| | | | | | | |
|---|---|---|---|---|---|---|
| AM6TW-4805D-NZ | 18-75 | ±5 | ±600 | ±680 | 1500 | 83 |
| AM6TW-4812D-NZ | 18-75 | ±12 | ±250 | ±330 | 1500 | 87 |
| AM6TW-4815D-NZ | 18-75 | ±15 | ±200 | ±220 | 1500 | 88 |
| AM6TW-2405DH30-NZ | 9-36 | ±5 | ±600 | ±680 | 3000 | 80 |
| AM6TW-2412DH30-NZ | 9-36 | ±12 | ±250 | ±330 | 3000 | 84 |
| AM6TW-2415DH30-NZ | 9-36 | ±15 | ±200 | ±220 | 3000 | 84 |

## Input Specifications

| Parameters | Nominal | Typical | Maximum | Units |
|---|---|---|---|---|
| Voltage range | 24 Vin | 9-36 | | VDC |
| | 48 Vin | 18-75 | | VDC |
| Absolute Maximum Input Voltage (1 Sec max) | 24 Vin | | -0.7 - 50 | VDC |
| | 48 Vin | | -0.7 - 100 | VDC |
| Filter | π (Pi) Network | | | |
| Reflected Input ripple current | | 20 | | mA p-p |
| Input Under Voltage lockout | 24 Vin | 6.5 | | VDC |
| | 48 Vin | 15.5 | | VDC |
| Startup voltage | 24 Vin | | 9 | VDC |
| | 48 Vin | | 18 | VDC |
| Startup time | 3000VDC isolated models | 10 | | ms |

## Isolation Specifications

| Parameters | Conditions | Typical | Maximum | Units |
|---|---|---|---|---|
| Tested I/O voltage | 60 sec, <1mA, 1500VDC isolated models | ≥ 1500 | | VDC |
| | 60 sec, <1mA, 3000VDC isolated models | ≥ 3000 | | VDC |
| | 60 sec, <1mA, 6000VDC isolated models | ≥ 6000 | | VDC |
| Resistance | 1500 & 3000VDC isolated models, 500VDC | ≥ 1000 | | MOhm |
| | 6000VDC isolated models, 500VDC | ≥ 10000 | | MOhm |
| Capacitance (0.1V/100KHz) | 1500 & 3000VDC isolated models | 1000 | | pF |
| | 6000VDC isolated models | 13 | 20 | pF |
| Isolation creepage and clearances (6000VDC isolated models) | PCB Clearance and Creepage | ≥ 8.0 | | mm |
| | Optocoupler Creepage | ≥ 8.0 | | mm |
| | Transformer Creepage | ≥ 8.0 | | mm |
| | Transformer Clearance | ≥ 5.0 | | mm |
| Insulation system | 6000VDC isolated models | Reinforced isolation | | |
| Leakage | 6000VDC isolated models, 240VAC/60Hz | 3.6 | 5 | µA |
| Protection grade | 6000VDC isolated models, 240VAC/60Hz | 2xMOPP | | |
| Applied part | 6000VDC isolated models | Type CF | | |

## Output Specifications

| Parameters | Conditions | Typical | Maximum | Units |
|---|---|---|---|---|
| Voltage accuracy | 5% to 100% load | ±1 | ±3 | % |
| Balanced Load | Dual output models | ±0.5 | ±1.5 | % |
| Over voltage protection | | ≥ 110 | 160 | % of Vout |
| Over current protection | 3000VDC isolated 24Vout model | 220 | 290 | % of Iout |
| | 6000VDC isolated models | 150 | 260 | % of Iout |
| | others | 140 | 190 | % of Iout |
| Short Circuit protection | Continuous | | | |
| Short circuit restart | Auto-recovery | | | |
| Line voltage regulation | LL to HL, output 1 | ±0.2 | ±0.5 | % |
| | LL to HL, output 2 | ±0.5 | ±1 | % |
| Load voltage regulation | 5% to 100% load, output 1 | ±0.5 | ±1 | % |
| | 5% to 100% load, output 2 | ±0.5 | ±1.5 | % |
| Cross voltage regulation | Output 1 50% load, output 2 10-100% load | | ±5 | % |
| Ripple & Noise | 1500VDC models | | 85 | mV p-p |
| | 3000VDC models | 85 | 120 | mV p-p |
| | 6000VDC models | 100 | 180 | mV p-p |
| Transient Recovery Time | 25% load step change | 300 | 500 | µS |
| Transient Response Deviation | 25% load step change, 1.5KV 3.3/ 5/ ±5Vout | ±5 | ±8 | % |
| | 25% load step change, others | ±3 | ±5 | % |

