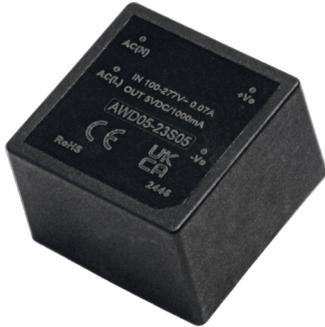


Product Characteristics



- Input voltage: 85-305 VAC / 100-430 VDC
- Packaging form: DIP
- Operating temperature: -40°C – + 85°C
- Isolation voltage: 4000 VAC
- Full-load efficiency: 82% (typical)
- Output short-circuit protection function, small volume, high efficiency, low power consumption, environmental protection.
- Industrial-grade product technical design

Product selection table

Model	Input Voltage (VAC)	Output Power (W)	Output Voltage (VDC)	Output Current Max. (mA)	Full Load Efficiency% (230VAC, Typ)	capacity load Max (μF)
TPS-AWD0523S05	85-305	5	5	1000	78	3000
TPS-AWD0523S09	85-305	5	9	550	79	1000
TPS-AWD0523S12	85-305	5	12	420	81	820
TPS-AWD0523S15	85-305	5	15	330	82	680
TPS-AWD0523S24	85-305	5	24	210	82	220

Input characteristics

Item	Working Conditions	Min .	Typ.	Max .	Unit
Input voltage	AC input	85	--	305	VAC
	DC input	100	--	430	VDC
Input current on	110VAC	--	0.11	--	A
	230VAC	--	0.07	--	
Input frequency		47	--	63	Hz
External fuse	Recommended 1A slow-blow fuse, must be connected				
Leakage current	0.3mA RMS typ.230VAC/50Hz				
Hot plug	not supported				

Output characteristic

Item	Working conditions	Min.	Typ .	Max .	Unit
Output voltage accuracy	10% -100% of load	--	± 2	--	%
Linear regulation rate	Rated load	--	± 0.5	--	
Load regulation rate	10% -100% load of 3.3DC output	--	± 1.0	--	
Ripple noise	20 MHz bandwidth (peak-peak), 10% -100% load	--	60	120	mV
Temperature Shift Factor		--	± 0.02	--	%/°C
Standby power consumption	230VAC	--	0.10	--	W
Minimum load		0	--	--	%
Overcurrent protection		110	--	--	%Io
Short-circuit protection	Sustainable short-circuit, self-recovery				
Hold-Up Time	230VAC	--	50	--	ms

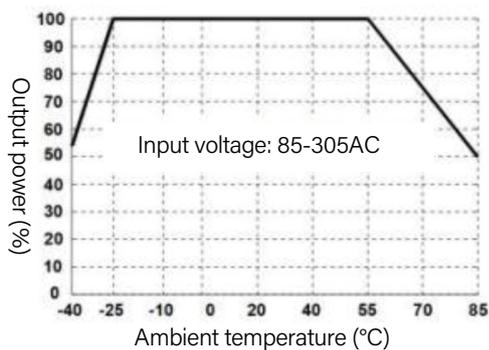
General features					
Item	Working Conditions	Min.	Typ.	Max.	Unit
Isolation voltage	Input-output, test time: 1 min, leakage current: <5 mA	4000	--	--	VAC
Insulation resistance	Input-output, test voltage: 500VDC	100	--	--	MΩ
Power reduction	-40°C --25°C 5V/9V/24V	2.8	--	--	%°C
	+55°C --+85°C 5V/9V/24V	2.2	--	--	
	+55°C --+85°C 12V/15V	3.0	--	--	
	85VAC - 100VAC	1.0	--	--	%/VAC
Working temperature		-40	--	+85	°C
Storage temperature		-40	--	+105	
Storage humidity	No condensation	--	--	95	%RH
Welding temperature	Wave soldering	260 ± 5°C; 5-10s			
	Manual welding	360 ± 5°C; 3-5s			
Safety standards		IEC/UL62368-1			
Security classification		CLASSII			
Average time failure time (MTBF)	MIL-HDBK-217F@25°C	>260,000h			

Physical Characteristics	
Case material	Black flame retardant heat resistant plastic (UL 94 V-0)
Package size	25.40 x 25.40 x 16.10mm
Weight	23g (Typ.)
Cooling method	natural air cooling

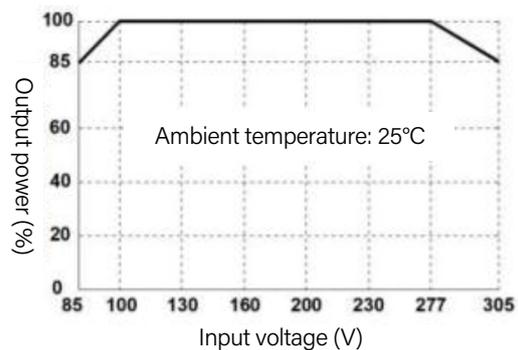
EMC Characteristic				
EMI	CE	CISPR32/EN55032 CLASS B		
	RE	CISPR32/EN55032 CLASS B		
EMS	RS	IEC/EN61000-4-310V/m	Perf. Criteria A	
	EFT	IEC/EN61000-4-4 ± 4KV	Perf. Criteria B	
	Surge	IEC/EN61000-4-5 line to line ± 1KV		Perf. Criteria B
		IEC / EN61000-4-5 line to line ± 2KV (Applied circuit 2)		Perf. Criteria B
	CS	IEC/EN61000-4-6 10Vr.m.s		Perf. Criteria A
	ESD	IEC/EN61000-4-2 Contact ±6KV/± 8KV		Perf. Criteria B

