

## Series AM15C-Z

### 15Watt | DC-DC Converter



#### FEATURES:

- Ultra-compact footprint 1"x1"
- Wide Input Range 2:1
- 1600 VDC Isolation
- Remote ON/OFF Function
- No Minimum Load Required
- Adjustable Output Voltage
- Operating Temperature -40°C to +85°C
- Over Current and Over Voltage Protection
- Efficiency up to 89%
- RoHS Compliant

#### Models Single output



| Model        | Input Voltage (V) | Output Voltage (V) | Output Current max (A) | Isolation (VDC) | Max Capacitive Load (uF) | Efficiency (%) |
|--------------|-------------------|--------------------|------------------------|-----------------|--------------------------|----------------|
| AM15C-1203SZ | 9-18              | 3.3                | 4                      | 1600            | 1000                     | 85             |
| AM15C-1205SZ | 9-18              | 5                  | 3                      | 1600            | 1000                     | 86             |
| AM15C-1212SZ | 9-18              | 12                 | 1.3                    | 1600            | 330                      | 88             |
| AM15C-1215SZ | 9-18              | 15                 | 1                      | 1600            | 220                      | 89             |
| AM15C-2403SZ | 18-36             | 3.3                | 4                      | 1600            | 1000                     | 86             |
| AM15C-2405SZ | 18-36             | 5                  | 3                      | 1600            | 1000                     | 87             |
| AM15C-2412SZ | 18-36             | 12                 | 1.3                    | 1600            | 330                      | 88             |
| AM15C-2415SZ | 18-36             | 15                 | 1                      | 1600            | 220                      | 89             |
| AM15C-4803SZ | 36-75             | 3.3                | 4                      | 1600            | 1000                     | 85             |
| AM15C-4805SZ | 36-75             | 5                  | 3                      | 1600            | 1000                     | 86             |
| AM15C-4812SZ | 36-75             | 12                 | 1.3                    | 1600            | 330                      | 88             |
| AM15C-4815SZ | 36-75             | 15                 | 1                      | 1600            | 220                      | 88             |

#### Models Dual output

| Model        | Input Voltage (V) | Output Voltage (V) | Output Current max (A) | Isolation (VDC) | Max Capacitive Load (uF) | Efficiency (%) |
|--------------|-------------------|--------------------|------------------------|-----------------|--------------------------|----------------|
| AM15C-1205DZ | 9-18              | ±5                 | ±1.5                   | 1600            | ±470                     | 85             |
| AM15C-1212DZ | 9-18              | ±12                | ±0.625                 | 1600            | ±220                     | 89             |
| AM15C-1215DZ | 9-18              | ±15                | ±0.5                   | 1600            | ±100                     | 89             |
| AM15C-2405DZ | 18-36             | ±5                 | ±1.5                   | 1600            | ±470                     | 85             |
| AM15C-2412DZ | 18-36             | ±12                | ±0.625                 | 1600            | ±220                     | 88             |
| AM15C-2415DZ | 18-36             | ±15                | ±0.5                   | 1600            | ±100                     | 89             |
| AM15C-4805DZ | 36-75             | ±5                 | ±1.5                   | 1600            | ±470                     | 84             |
| AM15C-4812DZ | 36-75             | ±12                | ±0.625                 | 1600            | ±220                     | 87             |
| AM15C-4815DZ | 36-75             | ±15                | ±0.5                   | 1600            | ±100                     | 88             |

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.

#### Input Specifications

| Parameters              | Nominal                                                           | Typical | Maximum | Units |
|-------------------------|-------------------------------------------------------------------|---------|---------|-------|
| Voltage range           | 12                                                                | 9-18    |         | VDC   |
|                         | 24                                                                | 18-36   |         | VDC   |
|                         | 48                                                                | 36-75   |         | VDC   |
| Filter                  | π                                                                 |         |         |       |
| Start up time           | Nominal Vin with constant resistive load                          |         | 20      | ms    |
| Absolute Maximum Rating | 12 Vin                                                            |         | 36      | VDC   |
|                         | 24 Vin                                                            |         | 50      | VDC   |
|                         | 48 Vin                                                            |         | 100     | VDC   |
| Peak Input Voltage time |                                                                   |         | 100     | ms    |
| On/Off control          | ON -3 to 12VDC (or open)                                          |         |         |       |
|                         | OFF - 0 to 1.2VDC or short pin 2 to pin 3; OFF idle current - 5mA |         |         |       |

