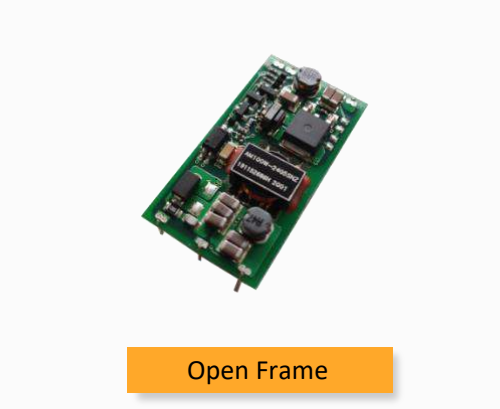


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samples

AM100W-NZ



Open Frame

The AM100W-NZ series is designed to offer an ultra-thin solution to customers with designs that have challenging height considerations. The AM100W-NZ series is available in both SIP and DIP packages with open frame and metal case options. The total height of 0.24inches (6.1mm) for the Dual inline Package offers significant space optimization when compared to typical 10W DIP products with approximately twice the height (~0.4inches). In addition, the AM100W-NZ offers an impressive 500VAC/1500VDC isolation with a 4:1 input voltage range of 9-36VDC. It is also designed with input under-voltage protection, output over-voltage, over-current, short circuit protection, which enable the AM100W-NZ series to be used in a variety of application related to industrial control, instrumentation and communication equipment.

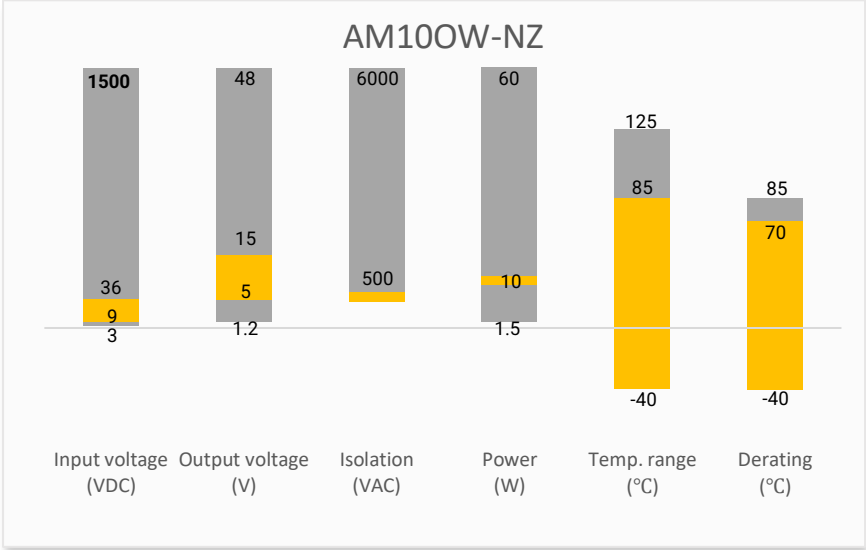
Features



Summary



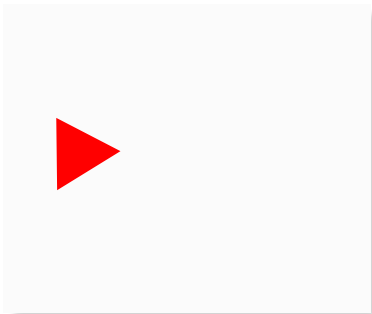
- Wide 4:1 Input Range: 9VDC – 36VDC
- Operating Temp: -40 °C to +85 °C
- Low ripple & noise, up to 100mV(p-p) max
- Efficiency up to 88%
- Adjustable output voltage
- Output short circuit, over current protection, over voltage protection
- Regulated Output



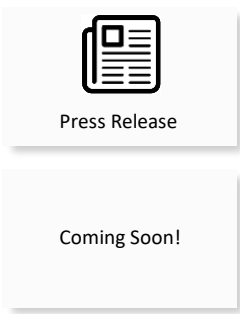
Training



Applications



Product Training Video
(click to open)



Application Notes



Power Grid



Industrial



Telecom



Instrumentation

Models & Specifications

Single Output

| Model | Input Voltage (VDC) | Output Voltage (VDC) | Input Current Max (mA) | | Output Current Max (mA) | Maximum Capacitive Load (μF) | Efficiency (%) Full Load |
|----------------|---------------------|----------------------|------------------------|-----------|-------------------------|------------------------------|--------------------------|
| | | | No Load | Full Load | | | |
| AM100W-2405SNZ | 24 (9 ~ 36) | 5 | 40 | 508 | 2000 | 2200 | 84 |
| AM100W-2412SNZ | 24 (9 ~ 36) | 12 | 12 | 490 | 833 | 680 | 87 |
| AM100W-2415SNZ | 24 (9 ~ 36) | 15 | 15 | 485 | 667 | 470 | 88 |

The standard part number is for DIP and open-frame package;

With adding suffix “-M” for DIP package with metal case (E.g. AM100W-1205SNZ-M is for 5V model with DIP pin type and metal case);

With adding suffix “-L” for SMD and open-frame package (E.g. AM100W-1205SNZ-L is for 5V model with SMD pin type and open frame);

With adding suffix “-LM” for SMD package with metal case (E.g. AM100W-1205SNZ-LM is for 5V model with SMD pin type and metal case).

