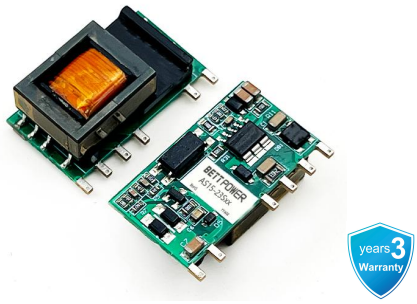
2025/08/18(A/2)

AS15-23Sxx Series

AC-DC Converter | 15W | Small open frame | SIP | 4000VAC | 85～305VAC



Features

- 1.3''x0.8'' compact size, high power density
- Universal Input:85～305VAC / 100～430VDC
- No-load power consumption: 0.1W
- Operating temperature range:-40℃ ～ +85℃
- Isolation voltage: 4000VAC
- High efficiency: up to 85%(typ.)
- Multi application, flexible layout, green power
- Output short circuit, over current and over voltage protection
- Designed to meet UL/IEC/BS EN/EN62368, EN60335, IEC/EN61558

Product description

AS15-23Sxx series is highly efficient green power AC-DC open frame power module. It features a compact design and supports univeral input voltage range of 85~305Vac, high reliability, low power consumption and reinforced insulation. These power supply modules are particularly suitable for applications with strict space constrains, such as industrial control, electric power, instrumentation and smart home applications. For extremely harsh EMC environment, we recommend using the application circuit show in Design Reference of this datasheet.

Selection Guide

Certification	Part No.	Input Voltage (VAC)	Output Power (W)	Output Voltage (VDC)	Output Current Max.(mA)	Full Load Efficiency % (230VAC,typ.)	Capacitive Load Max.(μF)
EN/UL pending	AS15-23S03	85～305	9.9	3.3	3000	75	5000
	AS15-23S05	85～305	14	5	2800	78	5000
	AS15-23S09	85～305	15	9	1670	80	4000
	AS15-23S12	85～305	15	12	1250	84	2000
	AS15-23S15	85～305	15	15	1000	84	1000
	AS15-23S24	85～305	15	24	625	85	680

Note：1. The above data were all tested within the parameter range of typ.ical application circuits.

2. If the product is used in a high-vibration environment, it is necessary to apply glue to fix it.

3. Products with the suffix "-P" are models without conformal coating protection on the surface, such as AS15-23S05-P.

4. Products with the suffix "-F" are horizontal type with 90° bent pin products, such as AS15-23S05-F.

5. The product images are for reference only. Please refer to the actual product for details.

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	AC input	85	--	305	VAC
	DC input	100	--	430	VDC
Input Current	115VAC	--	--	0.40	A
	230VAC	--	--	0.25	A
Impulse current	115VAC	--	18	--	A
	230VAC	--	35	--	A
Input Frequency		47	--	63	Hz
Recommended External Input Fuse		1A/300V，slow-blow, required			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	3.3V Output		--	±3	--	%
	Other output		--	±2	--	%
Line Regulation	Rated load		--	±0.5	--	%
Load Regulation	10% ～- 100% load	3.3 VDC output	--	±2.0	--	%
		5 VDC output	--	±1.5	--	%
		Other voltage	--	±1.0	--	%
Ripple & Noise	20MHz bandwidth (peak-to-peak value),10% ～ 100% load		--	80	150	mV
Temperature Coefficient			--	±0.15	--	%/℃
Stand-by Power Consumption	230VAC		--	0.1	0.25	W
Min. Load			0	--	--	%
Over-current Protection			110	--	--	%Io
Short Circuit Protection			Continuous, Self-Recovery			

Note: Ripple & noise are measured at 20MHz of bandwidth with a 10uF electrolytic capacitor and a 1uF ceramic capacitor connected inparallel at the output.

