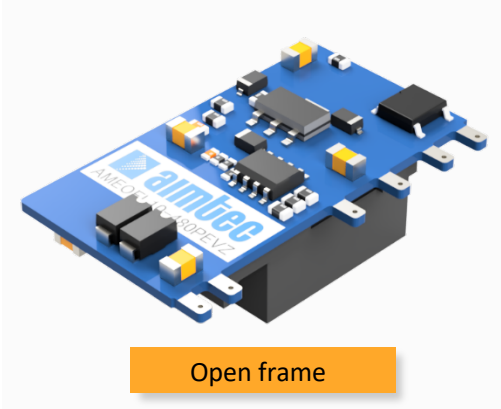




AMEOFL10-480PEVZ



Open frame

AMEOFL10-480PEVZ series is one of Aimtec’s highly efficient 10W AC-DC converter series. They feature an ultra-wide input range accepting either AC or DC voltage, high efficiency, compact size, an open-frame package, low power consumption and CLASS II reinforced insulation. A variety of EMC external circuits meet the needs of multiple industries.

This new series offers great operating temperatures, from -40°C to 85°C also features an isolation of 4000VAC for improved reliability and system safety. Furthermore, a high MTBF of 500,000h, output short circuit protection (OSCP) and an output over-current protection (OCP) come standard with the series.

All models are particularly suitable for industrial control, EV charger, electric power, instrumentation and smart home applications.

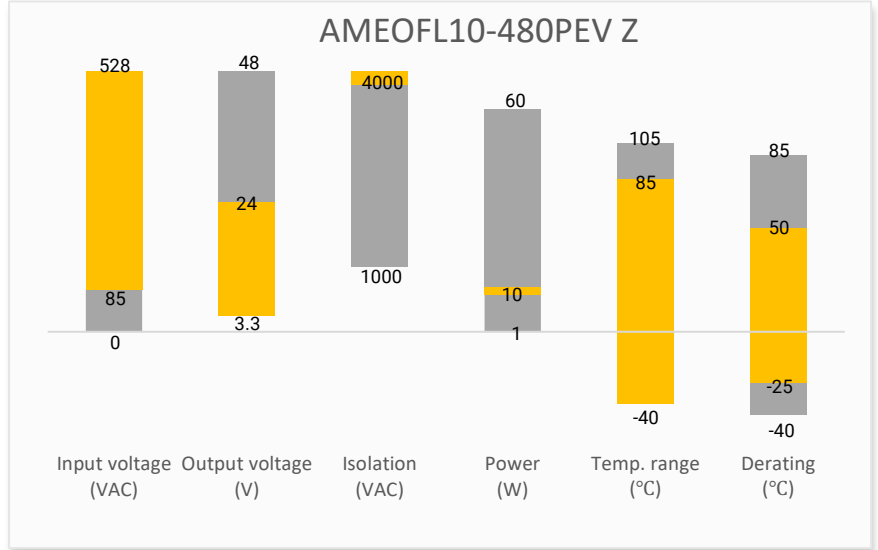
Features



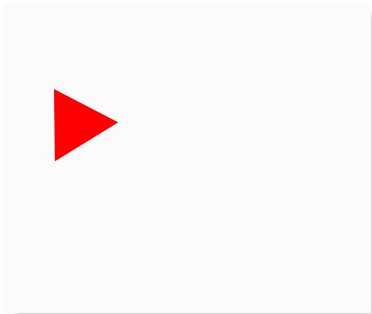
- Ultra-Wide Input: 85 - 528VAC/100 - 745VDC
- Operating Temp: -40 °C to +85 °C
- High isolation voltage: 4000VAC
- Low ripple & noise, 180mV(p-p), max.
- Output short circuit, over-current protection
- Open frame package



