

## Series AM6G-Z

### 6 Watt | DC-DC Converter



#### FEATURES:

- High Power Density SIP8
- High efficiency up to 87%
- On / Off Control
- No Minimum Load
- Operating temperature -40°C to + 85°C
- Continuous Short circuit protection
- Input / Output Isolation 1500 & 3000VDC

#### Models Single Output



| Model          | Input Voltage (V) | Output Voltage (V) | Output Current max (mA) | Isolation (VDC) | Capacitor Load (μF) | Efficiency |
|----------------|-------------------|--------------------|-------------------------|-----------------|---------------------|------------|
| AM6G-0503SZ    | 4.5-9             | 3.3                | 1300                    | 1500            | 6600                | 75         |
| AM6G-0505SZ    | 4.5-9             | 5                  | 1200                    | 1500            | 3300                | 79         |
| AM6G-0509SZ    | 4.5-9             | 9                  | 666                     | 1500            | 2000                | 83         |
| AM6G-0512SZ    | 4.5-9             | 12                 | 500                     | 1500            | 1600                | 84         |
| AM6G-0515SZ    | 4.5-9             | 15                 | 400                     | 1500            | 1400                | 84         |
| AM6G-0524SZ    | 4.5-9             | 24                 | 250                     | 1500            | 680                 | 84         |
| AM6G-1203SZ    | 9-18              | 3.3                | 1300                    | 1500            | 6600                | 76         |
| AM6G-1205SZ    | 9-18              | 5                  | 1200                    | 1500            | 3300                | 83         |
| AM6G-1209SZ    | 9-18              | 9                  | 666                     | 1500            | 2000                | 84         |
| AM6G-1212SZ    | 9-18              | 12                 | 500                     | 1500            | 1600                | 85         |
| AM6G-1215SZ    | 9-18              | 15                 | 400                     | 1500            | 1400                | 85         |
| AM6G-1224SZ    | 9-18              | 24                 | 250                     | 1500            | 680                 | 86         |
| AM6G-2403SZ    | 18-36             | 3.3                | 1300                    | 1500            | 6600                | 78         |
| AM6G-2405SZ    | 18-36             | 5                  | 1200                    | 1500            | 3300                | 83         |
| AM6G-2409SZ    | 18-36             | 9                  | 666                     | 1500            | 2000                | 85         |
| AM6G-2412SZ    | 18-36             | 12                 | 500                     | 1500            | 1600                | 85         |
| AM6G-2415SZ    | 18-36             | 15                 | 400                     | 1500            | 1400                | 87         |
| AM6G-2424SZ    | 18-36             | 24                 | 250                     | 1500            | 680                 | 87         |
| AM6G-4803SZ    | 36-75             | 3.3                | 1300                    | 1500            | 6600                | 76         |
| AM6G-4805SZ    | 36-75             | 5                  | 1200                    | 1500            | 3300                | 80         |
| AM6G-4809SZ    | 36-75             | 9                  | 666                     | 1500            | 2000                | 85         |
| AM6G-4812SZ    | 36-75             | 12                 | 500                     | 1500            | 1600                | 84         |
| AM6G-4815SZ    | 36-75             | 15                 | 400                     | 1500            | 1400                | 86         |
| AM6G-4824SZ    | 36-75             | 24                 | 250                     | 1500            | 680                 | 84         |
| AM6G-0503SH30Z | 4.5-9             | 3.3                | 1300                    | 3000            | 6600                | 75         |
| AM6G-0505SH30Z | 4.5-9             | 5                  | 1200                    | 3000            | 3300                | 79         |
| AM6G-0509SH30Z | 4.5-9             | 9                  | 666                     | 3000            | 2000                | 83         |
| AM6G-0512SH30Z | 4.5-9             | 12                 | 500                     | 3000            | 1600                | 84         |
| AM6G-0515SH30Z | 4.5-9             | 15                 | 400                     | 3000            | 1400                | 84         |
| AM6G-0524SH30Z | 4.5-9             | 24                 | 250                     | 3000            | 680                 | 84         |
| AM6G-1203SH30Z | 9-18              | 3.3                | 1300                    | 3000            | 6600                | 76         |
| AM6G-1205SH30Z | 9-18              | 5                  | 1200                    | 3000            | 3300                | 83         |
| AM6G-1209SH30Z | 9-18              | 9                  | 666                     | 3000            | 2000                | 84         |
| AM6G-1212SH30Z | 9-18              | 12                 | 500                     | 3000            | 1600                | 85         |
| AM6G-1215SH30Z | 9-18              | 15                 | 400                     | 3000            | 1400                | 85         |
| AM6G-1224SH30Z | 9-18              | 24                 | 250                     | 3000            | 680                 | 86         |
| AM6G-2403SH30Z | 18-36             | 3.3                | 1300                    | 3000            | 6600                | 78         |
| AM6G-2405SH30Z | 18-36             | 5                  | 1200                    | 3000            | 3300                | 83         |
| AM6G-2409SH30Z | 18-36             | 9                  | 666                     | 3000            | 2000                | 85         |
| AM6G-2412SH30Z | 18-36             | 12                 | 500                     | 3000            | 1600                | 85         |
| AM6G-2415SH30Z | 18-36             | 15                 | 400                     | 3000            | 1400                | 87         |
| AM6G-2424SH30Z | 18-36             | 24                 | 250                     | 3000            | 680                 | 87         |
| AM6G-4803SH30Z | 36-75             | 3.3                | 1300                    | 3000            | 6600                | 76         |
| AM6G-4805SH30Z | 36-75             | 5                  | 1200                    | 3000            | 3300                | 80         |
| AM6G-4809SH30Z | 36-75             | 9                  | 666                     | 3000            | 2000                | 85         |
| AM6G-4812SH30Z | 36-75             | 12                 | 500                     | 3000            | 1600                | 84         |
| AM6G-4815SH30Z | 36-75             | 15                 | 400                     | 3000            | 1400                | 86         |
| AM6G-4824SH30Z | 36-75             | 24                 | 250                     | 3000            | 680                 | 84         |