## General Specifications

| Parameters | Conditions | Typical | Maximum | Units |
|---|---|---|---|---|
| Switching frequency | | 300 | | KHz |
| Operating temperature | Derating above +71 | -40 to +85 | | °C |
| Storage temperature | | -55 to +125 | | °C |
| Temperature coefficient | | ±0.03 | | %/°C |
| Max Case temperature | | | 100 | °C |
| Cooling | Free air convection | | | |
| Humidity | | | 95 | % RH |
| Soldering Temperature | 1.5mm from lead for 10 sec. | | 300 | °C |
| Case material | 1500VDC Isolated models | Aluminum Alloy | | |
| | 3000 & 6000VDC Isolated models | Black flame-retardant plastic (UL94 V-0) | | |
| Weight | 1500VDC Isolated models | 12 | | g |
| | 3000 & 6000VDC Isolated models | 13 | | g |
| Dimensions (L x W x H) | 1500VDC Isolated models | 1.26 x 0.79 x 0.42inches 32.00 x 20.00 x 10.80mm | | |
| | 3000 & 6000VDC Isolated models | 1.24 x 0.80 x 0.40inches 31.60 x 20.30 x 10.20mm | | |
| MTBF | >1 000 000hrs (MIL-HDBK -217F, Ground Benign, t=+25°C) | | | |

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.

## Environment Specifications

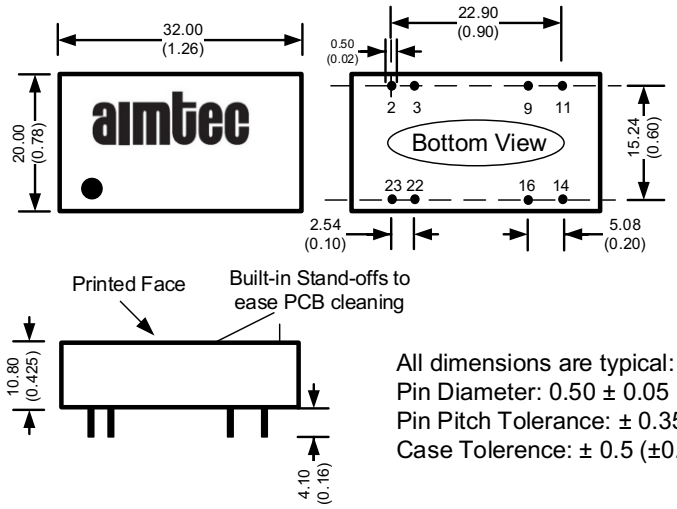
| Test | Parameters | Conditions |
|---|---|---|
| Vibration | 1500VDC Isolated models | IEC/EN 61373 Category 1, class B |
| | 3000 & 6000VDC Isolated models | 10-55Hz, 2g, 30min, every axis tested |

## Safety Specifications

| Parameters | | |
|---|---|---|
| Approval | UL60950-1 for 1.5 and 3KV isolated models | |
| Standards | Design to meet EN50155 for 1.5KV isolated models<br>Design to meet EN60601-1 3rd edition, 2xMOPP, Type CF applied part for 6KV isolated models | |
| | EMI - Conducted and radiated emission | CISPER32/EN55032, class A, (without external component)<br>class B, for 1.5 and 3KV isolated models (with the recommended EMC circuit part A)<br>EN50121-3-2 for 1.5KV isolated models (with the recommended EMC circuit part A)<br>EN55016-2-1 for 1.5KV isolated models (with the recommended EMC circuit part A) |
| | Electrostatic Discharge Immunity | IEC61000-4-2, contact ±4KV, Criteria B for 1.5 and 3KV isolated models<br>IEC61000-4-2, contact ±6KV, Criteria B for 6KV isolated models<br>EN50121-3-2, contact ±6KV, Air ±8KV, Criteria A for 1.5KV isolated models |
| | RF, Electromagnetic Field Immunity | IEC61000-4-3, 10V/m, Criteria A for 1.5 and 3KV isolated models<br>EN50121-3-2, 20V/m, Criteria A for 1.5KV isolated models |
| | Electrical Fast Transient/Burst Immunity | IEC61000-4-4, ±2KV, Criteria B, (with the recommended EMC circuit part B)<br>EN50121-3-2, ±2KV, Criteria A for 1.5KV isolated models (with the recommended EMC circuit part B) |
| | Surge Immunity | IEC61000-4-5, ±2KV, Criteria B, (with the recommended EMC circuit part B)<br>EN50121-3-2, L-L ±1KV, Criteria A for 1.5KV isolated models (with the recommended EMC circuit part B) |
| | RF, Conducted Disturbance Immunity | IEC61000-4-6, 3Vrms, Criteria A<br>EN50121-3-2, 10Vr.m.s, Criteria A for 1.5KV isolated models |
| | Voltage dips, short interruptions and voltage variations immunity | IEC61000-4-29, 0-70%, Criteria B |