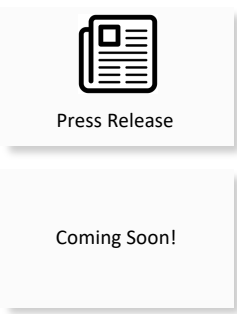
Summary



Training



Product Training Video  
(click to open)



Application Notes

Applications



Power Grid



Industrial



Telecom



Instrumentation

## Models & Specifications

| Single Output       |                        |                     |                        |                    |                        |                                    |                              |
|---------------------|------------------------|---------------------|------------------------|--------------------|------------------------|------------------------------------|------------------------------|
| Model               | Input Voltage (VAC/Hz) | Input Voltage (VDC) | Max Output wattage (W) | Output Voltage (V) | Output Current max (A) | Maximum capacitive load ( $\mu$ F) | Efficiency @ 230VAC Typ. (%) |
| AMEOFL10-3S480PEVZ  | 85 – 528 / 47 – 63     | 100 – 745           | 6.6                    | 3.3                | 2.0                    | 1500                               | 70                           |
| AMEOFL10-5S480PEVZ  | 85 – 528 / 47 – 63     | 100 – 745           | 10                     | 5                  | 2.0                    | 1500                               | 77                           |
| AMEOFL10-9S480PEVZ  | 85 – 528 / 47 – 63     | 100 – 745           | 10                     | 9                  | 1.1                    | 1000                               | 80                           |
| AMEOFL10-12S480PEVZ | 85 – 528 / 47 – 63     | 100 – 745           | 10                     | 12                 | 0.83                   | 680                                | 82                           |
| AMEOFL10-15S480PEVZ | 85 – 528 / 47 – 63     | 100 – 745           | 10                     | 15                 | 0.67                   | 470                                | 82                           |
| AMEOFL10-24S480PEVZ | 85 – 528 / 47 – 63     | 100 – 745           | 10                     | 24                 | 0.42                   | 330                                | 83                           |

| Input Specifications |                          |         |         |                     |
|----------------------|--------------------------|---------|---------|---------------------|
| Parameters           | Conditions               | Typical | Maximum | Units               |
| Input Current        | 115VAC                   |         | 300     | mA                  |
|                      | 230VAC                   |         | 150     | mA                  |
|                      | 380VAC                   |         | 100     | mA                  |
| Inrush current       | 115VAC                   | 15      |         | A                   |
|                      | 230VAC                   | 30      |         | A                   |
|                      | 380VAC                   | 50      |         | A                   |
| External fuse        | Slow blow type, required | 2       |         | A                   |
| Leakage current      | 480VAC/50Hz              |         | 0.5     | mA <sub>(RMS)</sub> |

| Output Specifications |                         |           |         |        |
|-----------------------|-------------------------|-----------|---------|--------|
| Parameters            | Conditions              | Typical   | Maximum | Units  |
| Voltage accuracy      | Full load, 3.3V output  | $\pm 6$   |         | %      |
|                       | 0-10% load, 5V output   | $\pm 5$   |         | %      |
|                       | 10-100% load, 5V output | $\pm 4$   |         | %      |
|                       | Full load, Others       | $\pm 5$   |         | %      |
| Line regulation       | Full load, 3.3V output  | $\pm 2$   |         | %      |
|                       | Full load, Others       | $\pm 1.5$ |         | %      |
| Load regulation       | 10-100% load            | $\pm 3$   |         | %      |
| Ripple & Noise        | 20MHz bandwidth         | 100       | 180     | mV p-p |
| Hold-up time          | 115VAC                  | 8         |         | ms     |
|                       | 230VAC                  | 35        |         | ms     |
|                       | 380VAC                  | 80        |         | ms     |

