

**FEATURES:**

- Ultra Wide Input 4:1 Range
- Full SMD Technology
- 1600 VDC Isolation
- Efficiency up to 92%
- Soft Start
- Adjustable Output Voltage
- Remote ON/OFF Function
- Over Current, Voltage, & Temperature Protection
- Operating temperature -40°C to + 85°C

### Models

#### Single output



| Model         | Input Voltage (V) | Output Voltage (V) | Output Current max (A) | Isolation (VDC) | Max Capacitive Load (uF) | Efficiency (%) |
|---------------|-------------------|--------------------|------------------------|-----------------|--------------------------|----------------|
| AM40UW-2403SZ | 9-36              | 3.3                | 10                     | 1600            | 25000                    | 89             |
| AM40UW-2405SZ | 9-36              | 5                  | 8                      | 1600            | 13000                    | 91             |
| AM40UW-2412SZ | 9-36              | 12                 | 3.35                   | 1600            | 2300                     | 90             |
| AM40UW-2415SZ | 9-36              | 15                 | 2.65                   | 1600            | 1500                     | 90             |
| AM40UW-4803SZ | 18-75             | 3.3                | 10                     | 1600            | 25000                    | 89             |
| AM40UW-4805SZ | 18-75             | 5                  | 8                      | 1600            | 13000                    | 92             |
| AM40UW-4812SZ | 18-75             | 12                 | 3.35                   | 1600            | 2300                     | 90             |
| AM40UW-4815SZ | 18-75             | 15                 | 2.65                   | 1600            | 1500                     | 91             |

Add suffix "-K" for optional heatsink

### Models

#### Dual output

| Model         | Input Voltage (V) | Output Voltage (V) | Output Current max (A) | Isolation (VDC) | Max Capacitive Load (uF) | Efficiency (%) |
|---------------|-------------------|--------------------|------------------------|-----------------|--------------------------|----------------|
| AM40UW-2412DZ | 9-36              | ±12                | ±1.65                  | 1600            | ±1200                    | 89             |
| AM40UW-2415DZ | 9-36              | ±15                | ±1.35                  | 1600            | ±750                     | 89             |
| AM40UW-4812DZ | 18-75             | ±12                | ±1.65                  | 1600            | ±1200                    | 90             |
| AM40UW-4815DZ | 18-75             | ±15                | ±1.35                  | 1600            | ±750                     | 90             |

Add suffix "-K" for optional heatsink

NOTE: All specifications in this datasheet are measured at an ambient temperature of 25°C, humidity&lt;75%, nominal input voltage and at rated output load unless otherwise specified.

### Input Specifications

| Parameters                      | Nominal  | Typical            | Maximum   | Units  |
|---------------------------------|--|--------------------|-----------|--------|
| Voltage range                   | 24<br>48   | 9-36<br>18-75      |           | VDC    |
| Filter                          | π(Pi) Network  |                    |           |        |
| Start up time                   |  | 25                 |           | ms     |
| Absolute Maximum Rating         | 24<br>48   |                    | 50<br>100 | VDC    |
| Peak Input Voltage time         |  |                    | 100       | ms     |
| On/Off control                  | ON -3.0 -12 (or open) ; OFF -0 -1.2 (or short pin 2 to pin 3)<br>Off idle current: 5mA |                    |           |        |
| No Load Input Current           |  | 100                |           | mA     |
| Under voltage lockout           | 24 ON/OFF<br>48 ON/OFF   | 8.6/7.9<br>17.6/16 |           | VDC    |
| Input reflected ripple current* |  | 20                 |           | mA p-p |

\* Measured with a 12μH inductor

### Isolation Specifications

| Parameters              | Conditions | Typical | Rated | Units |
|-------------------------|------------|---------|-------|-------|
| Tested I/O voltage      | 60 sec     |         | 1600  | VDC   |
| Tested I,O/case voltage | 60 sec     |         | 1600  | VDC   |
| Resistance              |            | >1000   |       | MOhm  |
| Capacitance             |            | 2500    |       | pF    |

