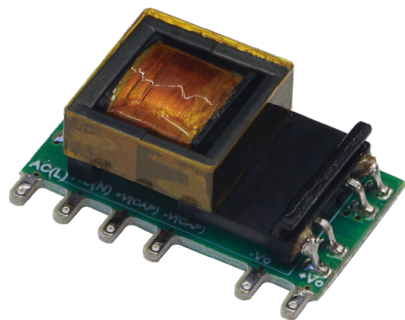




Product Feature

- Universal Input: 85-305VAC/100-430VDC
- Package Type: SIP
- Operating temperature range: -40°C-+85°C
- Isolation voltage: 4000VAC
- High efficiency up to: 81% (Type)
- Output short-circuit protection.
- Overcurrent protection, Overvoltage protection mechanism
- Design in compliance with IEC/EN61558 and IEC/EN60335 standards

Selection Guide

Part No.	Input Voltage (VAC)	Output Power (W)	Output Voltage (VDC)	Output Current Max. (mA)	Full Load Efficiency% (Typ)	Capacity Load Max (μF)
TPS-AWS0523S03	85-305	3.3	3.3	1000	73	1500
TPS-AWS0523S05	85-305	5	5	1000	76	1500
TPS-AWS0523S09	85-305	5	9	560	77	680
TPS-AWS0523S12	85-305	5	12	420	78	470
TPS-AWS0523S15	85-305	5	15	340	79	330
TPS-AWS0523S24	85-305	5	24	210	81	100

Input Specifications

Item	Operating Conditions	Min .	Typ.	Max .	Unit
Input voltage	AC input	85	--	305	VAC
	DC input	100	--	430	VDC
Input current on	110VAC	--	0.10	--	A
	230VAC	--	0.07	--	
Input frequency		47	--	63	Hz
Fuse		1A, slow-blow, required			
Hot plug		Unavailable			

Output characteristic

Item	Operating Conditions		Min.	Typ .	Max .	Unit
Output Voltage Accuracy	10%-100% Load		--	± 5	--	%
Linear Regulation	Rated load	3.3V	--	± 2.5	--	
		Other voltages	--	± 1.5	--	
Load Regulation	10%-100%load		--	± 3	--	
Ripple & Noise	20MHz bandwidth,10%-100%load		--	80	180	mV
Temperature Coefficient			--	± 0.15	--	%/°C
Stand-by Power Consumption	230VAC		--	0.10	--	W
Min. Load			0	--	--	%Io
Over Current Protection			110	--	--	%Io
Short-Circuit Protection			Continuous, Self-Recovery			
Hold-up Time	115VAC		--	8	--	ms
	230VAC		--	40	--	

General Specifications

Item	Working Conditions	Min.	Typ .	Max .	Unit
Isdlation Voltage	Input-output, test time 1 minute, leakagecurrent less than 5mA	4000	--	--	VAC
Insulation Resistance	Input-output,insulated voltage 500VDC	1000	--	--	MΩ
Power Derating	+55°C~+85°C	1.67	--	--	%°C
	85VAC-100VAC; 270VAC-305VAC	1.33	--	--	%/VAC
	Operating Temperature	-40	--	+85	°C
Storage Temperature		-40	--	+105	°C
	Wave-soldering	260 ± 5°C; time: 5-10s			
Soldering Profile	Manual-welding	360 ± 8°C; time: 3-5s			
Safety Standard	IEC/UL62368-1、 IEC/EN60335-1、 IEC/EN61558-1				
Safety Class		CLASS II			
MTBF	MIL-HDBK-217F@25°C	>1000Kh			

Mechanical Specification

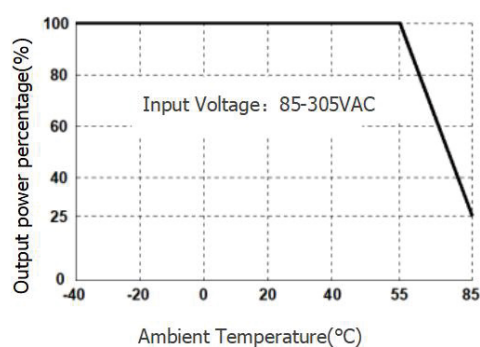
Package Dimensions	26.40 x 11.00 x 17.60mm
Weight	5.9g (TyP.)
Cooling Method	Free air convection

