

## Series AME15-MAZ

### 15 Watt | AC-DC / DC-DC Converter



#### FEATURES:

- 4000VAC I/O Isolation
- Operating temperature: -40 to +85°C
- Over load, Over Voltage, Short Circuit Protection
- Universal input: 90-264VAC, 47-440Hz
- RoHS compliant
- Soft start
- Energy Star compliant
- CE, cULus, CB approvals



#### Models Single output

| Model         | Input Voltage (VAC/Hz) | Input voltage (VDC) | Output Voltage (V) | Output Current max (A) | Maximum capacitive Load (μF) | Efficiency (%) |         |
|---------------|------------------------|---------------------|--------------------|------------------------|------------------------------|----------------|---------|
|               |                        |                     |                    |                        |                              | 115 VAC        | 230 VAC |
| AME15-3.3SMAZ | 90-264/47-440          | 130-370             | 3.3                | 3                      | 4700                         | 73             | 73      |
| AME15-5SMAZ   | 90-264/47-440          | 130-370             | 5                  | 3                      | 2200                         | 76             | 78      |
| AME15-12SMAZ  | 90-264/47-440          | 130-370             | 12                 | 1.25                   | 1000                         | 78             | 79      |
| AME15-15SMAZ  | 90-264/47-440          | 130-370             | 15                 | 1                      | 680                          | 79             | 82      |
| AME15-24SMAZ  | 90-264/47-440          | 130-370             | 24                 | 0.63                   | 470                          | 82             | 84      |

#### Models Dual output

| Model        | Input Voltage (VAC/Hz) | Input voltage (VDC) | Output Voltage (V) | Output Current max (A) | Maximum Capacitive Load (μF) | Efficiency (%) |         |
|--------------|------------------------|---------------------|--------------------|------------------------|------------------------------|----------------|---------|
|              |                        |                     |                    |                        |                              | 115 VAC        | 230 VAC |
| AME15-5DMAZ  | 90-264/47-440          | 130-370             | ±5                 | ±1.5                   | ±1000                        | 78             | 79      |
| AME15-12DMAZ | 90-264/47-440          | 130-370             | ±12                | ±0.63                  | ±470                         | 81             | 82      |
| AME15-15DMAZ | 90-264/47-440          | 130-370             | ±15                | ±0.5                   | ±330                         | 82             | 83      |

#### Input Specifications

| Parameters                       | Conditions     | Typical | Maximum | Units |
|----------------------------------|----------------|---------|---------|-------|
| Current                          | 115 VAC        |         | 350     | mA    |
|                                  | 230 VAC        |         | 180     | mA    |
| Inrush current <2ms (Cold Start) | 115 VAC        |         | 20      | A     |
|                                  | 230 VAC        |         | 30      | A     |
| Leakage current                  | 115 VAC        |         | 0.1     | mA    |
|                                  | 264 VAC        |         | 0.2     | mA    |
| External Fuse (recommend)        | slow blow type | 2       |         | A     |
| Input Dissipation                | 110/230Vac     | ≤ 0.4   |         | W     |
| Under Voltage Protection         |                | 85      |         | VAC   |
| Start-up time                    |                |         | 1300    | ms    |

#### Output Specifications

| Parameters                   | Conditions                                                      | Typical | Maximum | Units     |
|------------------------------|-----------------------------------------------------------------|---------|---------|-----------|
| Voltage accuracy             |                                                                 | ±2      |         | %         |
| Line regulation              | LL-HL                                                           | ±1      |         | %         |
| Load regulation (single)     | 0-100%                                                          | ±1      |         | %         |
| Cross regulation (dual)**    | 25% load - 1 <sup>st</sup> out, 100% load – 2 <sup>nd</sup> out | ±5      |         | %         |
| Transient Recovery Time      |                                                                 | 300     |         | μs        |
| Transient Response Deviation | 25% load step                                                   | ±2      |         | % of Vout |
| Ripple & Noise*              | 3.3 / 5V Models                                                 | 75      |         | mVp-p     |
|                              | 12 / 15V Models                                                 | 100     |         |           |
|                              | 24V                                                             | 150     |         |           |
| Hold-up time                 | min                                                             | 20      |         | ms        |

\* Ripple and Noise are measured at 20MHz bandwidth by using a 0.1μF (M/C) and 47μF (E/C) parallel capacitor

\*\* The load of each output should be limited to the maximum rated current of each output.

