

## Series AM6T-Z

### 6 Watt | DC-DC Converter



#### FEATURES:

- RoHS compliant
- 24 Pin DIP Package
- Wide 2:1 input range
- High efficiency up to 83%
- Operating temperature -40°C to + 85°C
- Input / Output Isolation 1500 and 3500VDC
- Pin compatible with multiple manufacturers
- Continuous short circuit protection



#### Models

##### Single output

| Model          | Input Voltage (V) | Output Voltage (V) | Output Current max (mA) | Efficiency (%) | Capacitive load, max (μF) | Isolation (VDC) |
|----------------|-------------------|--------------------|-------------------------|----------------|---------------------------|-----------------|
| AM6T-0503SZ    | 4.5-9             | 3.3                | 1400                    | 73             | 1000                      | 1500            |
| AM6T-0505SZ    | 4.5-9             | 5                  | 1200                    | 76             | 1000                      | 1500            |
| AM6T-0512SZ    | 4.5-9             | 12                 | 500                     | 82             | 330                       | 1500            |
| AM6T-0515SZ    | 4.5-9             | 15                 | 400                     | 82             | 220                       | 1500            |
| AM6T-1203SZ    | 9-18              | 3.3                | 1400                    | 73             | 1000                      | 1500            |
| AM6T-1205SZ    | 9-18              | 5                  | 1200                    | 77             | 1000                      | 1500            |
| AM6T-1207SZ    | 9-18              | 7.2                | 833                     | 78             | 680                       | 1500            |
| AM6T-1209SZ    | 9-18              | 9                  | 666                     | 78             | 680                       | 1500            |
| AM6T-1212SZ    | 9-18              | 12                 | 500                     | 81             | 330                       | 1500            |
| AM6T-1215SZ    | 9-18              | 15                 | 400                     | 80             | 220                       | 1500            |
| AM6T-1218SZ    | 9-18              | 18                 | 333                     | 80             | 68                        | 1500            |
| AM6T-1224SZ    | 9-18              | 24                 | 250                     | 80             | 68                        | 1500            |
| AM6T-2403SZ    | 18-36             | 3.3                | 1400                    | 75             | 3300                      | 1500            |
| AM6T-2405SZ    | 18-36             | 5                  | 1200                    | 80             | 1000                      | 1500            |
| AM6T-2407SZ    | 18-36             | 7.2                | 833                     | 82             | 680                       | 1500            |
| AM6T-2409SZ    | 18-36             | 9                  | 666                     | 82             | 680                       | 1500            |
| AM6T-2412SZ    | 18-36             | 12                 | 500                     | 80             | 330                       | 1500            |
| AM6T-2415SZ    | 18-36             | 15                 | 400                     | 82             | 220                       | 1500            |
| AM6T-2418SZ    | 18-36             | 18                 | 333                     | 82             | 220                       | 1500            |
| AM6T-2424SZ    | 18-36             | 24                 | 250                     | 82             | 220                       | 1500            |
| AM6T-4803SZ    | 36-72             | 3.3                | 1400                    | 75             | 3300                      | 1500            |
| AM6T-4805SZ    | 36-72             | 5                  | 1200                    | 80             | 2200                      | 1500            |
| AM6T-4807SZ    | 36-72             | 7.2                | 833                     | 82             | 470                       | 1500            |
| AM6T-4809SZ    | 36-72             | 9                  | 666                     | 82             | 470                       | 1500            |
| AM6T-4812SZ    | 36-72             | 12                 | 500                     | 80             | 330                       | 1500            |
| AM6T-4815SZ    | 36-72             | 15                 | 400                     | 83             | 220                       | 1500            |
| AM6T-4818SZ    | 36-72             | 18                 | 333                     | 83             | 100                       | 1500            |
| AM6T-4824SZ    | 36-72             | 24                 | 250                     | 83             | 100                       | 1500            |
| AM6T-0503SH35Z | 4.5-9             | 3.3                | 1400                    | 73             | 1000                      | 3500            |
| AM6T-0505SH35Z | 4.5-9             | 5                  | 1200                    | 76             | 1000                      | 3500            |
| AM6T-0512SH35Z | 4.5-9             | 12                 | 500                     | 82             | 330                       | 3500            |
| AM6T-0515SH35Z | 4.5-9             | 15                 | 400                     | 82             | 220                       | 3500            |
| AM6T-1203SH35Z | 9-18              | 3.3                | 1400                    | 73             | 1000                      | 3500            |
| AM6T-1205SH35Z | 9-18              | 5                  | 1200                    | 77             | 1000                      | 3500            |
| AM6T-1207SH35Z | 9-18              | 7.2                | 833                     | 78             | 680                       | 3500            |
| AM6T-1209SH35Z | 9-18              | 9                  | 666                     | 78             | 680                       | 3500            |
| AM6T-1212SH35Z | 9-18              | 12                 | 500                     | 81             | 330                       | 3500            |
| AM6T-1215SH35Z | 9-18              | 15                 | 400                     | 80             | 220                       | 3500            |
| AM6T-1218SH35Z | 9-18              | 18                 | 333                     | 80             | 68                        | 3500            |
| AM6T-1224SH35Z | 9-18              | 24                 | 250                     | 80             | 68                        | 3500            |
| AM6T-2403SH35Z | 18-36             | 3.3                | 1400                    | 75             | 3300                      | 3500            |
| AM6T-2405SH35Z | 18-36             | 5                  | 1200                    | 80             | 1000                      | 3500            |
| AM6T-2407SH35Z | 18-36             | 7.2                | 833                     | 82             | 680                       | 3500            |
| AM6T-2409SH35Z | 18-36             | 9                  | 666                     | 82             | 680                       | 3500            |
| AM6T-2412SH35Z | 18-36             | 12                 | 500                     | 80             | 330                       | 3500            |
| AM6T-2415SH35Z | 18-36             | 15                 | 400                     | 82             | 220                       | 3500            |

