

## Series AM3G-NZ

### 3 Watt | DC-DC Converter

#### FEATURES:



- 1500 and 3000VDC I/O Isolation
- Very low no load consumption
- Remote On/Off Control
- 8 pin SIP package

- Operating temperature -40°C to 100°C
- Continuous Short circuit protection
- Wide 2:1 input range
- High efficiency up to 84%



#### Models

#### Single output

| Model            | Input Voltage (V) | Output Voltage(V) | Output Current max (mA) | Isolation (VDC) | Capacitor Load (μF) | Efficiency (%) |
|------------------|-------------------|-------------------|-------------------------|-----------------|---------------------|----------------|
| AM3G-0505S-NZ    | 4.5-9             | 5                 | 500                     | 1500            | 2200                | 73             |
| AM3G-0509S-NZ    | 4.5-9             | 9                 | 278                     | 1500            | 1000                | 74             |
| AM3G-0512S-NZ    | 4.5-9             | 12                | 208                     | 1500            | 680                 | 77             |
| AM3G-0515S-NZ    | 4.5-9             | 15                | 167                     | 1500            | 470                 | 74             |
| AM3G-1203S-NZ    | 9-18              | 3.3               | 758                     | 1500            | 2700                | 75             |
| AM3G-1205S-NZ    | 9-18              | 5                 | 600                     | 1500            | 2200                | 76             |
| AM3G-1209S-NZ    | 9-18              | 9                 | 333                     | 1500            | 1000                | 79             |
| AM3G-1212S-NZ    | 9-18              | 12                | 250                     | 1500            | 680                 | 82             |
| AM3G-1215S-NZ    | 9-18              | 15                | 200                     | 1500            | 470                 | 83             |
| AM3G-1224S-NZ    | 9-18              | 24                | 125                     | 1500            | 330                 | 81             |
| AM3G-2403S-NZ    | 18-36             | 3.3               | 758                     | 1500            | 2700                | 74             |
| AM3G-2405S-NZ    | 18-36             | 5                 | 600                     | 1500            | 2200                | 81             |
| AM3G-2409S-NZ    | 18-36             | 9                 | 333                     | 1500            | 1000                | 83             |
| AM3G-2412S-NZ    | 18-36             | 12                | 250                     | 1500            | 680                 | 83             |
| AM3G-2415S-NZ    | 18-36             | 15                | 200                     | 1500            | 470                 | 83             |
| AM3G-2424S-NZ    | 18-36             | 24                | 125                     | 1500            | 330                 | 83             |
| AM3G-4803S-NZ    | 36-75             | 3.3               | 758                     | 1500            | 2700                | 75             |
| AM3G-4805S-NZ    | 36-75             | 5                 | 600                     | 1500            | 2200                | 76             |
| AM3G-4812S-NZ    | 36-75             | 12                | 250                     | 1500            | 680                 | 80             |
| AM3G-4815S-NZ    | 36-75             | 15                | 200                     | 1500            | 470                 | 84             |
| AM3G-4824S-NZ    | 36-75             | 24                | 125                     | 1500            | 330                 | 82             |
| AM3G-0505SH30-NZ | 4.5-9             | 5                 | 500                     | 3000            | 2200                | 73             |
| AM3G-0509SH30-NZ | 4.5-9             | 9                 | 278                     | 3000            | 1000                | 74             |
| AM3G-0512SH30-NZ | 4.5-9             | 12                | 208                     | 3000            | 680                 | 77             |
| AM3G-0515SH30-NZ | 4.5-9             | 15                | 167                     | 3000            | 470                 | 74             |
| AM3G-1203SH30-NZ | 9-18              | 3.3               | 758                     | 3000            | 2700                | 75             |
| AM3G-1205SH30-NZ | 9-18              | 5                 | 600                     | 3000            | 2200                | 76             |
| AM3G-1209SH30-NZ | 9-18              | 9                 | 333                     | 3000            | 1000                | 79             |
| AM3G-1212SH30-NZ | 9-18              | 12                | 250                     | 3000            | 680                 | 82             |
| AM3G-1215SH30-NZ | 9-18              | 15                | 200                     | 3000            | 470                 | 83             |
| AM3G-1224SH30-NZ | 9-18              | 24                | 125                     | 3000            | 330                 | 81             |
| AM3G-2403SH30-NZ | 18-36             | 3.3               | 758                     | 3000            | 2700                | 74             |
| AM3G-2405SH30-NZ | 18-36             | 5                 | 600                     | 3000            | 2200                | 81             |
| AM3G-2409SH30-NZ | 18-36             | 9                 | 333                     | 3000            | 1000                | 83             |
| AM3G-2412SH30-NZ | 18-36             | 12                | 250                     | 3000            | 680                 | 83             |
| AM3G-2415SH30-NZ | 18-36             | 15                | 200                     | 3000            | 470                 | 83             |
| AM3G-2424SH30-NZ | 18-36             | 24                | 125                     | 3000            | 330                 | 83             |
| AM3G-4803SH30-NZ | 36-75             | 3.3               | 758                     | 3000            | 2700                | 75             |
| AM3G-4805SH30-NZ | 36-75             | 5                 | 600                     | 3000            | 2000                | 76             |
| AM3G-4812SH30-NZ | 36-75             | 12                | 250                     | 3000            | 680                 | 80             |
| AM3G-4815SH30-NZ | 36-75             | 15                | 200                     | 3000            | 470                 | 84             |

