			Hiccup type, self-healing or output voltage clamp
	Output 9V	≤15V			
	Output 12V	≤16V			
	Output 15V	≤20V			
	Output 24V	≤30V			

Note:

1. The output ripple voltage and noise of the power supply are measured with 0.1uF ceramic capacitor and 10uF electrolytic capacitor, and each output noise is tested in the bandwidth of 0 Hz to 20 MHz.

### General characteristic parameters

Item	Operating Conditions	Min.	Typ.	Max.	Unit		
Isolation voltage	Input-Output, Test for 1min, leakage current < 5mA	/	/	4000	VAC		
Insulation resistance	Input-Output test voltage: 500VDC	100	/	/	MΩ		
Switching Frequency		/	65	/	kHz		
Storage temperature	Standard packaging	-40	/	+85	°C		
Working temperature	Rated state	-30	/	+70			
Storage humidity		10	/	95	%RH		
Working altitude		/	/	2000	m		
Power derating	Reduced working temperature	+50°C to +70°C	3.3VDC	2.5	/	/	% / °C
			Others	3.33	/	/	
	Input voltage derating	85-100VAC	1.33	/	/	% / VAC	
	277-305VAC	0.72	/	/			
Safety Standard	EN60355-1 & EN62368-1						
Safety Class	CLASS II						
MTBF	MIL-HDBK-217F at 25°C	≥3,200Khours					
Soldering Temperature	Manual-welding	time: 3 - 5s			350±10	°C	
	Wave-soldering	time: 5 - 10s			260±5		

### Electromagnetic Compatibility

Item		
CE	CISPR32/EN55032 CLASS B	
RE	CISPR32/EN55032 CLASS B	
ESD	EN61000-4-2 ,Contact ±6KV/Air ±8KV	Perf, Criteria A
Radiated immunity	EN61000-4-3 ,80MHz – 1GHz 10V/m	Perf, Criteria A
EFT/burst	EN61000-4-4, ± 2KV (refer to recommended circuit diagram 1)	Perf, Criteria A
	EN61000-4-4, ± 4KV (refer to recommended circuit diagram 2)	Perf, Criteria A
Surge	EN61000-4-5, line to line ±1KV(refer to recommended circuit diagram 1)	Perf, Criteria A
	EN61000-4-5, line to line ±2KV(refer to recommended circuit diagram 2)	Perf, Criteria A
Conducted immunity	EN61000-4-6 ,0.15MHz-80MHz 10Vr.m.s	Perf, Criteria A
voltage dips and interruption	EN61000-4-11 ,0%, 70%	Perf, Criteria B

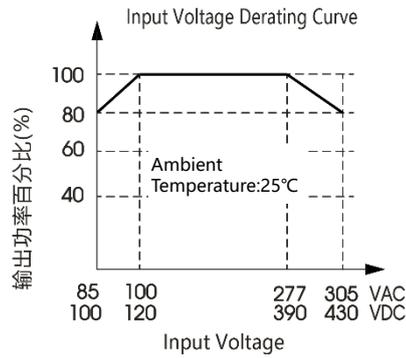
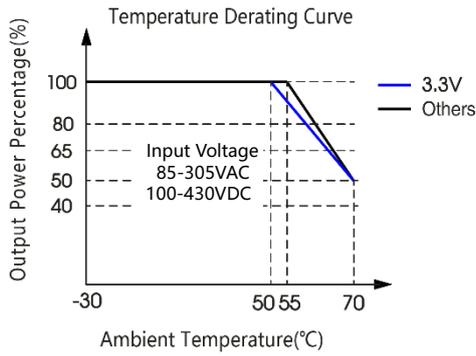
Note: ① When the output terminal of the product needs to be connected to the ground terminal through a Y capacitor or tightly attached to a metal shell, please refer to the recommended circuit(Figure 2);

② Unless otherwise specified, EMC performance indicators are tested according to typical application circuits (Figure 1).

### Other parameters

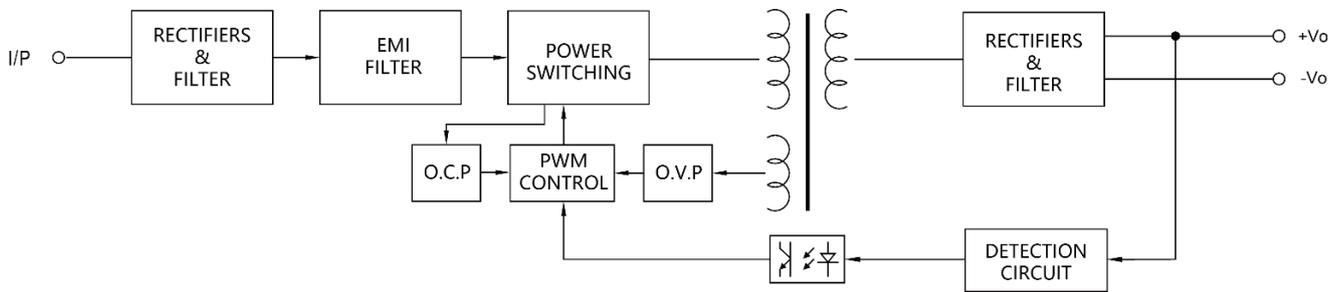
Item	
External dimensions	45.7*25.4*21.5mm(1.799*1.000*0.846inches)
Weight	36.0g(Typ.)
Housing material	Black flame retardant heat resistant plastic (UL94 V-0)
Cooling mode	Natural air cooling