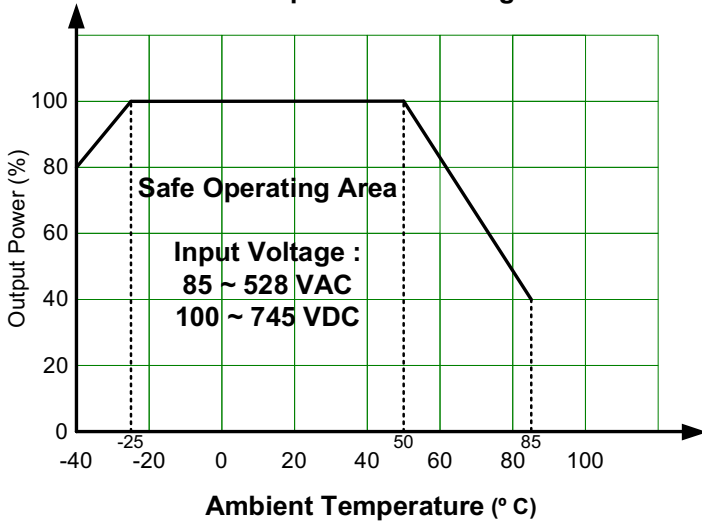
| Isolation Specifications |                 |         |       |            |
|--------------------------|-----------------|---------|-------|------------|
| Parameters               | Conditions      | Typical | Rated | Units      |
| Tested I/O voltage       | 60 sec, 5mA max |         | 4000  | VAC        |
| Insulation resistance    | 500VDC          | >50     |       | M $\Omega$ |

| General Specifications  |   |         |         |                       |
|---|---|---------|---------|-----------------------|
| Parameters  | Conditions  | Typical | Maximum | Units                 |
| Safety class  | Class II  |         |         |                       |
| Over Current protection   | Auto recovery   | ≥ 110   |         | % of I <sub>out</sub> |
| Short circuit protection  | Hiccup, Continuous, Auto recovery                     |         |         |                       |
| Power consumption   | 230VAC  |         | 0.3     | W                     |
|   | 380VAC  |         | 0.5     | W                     |
| Power derating  | +50 °C to +85 °C                                      | 1.72    |         | % / °C                |
|   | -40 °C to -25 °C                                      | 1.33    |         | % / °C                |
|   | 85VAC ~ 100VAC  | 1.33    |         | % /VAC                |
|   | 480VAC ~ 528VAC                                       | 0.42    |         | % /VAC                |
| Operating temperature   | -40 to +85  |         |         | °C                    |
| Storage temperature   | -40 to +105   |         |         | °C                    |
| Temperature coefficient   |   | ±0.2    |         | % / °C                |
| Cooling   | Free air convection                                   |         |         |                       |
| Storage Humidity  |   |         | 95      | % RH                  |
| Weight  |   | 10      |         | g                     |
| Dimensions (L x W x H)  | 1.50 x 0.79 x 0.60 inches ( 38.00 x 20.00 x 15.25mm ) |         |         |                       |
| MTBF  | > 500 000 hrs (MIL-HDBK -217F, t=+25°C)/Full Load     |         |         |                       |
| NOTE: All specifications in this datasheet are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified. |   |         |         |                       |