EMC Characteristic

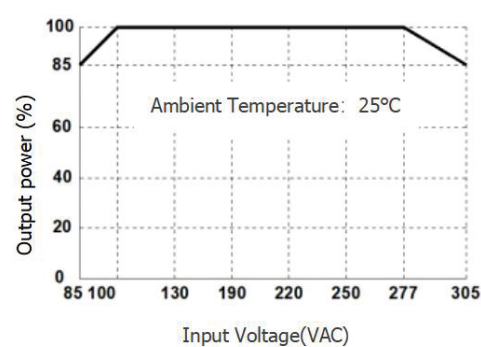
EMI	CE	CISPR32/EN55032 CLASS A(Application circuit 1, 4)	
		CISPR32/EN55032 CLASS B(Application circuit 2,3)	
	RE	CISPR32/EN55032 CLASS A(Application circuit 1, 4)	
		CISPR32/EN55032 CLASS B(Application circuit 2, 3)	
EMS	RS	IEC/EN61000-4-3 10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4 ± 2KV(Application circuit 1、 2)	perf. Criteria B
		IEC/EN61000-4-4 ± 4KV(Application circuit 3、 4)	perf. Criteria B
	Surge	IEC/EN61000-4-5 line to line ± 1KV(Application circuit 1、 2)	perf. Criteria B
		IEC/EN61000-4-5 line to line ± 2KV(Application circuit 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

Typical characteristic curves

Temperature derating curve

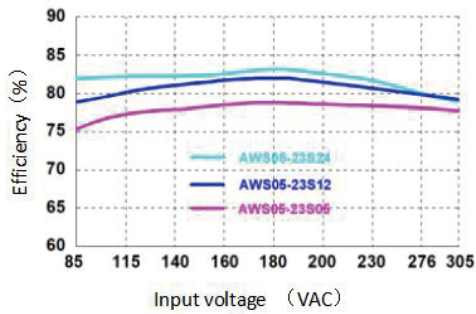


Input voltage derating curve

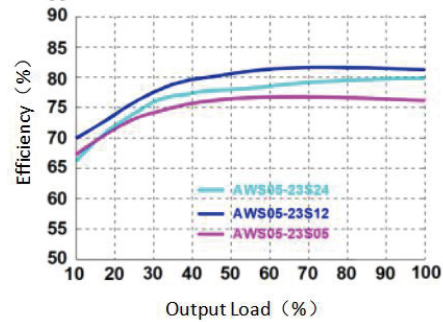


Typical characteristic curves

Efficiency VS Input voltage curve (full load)

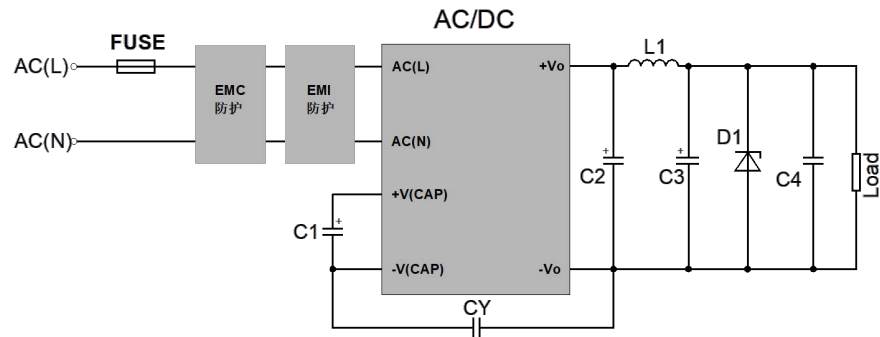


Efficiency VS Output load curve (Vin = 230 VAC)



Typical circuit design and application

Application circuit



Reference table for the selection of peripheral devices

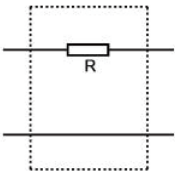
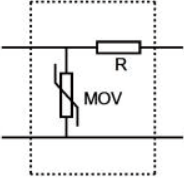
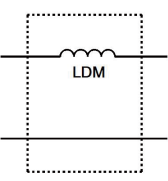
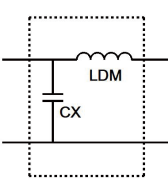
Output voltage	C1 (Required)	C2 (Required)	L1 (Required)	C3 (Required)	C4	CY (Required)	D1
5VDC	10uF/450V	560uF/16V (Solid state capacitor)	2.2uH 3A40m 2MAX	100uF/16V	0.1uF/50V	1nF/400VAC	D1 is a TVS transistor that can protect the downstream circuit in case of module abnormalities. It is recommended to choose a model that is 1.2 times the output voltage
12VDC	10uF/450V	330uF/25V (Solid state capacitor)	2.2uH 3A40m 2MAX	100uF/25V	0.1uF/50V	1nF/400VAC	
15/24VDC	10uF/450V	330uF/35V	3.3uH 2A 40m2MAX	47uF/35V	0.1uF/50V	1nF/400VAC	

Note:

1. FUSE, EMC protection, and EMI protection are selected based on actual application needs;
2. C1 is a filtering electrolytic capacitor, which is a required component. It is recommended to use ripple current > 400mA@100KHz Electrolytic capacitors.
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.