Input Specification

| Parameters | Conditions | Typical | Maximum | Units |
|-----------------------------|---|---------|---------|----------|
| Voltage range | See models table | | | VDC |
| Filter | Pi filter | | | |
| Absolute maximum rating | 1 sec. max | | 50 | VDC |
| Reflected ripple current | | 40 | | mA pk-pk |
| Start-up voltage | Nominal 12V input models | | 9 | VDC |
| Input under voltage lockout | Nominal 12V input models | 6.5 | | VDC |
| On/Off Control * | ON – 0 to 0.3Vdc, pulled low to GND; OFF – 2.4~12Vdc, pulled high or open, idle current 6mA typ. | | | |

* The Ctrl pin voltage is referenced to input GND.

Isolation Specification

| Parameters | Conditions | Typical | Maximum | Units |
|----------------------------|--|---------|---------|-------|
| Tested I/O voltage | 60 sec, 5mA max | 500 | | VAC |
| | 60 sec, 1mA max | 1500 | | VDC |
| Tested case to I/O voltage | 60 sec, 5mA max, for metal case models | 500 | | VAC |
| | 60 sec, 1mA max, for metal case models | 1500 | | VDC |
| Resistance | 500Vdc | ≥ 100 | | MΩ |
| Capacitance | I/O capacitance at 100KHz/0.1V | 1000 | | pF |

| Output Specification | | | | |
|------------------------------|--------------------------------|---------|---------|----------|
| Parameters | Conditions | Typical | Maximum | Units |
| Voltage accuracy | 0 ~ 100% load | ± 1 | ± 3 | % |
| Line regulation | Full load | ± 0.2 | ± 0.5 | % |
| Load regulation | 5 ~ 100% load | ± 0.5 | ± 1 | % |
| Over voltage protection | | | 160 | % Vout |
| Over current protection | | 140 | 200 | % Iout |
| Short circuit protection | Continuous, Auto recovery | | | |
| Temperature coefficient | Full load | | ± 0.03 | %/°C |
| Ripple & Noise* | 20MHz bandwidth, 5 ~ 100% load | 50 | 100 | mV pk-pk |
| Transient recovery time | 25% load step change | 300 | 500 | µS |
| Transient response deviation | 25% load step change | ±3 | ±5 | % |

* Ripple and Noise are measured at 20MHz bandwidth by using a 1µF (M/C) and 10µF (E/C) parallel capacitor and typical input with full load

| General Specifications | | | | |
|------------------------------|---|---|---------|-------|
| Parameters | Conditions | Typical | Maximum | Units |
| Switching frequency | 100% load | 350 | | KHz |
| Operating temperature | See derating graph | -40 to +85 | | °C |
| Storage temperature | | -55 to +125 | | °C |
| Reflow soldering temperature | Peak temp ≤ 245°C, 60 sec max at 217°C, please refer to IPC/JEDEC J-STD-020D.1. | | | |
| Soldering temperature | 1.5mm from case 10 sec max | | 300 | °C |
| Cooling | Free air convection (20 LFM) | | | |
| Humidity | Non-condensing | | 95 | % RH |
| Case material | Aluminum alloy | | | |
| Vibration | 10-150Hz, 5G, 90min. along X, Y and Z | | | |
| Weight | Open-frame models | 5.7 | | g |
| | Metal case models | 6.7 | | |
| Dimensions (L x W x H) | Standard DIP and open-frame package | 1.54 x 0.82 x 0.24 inches, 39.20 x 20.80 x 6.10mm | | |
| | Optional SMD and open-frame package | 1.63 x 0.82 x 0.25 inches, 41.40 x 20.80 x 6.30mm | | |
| | Optional DIP package with metal case | 1.58 x 0.87 x 0.27 inches, 40.20 x 22.00 x 6.80mm | | |
| | Optional SMD package with metal case | 1.63 x 0.87 x 0.28 inches, 41.40 x 22.00 x 7.00mm | | |
| MTBF | > 1 000 000 hrs (MIL-HDBK -217F, t=+25°C) / Full Load | | | |