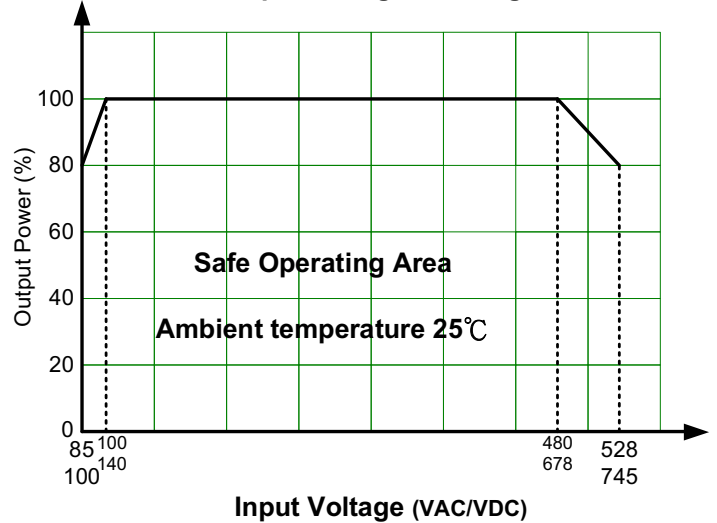
| Safety Specifications |   |   |
|-----------------------|---|---|
| Parameters            |   |   |
| Standards             | Design to meet IEC/EN62477-1, EN61010-1, IEC/EN/UL62368-1, BS EN62368-1 |   |
|                       | EMI - Conducted and radiated emission                                   | CISPR32 / EN55032, Class A (With EMI class A recommended circuit)<br>CISPR32 / EN55032, Class B (With EMI class B recommended circuit)  |
|                       | Electrostatic Discharge Immunity  | IEC61000-4-2 Contact ±6KV, Air ±8KV, Criteria B   |
|                       | RF, Electromagnetic Field Immunity                                      | IEC61000-4-3 10V/m, Criteria A  |
|                       | Electrical Fast Transient/Burst Immunity                                | IEC61000-4-4 ±2KV, Criteria B (With the recommended circuit for basic application, outdoor general or strong lightning surge environment)<br>IEC61000-4-4 ±4KV, Criteria B (With the recommended circuit for indoor general, indoor industrial or outdoor industrial environment)   |
|                       | Surge Immunity  | IEC61000-4-5 L-L ±1KV, Criteria B (With surge immunity Class III recommended circuit)<br>IEC61000-4-5 L-L ±2KV, Criteria B (With surge immunity Class IV recommended circuit)<br>IEC61000-4-5 L-L ±2KV, L-G ±4KV, Criteria B (With outdoor industrial environment recommended circuit)<br>IEC61000-4-5 L-L ±4KV, Criteria B (With strong lightning surge environment recommended circuit) |
|                       | RF, Conducted Disturbance Immunity                                      | IEC61000-4-6 10Vr.m.s, Criteria A   |
|                       | Voltage dips, Short Interruptions Immunity                              | IEC61000-4-11 0%, 70%, Criteria B   |

Derating

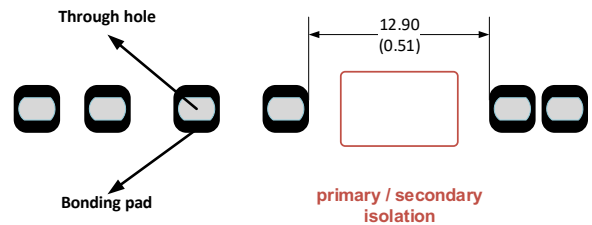
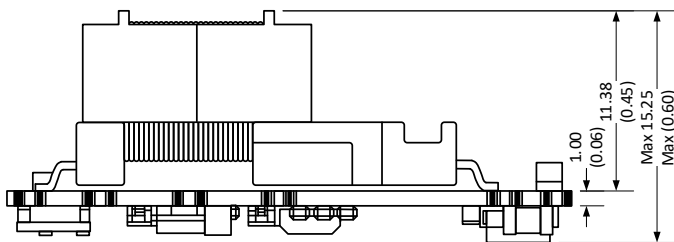
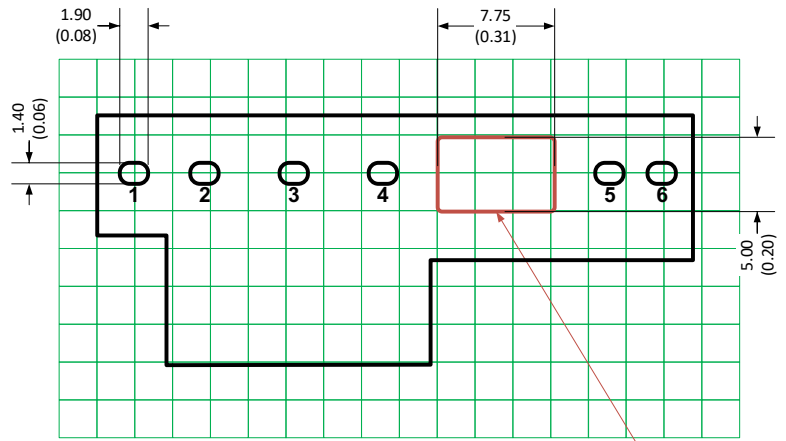
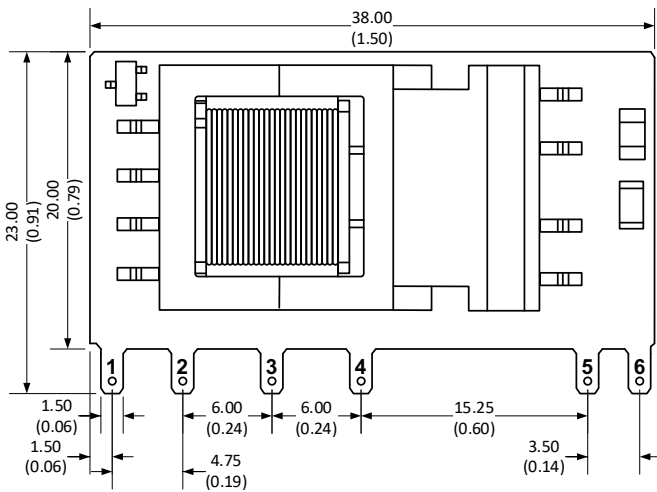
Temperature Derating