## Models

### Dual output

| Model          | Input Voltage (V) | Output Voltage (V) | Output Current max (mA) | Isolation (VDC) | Capacitor Load (μF) | Efficiency (%) |
|----------------|-------------------|--------------------|-------------------------|-----------------|---------------------|----------------|
| AM6G-0505DZ    | 4.5-9             | ±5                 | ±600                    | 1500            | ±2000               | 81             |
| AM6G-0512DZ    | 4.5-9             | ±12                | ±250                    | 1500            | ±900                | 84             |
| AM6G-0515DZ    | 4.5-9             | ±15                | ±200                    | 1500            | ±660                | 84             |
| AM6G-1205DZ    | 9-18              | ±5                 | ±600                    | 1500            | ±2000               | 82             |
| AM6G-1212DZ    | 9-18              | ±12                | ±250                    | 1500            | ±900                | 84             |
| AM6G-1215DZ    | 9-18              | ±15                | ±200                    | 1500            | ±660                | 86             |
| AM6G-2405DZ    | 18-36             | ±5                 | ±600                    | 1500            | ±2000               | 82             |
| AM6G-2412DZ    | 18-36             | ±12                | ±250                    | 1500            | ±900                | 84             |
| AM6G-2415DZ    | 18-36             | ±15                | ±200                    | 1500            | ±660                | 84             |
| AM6G-4805DZ    | 36-75             | ±5                 | ±600                    | 1500            | ±2000               | 82             |
| AM6G-4812DZ    | 36-75             | ±12                | ±250                    | 1500            | ±900                | 85             |
| AM6G-4815DZ    | 36-75             | ±15                | ±200                    | 1500            | ±660                | 85             |
| AM6G-0505DH30Z | 4.5-9             | ±5                 | ±600                    | 3000            | ±2000               | 81             |
| AM6G-0512DH30Z | 4.5-9             | ±12                | ±250                    | 3000            | ±900                | 84             |
| AM6G-0515DH30Z | 4.5-9             | ±15                | ±200                    | 3000            | ±660                | 84             |
| AM6G-1205DH30Z | 9-18              | ±5                 | ±600                    | 3000            | ±2000               | 82             |
| AM6G-1212DH30Z | 9-18              | ±12                | ±250                    | 3000            | ±900                | 84             |
| AM6G-1215DH30Z | 9-18              | ±15                | ±200                    | 3000            | ±660                | 86             |
| AM6G-2405DH30Z | 18-36             | ±5                 | ±600                    | 3000            | ±2000               | 82             |
| AM6G-2412DH30Z | 18-36             | ±12                | ±250                    | 3000            | ±900                | 84             |
| AM6G-2415DH30Z | 18-36             | ±15                | ±200                    | 3000            | ±660                | 84             |
| AM6G-4805DH30Z | 36-75             | ±5                 | ±600                    | 3000            | ±2000               | 82             |
| AM6G-4812DH30Z | 36-75             | ±12                | ±250                    | 3000            | ±900                | 85             |
| AM6G-4815DH30Z | 36-75             | ±15                | ±200                    | 3000            | ±660                | 85             |