### Input Specifications (continued)

| Parameters                     | Nominal | Typical | Maximum | Units  |
|--------------------------------|---------|---------|---------|--------|
| No load current                | 12 Vin  |         | 20      | mA     |
|                                | 24 Vin  |         | 15      | mA     |
|                                | 48 Vin  |         | 10      | mA     |
| Input reflected ripple current |         | 20      |         | mA p-p |

### Isolation Specifications

| Parameters         | Conditions | Typical | Rated | Units |
|--------------------|------------|---------|-------|-------|
| Tested I/O voltage | 60 sec     |         | 1600  | VDC   |
| Case to Input      | 60 sec     | 1600    |       | VDC   |
| Case to Output     | 60 sec     | 1600    |       | VDC   |
| Resistance         |            | >1000   |       | MOhm  |
| Capacitance        |            | 1200    |       | pF    |

### Output Specifications

| Parameters                            | Conditions                                            | Typical | Maximum | Units  |
|---------------------------------------|-------------------------------------------------------|---------|---------|--------|
| Voltage accuracy                      |                                                       |         | ±1      | %      |
| Cross Regulation (Dual Output Models) | 25-100% load on one output - 100% load on second load |         | ±5      | %      |
| Over voltage protection               | Zener Diode Clamp, 3.3Vout                            | 3.9     |         | VDC    |
|                                       | Zener Diode Clamp, 5Vout                              | 6.2     |         | VDC    |
|                                       | Zener Diode Clamp, 12Vout                             | 15      |         | VDC    |
|                                       | Zener Diode Clamp, 15Vout                             | 18      |         | VDC    |
|                                       | Zener Diode Clamp, ±5Vout                             | ±6.2    |         | VDC    |
|                                       | Zener Diode Clamp, ±12Vout                            | ±15     |         | VDC    |
|                                       | Zener Diode Clamp, ±15Vout                            | ±18     |         | VDC    |
| Over load protection                  | Full Load                                             | 150     |         | %      |
| Short Circuit protection              | Continuous                                            |         |         |        |
| Short circuit restart                 | Auto-Recovery                                         |         |         |        |
| Line voltage regulation (Single)      | HL-LL                                                 |         | ±0.2    | %      |
| Line voltage regulation (Dual)        | HL-LL balanced load                                   |         | ±0.5    | %      |
| Load voltage regulation (Single)      | 0% to 100% load                                       |         | ±0.5    | %      |
| Load voltage regulation (Dual)        | 0% to 100% balanced load                              |         | ±1      | %      |
| Transient recovery time               | Load step change 75% to 50% to 25%                    | 250     |         | µS     |
| Transient recovery deviation          | Load step change 75% to 50% to 25%                    |         | ±3      | %      |
| Temperature coefficient               |                                                       | ±0.02   |         | %/°C   |
| Ripple & Noise*                       | 20MHz Bandwidth                                       |         | 100     | mV p-p |
| Voltage adjustment range              | Trim - Single output models only                      |         | ±10     | %      |

\* Measured with a 1.0µF ceramic capacitor and 10µF tantalum capacitor.

### General Specifications

| Parameters                    | Conditions                                             | Typical                  | Maximum | Units |
|-------------------------------|--------------------------------------------------------|--------------------------|---------|-------|
| Switching frequency           | 100% load                                              | 375                      |         | KHz   |
| Operating temperature         | With derating above +66°C                              | -40 to +85               |         | °C    |
| Storage temperature           |                                                        | -40 to +125              |         | °C    |
| Maximum case temperature      |                                                        |                          | 105     | °C    |
| Derating                      |                                                        | 2.6                      |         | %/°C  |
| Cooling                       | Free air convection (30-65LFM)                         |                          |         |       |
| Humidity                      |                                                        |                          | 95      | % RH  |
| Case material                 | Nickel-coated copper                                   |                          |         |       |
| Weight                        |                                                        | 18.1                     |         | g     |
| Dimensions (L x W x H)        | 1.00 x 1.00 x 0.41 inches                              | 25.40 x 25.40 x 10.40 mm |         |       |
| MTBF                          | > 560,000 hrs (MIL-HDBK -217F, Ground Benign, t=+25°C) |                          |         |       |
| Maximum soldering temperature | 1.5mm from case for 10 sec                             |                          | 260     | °C    |