Input Voltage Derating



Dimensions

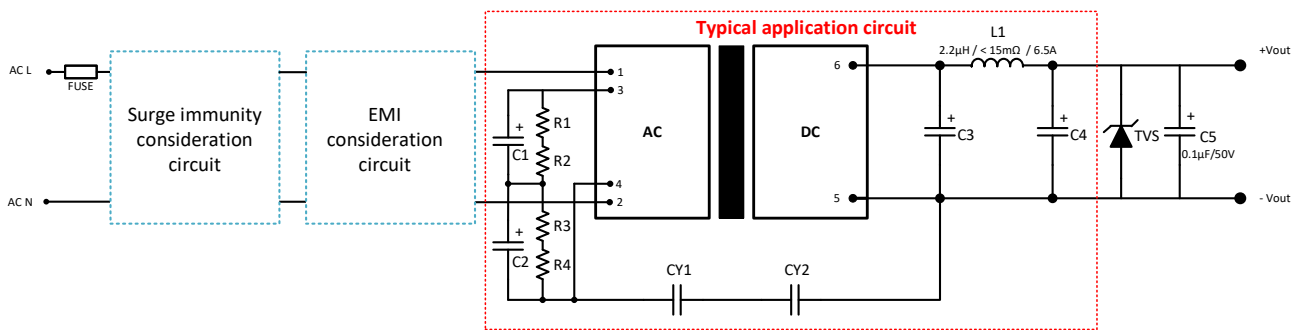


Note:  
Unit: mm [inch]  
General tolerances:  $\pm 1.00 [\pm 0.040]$

| Pin Output Specifications |            |
|---------------------------|------------|
| Pin                       | Function   |
| 1                         | Input AC L |
| 2                         | Input AC N |
| 3                         | +V_Cap     |
| 4                         | -V_Cap     |
| 5                         | -V Output  |
| 6                         | +V Output  |

1. It is necessary to add C1 between pin3 to pin4
2. It is necessary to add circuit to the output as shown in recommended circuit
3. The layout of the device is for reference only, please refer to the actual product