## Models

### Single output (continued)

| Model          | Input Voltage (V) | Output Voltage (V) | Output Current max (mA) | Efficiency (%) | Capacitive load, max (μF) | Isolation (VDC) |
|----------------|-------------------|--------------------|-------------------------|----------------|---------------------------|-----------------|
| AM6T-2418SH35Z | 18-36             | 18                 | 333                     | 73             | 220                       | 3500            |
| AM6T-2424SH35Z | 18-36             | 24                 | 250                     | 77             | 220                       | 3500            |
| AM6T-4803SH35Z | 36-72             | 3.3                | 1400                    | 78             | 3300                      | 3500            |
| AM6T-4805SH35Z | 36-72             | 5                  | 1200                    | 78             | 2200                      | 3500            |
| AM6T-4807SH35Z | 36-72             | 7.2                | 833                     | 81             | 470                       | 3500            |
| AM6T-4809SH35Z | 36-72             | 9                  | 666                     | 80             | 470                       | 3500            |
| AM6T-4812SH35Z | 36-72             | 12                 | 500                     | 80             | 330                       | 3500            |
| AM6T-4815SH35Z | 36-72             | 15                 | 400                     | 80             | 220                       | 3500            |
| AM6T-4818SH35Z | 36-72             | 18                 | 333                     | 75             | 100                       | 3500            |
| AM6T-4824SH35Z | 36-72             | 24                 | 250                     | 80             | 100                       | 3500            |