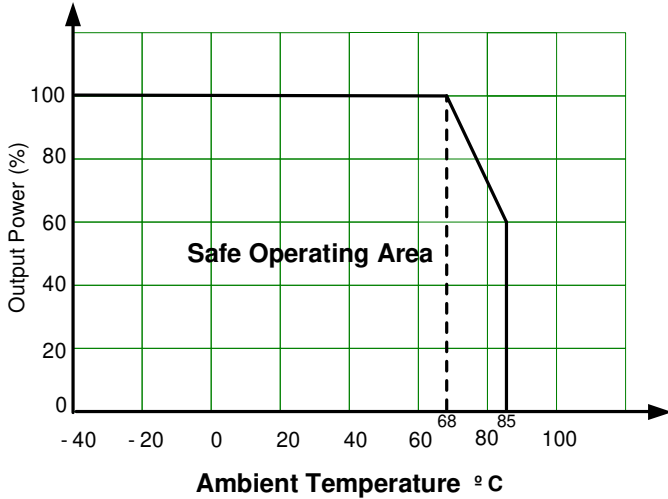
| Safety Specifications | | |
|-----------------------|--|---|
| Parameters | | |
| Standards | Designed to meet UL/IEC/EN 62368 | |
| | EMC - Conducted and radiated emission | EN55032, CLASS A EN55032, CLASS B with recommended circuit |
| | Electrostatic Discharge Immunity | IEC 61000-4-2, Criteria B |
| | RF, Electromagnetic Field Immunity | IEC 61000-4-3, Criteria A |
| | Electrical Fast Transient/Burst Immunity | IEC 61000-4-4, Criteria B with recommended circuit |
| | Surge Immunity | IEC 61000-4-5, Criteria B with recommended circuit |
| | RF, Conducted Disturbance Immunity | IEC 61000-4-6, Criteria A |

Note: The case grounding connection to the ground is strongly suggested for the EMC consideration (For the models with optional "-M" only)