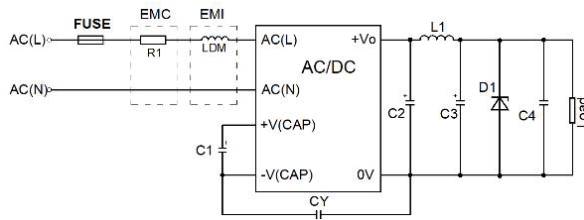
Environmental Application -EMC Solution Selection Table

Recommended circuit	Application environment	Application industry	Input Voltage	Ambient Temperature	EMI	EMS
1	Basic applications	--	85-305VAC	-40°C~+85°C	Class A	III level
2	Indoor civilian	Smart Home、 Home Appliances	85-305VAC	-25°C~+55°C	Class B	III level
	Indoor ordinary	Intelligent buildings、 smart agriculture	85-305VAC	-25°C~+55°C	Class B	III level
3	Indoor industry	Production workshop	85-305VAC	-25°C~+55°C	Class B	IV level
4	Outdoor ordinary	Intelligent transportation, charging stations, communication, security	85-305VAC	-40°C~+85°C	Class A	IV level

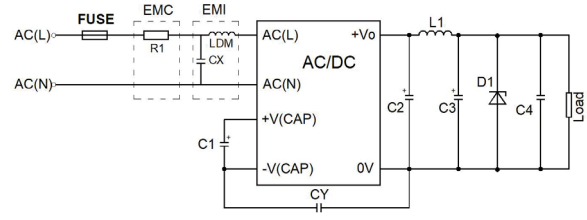
EMS protection circuit design reference		EMI protection circuit design reference	
III level	IV level	Class A level	Class B level
			

EMC Solutions -Recommended circuits

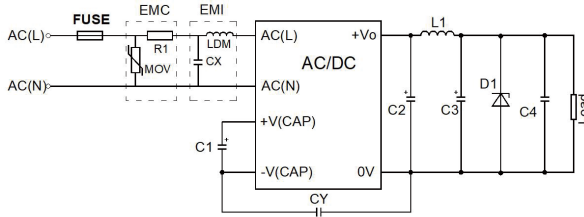
Recommended circuit 1



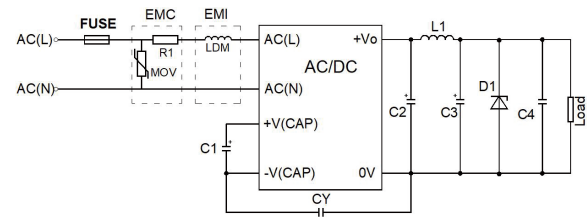
Recommended circuit 2



Recommended circuit 3



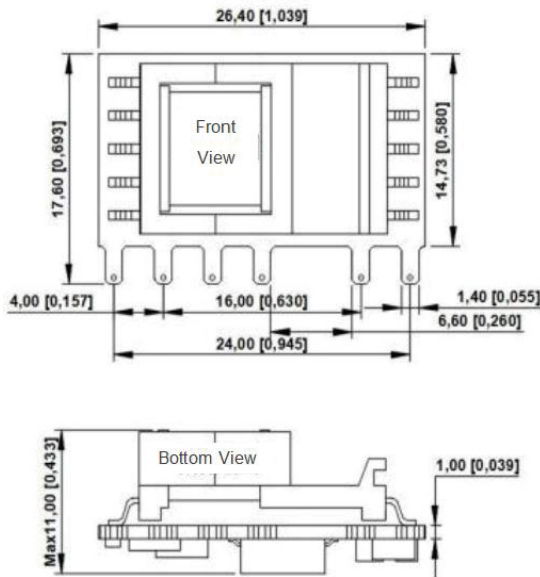
Recommended circuit 4



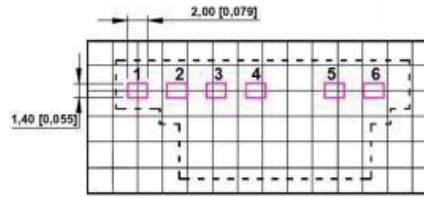
EMC Recommended Circuit Device Selection Reference Table				
Model	Recommended circuit 1	Recommended circuit 2	Recommended circuit 3	Recommended circuit 4
FUSE	1A/300V, slow-blow, required		2A/300V, slow-blow, required	
Rll	122/3W, Winding resistance, required			
MOV	14D561			
LDM	2.2mH / Max: 4 Ω / Min: 0.24A			
CX	0.1uF/310VAC			

Dimensions and Recommended Layout

Dimensions



PCB Printing Layout



Grid size: 2.54*2.54mm

Pin Function Table

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

Note:

Unit: mm[inch]

Pin section tolerances: ± 0.10 [+0.004]

General tolerances: +0.50 [+0.020]

Note:

- The input voltage should not exceed the specified range value, otherwise it may cause permanent and irreparable damage;
- 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;
- Suggested dual output module load imbalance: $\leq \pm 5\%$. If it exceeds $\pm 5\%$, it cannot be guaranteed that the product performance meets all performance indicators in this manual;
- The maximum capacitive load is tested within the input voltage range and under full load conditions;
- Unless otherwise specified, all indicators in this manual are measured at $T_a=25^\circ\text{C}$, humidity<75% RH, nominal input voltage, and output rated load;
- All indicator testing methods in this manual are based on our company's corporate standards;
- 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.