## Isolation Specifications

| Parameters           | Conditions | Typical | Rated | Units |
|----------------------|------------|---------|-------|-------|
| Tested I/O voltage   | 60 sec     |         | 4000  | VAC   |
| Isolation resistance |            | >1000   |       | MΩ    |

## General Specifications

| Parameters               | Conditions               | Typical                                                                                                     | Maximum | Units  |
|--------------------------|--------------------------|-------------------------------------------------------------------------------------------------------------|---------|--------|
| Switching frequency      |                          | 132                                                                                                         |         | KHz    |
| Protection class         |                          | Class II                                                                                                    |         |        |
| Over load protection     | Fold Back                | 130                                                                                                         |         | %      |
| Over voltage protection  |                          | Zener diode clamp                                                                                           |         |        |
| Short Circuit protection |                          | Continuous                                                                                                  |         |        |
| Short Circuit restart    |                          | Auto recovery                                                                                               |         |        |
| Operating temperature    | With derating over 55 °C | -40 to +85                                                                                                  |         | °C     |
| Storage temperature      |                          | -40 to +100                                                                                                 |         | °C     |
| Max Case temperature     |                          |                                                                                                             | 100     | °C     |
| Temperature coefficient  |                          | ±0.02                                                                                                       |         | % / °C |
| Cooling                  |                          | Free air convection                                                                                         |         |        |
| Humidity                 |                          |                                                                                                             | 95      | % RH   |
| Weight                   |                          | 100                                                                                                         |         | g      |
| Dimensions (L x W x H)   |                          | 2.56 x 1.83 x 0.83 inches 65.0 x 46.5 x 21 mm , ±0.5mm                                                      |         |        |
| MTBF                     |                          | > 400,000hrs (MIL-HDBK -217F, t=+25°C)<br>> 100,000hrs (MIL-HDBK -217F, t=at highest operating temperature) |         |        |
| Case material            |                          | Plastic (flammability to UL 94V-0)                                                                          |         |        |

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 Approval

| Parameters | Conditions                                                           |
|------------|----------------------------------------------------------------------|
| Shock      | Wave form: Half sine wave                                            |
|            | Acceleration amplitude: 5gn                                          |
|            | Bump duration: 30 ms                                                 |
|            | Number of bumps: 18 (3 in each direction for every axis)             |
|            | Converter operation before and after test, body mounted (on chassis) |
| Vibrations | Test mode: Sweep sine                                                |
|            | 10-100Hz, speed 0.05Hz/s                                             |
|            | Displacement: 1mm                                                    |
|            | Acceleration: 3g                                                     |
|            | 3 loops 30min one cycle, 3h total, every axis tested                 |
|            | Converter operation before and after test, body mounted (on chassis) |

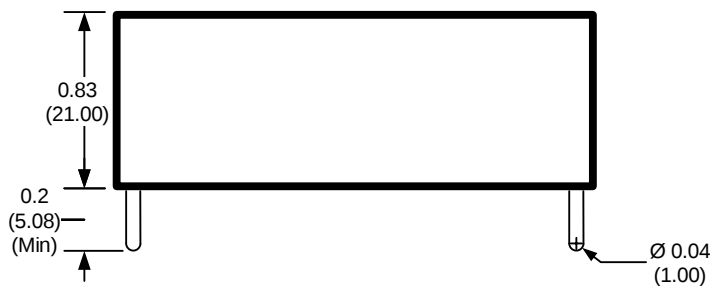
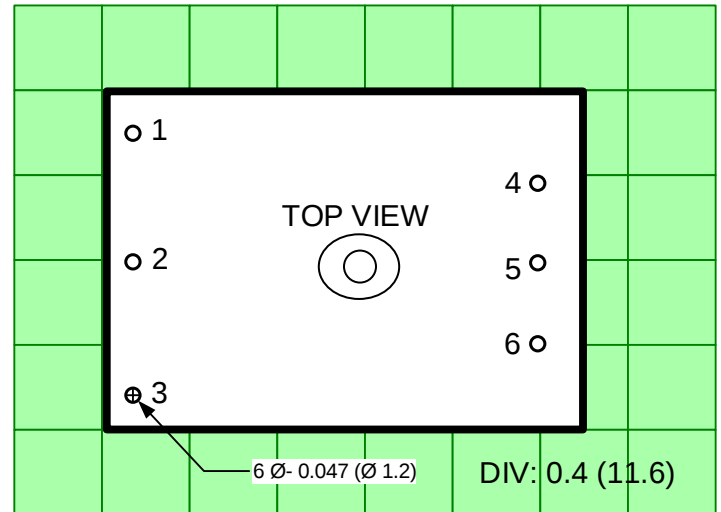
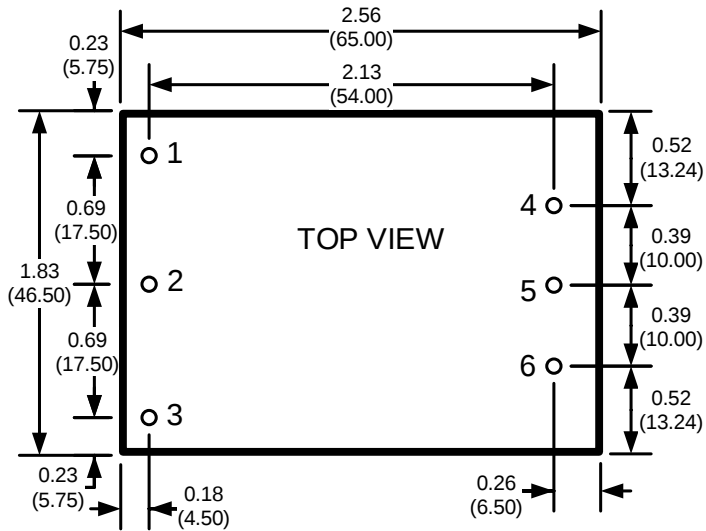
## Safety & EMC Specifications