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                   | 5<br>12<br>24<br>48                                                                                 | 4.5-9<br>9-18<br>18-36<br>36-75           |          | VDC    |
| Filter                          | Capacitor                                                                                           |                                           |          |        |
| Transient recovery time         | 100% - 25% load, 25% load step change                                                               | 500                                       |          | μs     |
| Transient Response deviation    | 100% - 25% load, 25% load step change, 3.3 & 5Vout<br>100% - 25% load, 25% load step change, Others |                                           | ±5<br>±3 | %      |
| Start up time                   |                                                                                                     | 30                                        |          | ms     |
| Absolute Maximum Rating         | 5 Vin<br>12 Vin<br>24 Vin<br>48 Vin                                                                 | -0.7-15<br>-0.7-25<br>-0.7-50<br>-0.7-100 |          | VDC    |
| Peak Input Voltage Time         |                                                                                                     |                                           | 100      | ms     |
| Input reflected ripple current* |                                                                                                     | 30                                        |          | mA p-p |
| On/Off Control                  | ON – high impedance or open;<br>OFF – 2-4mA input current through 1KΩ (standby 2.5mA max)           |                                           |          |        |

\* The input reflected ripple current should be measured with a 12μH inductor and a 47μF input capacitor (ESR<1Ω at 100 KHz)

## Isolation Specifications

| Parameters         | Conditions | Typical | Rated       | Units |
|--------------------|------------|---------|-------------|-------|
| Tested I/O voltage | 60 sec     |         | 1500 & 3000 | VDC   |
| Resistance         |            | > 1000  |             | MOhm  |
| Capacitance        |            | 50      |             | pF    |

## Output Specifications

| Parameters               | Conditions                                    | Typical | Maximum | Units  |
|--------------------------|-----------------------------------------------|---------|---------|--------|
| Voltage accuracy         |                                               | ±1      |         | %      |
| Cross Regulation (Dual)  | 1st output 25-100% load, 2nd output 100% load | ±5      |         | %      |
| Short Circuit protection | Continuous                                    |         |         |        |
| Short Circuit restart    | Auto recovery                                 |         |         |        |
| Line voltage regulation  | LL~HL                                         |         | ±0.2    | %      |
| Load voltage regulation  | 0-100% load                                   |         | ±1      | %      |
| Temperature coefficient  |                                               | ±0.02   |         | %/°C   |
| Ripple & Noise*          | At 20MHz Bandwidth                            |         | 75      | mV p-p |

\* Measured with a 0.1µF CC and a 10µF EC.

## General Specifications

| Parameters              | Conditions                                            | Typical     | Maximum | Units |
|-------------------------|-------------------------------------------------------|-------------|---------|-------|
| Switching frequency     | 100% load                                             | >100        |         | KHz   |
| Operating temperature   | See Derating Chart                                    | -40 to +85  |         | °C    |
| Storage temperature     |                                                       | -55 to +125 |         | °C    |
| Max Case temperature    |                                                       |             | +105    | °C    |
| Cooling                 | Free air convection                                   |             |         |       |
| Humidity                |                                                       |             | 95      | %     |
| Case material           | Non-conductive black plastic                          |             |         |       |
| Pin Material            | C5191R-H Solder coated                                |             |         |       |
| Weight                  |                                                       | 4.5         |         | g     |
| Dimensions (L x W x H)  | 0.86 x 0.36 x 0.44 inch 21.85 x 9.20 x 11.10 mm       |             |         |       |
| MTBF                    | >770,000 hrs (MIL-HDBK -217F, Ground Benign, t=+25°C) |             |         |       |
| Maximum soldering temp. | 1.5mm from case for 10 second                         |             | 260     | °C    |