## Output Specifications

| Parameters                            | Conditions  | Typical | Maximum | Units    |
|---------------------------------------|---|---------|---------|----------|
| Voltage accuracy                      |   | ±1      |         | %        |
| Cross Regulation (Dual Output Models) | 1 <sup>st</sup> output 25% to 100%, 2 <sup>nd</sup> output 100% | ±5      |         | %        |
| Over voltage protection               | Zener Diode Clamp, 3.3V output                                  | 3.9     |         | V        |
|                                       | Zener Diode Clamp, 5V output                                    | 6.2     |         |          |
|                                       | Zener Diode Clamp, 12V output                                   | 15      |         |          |
|                                       | Zener Diode Clamp, 15V output                                   | 18      |         |          |
|                                       | Zener Diode Clamp, ±12V output                                  | ±15     |         |          |
|                                       | Zener Diode Clamp, ±15V output                                  | ±18     |         |          |
| Over current protection               | Full Load   | 130     |         | %        |
| Short Circuit protection              | Continuous  |         |         |          |
| Short circuit restart                 | Auto-Restart  |         |         |          |
| Thermal shutdown                      | On Case   | 110     |         | °C       |
| Line voltage regulation               | HL-LL   |         | ±0.5    | % of Vin |
| Load voltage regulation (Single)      | I <sub>out</sub> =0% to 100%                                    |         | ±0.5    | %        |
| Load voltage regulation (Dual)        | I <sub>out</sub> =1% to 100%                                    |         | ±1      | %        |
| Temperature coefficient               |   | ±0.02   |         | %/°C     |
| Ripple & Noise*                       | 3.3/5V output models  |         | 50      | mV p-p   |
|                                       | Dual output models  |         | 150     |          |
|                                       | Other models  |         | 75      |          |
| Voltage adjustment range              | Inclusive of trim and remote sense                              |         | ±10     | %        |
| Minimum load current                  |   | 0       |         | % of Max |

\* Measured at 20MHz bandwidth a 1.0µF ceramic capacitor.

## General Specifications

| Parameters                    | Conditions  | Typical                | Maximum | Units |
|-------------------------------|---|------------------------|---------|-------|
| Switching frequency           | 100% load   | 270                    |         | KHz   |
| Operating temperature         | With derating above 55 °C (see graph below)           | -40 to +85             |         | °C    |
| Storage temperature           |   | -55 to +125            |         | °C    |
| Maximum case temperature      |   |                        | 105     | °C    |
| Derating                      | Above 55 °C   | 2                      |         | %/°C  |
| Cooling                       | Free Air Convection                                   |                        |         |       |
| Humidity                      |   |                        | 95      | % RH  |
| Case material                 | Nickel – coated Copper                                |                        |         |       |
| Weight                        |   | 65                     |         | g     |
| Dimensions (L x W x H)        | 2.00 x 2.00 x 0.40 inches                             | 50.81 x 50.81 10.14 mm |         |       |
| MTBF                          | >151000 hrs Calculated using MIL-HDBK-217 F at +25 °C |                        |         |       |
| Maximum soldering temperature | 1.5mm from case for 10 sec                            |                        | 260     | °C    |
| Transient recovery time       | 25% load step change                                  | 250                    |         | µS    |
| Transient recovery deviation  | 25% load step change                                  |                        | ±3      | %     |

