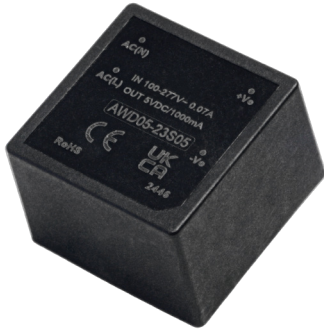


Product Characteristics



- 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 |

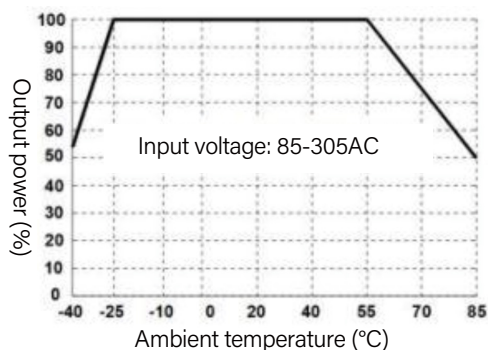
| General features | | | | | |
|----------------------------------|--|------------------|------|------|-------|
| Item | Working Conditions | Min. | Typ. | Max. | Unit |
| Isolation voltage | Input-output, test time: 1 min, leakage current: <5 mA | 4000 | -- | -- | VAC |
| Insulation resistance | Input-output, 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 |

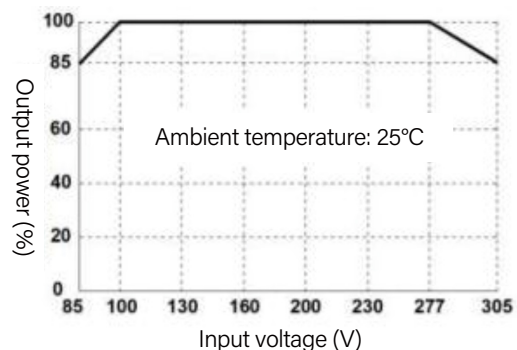
| EMC Characteristic | | | | |
|--------------------|-------|--|------------------|------------------|
| EMI | CE | CISPR32/EN55032 CLASS B | | |
| | RE | CISPR32/EN55032 CLASS B | | |
| EMS | RS | IEC/EN61000-4-310V/m | Perf. Criteria A | |
| | EFT | IEC/EN61000-4-4 ± 4KV | Perf. Criteria B | |
| | 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

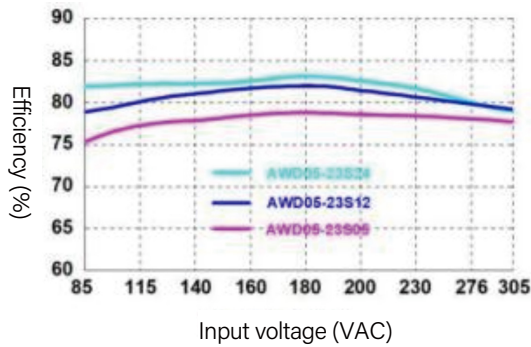


Input voltage derating curve

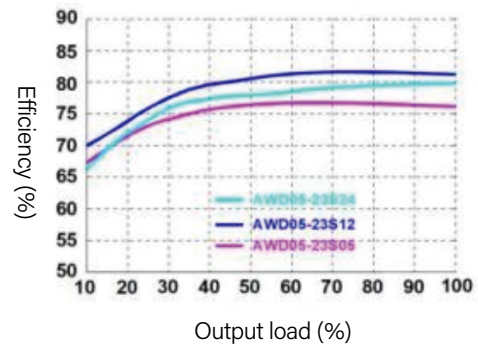


Typical characteristic curves

Efficiency VS Input voltage curve (full load)

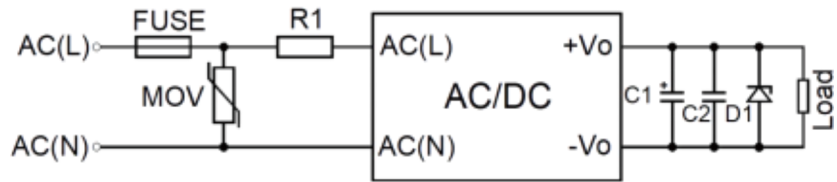


Efficiency VS Output load curve (Vin = 230 VAC)



Typical circuit design and application

Peripheral circuit design scheme (Figure 1)



Reference table for the selection of peripheral devices

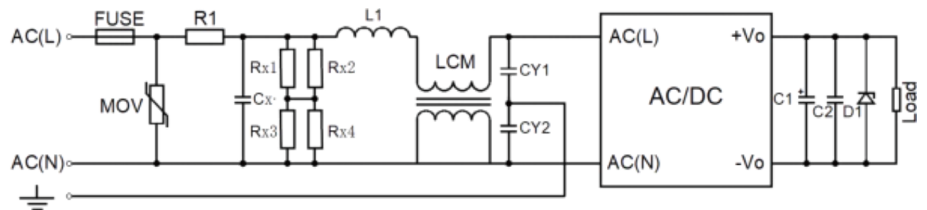
| Output voltage | FUSE | MOV | R1 | C1 | C2 | D1 |
|----------------|--|---------|--|-----------|-----------|------------|
| 5VDC | 1A / 300VAC slow-blow, must be connected | 10D561K | 12Ω /3W Fusible Resistor, must be connected | 150uF/25V | 0.1uF/25V | See Note 2 |
| 9/12VDC | | | | 150uF/25V | 0.1uF/25V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

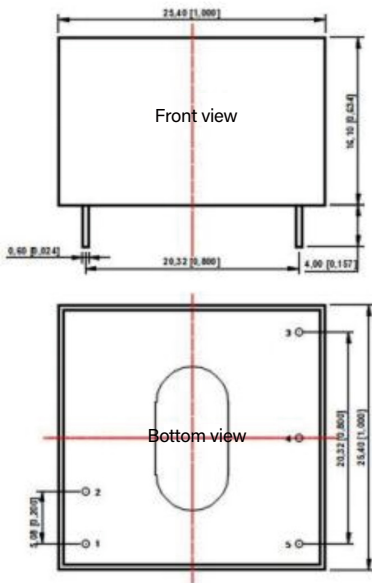


EMC Solution — Recommended circuit

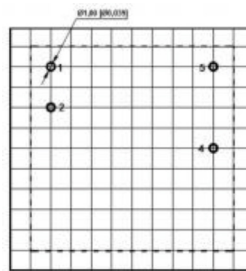
| Element | Recommended value |
|--------------------|---|
| FUSE | 2A / 300VAC, slow-blow fuse, must connect |
| MOV | 14D561K |
| Cx | 0.1uF/275VAC |
| L1 | 1.2mH/0.3A |
| CY1、 CY2 | 1nF/400VAC |
| LCM | 22mH, the common-mode inductance |
| Rx1, Rx2, Rx3, Rx4 | 2MΩ/1206 |

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.