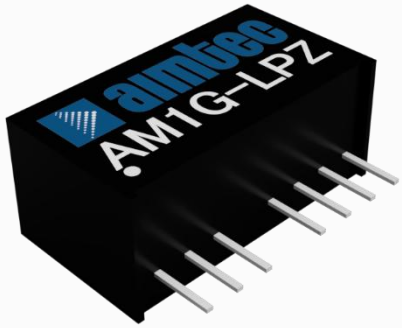
Click to ORDER samples

# AM1G-LPZ




SIP8 Package

The AM1G-LPZ is a 1W SIP8 DC/DC converter that offers great cost savings thanks to an improved manufacturing process. It also features excellent reliability and performance while offering a wide input voltage range of 4.5-75VDC as well as an output voltage of -15 to 24V. This compact SIP8 design will surely benefit your new system design.

This new series offers a great operating temperature range from -40 to 85°C. Also, an isolation of 1500VDC for improved reliability and system safety as well as a great 1,000,000h MTBF come standard.

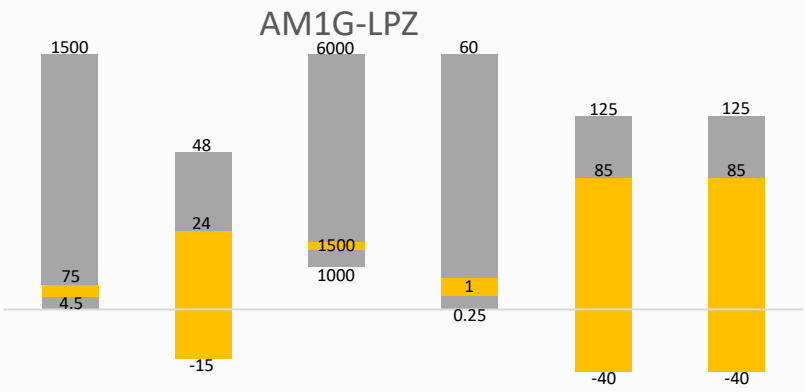
The AM1G-LPZ is suitable for many applications such as industrial systems, portable equipment, and internet of things.

## Features

- High I/O Isolation of 1500VDC
- Continuous Short circuit protection
- Operating Temp: -40 °C to +85 °C
- Industry standard SIP8 pin-out
- Regulated output

RoHS · 3yr Warranty · CE · cULus

## Summary




## Training

Product Training Video (click to open)

Press Release

Coming Soon!

Application Notes

## Applications

Industrial · Portable Equipment · IoT



Downloaded from Arrow.com.

