

## Series AM12T-Z

### 12 Watt | DC-DC Converter



#### FEATURES:

- Wide Input Range 2:1
- 1600 Vdc Isolation
- Efficiency up to 91%
- Soft Start
- Remote On/Off Function
- No Minimum Load Required
- -40°C to +85°C Operating Temperature Range
- Short Circuit & Over Voltage Protection
- DIP 24 Package
- Low No Load Input Current



#### Models

##### Single output

| Model        | Input Voltage (V) | Output Voltage (V) | Output Current max (mA) | Isolation (VDC) | Maximum Capacitive load (μF) | Efficiency (%) |
|--------------|-------------------|--------------------|-------------------------|-----------------|------------------------------|----------------|
| AM12T-1202SZ | 9-18              | 2.5                | 3500                    | 1600            | 2000                         | 85             |
| AM12T-1203SZ | 9-18              | 3.3                | 3500                    | 1600            | 2000                         | 87             |
| AM12T-1205SZ | 9-18              | 5                  | 2400                    | 1600            | 2000                         | 89             |
| AM12T-1212SZ | 9-18              | 12                 | 1000                    | 1600            | 430                          | 90             |
| AM12T-1215SZ | 9-18              | 15                 | 800                     | 1600            | 300                          | 90             |
| AM12T-2402SZ | 18-36             | 2.5                | 3500                    | 1600            | 2000                         | 85             |
| AM12T-2403SZ | 18-36             | 3.3                | 3500                    | 1600            | 2000                         | 87             |
| AM12T-2405SZ | 18-36             | 5                  | 2400                    | 1600            | 2000                         | 89             |
| AM12T-2412SZ | 18-36             | 12                 | 1000                    | 1600            | 430                          | 90             |
| AM12T-2415SZ | 18-36             | 15                 | 800                     | 1600            | 300                          | 90             |
| AM12T-4802SZ | 36-75             | 2.5                | 3500                    | 1600            | 2000                         | 84             |
| AM12T-4803SZ | 36-75             | 3.3                | 3500                    | 1600            | 2000                         | 88             |
| AM12T-4805SZ | 36-75             | 5                  | 2400                    | 1600            | 2000                         | 89             |
| AM12T-4812SZ | 36-75             | 12                 | 1000                    | 1600            | 430                          | 88             |
| AM12T-4815SZ | 36-75             | 15                 | 800                     | 1600            | 300                          | 89             |

#### Models

##### Dual output

| Model        | Input Voltage (V) | Output Voltage (V) | Output Current max (mA) | Isolation (VDC) | Maximum Capacitive load (μF) | Efficiency (%) |
|--------------|-------------------|--------------------|-------------------------|-----------------|------------------------------|----------------|
| AM12T-1212DZ | 9-18              | ±12                | ±500                    | 1600            | ±200                         | 90             |
| AM12T-1215DZ | 9-18              | ±15                | ±400                    | 1600            | ±120                         | 91             |
| AM12T-2412DZ | 18-36             | ±12                | ±500                    | 1600            | ±200                         | 90             |
| AM12T-2415DZ | 18-36             | ±15                | ±400                    | 1600            | ±120                         | 91             |
| AM12T-4812DZ | 36-75             | ±12                | ±500                    | 1600            | ±200                         | 88             |
| AM12T-4815DZ | 36-75             | ±15                | ±400                    | 1600            | ±120                         | 89             |

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    |         |       |
|                                | 48                                      | 36-48    |         |       |
| Filter                         | π (Pi) Network                          |          |         |       |
| Turn on Transient process time |                                         | 250      |         | μs    |
| Transient response deviation   |                                         |          | ±3      | %     |
| Start up time                  | Nominal Vin and constant resistive load |          | 20      | ms    |
| Absolute Maximum Rating        | 12 Vin models                           | -0.7-36  |         | VDC   |
|                                | 24 Vin models                           | -0.7-50  |         |       |
|                                | 48 Vin models                           | -0.7-100 |         |       |