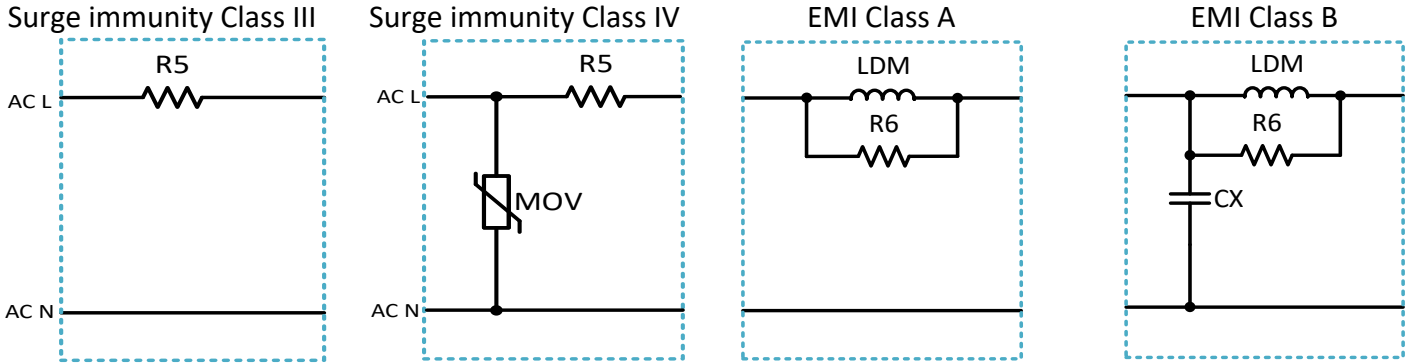
## Recommended EMC external circuit



| Model name          | C1/C2     | R1/R2/R3/R4    | C3                                   | C4         | TVS |
|---------------------|-----------|----------------|--------------------------------------|------------|-----|
| AMEOFL10-3S480PEVZ  | 47μF/400V | 1MΩ/1206/0.25W | 1500μF/6.3V<br>solid-state capacitor | 680μF/25V  | 7V  |
| AMEOFL10-5S480PEVZ  |           |                | 820μF/16V<br>solid-state capacitor   | 330μF/25V  | 7V  |
| AMEOFL10-9S480PEVZ  |           |                | 470μF/16V<br>solid-state capacitor   | 1000μF/16V | 12V |
| AMEOFL10-12S480PEVZ |           |                | 470μF/16V<br>solid-state capacitor   | 330μF/25V  | 20V |
| AMEOFL10-15S480PEVZ |           |                | 470μF/25V<br>solid-state capacitor   | 100μF/35V  | 20V |
| AMEOFL10-24S480PEVZ |           |                | 470μF/35V                            | 100μF/35V  | 30V |

- With the variable combination of below Surge and EMI circuits which offer the different level of protection.
- The components are the must for typical application circuit in red frame area.
- A suppressor diode (TVS) is recommended to protect the application in case of a converter failure and specification should be 1.2 times of the output voltage.
- C1/C2 capacitor recommendation: ripple current > 200mA@100KHz, ESR ≤ 100Ω at low temperature