# Models & Specifications

| Single Output | | | | | | |
|---|---|---|---|---|---|---|
| Model | Input Voltage (VDC) | Output Voltage (VDC) | Output Current Max/Min (mA) | Isolation (VDC) | Maximum Capacitive Load (µF) | Efficiency Typ. (%) |
| AM1G-0503SLPZ* | 5 (4.5-9) | 3.3 | 303/15 | 1500 | 1800 | 71 |
| AM1G-0505SLPZ* | 5 (4.5-9) | 5 | 200/10 | 1500 | 2200 | 72 |
| AM1G-0512SLPZ* | 5 (4.5-9) | 12 | 83/4 | 1500 | 680 | 76 |
| AM1G-0515SLPZ* | 5 (4.5-9) | 15 | 67/3 | 1500 | 470 | 75 |
| AM1G-0524SLPZ* | 5 (4.5-9) | 24 | 42/2 | 1500 | 330 | 73 |
| AM1G-1203SLPZ* | 12 (9-18) | 3.3 | 303/15 | 1500 | 2700 | 75 |
| AM1G-1205SLPZ* | 12 (9-18) | 5 | 200/10 | 1500 | 2200 | 77 |
| AM1G-1209SLPZ* | 12 (9-18) | 9 | 111/6 | 1500 | 1000 | 79 |
| AM1G-1212SLPZ* | 12 (9-18) | 12 | 83/4 | 1500 | 680 | 78 |
| AM1G-1215SLPZ* | 12 (9-18) | 15 | 67/3 | 1500 | 470 | 80 |
| AM1G-1224SLPZ* | 12 (9-18) | 24 | 42/2 | 1500 | 330 | 76 |
| AM1G-2403SLPZ* | 24 (18-36) | 3.3 | 303/15 | 1500 | 2700 | 75 |
| AM1G-2405SLPZ* | 24 (18-36) | 5 | 200/10 | 1500 | 2200 | 77 |
| AM1G-2412SLPZ* | 24 (18-36) | 12 | 83/4 | 1500 | 680 | 78 |
| AM1G-2415SLPZ* | 24 (18-36) | 15 | 67/3 | 1500 | 470 | 78 |
| AM1G-2424SLPZ* | 24 (18-36) | 24 | 42/2 | 1500 | 330 | 77 |
| AM1G-4803SLPZ | 48 (36-75) | 3.3 | 303/15 | 1500 | 2700 | 75 |
| AM1G-4805SLPZ | 48 (36-75) | 5 | 200/10 | 1500 | 2200 | 76 |
| AM1G-4812SLPZ | 48 (36-75) | 12 | 83/4 | 1500 | 680 | 80 |
| AM1G-4815SLPZ | 48 (36-75) | 15 | 67/3 | 1500 | 470 | 79 |

| Dual Output | | | | | | |
|---|---|---|---|---|---|---|
| Model | Input Voltage (VDC) | Output Voltage (VDC) | Output Current Max/Min (mA) | Isolation (VDC) | Maximum Capacitive Load (µF) | Efficiency Typ. (%) |
| AM1G-0505DLPZ* | 5 (4.5-9) | ±5 | ±100/±5 | 1500 | ±1000 | 73 |
| AM1G-0512DLPZ* | 5 (4.5-9) | ±12 | ±42/±2 | 1500 | ±470 | 76 |
| AM1G-0515DLPZ* | 5 (4.5-9) | ±15 | ±33/±2 | 1500 | ±330 | 75 |
| AM1G-1205DLPZ* | 12 (9-18) | ±5 | ±100/±5 | 1500 | ±1000 | 77 |
| AM1G-1212DLPZ* | 12 (9-18) | ±12 | ±42/±2 | 1500 | ±470 | 81 |
| AM1G-1215DLPZ* | 12 (9-18) | ±15 | ±33/±2 | 1500 | ±330 | 78 |
| AM1G-2405DLPZ* | 24 (18-36) | ±5 | ±100/±5 | 1500 | ±1000 | 79 |
| AM1G-2412DLPZ* | 24 (18-36) | ±12 | ±42/±2 | 1500 | ±470 | 78 |
| AM1G-2415DLPZ* | 24 (18-36) | ±15 | ±33/±2 | 1500 | ±330 | 78 |
| AM1G-4805DLPZ | 48 (36-75) | ±5 | ±100/±5 | 1500 | ±1000 | 76 |
| AM1G-4812DLPZ | 48 (36-75) | ±12 | ±42/±2 | 1500 | ±470 | 78 |
| AM1G-4815DLPZ | 48 (36-75) | ±15 | ±33/±2 | 1500 | ±330 | 80 |

| Input Specification | | | | |
|---|---|---|---|---|
| Parameters | Conditions | Typical | Maximum | Units |
| Input current | 5Vin | 281 | | mA |
| | 12Vin | 111 | | mA |


Downloaded from Arrow.com.