### Models

#### Dual output

| Model            | Input Voltage (V) | Output Voltage(V) | Output Current max (mA) | Isolation (VDC) | Capacitor Load (μF) | Efficiency (%) |
|------------------|-------------------|-------------------|-------------------------|-----------------|---------------------|----------------|
| AM3G-0505D-NZ    | 4.5-9             | ±5                | ±250                    | 1500            | ±1000               | 74             |
| AM3G-0512D-NZ    | 4.5-9             | ±12               | ±104                    | 1500            | ±470                | 77             |
| AM3G-0515D-NZ    | 4.5-9             | ±15               | ±83                     | 1500            | ±330                | 77             |
| AM3G-1205D-NZ    | 9-18              | ±5                | ±300                    | 1500            | ±1000               | 78             |
| AM3G-1209D-NZ    | 9-18              | ±9                | ±167                    | 1500            | ±680                | 79             |
| AM3G-1212D-NZ    | 9-18              | ±12               | ±125                    | 1500            | ±470                | 80             |
| AM3G-1215D-NZ    | 9-18              | ±15               | ±100                    | 1500            | ±330                | 80             |
| AM3G-2405D-NZ    | 18-36             | ±5                | ±300                    | 1500            | ±1000               | 78             |
| AM3G-2409D-NZ    | 18-36             | ±9                | ±167                    | 1500            | ±680                | 81             |
| AM3G-2412D-NZ    | 18-36             | ±12               | ±125                    | 1500            | ±470                | 83             |
| AM3G-2415D-NZ    | 18-36             | ±15               | ±100                    | 1500            | ±330                | 83             |
| AM3G-4805D-NZ    | 36-75             | ±5                | ±300                    | 1500            | ±680                | 80             |
| AM3G-4812D-NZ    | 36-75             | ±12               | ±125                    | 1500            | ±470                | 82             |
| AM3G-4815D-NZ    | 36-75             | ±15               | ±100                    | 1500            | ±330                | 82             |
| AM3G-0505DH30-NZ | 4.5-9             | ±5                | ±250                    | 3000            | ±1000               | 74             |
| AM3G-0512DH30-NZ | 4.5-9             | ±12               | ±104                    | 3000            | ±470                | 77             |
| AM3G-0515DH30-NZ | 4.5-9             | ±15               | ±83                     | 3000            | ±330                | 77             |
| AM3G-1205DH30-NZ | 9-18              | ±5                | ±300                    | 3000            | ±1000               | 78             |
| AM3G-1212DH30-NZ | 9-18              | ±12               | ±125                    | 3000            | ±470                | 79             |
| AM3G-1215DH30-NZ | 9-18              | ±15               | ±100                    | 3000            | ±330                | 80             |
| AM3G-2405DH30-NZ | 18-36             | ±5                | ±300                    | 3000            | ±1000               | 79             |
| AM3G-2409DH30-NZ | 18-36             | ±9                | ±167                    | 3000            | ±680                | 81             |
| AM3G-2412DH30-NZ | 18-36             | ±12               | ±125                    | 3000            | ±470                | 83             |
| AM3G-2415DH30-NZ | 18-36             | ±15               | ±100                    | 3000            | ±330                | 83             |
| AM3G-4805DH30-NZ | 36-75             | ±5                | ±300                    | 3000            | ±1000               | 79             |
| AM3G-4812DH30-NZ | 36-75             | ±12               | ±125                    | 3000            | ±470                | 82             |
| AM3G-4815DH30-NZ | 36-75             | ±15               | ±100                    | 3000            | ±330                | 82             |

### 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                                          |                                 |         |       |
| Maximum Rating                 | 5 Vin<br>12 Vin<br>24 Vin<br>48 Vin                | 12<br>25<br>50<br>100           |         | VDC   |
| Peak Input Voltage time        |                                                    |                                 | 1       | sec   |
| No load input current          | 5 Vin<br>12 Vin<br>24 Vin<br>48 Vin                | 40<br>20<br>7<br>7              |         | mA    |
| Input Reflected Ripple Current | 5 Vin<br>12 Vin<br>24 Vin<br>48 Vin                | 30<br>30<br>110<br>45           |         | mA    |
| On/Off Control*                | ON – open or Isolated; OFF – high (current 5-10mA) |                                 |         |       |

\*Note: Exceeding 20mA of control current will permanently damage the converter.