## Input Specifications (continued)

| Parameters                     | Nominal                                                                                                                                  | Typical | Maximum | Units  |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|---------|---------|--------|
| Peak Input Voltage time        |                                                                                                                                          |         | 1000    | ms     |
| Input reflected ripple current |                                                                                                                                          |         | 20      | mA p-p |
| Quiescent Current              |                                                                                                                                          | 15      |         | mA     |
| On/Off Control                 | ON – High (3.0 ... 12Vdc) or open circuit;<br>OFF – Low (0 ... 1.2Vdc) or Short circuit pin1 and pin 2/3<br>OFF idle current: 5.0 mA typ |         |         |        |

## Isolation Specifications

| Parameters                   | Conditions | Typical | Rated | Units |
|------------------------------|------------|---------|-------|-------|
| Tested I/O voltage           | 3 sec      |         | 1600  | VDC   |
| Tested Case/Input and Output |            | 1600    |       | VDC   |
| Resistance                   |            | >1000   |       | MOhm  |
| Capacitance                  |            | 1200    |       | pF    |

## Output Specifications

| Parameters                       | Conditions           | Typical | Maximum | Units  |
|----------------------------------|----------------------|---------|---------|--------|
| Voltage accuracy                 |                      | ±1.2    |         | %      |
| Voltage balance                  | Dual output          | ±5      |         | %      |
| Line voltage regulation          | HL-LL                | ±0.5    |         | %      |
| Load voltage regulation (Single) | 0% Load to Full Load | ±0.5    |         | %      |
| Load voltage regulation (Dual)   | 0% Load to Full Load | ±1.0    |         | %      |
| Over voltage protection          | Zener diode clamp    |         |         |        |
| Over current protection          | Full Load            | 150     |         | %      |
| Short Circuit protection         | Continuous           |         |         |        |
| Short circuit restart            | Auto recovery        |         |         |        |
| Ripple & Noise                   |                      | 85      |         | m Vp-p |

## General Specifications

| Parameters              | Conditions                                              | Typical                   | Maximum                  | Units |
|-------------------------|---------------------------------------------------------|---------------------------|--------------------------|-------|
| Switching frequency     | 100% load                                               | 330                       |                          | KHz   |
| Operating temperature   | Full Load with Derating above 60°C                      | -40 to +85                |                          | °C    |
| Storage temperature     |                                                         | -40 to +125               |                          | °C    |
| Max Case temperature    |                                                         |                           | 100                      | °C    |
| Temperature coefficient |                                                         | ±0.02                     |                          | %/°C  |
| Derating                | Above 60°C                                              | 2.5 % per 1°C             |                          |       |
| Cooling                 | Free air convection                                     |                           |                          |       |
| Humidity                |                                                         |                           | 95                       | % RH  |
| Case material           | Nickel-coated Copper                                    |                           |                          |       |
| Potting material        | UL94V-0 rated                                           |                           |                          |       |
| Weight                  |                                                         | 18.0                      |                          | g     |
| Dimensions (L x W x H)  | Tolerance ±0.5 mm or ±0.02 inches                       | 1.25 x 0.80 x 0.40 inches | 31.75 x 20.32 x 10.16 mm |       |
| MTBF                    | >1 000 000 hrs (MIL-HDBK -217F, Ground Benign, t=+25°C) |                           |                          |       |

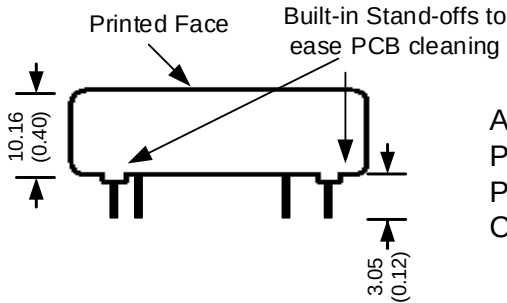
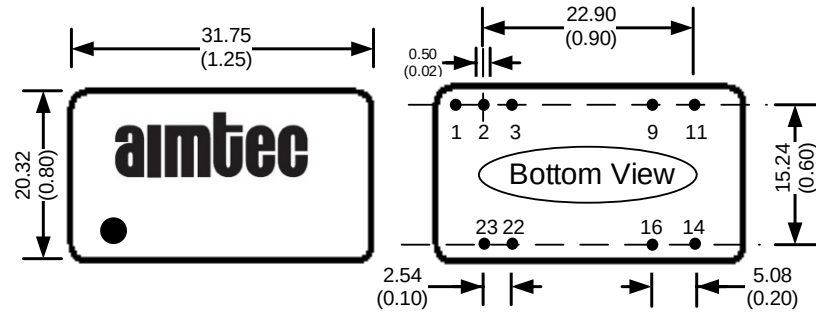
## Safety Specifications