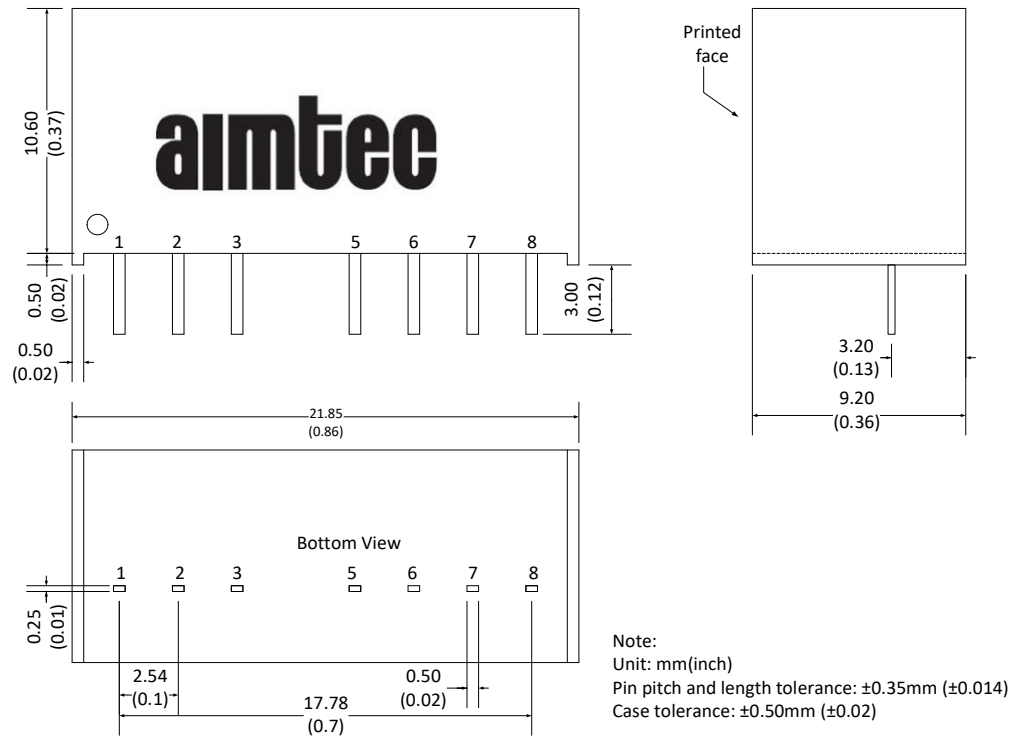
## Safety Specifications

| Parameters      |                                                                   |
|-----------------|-------------------------------------------------------------------|
| Agency Approval | CE, UL (EN/UL 60950-1, 62368-1)                                   |
| Standards       | EN 55032, Class A, with external EMI filter circuit               |
|                 | Designed to meet IEC60950-1, 62368-1                              |
|                 | IEC61000-4-2, Perf. Criteria A                                    |
|                 | IEC61000-4-3, Perf. Criteria A                                    |
|                 | IEC61000-4-4, Perf. Criteria A (external 330uF/100V cap required) |
|                 | IEC61000-4-5, Perf. Criteria A (external 330uF/100V cap required) |
|                 | IEC61000-4-6, Perf. Criteria A                                    |
|                 | IEC61000-4-8, Perf. Criteria A                                    |