## Isolation Specifications

| Parameters         | Conditions  | Typical | Rated      | Units |
|--------------------|-------------|---------|------------|-------|
| Tested I/O voltage | 60sec, <1mA |         | 1500, 3000 | VDC   |
| Resistance         |             | > 1000  |            | MOhm  |
| Capacitance        | 100kHz, 1V  | 50      |            | pF    |

## Output Specifications

| Parameters                   | Conditions                | Typical       | Maximum | Units  |
|------------------------------|---------------------------|---------------|---------|--------|
| Voltage accuracy             | 5 to 100% load            | ±2            |         | %      |
| No Load Voltage accuracy     |                           | ±5            |         |        |
| Voltage balance              | Dual Output balanced load | ±1            |         | %      |
| Short Circuit Protection     |                           | Continuous    |         |        |
| Short Circuit Restart        |                           | Auto-recovery |         |        |
| Line voltage regulation      | LL~HL                     | ±0.5          |         | %      |
| Load voltage regulation      | load 5~100%               | ±0.6          |         | %      |
| Temperature coefficient      |                           | ±0.02         |         | %/°C   |
| Transient Recovery Time      | 25% load step             | 2             |         | msec   |
| Transient Response Deviation | 25% load step             | ±5            |         | %      |
| Ripple                       | At 20MHz Bandwidth        | 50            |         | mV p-p |
| Noise                        | At 20MHz Bandwidth        | 80            |         | mV p-p |

## General Specifications

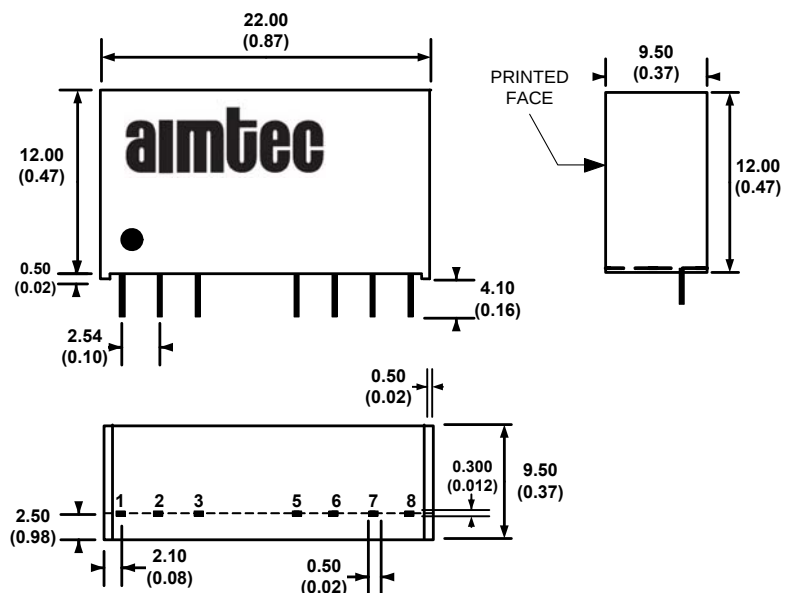
| Parameters             | Conditions                     | Typical                                                 | Maximum | Units |
|------------------------|--------------------------------|---------------------------------------------------------|---------|-------|
| Switching frequency    | 100% load                      | 250                                                     |         | KHz   |
| Operating temperature  | With derating above 85°C       | -40 to +100                                             |         | °C    |
| Storage temperature    |                                | -55 to +125                                             |         | °C    |
| Case Temperature       |                                | 105                                                     |         | °C    |
| Lead Temperature       | 1.5mm from case for 10 Seconds | 300                                                     |         | °C    |
| Cooling                |                                | Free air convection                                     |         |       |
| Humidity               |                                |                                                         | 95      | %     |
| Case material          |                                | Plastic (UL94V-0 rated)                                 |         |       |
| Weight                 |                                | 4.9                                                     |         | g     |
| Dimensions (L x W x H) |                                | 0.87 x 0.37 x 0.47 inch, 22 x 9.5 x 12 mm               |         |       |
| MTBF                   |                                | >1 000 000 hrs (MIL-HDBK -217F, Ground Benign, t=+25°C) |         |       |

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.