| Parameters      |                                                                   |
|-----------------|-------------------------------------------------------------------|
| Agency Approval | CE                                                                |
| Standards       | IEC 60950-1:2005 (2 <sup>nd</sup> Edition); EN 60950-1: 2006      |
|                 | EN55032 Class A, EN55024                                          |
|                 | IEC61000-4-2, Perf. Criteria B                                    |
|                 | IEC61000-4-3, Perf. Criteria A                                    |
|                 | IEC61000-4-4, Perf. Criteria B (external 330uF/100V cap required) |
|                 | IEC61000-4-5, Perf. Criteria B (external 330uF/100V cap required) |
|                 | IEC61000-4-6, Perf. Criteria A                                    |
|                 | IEC61000-4-8, Perf. Criteria A                                    |

## Pin Out Specifications

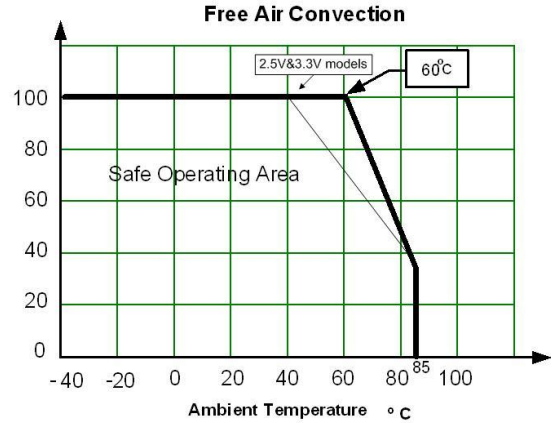
| Pin | Single        | Dual          |
|-----|---------------|---------------|
| 1   | Remote On/Off | Remote On/Off |
| 2   | -V Input      | -V Input      |
| 3   | -V Input      | -V Input      |
| 9   | No Pin        | Common        |
| 11  | N.C.          | -V Output     |
| 14  | +V Output     | +V Output     |
| 16  | -V Output     | Common        |
| 22  | +V Input      | +V Input      |
| 23  | +V Input      | +V Input      |

## Dimensions



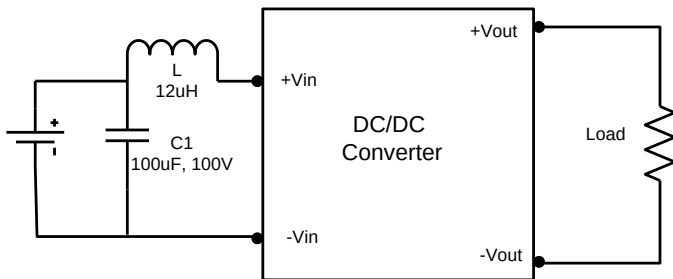
All dimensions are typical: millimeters (inches)  
Pin Diameter:  $0.50 \pm 0.05$  ( $0.02 \pm 0.002$ )  
Pin Pitch Tolerance:  $\pm 0.35$  ( $\pm 0.014$ )  
Case Tolerance:  $\pm 0.5$  ( $\pm 0.02$ )

## Derating

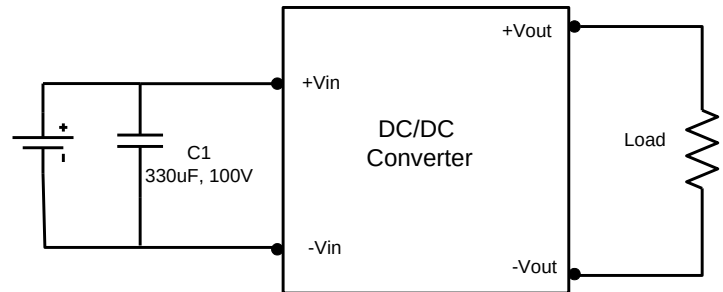


## Test Circuits

### Conducted Emmissions :



### Surge:



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