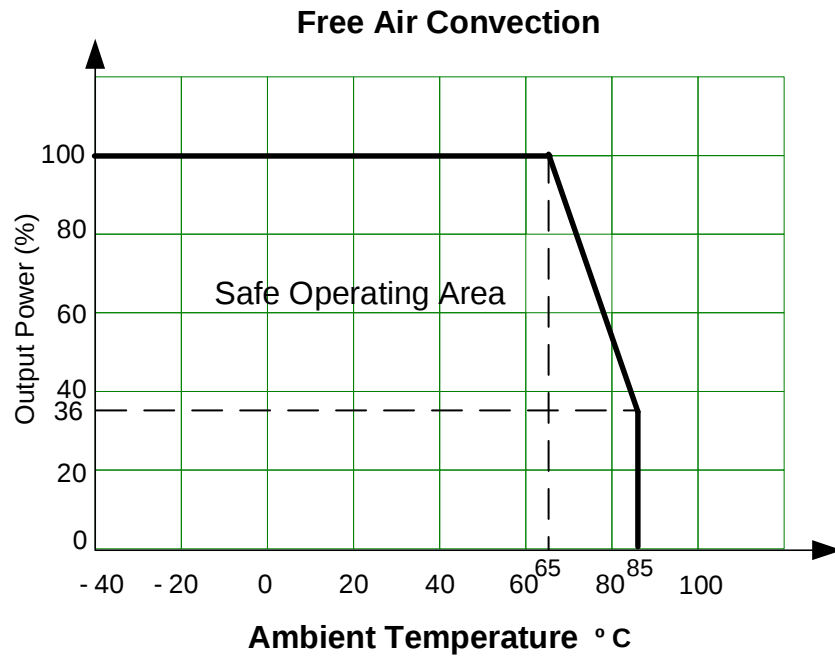
### Pin Out Specifications

| Pin | 1500 & 3000VDC |                |
|-----|----------------|----------------|
|     | Single         | Dual           |
| 1   | - V Input      | - V Input      |
| 2   | + V Input      | + V Input      |
| 3   | On/Off Control | On/Off Control |
| 5   | N.C.           | N.C.           |
| 6   | + V Output     | + V Output     |
| 7   | - V Output     | Common         |
| 8   | N.C.           | - V Output     |

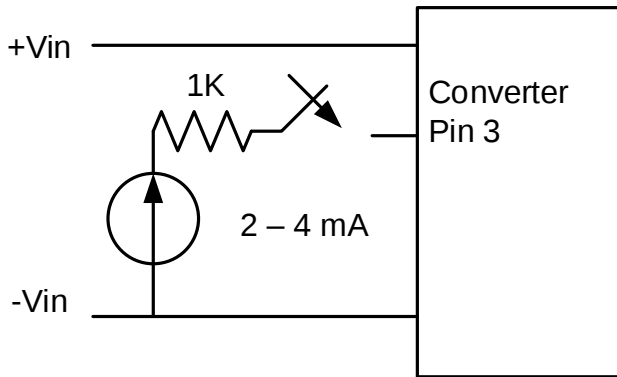
### Dimensions



### Derating

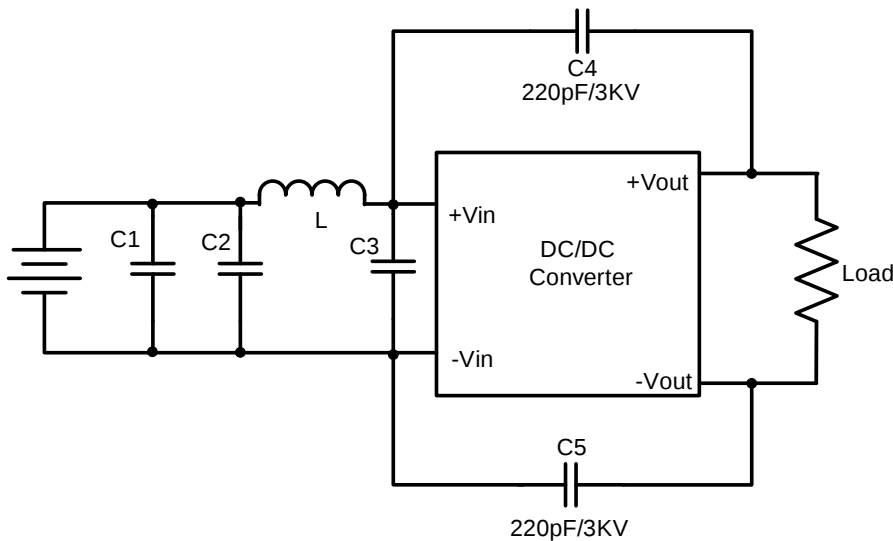


### Control ON/OFF pin connection example:



The voltage could be applied through a limiting resistor.  
The converter is turned on when the external switching circuit is open.

### EMI recommended circuit



| Input Voltage | C1         | C2 & C3    | L    |
|---------------|------------|------------|------|
| 5V            | 220uF/100V | 22uF/25V   | 10uH |
| 12V & 24V     | -          | 10uF/50V   |      |
| 48V           |            | 2.2uF/100V | 15uH |

**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 than 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).