## Models

### Dual output

| Model          | Input Voltage (V) | Output Voltage (V) | Output Current max (mA) | Efficiency (%) | Capacitive load, max (μF) | Isolation (VDC) |
|----------------|-------------------|--------------------|-------------------------|----------------|---------------------------|-----------------|
| AM6T-0503DZ    | 4.5-9             | ±3.3               | ±700                    | 73             | ±680                      | 1500            |
| AM6T-0505DZ    | 4.5-9             | ±5                 | ±600                    | 76             | ±330                      | 1500            |
| AM6T-0512DZ    | 4.5-9             | ±12                | ±250                    | 82             | ±100                      | 1500            |
| AM6T-0515DZ    | 4.5-9             | ±15                | ±200                    | 82             | ±100                      | 1500            |
| AM6T-1203DZ    | 9-18              | ±3.3               | ±909                    | 73             | ±680                      | 1500            |
| AM6T-1205DZ    | 9-18              | ±5                 | ±600                    | 77             | ±330                      | 1500            |
| AM6T-1207DZ    | 9-18              | ±7.2               | ±416                    | 80             | ±220                      | 1500            |
| AM6T-1209DZ    | 9-18              | ±9                 | ±333                    | 80             | ±220                      | 1500            |
| AM6T-1212DZ    | 9-18              | ±12                | ±250                    | 80             | ±100                      | 1500            |
| AM6T-1215DZ    | 9-18              | ±15                | ±200                    | 79             | ±47                       | 1500            |
| AM6T-1218DZ    | 9-18              | ±18                | ±166                    | 80             | ±33                       | 1500            |
| AM6T-1224DZ    | 9-18              | ±24                | ±125                    | 80             | ±33                       | 1500            |
| AM6T-2403DZ    | 18-36             | ±3.3               | ±909                    | 75             | ±680                      | 1500            |
| AM6T-2405DZ    | 18-36             | ±5                 | ±600                    | 78             | ±330                      | 1500            |
| AM6T-2407DZ    | 18-36             | ±7.2               | ±416                    | 83             | ±220                      | 1500            |
| AM6T-2409DZ    | 18-36             | ±9                 | ±333                    | 83             | ±220                      | 1500            |
| AM6T-2412DZ    | 18-36             | ±12                | ±250                    | 80             | ±100                      | 1500            |
| AM6T-2415DZ    | 18-36             | ±15                | ±200                    | 80             | ±47                       | 1500            |
| AM6T-2418DZ    | 18-36             | ±18                | ±166                    | 80             | ±33                       | 1500            |
| AM6T-2424DZ    | 18-36             | ±24                | ±125                    | 80             | ±33                       | 1500            |
| AM6T-4803DZ    | 36-72             | ±3.3               | ±909                    | 73             | ±680                      | 1500            |
| AM6T-4805DZ    | 36-72             | ±5                 | ±600                    | 79             | ±330                      | 1500            |
| AM6T-4807DZ    | 36-72             | ±7.2               | ±416                    | 79             | ±220                      | 1500            |
| AM6T-4809DZ    | 36-72             | ±9                 | ±333                    | 79             | ±220                      | 1500            |
| AM6T-4812DZ    | 36-72             | ±12                | ±250                    | 80             | ±100                      | 1500            |
| AM6T-4815DZ    | 36-72             | ±15                | ±200                    | 80             | ±47                       | 1500            |
| AM6T-4818DZ    | 36-72             | ±18                | ±166                    | 80             | ±33                       | 1500            |
| AM6T-4824DZ    | 36-72             | ±24                | ±125                    | 80             | ±33                       | 1500            |
| AM6T-0503DH35Z | 4.5-9             | ±3.3               | ±700                    | 73             | ±680                      | 3500            |
| AM6T-0505DH35Z | 4.5-9             | ±5                 | ±600                    | 76             | ±330                      | 3500            |
| AM6T-0512DH35Z | 4.5-9             | ±12                | ±250                    | 82             | ±100                      | 3500            |
| AM6T-0515DH35Z | 4.5-9             | ±15                | ±200                    | 82             | ±100                      | 3500            |
| AM6T-1203DH35Z | 9-18              | ±3.3               | ±909                    | 73             | ±680                      | 3500            |
| AM6T-1205DH35Z | 9-18              | ±5                 | ±600                    | 77             | ±330                      | 3500            |
| AM6T-1207DH35Z | 9-18              | ±7.2               | ±416                    | 80             | ±220                      | 3500            |
| AM6T-1209DH35Z | 9-18              | ±9                 | ±333                    | 80             | ±220                      | 3500            |
| AM6T-1212DH35Z | 9-18              | ±12                | ±250                    | 80             | ±100                      | 3500            |
| AM6T-1215DH35Z | 9-18              | ±15                | ±200                    | 79             | ±47                       | 3500            |
| AM6T-1218DH35Z | 9-18              | ±18                | ±166                    | 80             | ±33                       | 3500            |