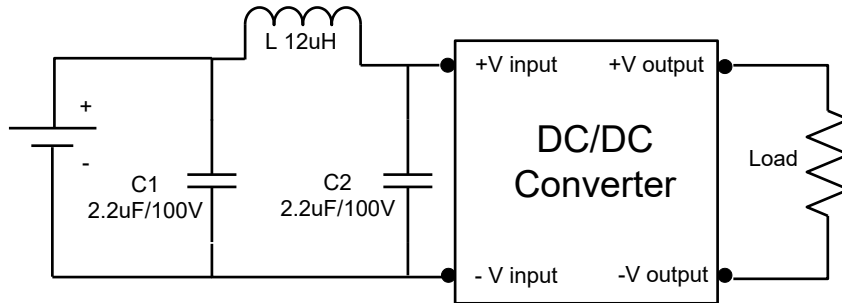
## Safety Specifications

| Parameters       |                                                                  |
|------------------|------------------------------------------------------------------|
| Agency Approvals | CE, UL                                                           |
| Standards        | UL 60950-1, UL62368-1                                            |
|                  | EN 55032 Class A                                                 |
|                  | EN 61000-4-2 Perf. Criteria A                                    |
|                  | EN 61000-4-3 Perf. Criteria A                                    |
|                  | EN 61000-4-4 Perf. Criteria A (external 220uF/100V cap required) |
|                  | EN 61000-4-5 Perf. Criteria A (external 220uF/100V cap required) |
|                  | EN 61000-4-6 Perf. Criteria A                                    |
|                  | EN 61000-4-8 Perf. Criteria A                                    |

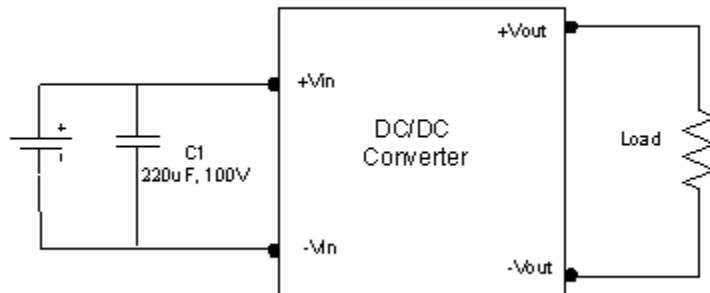
## Test Circuits

### Notes

1. Input filter (C1, C2, L) are needed to meet conducted emission (EN 55032 Class A) and should be mounted as close as possible to the converter.