Derating

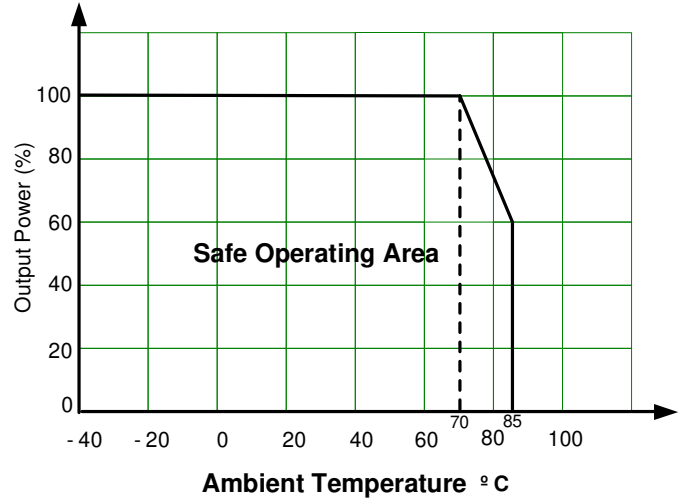
5V output model

Free air Convection

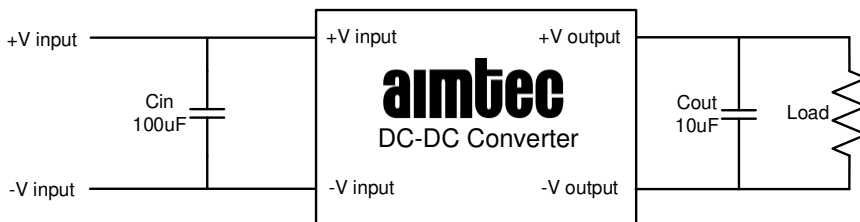


Others

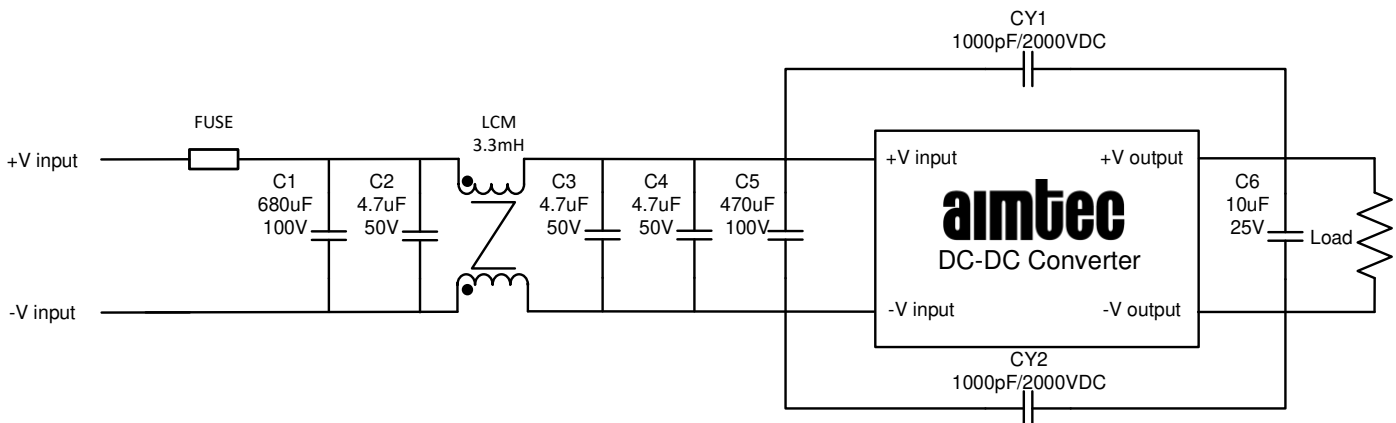
Free air Convection



Typical Application Circuit



EMC Recommended Circuit

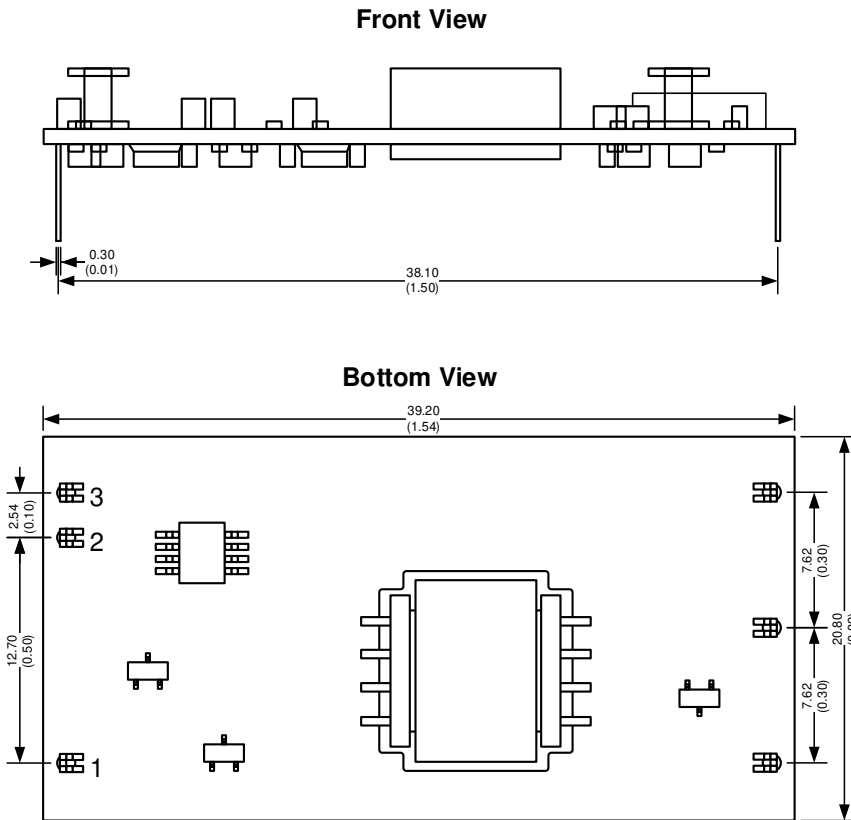


Fuse : Choose according to actual input current.

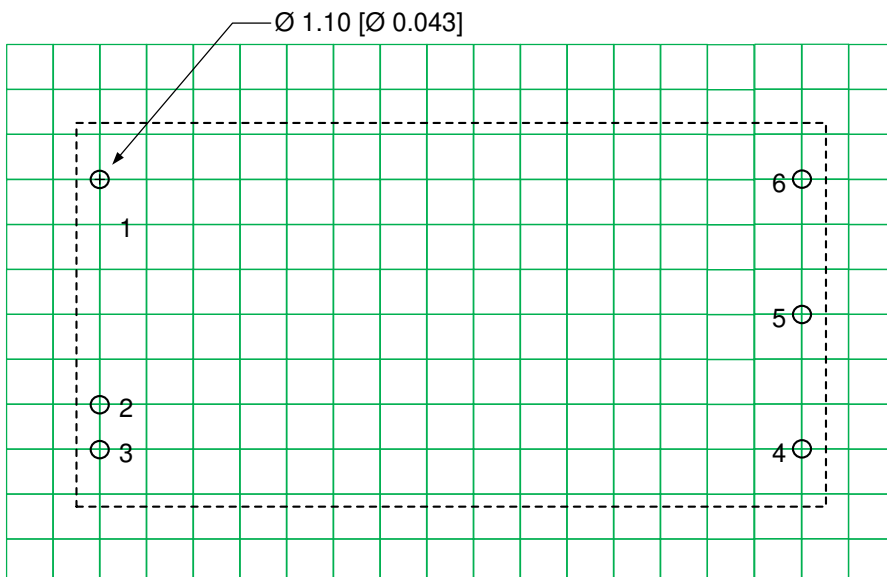
Note: The package with case model, the case should be connected to input pin GND when testing EMC performance.