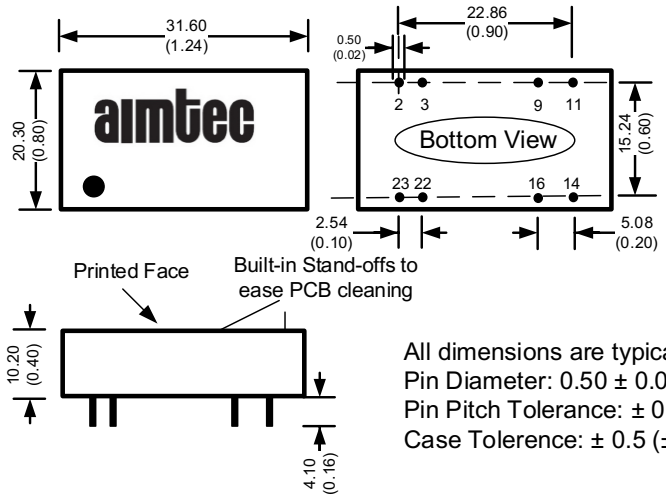
## Dimensions

### 1500VDC Isolated models



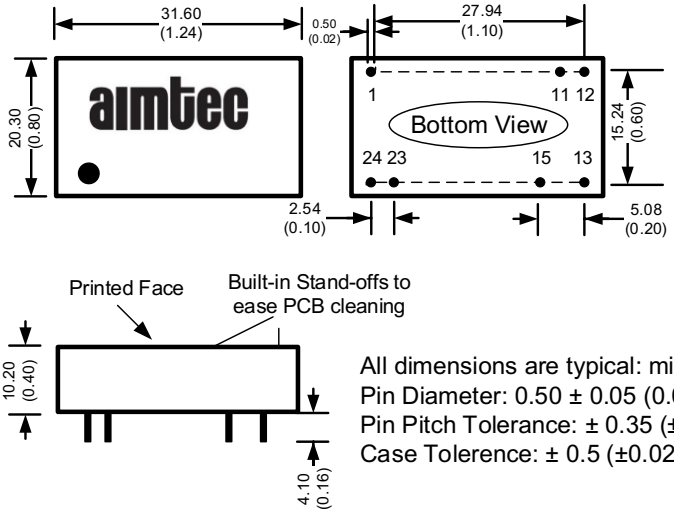

All dimensions are typical: millimeters (inches)
Pin Diameter: 0.50 ± 0.05 (0.02 ± 0.002)
Pin Pitch Tolerance: ± 0.35 (±0.014)
Case Tolerence: ± 0.5 (±0.02)

### 3000VDC Isolated models




All dimensions are typical: millimeters (inches)
Pin Diameter: 0.50 ± 0.05 (0.02 ± 0.002)
Pin Pitch Tolerance: ± 0.35 (±0.014)
Case Tolerence: ± 0.5 (±0.02)

### 6000VDC Isolated models




All dimensions are typical: millimeters (inches)
Pin Diameter: 0.50 ± 0.05 (0.02 ± 0.002)
Pin Pitch Tolerance: ± 0.35 (±0.014)
Case Tolerence: ± 0.5 (±0.02)