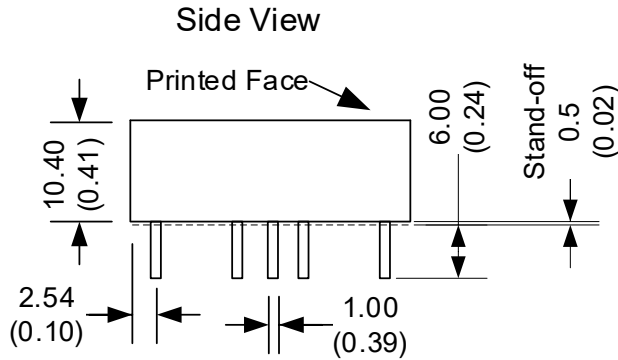
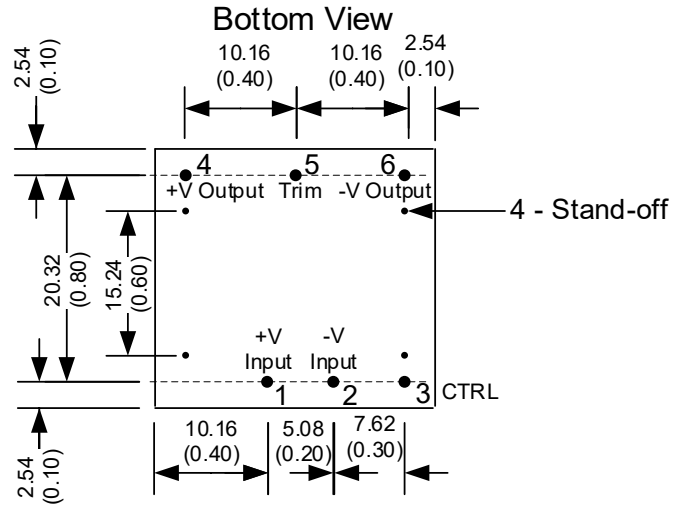
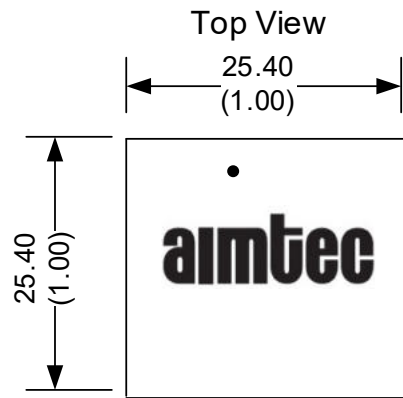
Surge:



## Pin Out Specifications

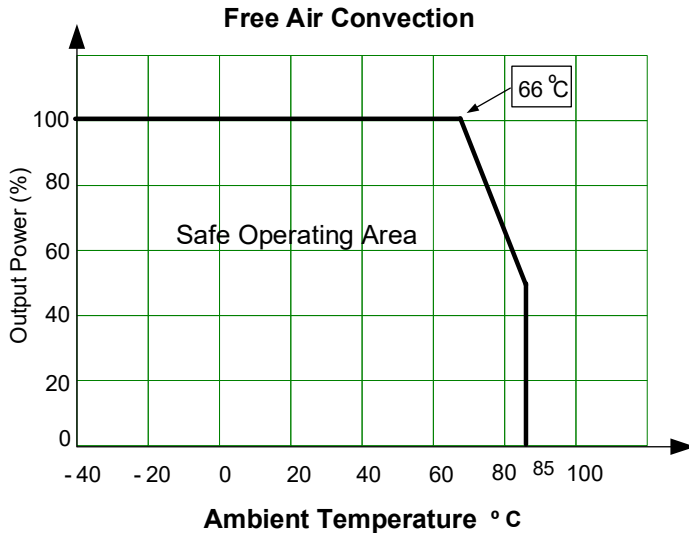
| Pin | Single         | Dual           |
|-----|----------------|----------------|
| 1   | + V input      | + V input      |
| 2   | - V input      | - V input      |
| 3   | On/Off Control | On/Off Control |
| 4   | + V output     | + V output     |
| 5   | Trim           | Common         |
| 6   | - V output     | - V output     |

## Dimensions

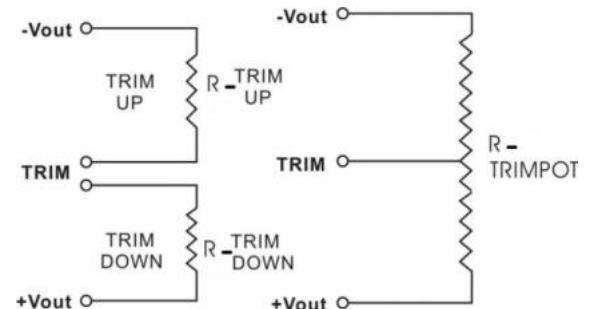


All dimensions are typical in millimeters (inches)  
Pin Diameter:  $1.00 \pm 0.05$  ( $0.04 \pm 0.002$ )  
Pin Pitch And Length Tolerance:  $\pm 0.35$  ( $\pm 0.014$ )  
Case Tolerance:  $\pm 0.5$  ( $\pm 0.02$ )  
Stand-off tolerance:  $\pm 0.1$  ( $\pm 0.004$ )

## Derating



## Trimming



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