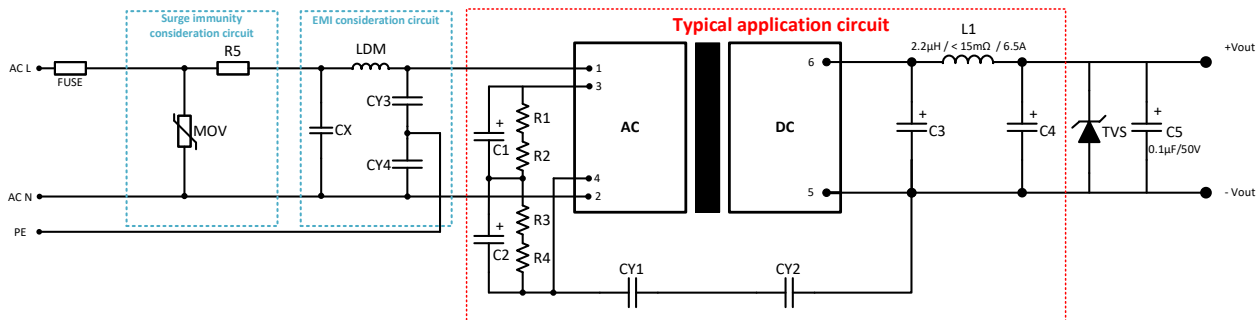
**EMI & Surge Recommended Circuit**



| Application environment | Environment Condition |      | Recommended Circuit & Component Selection |           |              |              |
|-------------------------|-----------------------|------|---|-----------|--------------|--------------|
|                         | Ambient temperature   | EFT  | Surge immunity                            | EMI CLASS | CY1          | CY2          |
| Basic application       | -40 °C ~ +85 °C       | ±2KV | CLASS III                                 | CLASS A   | 1nF/400VAC   | Wire         |
| Indoor general          | -25 °C ~ +55 °C       | ±4KV | CLASS III                                 | CLASS B   | 2.2nF/250VAC | 2.2nF/250VAC |
| Indoor industrial       | -25 °C ~ +55 °C       | ±4KV | CLASS IV                                  | CLASS B   | 1nF/400VAC   | Wire         |
| Outdoor general         | -40 °C ~ +85 °C       | ±2KV | CLASS IV                                  | CLASS A   | 1nF/400VAC   | Wire         |

| Component               | Surge immunity           |                | EMI                                    |                     |
|-------------------------|--------------------------|----------------|--|---------------------|
|                         | Class III                | Class IV       | CLASS A                                | CLASS B             |
| MOV                     | -                        | <b>S14K550</b> | -                                      | -                   |
| R5(Wire-wound resistor) | <b>6.8Ω/3W</b>           |                | -                                      | -                   |
| R6<br>(Chip resistor)   | 3.3V / 5V / 12V output   | -              | <b>10KΩ/1206/0.25W</b>                 |                     |
|                         | 9V / 15V / 24V output    | -              | <b>4.7KΩ/1206/0.25W</b>                |                     |
| CX                      | -                        | -              | -                                      | <b>0.1μF/480VAC</b> |
| LDM                     | -                        | -              | <b>2.2mH / &lt; 4.81Ω / &gt; 0.31A</b> |                     |
| FUSE                    | <b>2A/500V slow blow</b> |                | -                                      | -                   |

**Outdoor industrial environment Recommended Circuit**

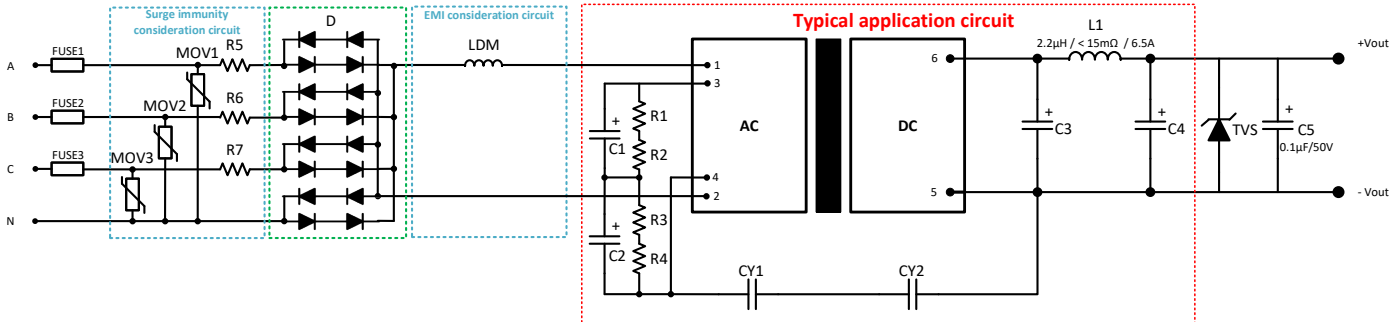


| Application environment | Environment Condition |      | Recommended Circuit & Component Selection |           |             |      |
|-------------------------|-----------------------|------|---|-----------|-------------|------|
|                         | Ambient temperature   | EFT  | Surge immunity                            | EMI CLASS | CY1/CY3/CY4 | CY2  |
| Outdoor industrial      | -40 °C ~ +85 °C       | ±4KV | CLASS IV                                  | CLASS A   | 1nF/400VAC  | Wire |