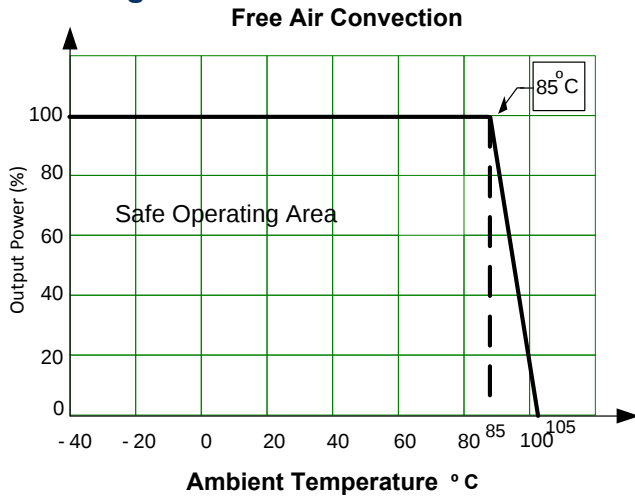
## Pin Out Specifications

| Pin | 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   | CS             | - V Output     |

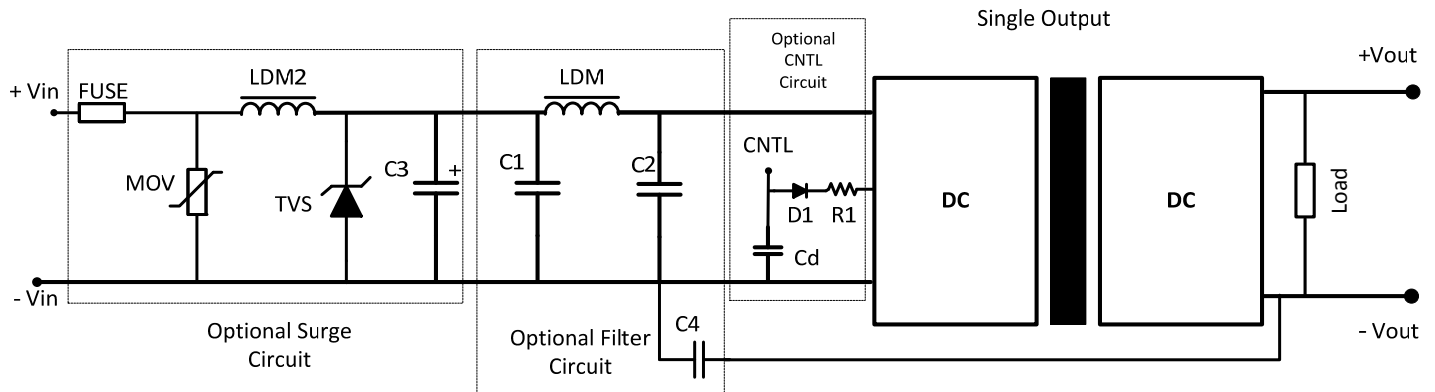
## Dimensions



### Derating



### Recommended EMC Circuit



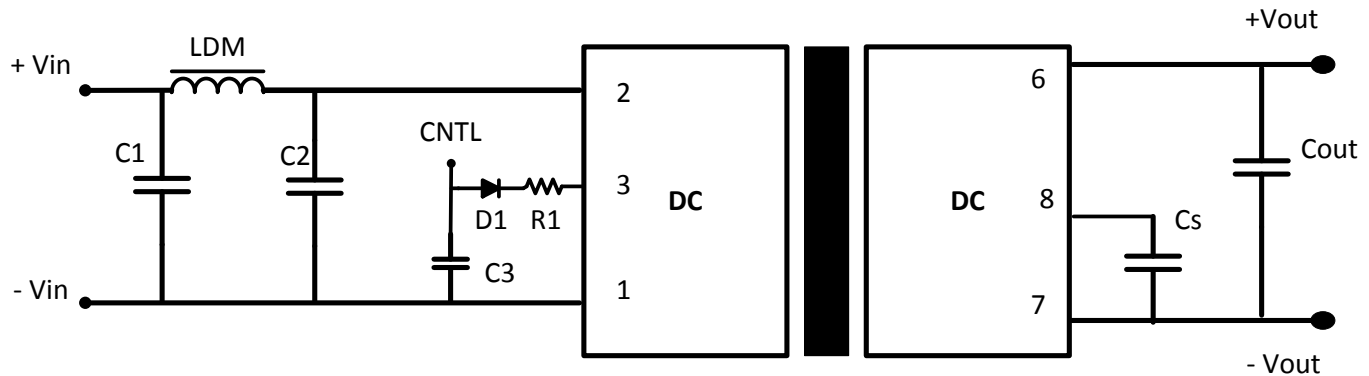
| Model  | C1, C2       | C4        | LDM   | MOV    | TVS     | C3           | LDM2 | Cd          | D1           | R1          |
|--------|--------------|-----------|-------|--------|---------|--------------|------|-------------|--------------|-------------|
| 5 Vin  | 4.7μF / 50V  | 1nF / 3KV | 12 μH | -      | SMCJ13A | 680μF / 16V  | -    | 47nF / 100V | RB160M-60/1A | See Formula |
| 12 Vin | 4.7μF / 50V  | 1nF / 3KV | 12 μH | -      | SMCJ28A | 680μF / 25V  | -    | 47nF / 100V | RB160M-60/1A | See Formula |
| 24 Vin | 4.7μF / 50V  | 1nF / 3KV | 12 μH | S14K35 | SMCJ48A | 330μF / 50V  | 56μH | 47nF / 100V | RB160M-60/1A | See Formula |
| 48 Vin | 4.7μF / 100V | 1nF / 3KV | 12 μH | S14K60 | SMCJ90A | 330μF / 100V | 56μH | 47nF / 100V | RB160M-60/1A | See Formula |