## Safety Specifications

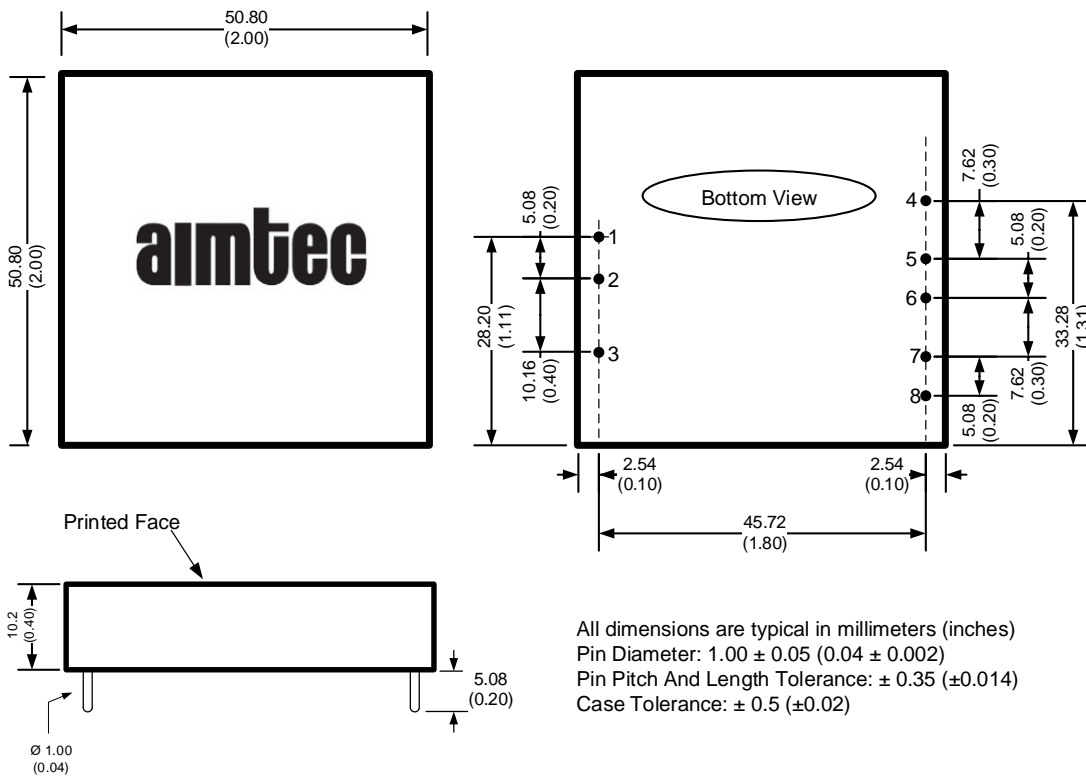
| Standards |  |
|-----------|--|
| Safety    | Design to meet IEC/EN/UL 60950, 62368                            |
|           | EN55032, Class A with the recommended circuit                    |
|           | IEC61000-4-2 Perf. Criteria A                                    |
|           | IEC61000-4-3 Perf. Criteria A                                    |
|           | IEC61000-4-4 Perf. Criteria A (external 220µF/100V cap required) |
|           | IEC61000-4-5 Perf. Criteria A (external 220µF/100V cap required) |
|           | IEC61000-4-6 Perf. Criteria A                                    |
|           | IEC61000-4-8 Perf. Criteria A                                    |

### Pin Out Specifications

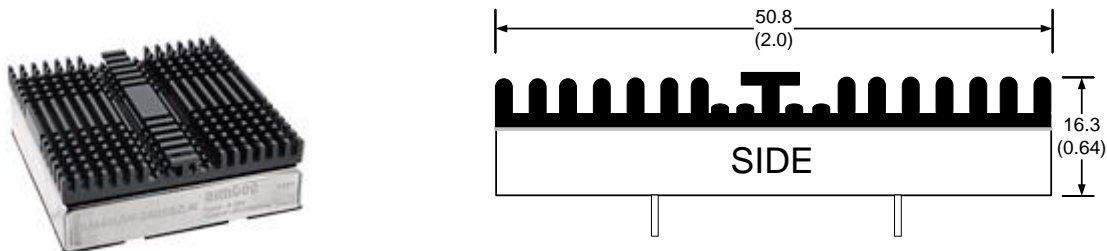
| Pin | Single         | Dual           |
|-----|----------------|----------------|
| 1   | +V Input       | +V Input       |
| 2   | -V Input       | -V Input       |
| 3   | On/Off Control | On/Off Control |
| 4   | - Sense        | +V Output      |
| 5   | + Sense        | Common         |
| 6   | +V Output      | Common         |
| 7   | -V Output      | -V Output      |
| 8   | Trim           | Trim           |

**Note:**  
When not using the sense function, connect the +sense to +Vout and -sense to -Vout with the shortest possible traces to avoid interference and minimize the voltage drop.