## Models

### Dual output (continued)

| Model          | Input Voltage (V) | Output Voltage (V) | Output Current max (mA) | Efficiency (%) | Capacitive load, max (μF) | Isolation (VDC) |
|----------------|-------------------|--------------------|-------------------------|----------------|---------------------------|-----------------|
| AM6T-1224DH35Z | 9-18              | ±24                | ±125                    | 80             | ±33                       | 3500            |
| AM6T-2403DH35Z | 18-36             | ±3.3               | ±909                    | 75             | ±680                      | 3500            |
| AM6T-2405DH35Z | 18-36             | ±5                 | ±600                    | 78             | ±330                      | 3500            |
| AM6T-2407DH35Z | 18-36             | ±7.2               | ±416                    | 83             | ±220                      | 3500            |
| AM6T-2409DH35Z | 18-36             | ±9                 | ±333                    | 83             | ±220                      | 3500            |
| AM6T-2412DH35Z | 18-36             | ±12                | ±250                    | 80             | ±100                      | 3500            |
| AM6T-2415DH35Z | 18-36             | ±15                | ±200                    | 80             | ±47                       | 3500            |
| AM6T-2418DH35Z | 18-36             | ±18                | ±166                    | 80             | ±33                       | 3500            |
| AM6T-2424DH35Z | 18-36             | ±24                | ±125                    | 80             | ±33                       | 3500            |
| AM6T-4803DH35Z | 36-72             | ±3.3               | ±909                    | 73             | ±680                      | 3500            |
| AM6T-4805DH35Z | 36-72             | ±5                 | ±600                    | 79             | ±330                      | 3500            |
| AM6T-4807DH35Z | 36-72             | ±7.2               | ±416                    | 79             | ±220                      | 3500            |
| AM6T-4809DH35Z | 36-72             | ±9                 | ±333                    | 79             | ±220                      | 3500            |
| AM6T-4812DH35Z | 36-72             | ±12                | ±250                    | 80             | ±100                      | 3500            |
| AM6T-4815DH35Z | 36-72             | ±15                | ±200                    | 80             | ±47                       | 3500            |
| AM6T-4818DH35Z | 36-72             | ±18                | ±166                    | 80             | ±33                       | 3500            |
| AM6T-4824DH35Z | 36-72             | ±24                | ±909                    | 80             | ±33                       | 3500            |

### Input Specifications

| Parameters                       | Nominal            | Typical | Maximum | Units  |
|----------------------------------|--------------------|---------|---------|--------|
| Voltage range                    | 5                  | 4.5-9   |         | VDC    |
|                                  | 12                 | 9-18    |         |        |
|                                  | 24                 | 18-36   |         |        |
|                                  | 48                 | 36-72   |         |        |
| Filter                           | $\pi$ (Pi) Network |         |         |        |
| Absolute Maximum Rating          | 5 Vin              | -0.7-15 |         | VDC    |
|                                  | 12 Vin             | -0.7-24 |         |        |
|                                  | 24 Vin             | -0.7-40 |         |        |
|                                  | 48 Vin             | -0.7-80 |         |        |
| Peak Input Voltage time          |                    | 100     |         | ms     |
| Input Reflected ripple current * |                    | 35      |         | mA p-p |

\* The input reflected ripple current should be measured with connected 12μH inductor.

### Isolation Specifications

| Parameters                | Conditions | Typical | Rated        | Units |
|---------------------------|------------|---------|--------------|-------|
| Tested I/O voltage        | 60 sec     |         | 1500 or 3500 | VDC   |
| Metal case/Input & Output | 60 sec     |         | 1000         | VDC   |
| Resistance                |            | > 1000  |              | MOhm  |
| Capacitance               |            | 500     |              | pF    |

### Output Specifications

| Parameters               | Conditions                       | Typical | Maximum | Units  |
|--------------------------|----------------------------------|---------|---------|--------|
| Voltage accuracy         |                                  | ±1      |         | %      |
| Short Circuit protection | Continuous, auto recovery        |         |         |        |
| Line voltage regulation  |                                  | ±0.5    |         | %      |
| Load voltage regulation  | 0 – 100% load, 3.3V/±3.3V Models | ±1.5    |         | %      |
|                          | 0 – 100% load, others            | ±0.5    |         | %      |
| Temperature coefficient  |                                  | ±0.02   |         | %/°C   |
| Ripple & Noise *         | At 20MHz Bandwidth               | 60      |         | mV p-p |

\* Measured with 1μF CC.