Note: Fuse is user selectable

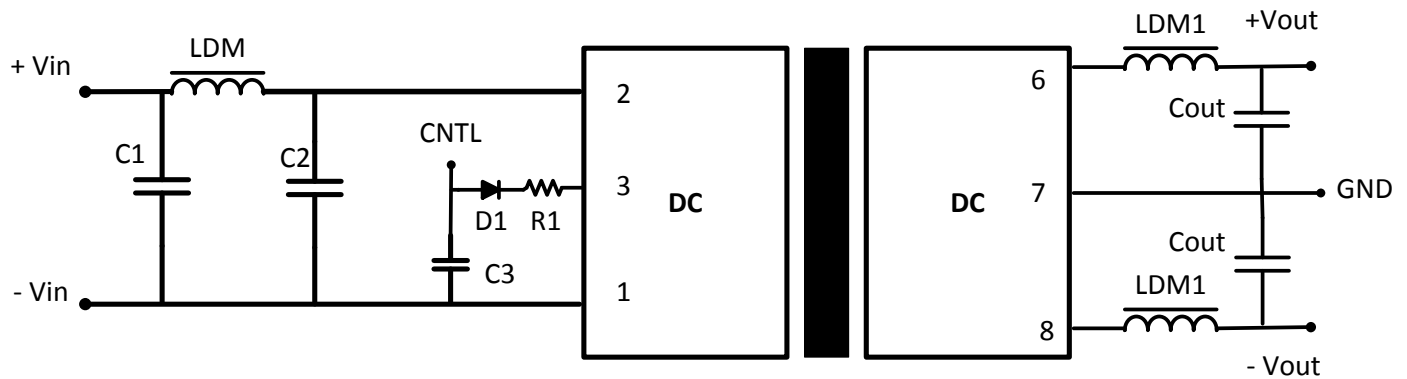
$$R1 = ((V_{cd} - V_{d1} - 1.0) / I_{cntl}) - 300$$

## Recommended Circuits

### Single Output



### Dual Output



| Model  | C1    | C2   | LDM         | C3          | D1           | R1          | LDM1        | CS        | Cout  |
|--------|-------|------|-------------|-------------|--------------|-------------|-------------|-----------|-------|
| 5 Vin  | 100μF | 47μF | 4.7 - 12 μH | 47μF / 100V | RB160M-60/1A | See Formula | 2.2 - 10 μH | 10 - 22μF | 100μF |
| 12 Vin | 100μF | 47μF | 4.7 - 12 μH | 47μF / 100V | RB160M-60/1A | See Formula | 2.2 - 10 μH | 10 - 22μF | 100μF |
| 24 Vin | 10μF  | 1μF  | 4.7 - 12 μH | 47μF / 100V | RB160M-60/1A | See Formula | 2.2 - 10μH  | 10 - 22μF | 100μF |
| 48 Vin | 10μF  | 1μF  | 4.7 - 12 μH | 47μF / 100V | RB160M-60/1A | See Formula | 2.2 - 10 μH | 10 - 22μF | 100μF |

$$R1 = ((V_{cd} - V_{d1} - 1.0) / I_{cntl}) - 300$$

**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).