### Dimensions

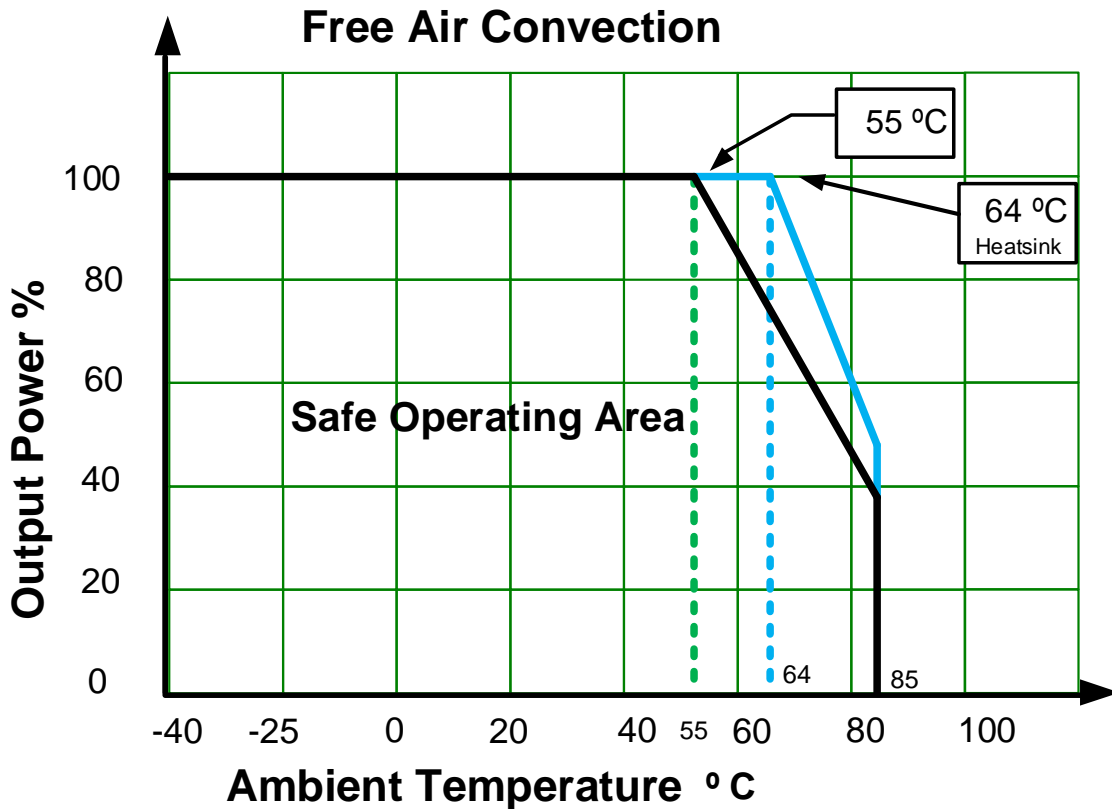


### Dimensions with Optional Heatsink



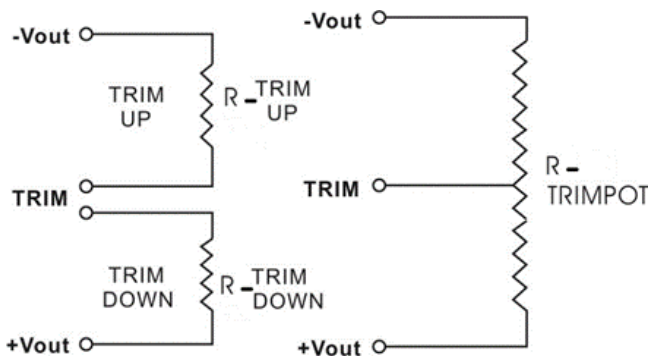
**Notes:** Add "-K" suffix for ordering, heatsink is affixed with thermally dissipative adhesive tape. See derating graph for temperature performance. Heatsink material is anodized (black) aluminum, adds weight 22g to total mass (60g).