| | | | | |
|---|---|---|---|---|
| | 24Vin | 55 | | mA |
| | 48Vin | 27 | | mA |
| Filter | Capacitor | | | |
| Voltage Types | Vo, Io Nom | | 2:1 | |
| Maximum Rating | 5Vin | > -0.7 | 12 | VDC |
| | 12Vin | > -0.7 | 25 | VDC |
| | 24Vin | > -0.7 | 50 | VDC |
| | 48Vin | > -0.7 | 100 | VDC |
| Peak Input Voltage Time | | | 1 | Sec |
| No load input current | 5Vin | 40 | 60 | mA |
| | 12Vin | 15 | 30 | mA |
| | 24Vin | 6 | 10 | mA |
| | 48Vin | 4 | 6 | mA |
| Startup input voltage | 5Vin | | 4.5 | VDC |
| | 12Vin | | 9 | VDC |
| | 24Vin | | 18 | VDC |
| | 48Vin | | 36 | VDC |
| Input Reflected Ripple Current | 5Vin | 40 | | mA |
| | 12Vin | 40 | | mA |
| | 24Vin | 55 | | mA |
| | 48Vin | 55 | | mA |
| On/Off Control | ON – open or logic high, positive logic | >3.5 | 12 | VDC |
| | OFF – grounded or logic low, positive logic | >0 | 0.7 | VDC |
| | Control pin current, positive logic | 5 | 10 | mA |

## Isolation Specification

| Parameters | Conditions | Typical | Maximum | Units |
|---|---|---|---|---|
| Tested I/O voltage | 60 sec, leakage ≤ 1mA, other models | 1500 | | VDC |
| Resistance | 500VDC | >1000 | | MΩ |
| Capacitance | 100KHz, 0.1V | 120 | | pF |

## Output Specification

| Parameters | Conditions | Typical | Maximum | Units |
|---|---|---|---|---|
| Voltage Tolerance | 100% Full Load, 3.3Vout and 5Vout model | ±2 | ±5 | % |
| | 100% Full Load, others | ±1 | ±3 | % |
| Line Regulation | Full load, main output | ±0.2 | ±0.5 | % |
| | Full load, other output | ±0.5 | ±1 | % |
| Load regulation | 25% load step | ±0.5 | ±1 | % |
| Temperature coefficient | | ±0.02 | ±0.03 | %/°C |
| Transient Recovery Time | 25% load step | 0.5 | 3 | mS |
| Transient Response Deviation | 25% load step | ±2.5 | ±5 | % |
| Ripple & Noise* | | 80 | 150 | mV p-p |

* Ripple and Noise are measured at 20MHz bandwidth. Please refer to the application note for specific details.

## General Specifications

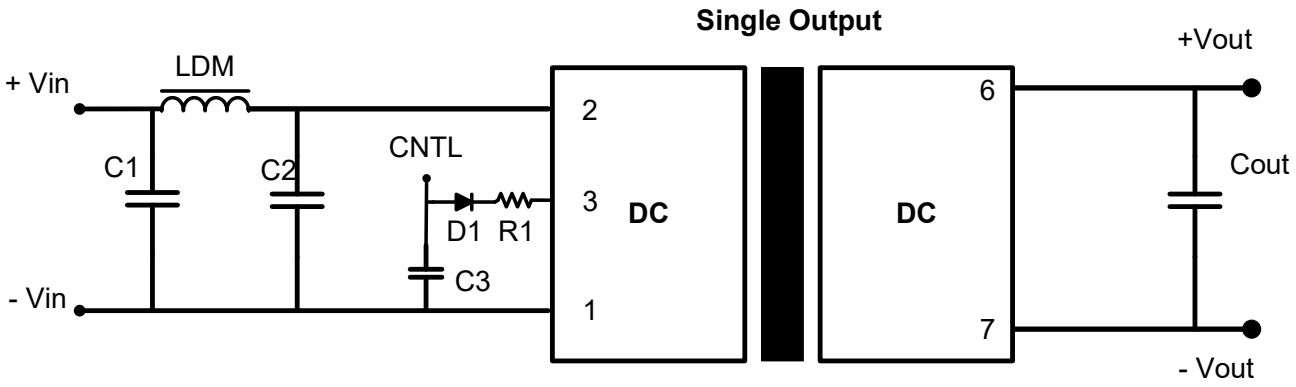
| Parameters | Conditions | Typical | Maximum | Units |
|---|---|---|---|---|
| Switching frequency | 100% load | 250 | | KHz |
| Short circuit protection | Continuous, auto-recovery | | | |