Product characteristics curve

Temperature derating curve

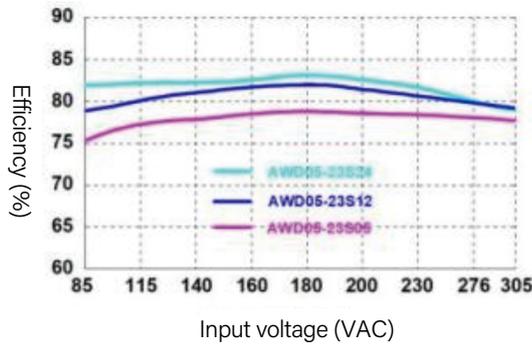


Input voltage derating curve

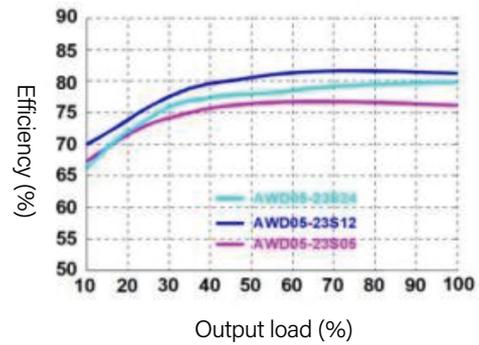


Typical characteristic curves

Efficiency VS Input voltage curve (full load)

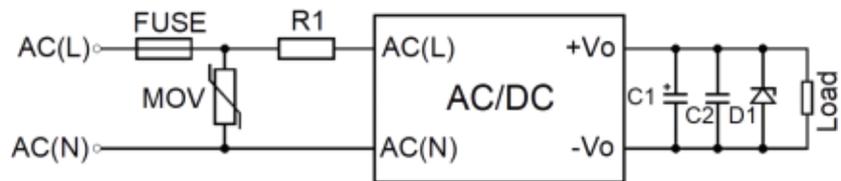


Efficiency VS Output load curve (Vin = 230 VAC)



Typical circuit design and application

Peripheral circuit design scheme (Figure 1)



Reference table for the selection of peripheral devices

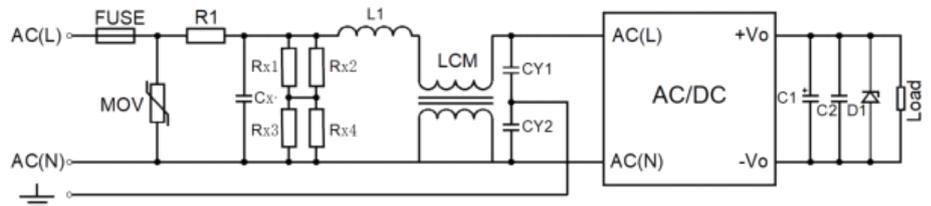
Output voltage	FUSE	MOV	R1	C1	C2	D1
5VDC	1A / 300VAC slow-blow, must be connected	10D561K	12Ω /3W Fusible Resistor, must be connected	150uF/25V	0.1uF/25V	See Note 2
9/12VDC				150uF/25V	0.1uF/25V	
15/24VDC				100uF/35V	0.1uF/50V	

Pour:

1. FUSE, MOV and NTC can be selected according to the actual application requirements.
2. D1 is a TVS tube, which can protect the rear stage circuit when the module is abnormal. It is recommended to select 1.2 times of the output voltage.

EMC Solution — Recommended circuit

EMC Solution-Recommended Circuit (Figure 2)

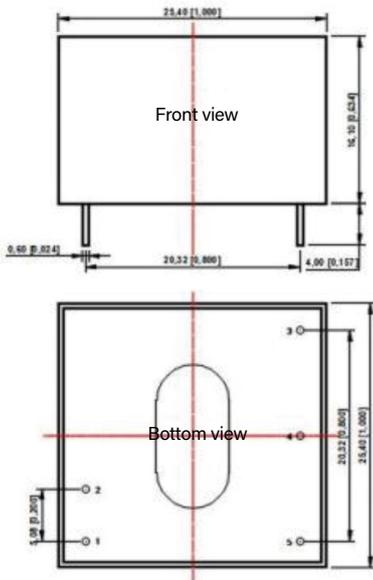


EMC Solution — Recommended circuit

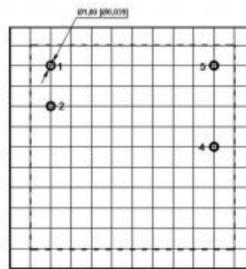
Element	Recommended value
FUSE	2A / 300VAC, slow-blow fuse, must connect
MOV	14D561K
Cx	0.1uF/275VAC
L1	1.2mH/0.3A
CY1、 CY2	1nF/400VAC
LCM	22mH, the common-mode inductance
Rx1, Rx2, Rx3, Rx4	2MΩ/1206

Appearance size, recommended PCB printing layout

Mechanical dimensions



PCB printing layout



The grid size distance is 2.54*2.54mm

Pin definition table					
Pin	1	2	3	4	5
Function	AC(N)	AC(L)	No Pin	-Vo	+Vo

Pour:
Dimensions in: mm [inch]
Size of terminal diameter tolerance: ± 0.1 [± 0.004]
End of dimension tolerance: ± 0.5 [± 0.020]

Remarks:

- The input voltage shall not exceed the specified range value, otherwise it may cause permanent and unrecoverable damage;
- If the product works below the minimum required load, it cannot be guaranteed that the product performance meets all the performance indicators in this manual;
- The maximum capacitive load is tested in the input voltage range and under full load conditions;
- Except for special instructions, all indicators in this manual are measured at $T_a=25\text{ }^\circ\text{C}$, humidity <75% RH, nominal input voltage and output rated load;
- All the index test methods in this manual are based on the enterprise standards of the company;
- Our company can provide product customization, specific needs can be directly contact our technical personnel.