**Derating**



Extended temperature performance can be achieved with optional heatsink. (add suffix “-K” to part number)

**Trimming**



**AM40UW-XX03SZ**

|              |         |         |         |        |        |        |        |        |        |        |
|--------------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|
| Trim down %  | 1%      | 2%      | 3%      | 4%     | 5%     | 6%     | 7%     | 8%     | 9%     | 10%    |
| Vout (VDC)   | 3.267   | 3.234   | 3.201   | 3.168  | 3.135  | 3.102  | 3.069  | 3.036  | 3.003  | 2.97   |
| Rt down (KΩ) | 315.932 | 172.257 | 112.528 | 79.806 | 59.153 | 44.930 | 34.539 | 26.616 | 20.374 | 15.330 |
| Trim up %    | 1%      | 2%      | 3%      | 4%     | 5%     | 6%     | 7%     | 8%     | 9%     | 10%    |
| Vout (VDC)   | 3.333   | 3.366   | 3.399   | 3.432  | 3.465  | 3.498  | 3.531  | 3.564  | 3.597  | 3.63   |
| Rt up (KΩ)   | 544.612 | 184.034 | 103.305 | 67.715 | 47.676 | 34.824 | 25.880 | 19.297 | 14.249 | 10.255 |

**AM40UW-XX05SZ**

|              |         |         |        |        |        |        |        |        |        |        |
|--------------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|
| Trim down %  | 1%      | 2%      | 3%     | 4%     | 5%     | 6%     | 7%     | 8%     | 9%     | 10%    |
| Vout (VDC)   | 4.95    | 4.9     | 4.85   | 4.8    | 4.75   | 4.7    | 4.65   | 4.6    | 4.55   | 4.5    |
| Rt down (KΩ) | 230.566 | 106.182 | 64.301 | 43.281 | 30.643 | 22.207 | 16.177 | 11.651 | 8.129  | 5.310  |
| Trim up %    | 1%      | 2%      | 3%     | 4%     | 5%     | 6%     | 7%     | 8%     | 9%     | 10%    |
| Vout (VDC)   | 5.05    | 5.1     | 5.15   | 5.2    | 5.25   | 5.3    | 5.35   | 5.4    | 5.45   | 5.5    |
| Rt up (KΩ)   | 244.547 | 113.776 | 70.631 | 49.142 | 36.274 | 27.707 | 21.592 | 17.010 | 13.447 | 10.598 |

**AM40UW-XX12SZ**

|              |         |         |         |        |        |        |        |        |        |        |
|--------------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|
| Trim down %  | 1%      | 2%      | 3%      | 4%     | 5%     | 6%     | 7%     | 8%     | 9%     | 10%    |
| Vout (VDC)   | 11.88   | 11.76   | 11.64   | 11.52  | 11.4   | 11.28  | 11.16  | 11.04  | 10.92  | 10.8   |
| Rt down (KΩ) | 327.351 | 142.100 | 83.928  | 55.470 | 38.591 | 27.418 | 19.477 | 13.542 | 8.939  | 5.264  |
| Trim up %    | 1%      | 2%      | 3%      | 4%     | 5%     | 6%     | 7%     | 8%     | 9%     | 10%    |
| Vout (VDC)   | 12.12   | 12.24   | 12.36   | 12.48  | 12.6   | 12.72  | 12.84  | 12.96  | 13.08  | 13.2   |
| Rt up (KΩ)   | 371.425 | 183.645 | 117.623 | 83.929 | 63.489 | 49.767 | 39.919 | 32.508 | 26.728 | 22.094 |