## General Specifications

| Parameters             | Conditions                                                               | Typical                   | Maximum                  | Units |
|------------------------|--------------------------------------------------------------------------|---------------------------|--------------------------|-------|
| Switching frequency    | 100% load                                                                | 266                       |                          | KHz   |
| Operating temperature  | Full Load without Derating<br>(except 5V input models see chart)         | -40 to +85                |                          | °C    |
| Storage temperature    |                                                                          | -40 to +125               |                          | °C    |
| Max Case temperature   |                                                                          |                           | +100                     | °C    |
| Cooling                | Free air convection                                                      |                           |                          |       |
| Humidity               |                                                                          |                           | 95                       | %     |
| Case material          | Nickel coated copper                                                     |                           |                          |       |
| Weight                 |                                                                          | 17                        |                          | g     |
| Dimensions (L x W x H) | Tolerance $\pm 0.5$ mm or $\pm 0.02$ inches                              | 1.25 x 0.80 x 0.40 inches | 31.75 x 20.32 x 10.16 mm |       |
| MTBF                   | >1 121 000 hrs (MIL-HDBK -217F, Ground Benign, $t=+25^{\circ}\text{C}$ ) |                           |                          |       |

NOTE: All specifications noted 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.

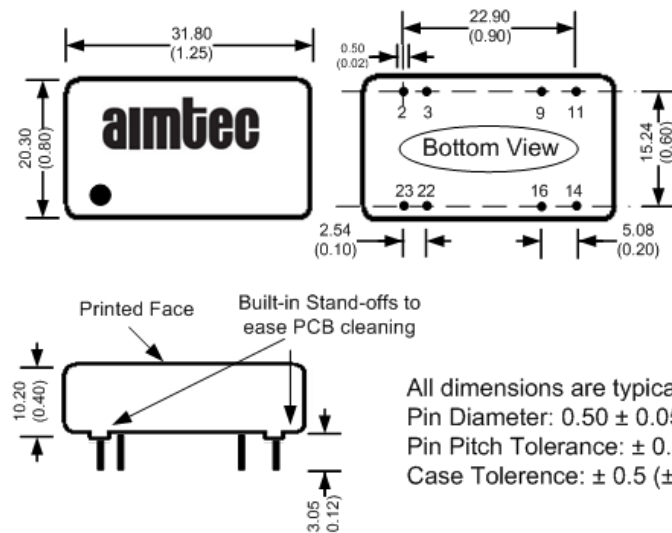
## Safety Specifications

| Parameters                                                 |                                                                   |
|------------------------------------------------------------|-------------------------------------------------------------------|
| Agency Approvals                                           | UL (pending), except 5Vin models, CE                              |
| Standards                                                  | EN55032 Class A, with recommended circuit                         |
|                                                            | IEC61000-4-2, Perf. Criteria A                                    |
|                                                            | IEC61000-4-3, Perf. Criteria A                                    |
|                                                            | IEC61000-4-4, Perf. Criteria A (external 220uF/100V cap required) |
|                                                            | IEC61000-4-5, Perf. Criteria A (external 220uF/100V cap required) |
|                                                            | IEC61000-4-6, Perf. Criteria A                                    |
|                                                            | IEC61000-4-8, Perf. Criteria A                                    |
| NOTE: also designed to meet IEC 60950-1:2001 & IEC 62368-1 |                                                                   |

## Pin Out Specifications

| Pin | 1500 & 3500VDC |           |
|-----|----------------|-----------|
|     | Single         | Dual      |
| 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  |

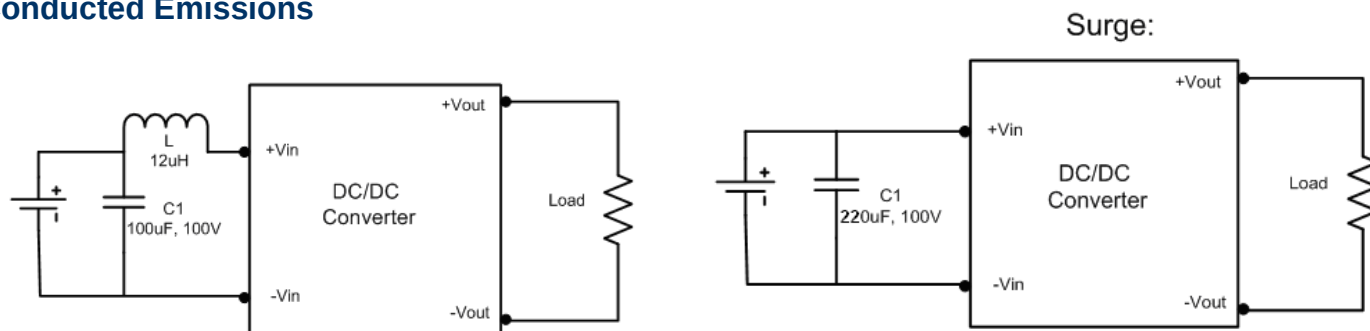
## Dimensions



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:  $\pm 0.5$  ( $\pm 0.02$ )