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Isolation Voltage	Input-output, test time 1 minute, leakage current less than 5mA	4000	--	--	VAC
Insulation Resistance	Input-output, insulated voltage 500VDC	50	--	--	MΩ
Power Derating	-40℃ - -25℃	2	--	--	%℃
	+55℃ - +85℃	3	--	--	%℃
	85VAC - 100VAC	2.67	--	--	%/VAC

	277VAC - 305VAC	1.428	--	--	%/VAC
Operating Temperature		-40	--	85	℃
Storage Temperature		-50	--	105	℃
Soldering Profile	Wave soldering	260 ± 5℃. time: 5 - 10s			
	Manual welding	360 ± 10℃. time: 3 - 5s			
Safety Standard	Product design conforms to IEC/EN/BS EN62368-1, IEC/EN61558-1/-2-16,EN60335-1, UL62368-1				
Safety Class		CLASS Ⅱ			
MTBF	MIL-HDBK-217F@25℃	>300,000h			

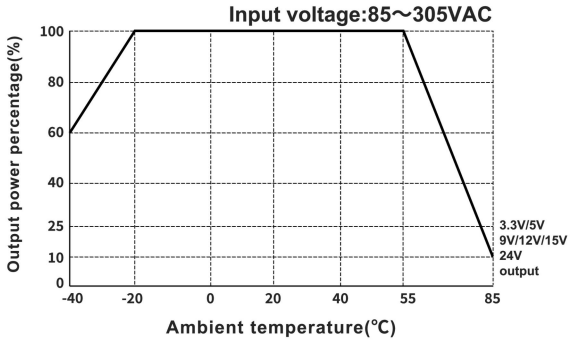
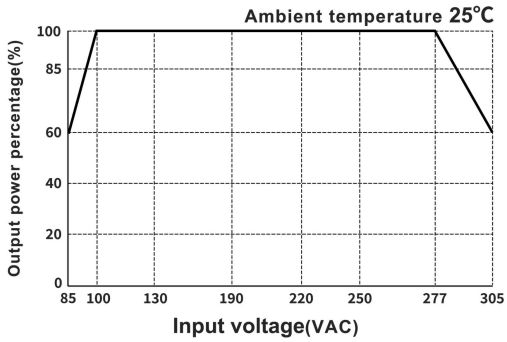
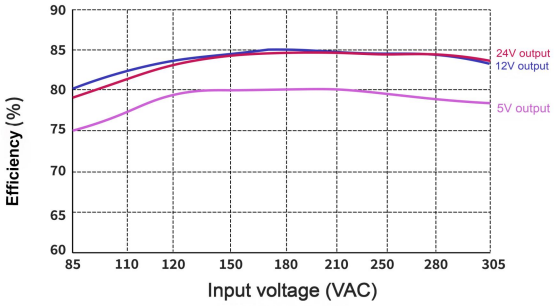
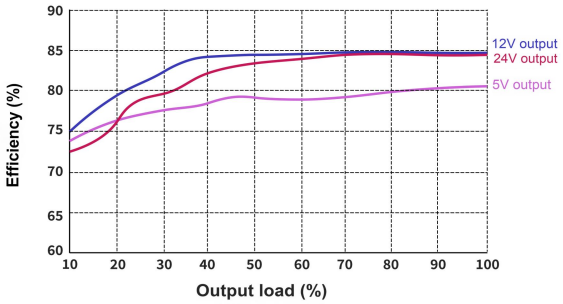
Mechanical Specifications

Package Dimensions	32.00 * 14.50 * 20.00mm	
Weight	AS15-23Sxx(-P)	10.2g(Typ.)
	AS15-23Sxx-F	11.3g(Typ.)
Cooling Method	Free air convection	

Electromagnetic Compatibility (EMC)

EMI	CE	CISPR32/EN55032 CLASS A (EMC Solutions - Recommended Circuits 1,4)	
		CISPR32/EN55032 CLASS B (EMC Solutions - Recommended Circuits 2,3)	
	RE	CISPR32/EN55032 CLASS A (EMC Solutions - Recommended Circuits 1,4)	
		CISPR32/EN55032 CLASS B (EMC Solutions - Recommended Circuits 2,3)	
EMS	RS	IEC/EN61000-4-3 10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4 ±2KV (EMC Solutions - Recommended Circuits 1,2)	perf. Criteria B
		IEC/EN61000-4-4 ±4KV (EMC Solutions - Recommended Circuits 3,4)	perf. Criteria B
	Surge	IEC/EN61000-4-5 line to line ±1KV (EMC Solutions - Recommended Circuits 1,2)	perf. Criteria B
		IEC/EN61000-4-5 line to line ±2KV (EMC Solutions - Recommended Circuits 3,4)	perf. Criteria B
	CS	IEC/EN61000-4-6 10Vr.m.s	perf. Criteria A
	ESD	IEC/EN61000-4-2 Contact ±6KV/Air ±8KV	perf. Criteria B