**AM40UW-XX15SZ**

|              |         |         |         |        |        |        |        |        |        |        |
|--------------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|
| Trim down %  | 1%      | 2%      | 3%      | 4%     | 5%     | 6%     | 7%     | 8%     | 9%     | 10%    |
| Vout (VDC)   | 14.85   | 14.7    | 14.55   | 14.4   | 14.25  | 14.1   | 13.95  | 13.8   | 13.65  | 13.5   |
| Rt down (KΩ) | 433.811 | 174.916 | 100.946 | 65.907 | 45.468 | 32.077 | 22.625 | 15.596 | 10.165 | 5.842  |
| Trim up %    | 1%      | 2%      | 3%      | 4%     | 5%     | 6%     | 7%     | 8%     | 9%     | 10%    |
| Vout (VDC)   | 15.15   | 15.3    | 15.45   | 15.6   | 15.75  | 15.9   | 16.05  | 16.2   | 16.35  | 16.5   |
| Rt up (KΩ)   | 347.293 | 178.523 | 115.235 | 82.084 | 61.683 | 47.863 | 37.882 | 30.336 | 24.430 | 19.682 |

**AM40UW-XX12DZ**

|              |         |         |        |        |        |        |        |        |       |       |
|--------------|---------|---------|--------|--------|--------|--------|--------|--------|-------|-------|
| Trim down %  | 1%      | 2%      | 3%     | 4%     | 5%     | 6%     | 7%     | 8%     | 9%    | 10%   |
| Vout (VDC)   | 11.88   | 11.76   | 11.64  | 11.52  | 11.4   | 11.28  | 11.16  | 11.04  | 10.92 | 10.8  |
| Rt down (KΩ) | 231.849 | 106.217 | 63.546 | 42.058 | 29.116 | 20.468 | 14.280 | 9.634  | 6.017 | 3.122 |
| Trim up %    | 1%      | 2%      | 3%     | 4%     | 5%     | 6%     | 7%     | 8%     | 9%    | 10%   |
| Vout (VDC)   | 12.12   | 12.24   | 12.36  | 12.48  | 12.6   | 12.72  | 12.84  | 12.96  | 13.08 | 13.2  |
| Rt up (KΩ)   | 229.254 | 103.827 | 62.826 | 42.473 | 30.309 | 22.218 | 16.449 | 12.128 | 8.769 | 6.085 |