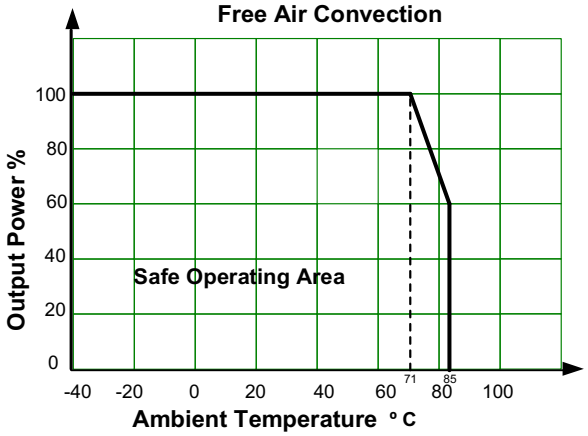
## Pin Out Specifications

| Pin | 1500VDC & 3000VDC | |
|---|---|---|
| | Single | Dual |
| 2 | -V Input | -V Input |
| 3 | -V Input | -V Input |
| 9 | No pin | Common |
| 11 | N.C. | -V Output |
| 14 | +V Output | +V Output |
| 16 | -V Output | Common |
| 22 | +V Input | +V Input |
| 23 | +V Input | +V Input |

## Pin Out Specifications

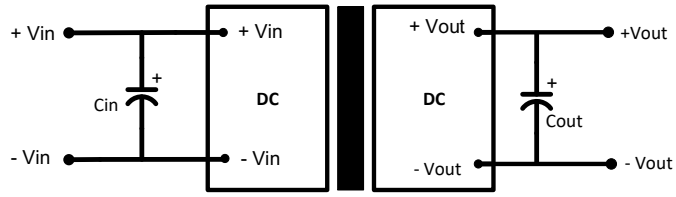
| Pin | 6000VDC |
|---|---|
| | Single |
| 1 | +V Input |
| 11 | No Pin |
| 12 | -V Output |
| 13 | +V Output |
| 15 | No Pin |
| 23/24 | -V Input |

## Derating curve



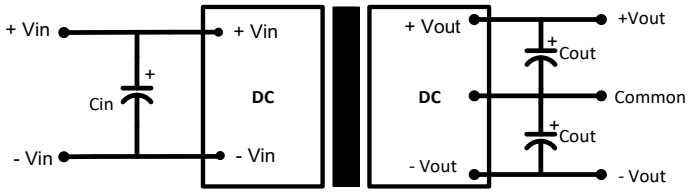

## Typical application circuit

### Single output models



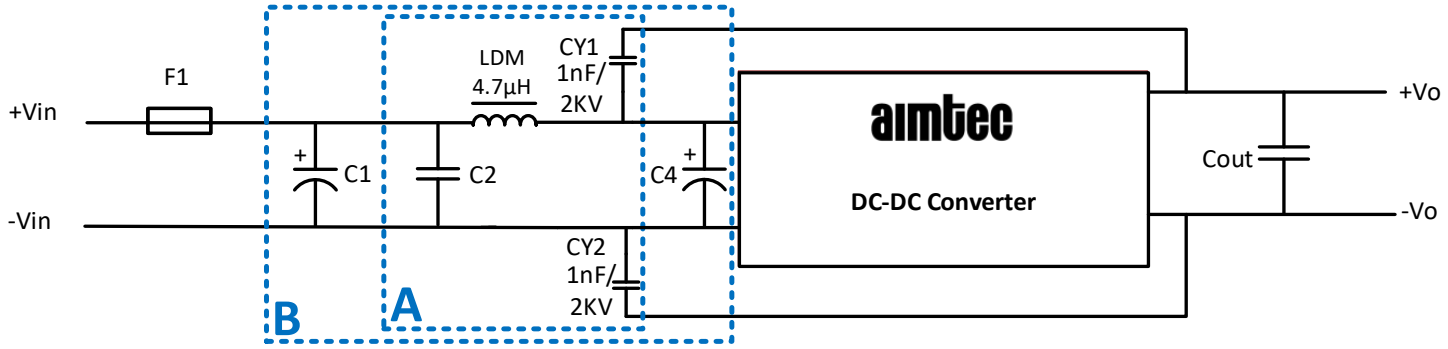

| Vin | Cin | Cout |
|---|---|---|
| 24V | 100µF | 10µF |
| 48V | 10-47µF | 10µF |