**Product Characteristic Curve**

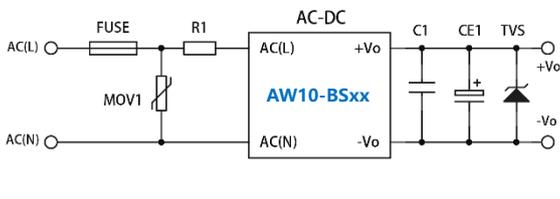


Note:  
For the input voltage  
85-100VAC/100-120VDC ,  
277-305VAC/390-430VDC  
Voltage derating should be  
carried out on the basis of  
temperature derating.

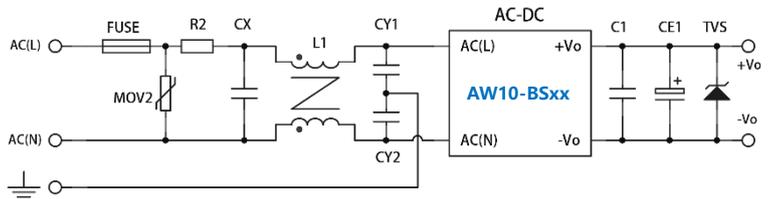
**Electrical Block Diagram**



**Design Reference**



**Fig.1 Typical circuit diagram**



**Fig.2 EMC application circuit with higher requirements**

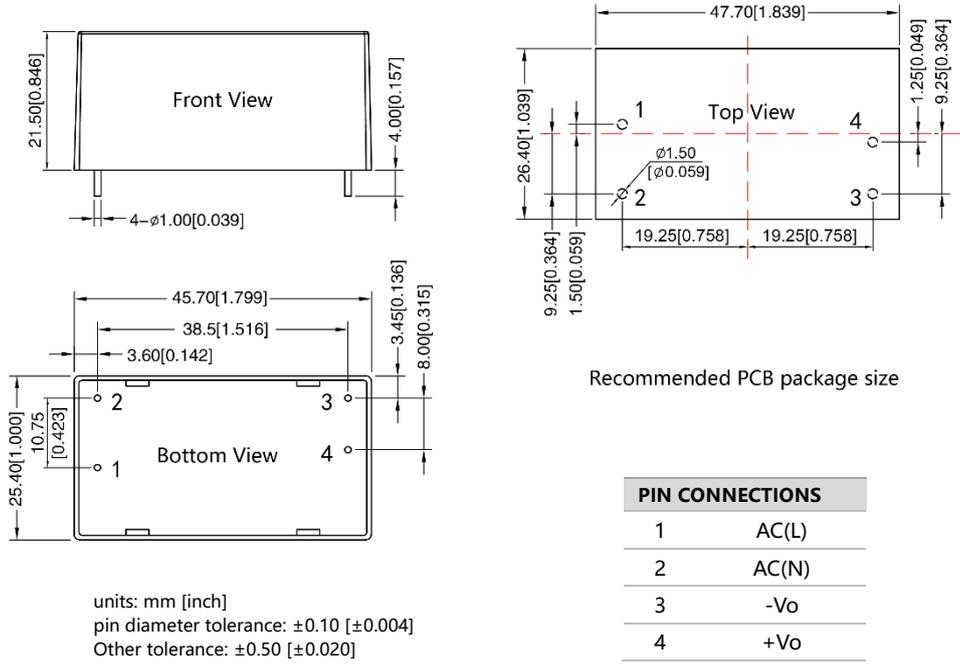
**External device specification reference value**

General Components Parameters				Part No. Components Parameters		
Components	Recommended Value	Component	Recommended Value	Part No.	CE1	TVS
FUSE	2A/300V slow-blow	CY1, CY2	1nF/400VAC	AW10-BS03	220uF/16V	SMBJ7.0A
MOV1	10D561K	C1	1uF/50V	AW10-BS05	220uF/16V	SMBJ7.0A
MOV2	14D561K			AW10-BS09	100uF/25V	SMBJ12A
R1	3Ω/3W			AW10-BS12	100uF/25V	SMBJ20A
R2	6.8Ω/3W			AW10-BS15	100uF/25V	SMBJ20A
CX	0.1uF/310V			AW10-BS24	100uF/35V	SMBJ30A
L1	10-20mH, UU9.8 type common mode inductor					

Note:

1. FUSE Required , Recommend slow-blow ;
2. C1 is a ceramic capacitor used for filtering high-frequency noise
3. CE1 using an electrolytic capacitor with high frequency, and low ESR rating
4. TVS is arecommended suppressor diode to protect the application in case of a converter failure.

**Dimensions and Recommended Layout**



- Note:
1. Qituo technology reserves the right to change the product at any time without notice;
  2. The product shall be provided with a 3-year warranty period;
  3. Unless otherwise specified, the products in this manual are not authorized to be used for key components of equipment requiring high reliability, so as not to affect the safety or effectiveness of the device;
  4. All parameters in this manual are measured under indoor  $t_a=25$  °C, humidity <75%, nominal input voltage and output rated load;

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