Product Characteristic Curve

Temperature Derating Curve	Input voltage Derating Curve
	
Efficiency VS Input Voltage (Full load)	**Efficiency VS Out Load (Vin=230VAC)**
	

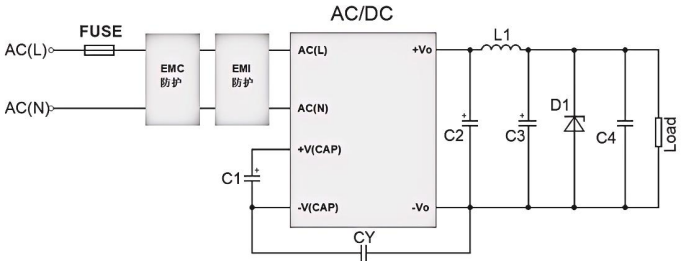
Note:

1. For input voltages of 85-100VAC/277-305VAC, voltage derating should be carried out on the basis of temperature derating.

2.This product is suitable for use in a natural wind-cooled environment.

Design Reference - Application circuit

Application circuit



Reference Table for Selection of Peripheral Devices

Part No.	C1(required)	C2(required)	L1(required)	C3(required)	C4	CY(required)	D1
AS15-23S03	33uF/450V	1000uF/16V (solid-state capacitor)	2.0uH 6.5A 15mΩMAX	470uF/25V	0.1uF/50V	1nF/400VAC	See note
AS15-23S05	33uF/450V			470uF/25V	0.1uF/50V	1nF/400VAC	
AS15-23S09	33uF/450V	470uF/25V (solid-state capacitor)		220uF/25V	0.1uF/50V	1nF/400VAC	
AS15-23S12	33uF/450V			220uF/25V	0.1uF/50V	2.2nF/400VAC	
AS15-23S15	33uF/450V	470uF/35V	3.3uH 5A 25mΩMAX	150uF/35V	0.1uF/50V	1nF/400VAC	
AS15-23S24	33uF/450V			150uF/35V	0.1uF/50V	1nF/400VAC	

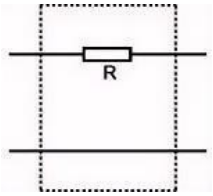
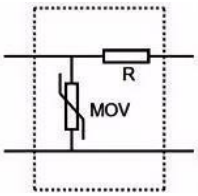
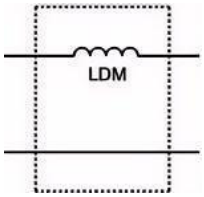
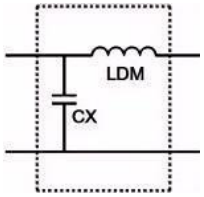
Note：

1. FUSE, EMC protection, and EMI protection are selected according to actual application requirements.
2. C1 is used as filter capacitor with AC input (must be connected externally) and as EMC filter capacitor with DC input (must be connected), and it is recommended to use the capacitor with ripple current ＞400mA@100KHz.
3. C2, C4, and L1 form a Pi type filtering circuit, and it is recommended to use high-frequency low resistance electrolytic capacitors or solid-state capacitors. When selecting L1, ripple requirements can be considered, while paying attention to current and internal resistance values.
4. D1 is a TVS transistor that can protect the downstream circuit in case of module abnormalities. It is recommended to choose a model that is 1.2 times the output voltage.