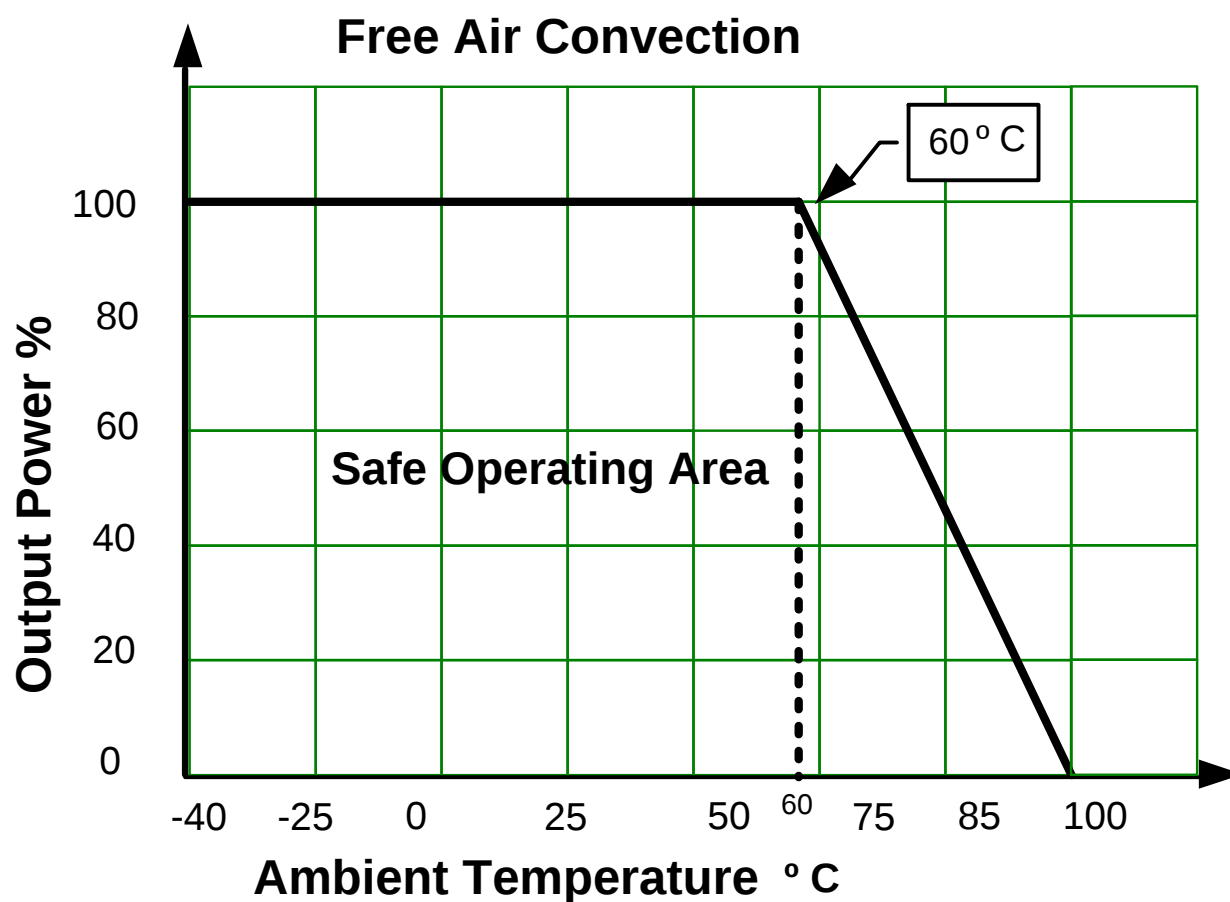
## Test Circuits

### Conducted Emissions



## Derating

(AM6T-05xxxx Devices only)



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