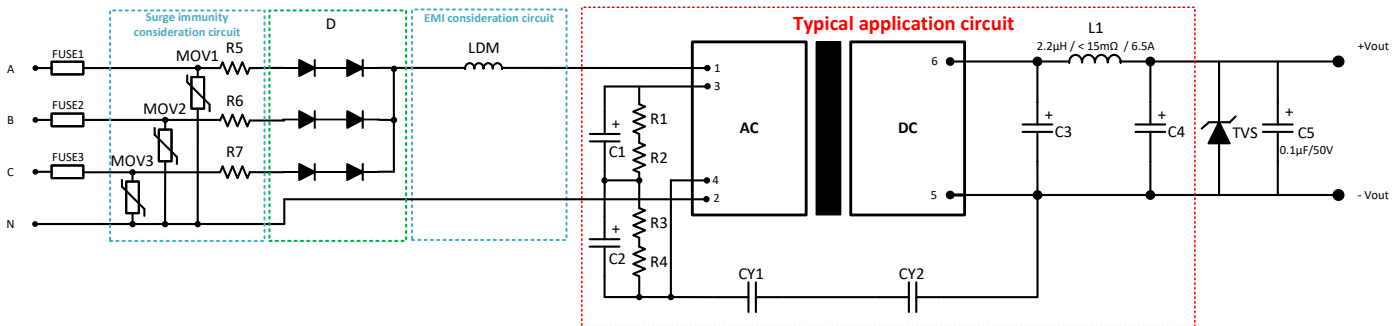
| Component               | Surge immunity           | EMI                                    |
|-------------------------|--------------------------|--|
|                         | Class IV                 | CLASS A                                |
| MOV                     | <b>S14K550</b>           | -                                      |
| R5(Wire-wound resistor) | <b>6.8Ω/3W</b>           | -                                      |
| CX                      | -                        | <b>0.1μF/480VAC</b>                    |
| LDM                     | -                        | <b>2.2mH / &lt; 4.81Ω / &gt; 0.31A</b> |
| FUSE                    | <b>2A/500V slow blow</b> | -                                      |

### Strong lightning surge environment Recommended Circuit

#### Full-wave rectification



#### Half-wave rectification



| Application environment | Environment Condition |      | Recommended Circuit & Component Selection |           |             |      |
|-------------------------|-----------------------|------|---|-----------|-------------|------|
|                         | Ambient temperature   | EFT  | Surge immunity                            | EMI CLASS | CY1/CY3/CY4 | CY2  |
| Strong lightning surge  | -40°C ~ +85°C         | ±2KV | CLASS IV                                  | CLASS A   | 1nF/400VAC  | Wire |

| Component                         | Surge immunity             | EMI                                    |
|-----------------------------------|----------------------------|--|
|                                   | Class IV                   | CLASS A                                |
| MOV1 / MOV2 / MOV3                | <b>S14K550</b>             | -                                      |
| R5 / R6 / R7(Wire-wound resistor) | <b>12Ω/5W</b>              | -                                      |
| D                                 | <b>2A/1000V</b>            |  |
| LDM                               | -                          | <b>2.2mH / &lt; 4.81Ω / &gt; 0.31A</b> |
| FUSE1 / FUSE2 / FUSE3             | <b>6.3A/500V slow blow</b> | -                                      |

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