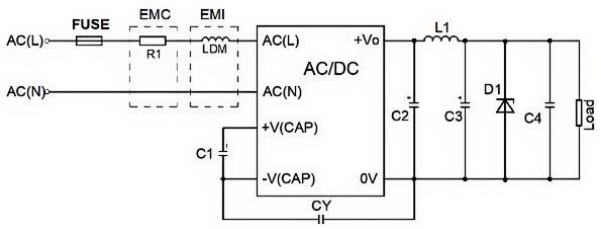
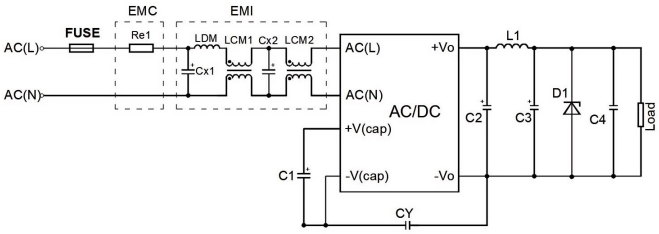
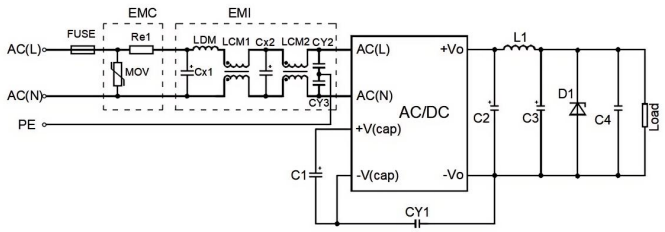
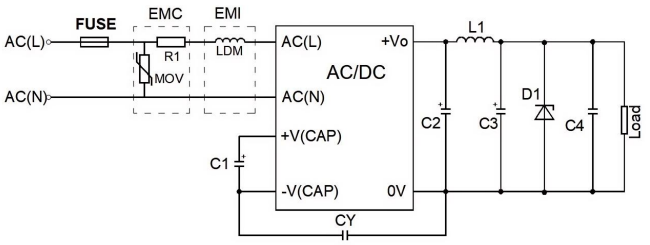
Design Reference - EMC Solutions - Environmental Application

Environmental application EMC solution selection table

Recommended circuit	Application environmental	Typical industry	Input voltage range	Environment temperature	Emissions	Immunity
1	Basic application	None	85～305VAC	-40℃ ～ +85℃	Class A	Level 3
2	Indoor civil environment	Smart home/Home appliances		-25℃ ～ +55℃	Class B	Level 3
3	Indoor general environment	Intelligent building/Intelligent agriculture		-25℃ ～ +55℃	Class B	Level 3
4	Indoor industrial environment	Manufacturing workshop		-25℃ ～ +55℃	Class B	Level 4
5	Outdoor general environment	ITS/Video monitoring/Charging point/Communication/Security and protection		-40℃ ～ +85℃	Class A	Level 4

Immunity design circuits for reference		Emissions design circuits for reference	
Level 3	Level 4	Class A	Class B
			

Design Reference - EMC Solutions - Recommended Circuits

EMC Solutions - Recommended Circuits 1	EMC Solutions - Recommended Circuits 2
	
EMC Solutions - Recommended Circuits 3	EMC Solutions - Recommended Circuits 4
	

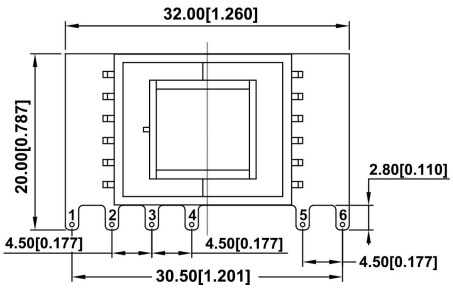
Recommended parameter values for EMC solution circuits				
Model	Circuit 1	Circuit 2	Circuit 3	Circuit 4
FUSE	1A/300V,Slow-blow, Required		2A/300V,Slow-blow, Required	
R1	6.8Ω/3W (Wire-wound resistor, Required)			
MOV	14D561			
LDM1	2.2mH/Max: 4Ω/Min:0.24A			
LCM1	200uH 0.8A			
LCM2	12.6mH/MIN 0.5A			
Cx1,Cx2	0.1uF/310VAC			
CY1,CY2,,CY3	1nF/400VAC			

Dimensions and Recommended Layout

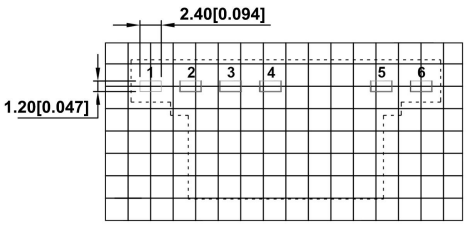
AS15-23Sxx(-P) Dimensions and Recommended Layout

Third Angle Projection

(Front View)

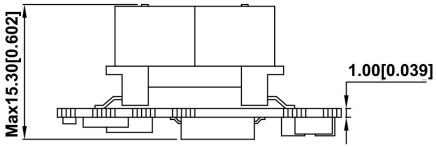


(Top View)