Dimensions

Standard DIP and open-frame package models



Notes:
 All dimensions are typical in millimeters (inches).
 Pin section tolerance : ± 0.1 (± 0.004)
 Stand-off tolerance ± 0.50 (± 0.02)

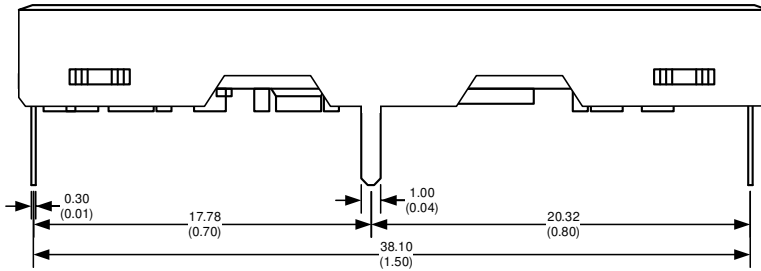


Note : Grid 2.54*2.54 mm

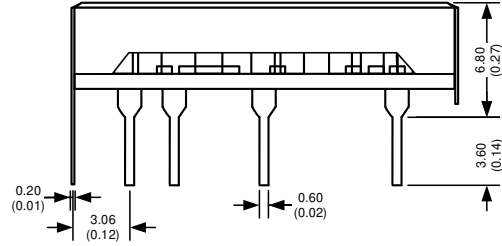
| Pin Out Specifications | |
|------------------------|-----------|
| Pin | Single |
| 1 | +V Input |
| 2 | Ctrl |
| 3 | -V Input |
| 4 | -V Output |
| 5 | Trim |
| 6 | +V Output |

Optional DIP package with metal case models

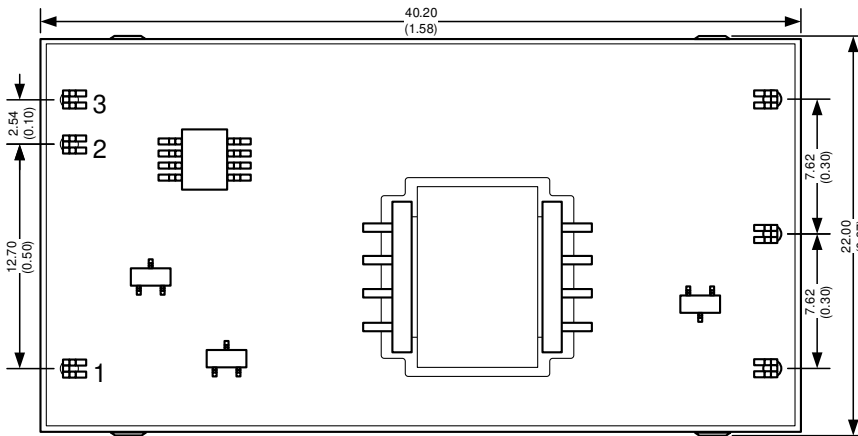
Front View



Right View



Bottom View

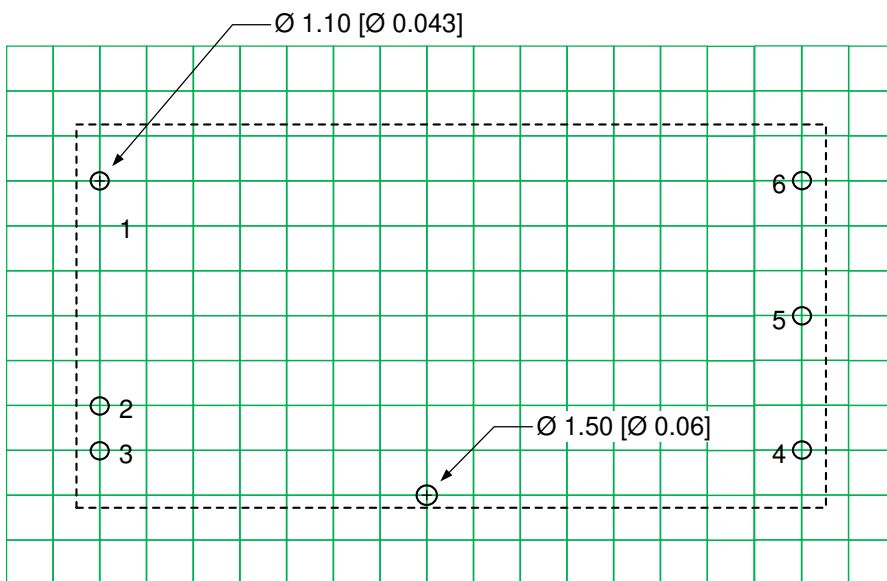


Notes:

All dimensions are typical in millimeters (inches).