### Dual output models



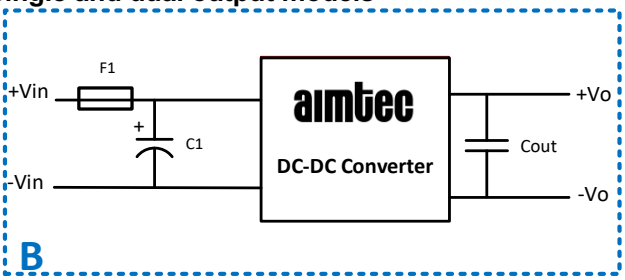

## Recommended EMC circuit

### 1500VDC isolated models



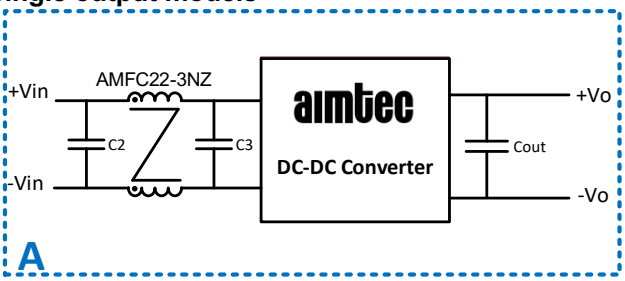

| Vin | C1, C4 | C2 |
|---|---|---|
| 24V | 330µF/50V | 1µF/50V |
| 48V | 330µF/100V | 1µF/100V |

### 3000VDC isolated models
### Single and dual output models

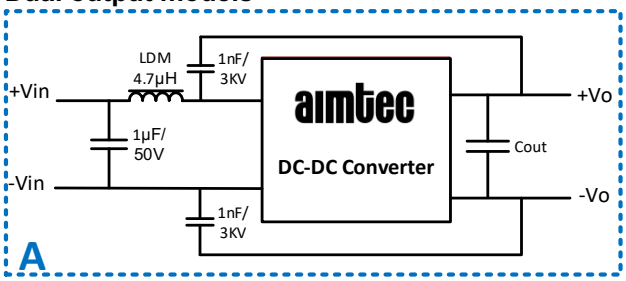



| Vin | C1, | C2, C3 |
|---|---|---|
| 24V | 1000µF/50V | 2.2µF/50V |
| 48V | 680µF/100V | 2.2µF/100V |

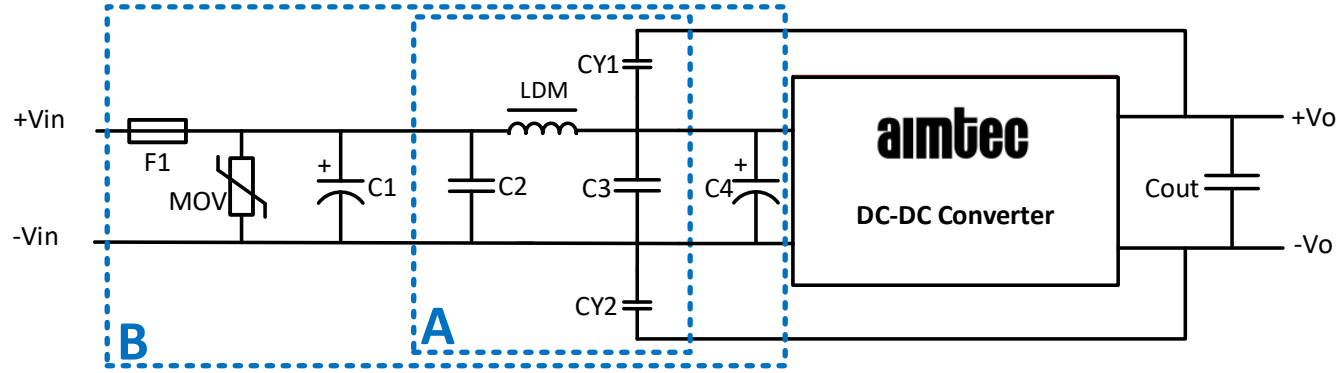
### Single output models




### Dual output models




### 6000VDC isolated models




| Vin | MOV | C1, C4 | C2, C3 | LDM | CY1, CY2 |
|---|---|---|---|---|---|
| 24V | S20K30 | 330µF/50V | 10µF/50V | 10µH | 1nF/6KV |
| 48V | S14K60 | 330µF/100V | - | - | - |

Part B for EMS, part A for EMI

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