| Parameters       |                                            |                                                      |
|------------------|--------------------------------------------|------------------------------------------------------|
| Agency approvals | cULus, CE, CB                              |                                                      |
| Standards        | Medical Electrical Equipment               | IEC/EN/UL 60601-1, 2 x MOOP, CSA-C22.2 No. 601.1-M90 |
|                  | Information technology Equipment           | EN 60950-1:2006+A11:2009                             |
|                  | EMI - Conducted and radiated emission      | EN55011, class B                                     |
|                  | Harmonic Current Emissions                 | IEC/EN 61000-3-2, Class A                            |
|                  | Voltage fluctuations and flicker           | IEC/EN 61000-3-3, (EN60555-3)                        |
|                  | Electrostatic Discharge Immunity           | IEC 61000-4-2 Level 3                                |
|                  | RF, Electromagnetic Field Immunity         | IEC 61000-4-3 Level 2                                |
|                  | Electrical Fast Transient/Burst Immunity   | IEC 61000-4-4 Level 3                                |
|                  | Surge Immunity                             | IEC 61000-4-5 Level 3                                |
|                  | RF, Conducted Disturbance Immunity         | IEC 61000-4-6 Level 2                                |
|                  | Power frequency Magnetic Field Immunity    | IEC 61000-4-8 Level 2                                |
|                  | Voltage dips, Short Interruptions Immunity | IEC 61000-4-11                                       |

## Pin Out Specifications

| Pin | Single       | Dual         |
|-----|--------------|--------------|
| 1   | No pin       | No pin       |
| 2   | AC Input (N) | AC Input (N) |
| 3   | AC Input (L) | AC Input (L) |
| 4   | -V Output    | -V Output    |
| 5   | No pin       | Common       |
| 6   | +V Output    | +V Output    |

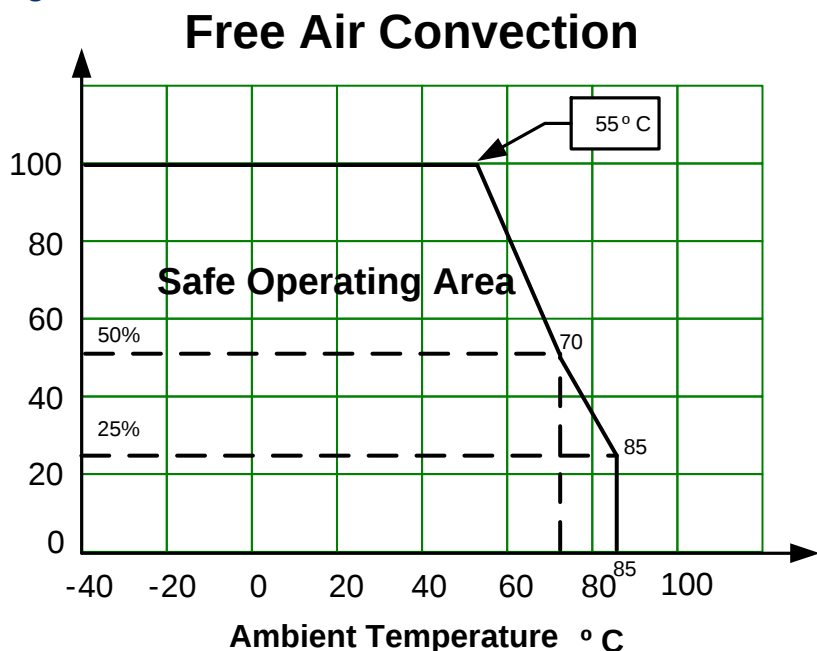
## Dimensions (Top View)



Dimensions: inch (mm)  
Case Tolerance:  $\pm 0.02$  (0.50)  
Pin Pitch Tolerance:  $\pm 0.02$  (0.50)

 - Case temperature Measurement

## Derating



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