Pin section tolerance : ± 0.1 (± 0.004)

Stand-off tolerance ± 0.50 (± 0.02)

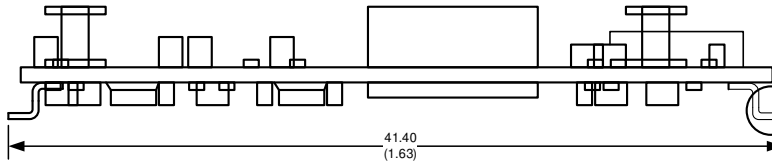


Note : Grid 2.54*2.54 mm

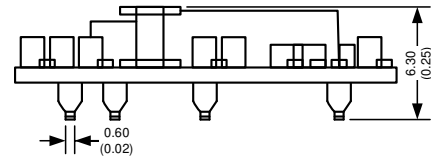
| Pin Out Specifications | |
|------------------------|-----------|
| Pin | Single |
| 1 | -V Input |
| 2 | Trim |
| 3 | NC |
| 4 | +V Output |
| 5 | -V Output |
| 6 | +V Input |

Optional SMD and open-frame package models

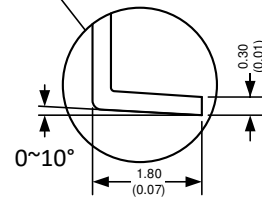
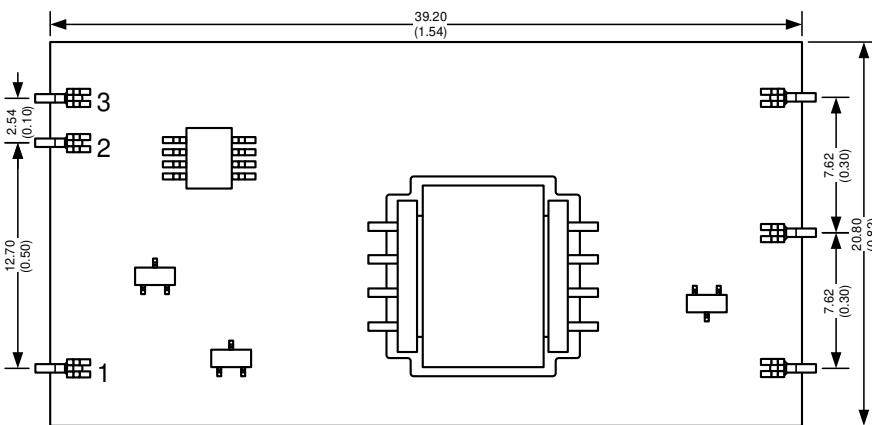
Front View



Right View

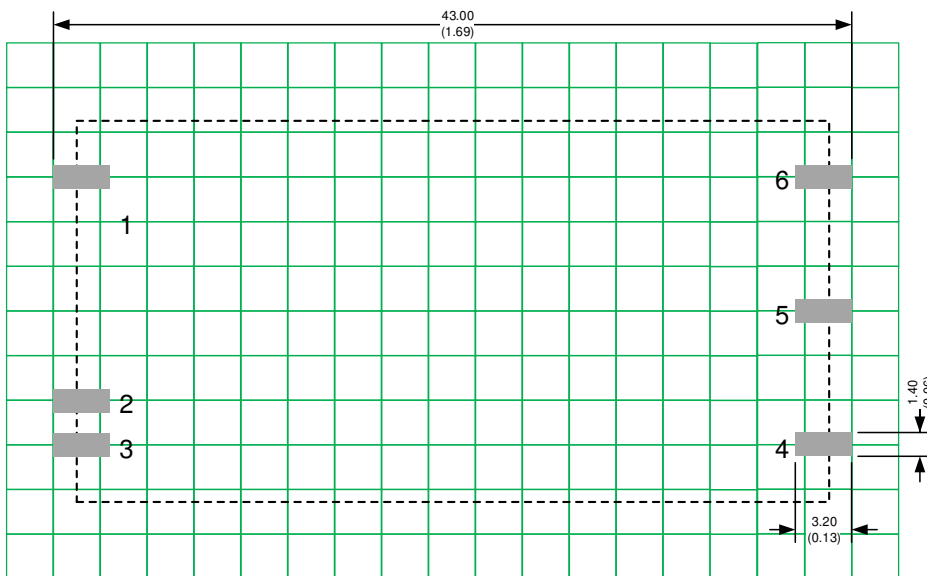


Bottom View



Notes:

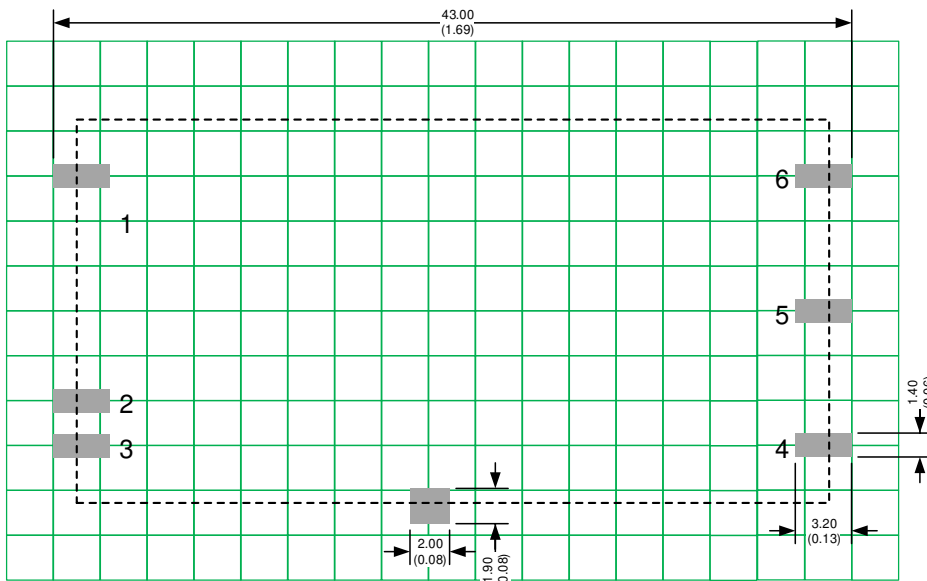
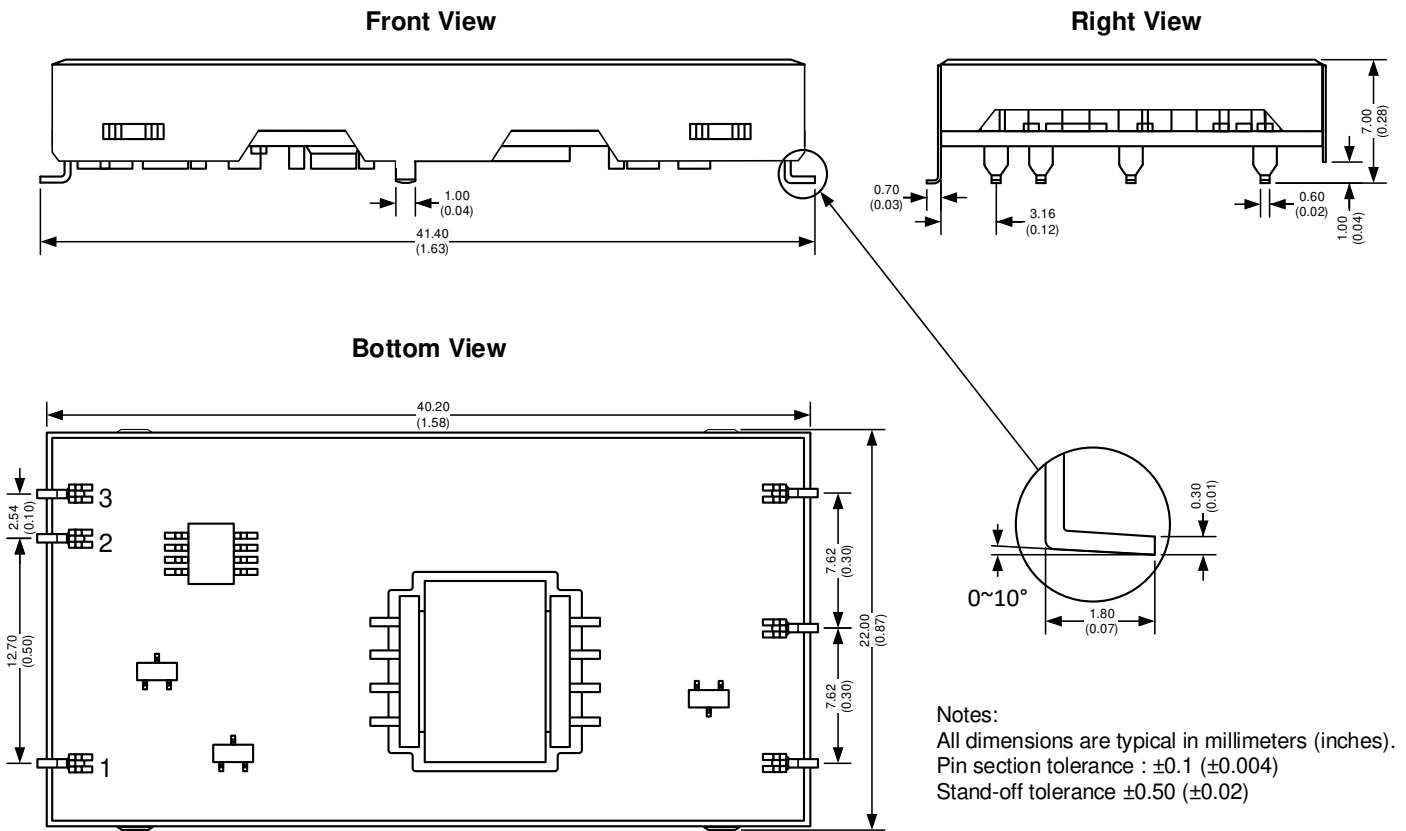
All dimensions are typical in millimeters (inches).
Pin section tolerance : ± 0.1 (± 0.004)
Stand-off tolerance ± 0.50 (± 0.02)