The grid distance size is 2.54mm*2.54mm

(Bottom view)



Pin	Function
1	AC(L)
2	AC(N)
3	+V(CAP)
4	-V(CAP)
5	-Vo
6	+Vo

Note:

Size unit: mm [inch]

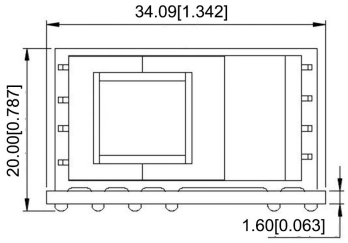
Pin diameter tolerance: ±0.10 [±0.004]

Unmarked dimensional tolerance: ±0.50 [±0.020]

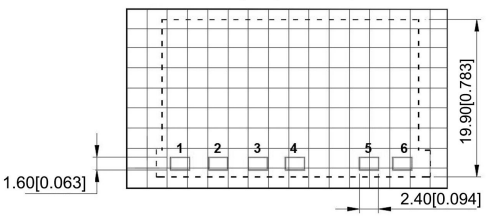
AS15-23Sxx-F Dimensions and Recommended Layout

Third Angle Projection

(Front View)

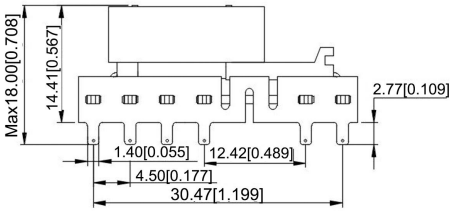


(Top View)



The grid distance size is 2.54mm*2.54mm

(Bottom view)



Pin	Function
1	AC(L)
2	AC(N)
3	+V(CAP)
4	-V(CAP)
5	-Vo
6	+Vo

Note:

Size unit: mm [inch]

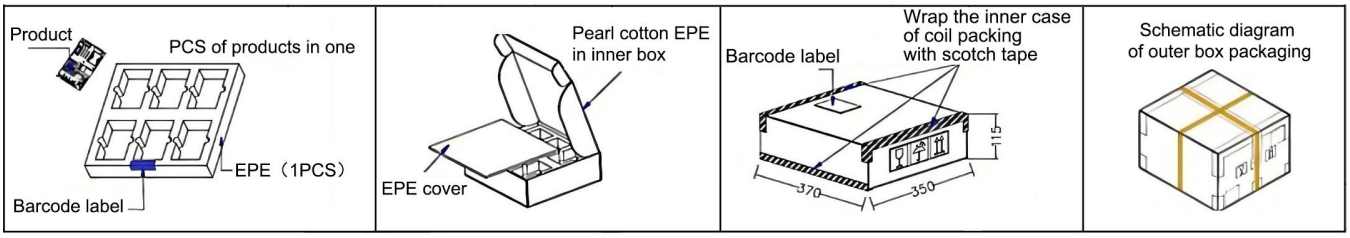
Pin diameter tolerance: ±0.10 [±0.004]

Unmarked dimensional tolerance: ±0.50 [±0.020]

Packaging Information

Model series	Product quantity(pcs/tray)	Inner carton quantity(pcs/carton)	Outer carton quantity(pcs/carton)
AS15-23Sxx(-P)	108	324	648
AS15-23Sxx-F	114	342	684

The schematic diagram of pearl cotton packaging is shown below：



Product precautions

1. The input voltage should not exceed the specified range value, otherwise it may cause permanent and irreparable damage.
2. It is recommended to use at a load of over 5%. If the load is below 5%, the ripple index of the product may exceed the specifications, but it does not affect the reliability of the product.
3. The maximum capacitive load is tested within the input voltage range and under full load conditions.
4. Unless otherwise specified, all indicators in this manual are measured at Ta=25 ℃, humidity<75% RH, nominal input voltage, and output rated load.
5. All indicator testing methods in this manual are based on our company's corporate standards.
6. Our company can provide product customization, and specific requirements can be directly contacted by our technical personnel.

Product specifications are subject to change without prior notice.

Manufacturer contact information

Bettpower Guangzhou Electronic Technology Co., Ltd.

Website：www.bettpower.com

Telephone：+86 - 020 - 32166256

Email：info@bettpower.com

Address：Room 2514-2515, Building A1,1 Doutang Road, Huangpu District, Guangzhou, China