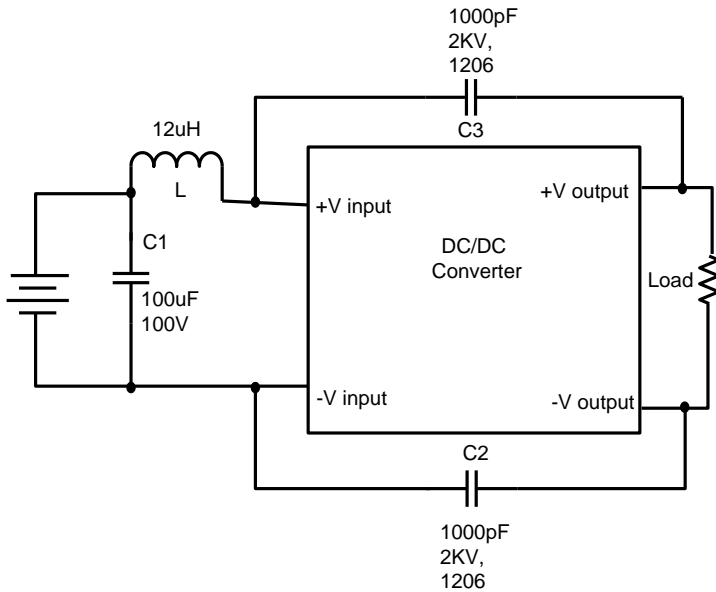
**AM40UW-XX15DZ**

|              |         |         |        |        |        |        |        |        |       |       |
|--------------|---------|---------|--------|--------|--------|--------|--------|--------|-------|-------|
| Trim down %  | 1%      | 2%      | 3%     | 4%     | 5%     | 6%     | 7%     | 8%     | 9%    | 10%   |
| Vout (VDC)   | 14.85   | 14.7    | 14.55  | 14.4   | 14.25  | 14.1   | 13.95  | 13.8   | 13.65 | 13.5  |
| Rt down (KΩ) | 351.590 | 146.987 | 85.137 | 55.280 | 37.693 | 26.101 | 17.886 | 11.760 | 7.015 | 3.232 |
| Trim up %    | 1%      | 2%      | 3%     | 4%     | 5%     | 6%     | 7%     | 8%     | 9%    | 10%   |
| Vout (VDC)   | 15.15   | 15.3    | 15.45  | 15.6   | 15.75  | 15.9   | 16.05  | 16.2   | 16.35 | 16.5  |
| Rt up (KΩ)   | 239.820 | 116.162 | 71.431 | 48.344 | 34.251 | 24.754 | 17.919 | 12.765 | 8.740 | 5.509 |

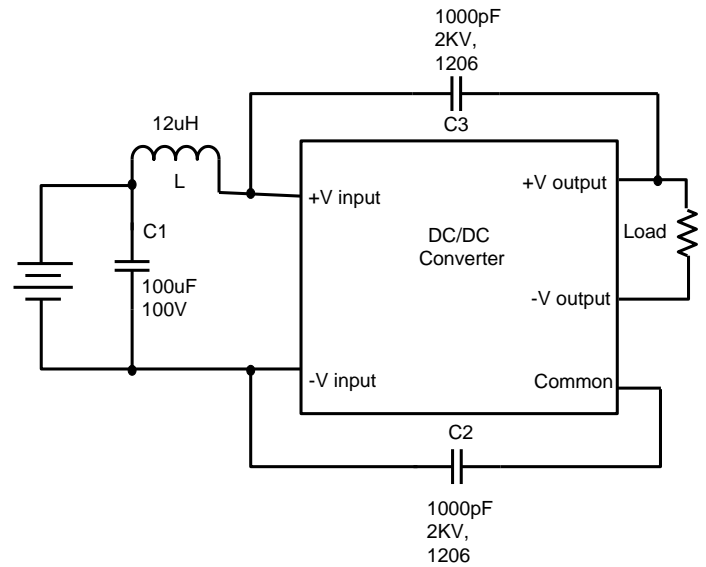
## Recommended Circuits

### Conducted and Radiated Emissions

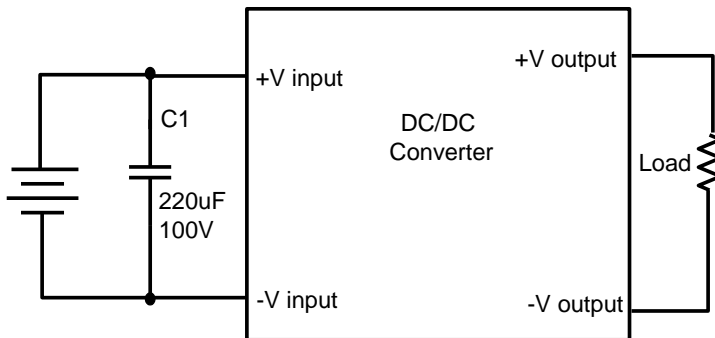
Single Output



Dual Output



### EFT/Surge



**NOTE:** 1. Datasheets are updated as needed and as such, specifications are subject to change without notice. Once printed or downloaded, datasheets are no longer controlled by Aimtec; refer to [www.aimtec.com](http://www.aimtec.com) for the most current product specifications. 2. Product labels shown, including safety agency certifications on labels, may vary based on the date manufactured. 3. Mechanical drawings and specifications are for reference only. 4. All specifications are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified. 5. Aimtec may not have conducted destructive testing or chemical analysis on all internal components and chemicals at the time of publishing this document. CAS numbers and other limited information are considered proprietary and may not be available for release. 6. This product is not designed for use in critical life support systems, equipment used in hazardous environments, nuclear control systems or other such applications which necessitate specific safety and regulatory standards other the ones listed in this datasheet. 7. Warranty is in accordance with Aimtec's standard Terms of Sale available at [www.aimtec.com](http://www.aimtec.com).