Note : Grid 2.54*2.54 mm

| Pin Out Specifications | |
|------------------------|-----------|
| Pin | Single |
| 1 | +V Input |
| 2 | Ctrl |
| 3 | -V Input |
| 4 | -V Output |
| 5 | Trim |
| 6 | +V Output |

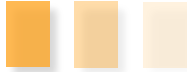
Optional SMD package with metal case models



Note : Grid 2.54*2.54 mm

| Pin Out Specifications | |
|------------------------|-----------|
| Pin | Single |
| 1 | +V Input |
| 2 | Ctrl |
| 3 | -V Input |
| 4 | -V Output |
| 5 | Trim |
| 6 | +V Output |

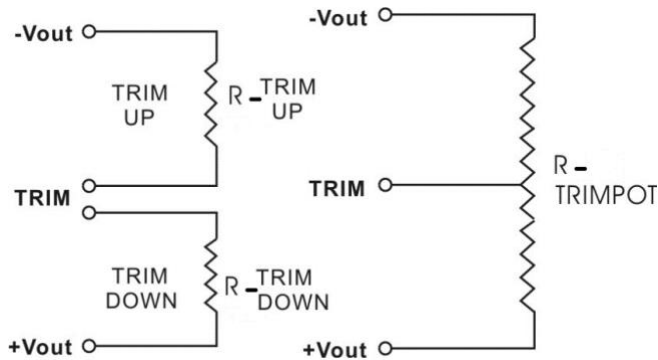
Trimming



Output voltage can be externally trimmed by utilizing the methods as shown below

Fixed Resistor

Variable Potentiometer



Leave open if not used.

AM100W-2405SNZ(-M/-L/-LM)

| Trim down % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|--------------|----------|---------|--------|--------|--------|--------|--------|-------|-------|-------|
| Vout (VDC) | 4.950 | 4.900 | 4.850 | 4.800 | 4.750 | 4.700 | 4.650 | 4.647 | 4.744 | 4.642 |
| Rt down (KΩ) | 49.906 | 28.833 | 17.748 | 10.910 | 6.272 | 2.918 | 0.380 | 0.248 | 5.813 | 0.031 |
| Trim up % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 5.062 | 5.100 | 5.150 | 5.200 | 5.250 | 5.300 | 5.350 | 5.400 | 5.450 | 5.500 |
| Rt up (KΩ) | 7160.000 | 173.344 | 67.562 | 37.868 | 23.884 | 15.750 | 10.430 | 6.680 | 3.893 | 1.742 |

AM100W-2412SNZ(-M/-L/-LM)

| Trim down % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|--------------|---------|---------|---------|---------|---------|--------|--------|--------|--------|--------|
| Vout (VDC) | 11.880 | 11.760 | 11.640 | 11.520 | 11.400 | 11.280 | 11.160 | 11.040 | 10.920 | 10.800 |
| Rt down (KΩ) | 478.092 | 283.452 | 194.527 | 143.585 | 110.573 | 87.442 | 70.332 | 57.164 | 46.716 | 38.223 |
| Trim up % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 12.120 | 12.240 | 12.360 | 12.480 | 12.600 | 12.720 | 12.840 | 12.865 | 12.890 | 12.915 |
| Rt up (KΩ) | 688.435 | 140.920 | 65.879 | 36.075 | 20.077 | 10.095 | 3.274 | 2.116 | 1.030 | 0.009 |

AM100W-2415SNZ(-M/-L/-LM)

| | | | | | | | | | | |
|--------------|----------|---------|---------|---------|---------|---------|---------|---------|--------|--------|
| Trim down % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 14.850 | 14.700 | 14.550 | 14.400 | 14.250 | 14.100 | 13.950 | 13.800 | 13.650 | 13.500 |
| Rt down (KΩ) | 623.045 | 395.763 | 285.907 | 221.156 | 178.462 | 148.196 | 125.620 | 108.134 | 94.191 | 82.813 |
| Trim up % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 15.150 | 15.300 | 15.450 | 15.600 | 15.750 | 15.900 | 16.050 | 16.200 | 16.350 | 16.500 |
| Rt up (KΩ) | 1859.550 | 199.069 | 98.516 | 62.236 | 43.530 | 32.118 | 24.431 | 18.899 | 14.729 | 11.473 |

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