Downloaded from Arrow.com.

| | | | | |
|---|---|---|---|---|
| Operating temperature | Without derating | -40 to +85 | | °C |
| Storage temperature | | -55 to +125 | | °C |
| Lead Temperature | 1.5mm from case for 10 seconds | | 300 | °C |
| Cooling | Free air convection | | | |
| Humidity | Non-condensing | >5 | 95 | % RH |
| Case material | Plastic (UL94V-0) | | | |
| Weight | | 4.5 | | g |
| Dimensions (L x W x H) | 0.87 x 0.37 x 0.47 inches (22.00 x 9.50 x 12.00 mm) | | | |
| MTBF | 1 000 000 hrs (MIL-HDBK -217F, t=+25°C) / Full Load | | | |
| 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. | | | | |

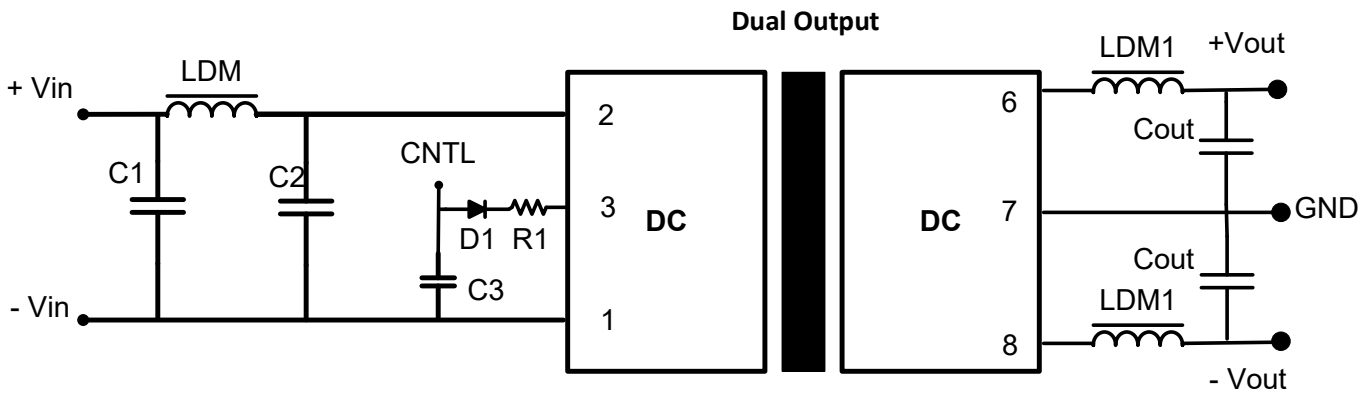
| Safety Specifications | | |
|---|---|---|
| Parameters | | |
| Agency Approvals | UL 62368-1 models marked with * only | |
| Standards | Designed to meet UL/EN/IEC 62368-1 | |
| | EMI - Conducted and radiated emission | CISPR32/EN55032 Class B with EMI recommended circuit |
| | Electrostatic Discharge Immunity | IEC/EN 61000-4-2, Contact ±4KVperf. Criteria B |
| | RF, Electromagnetic Field Immunity | IEC/EN 61000-4-3, 10V/m, Criteria A |
| | Electrical Fast Transient/Burst Immunity | IEC/EN 61000-4-4, ±2KV with recommended EMC circuit, Criteria B |
| | Surge Immunity | IEC/EN 61000-4-5, L-L ±2KV, Criteria B |
| | RF, Conducted Disturbance Immunity | IEC/EN 61000-4-6, 3 Vr.m.s, Criteria A |

## Typical application circuit





Downloaded from Arrow.com.

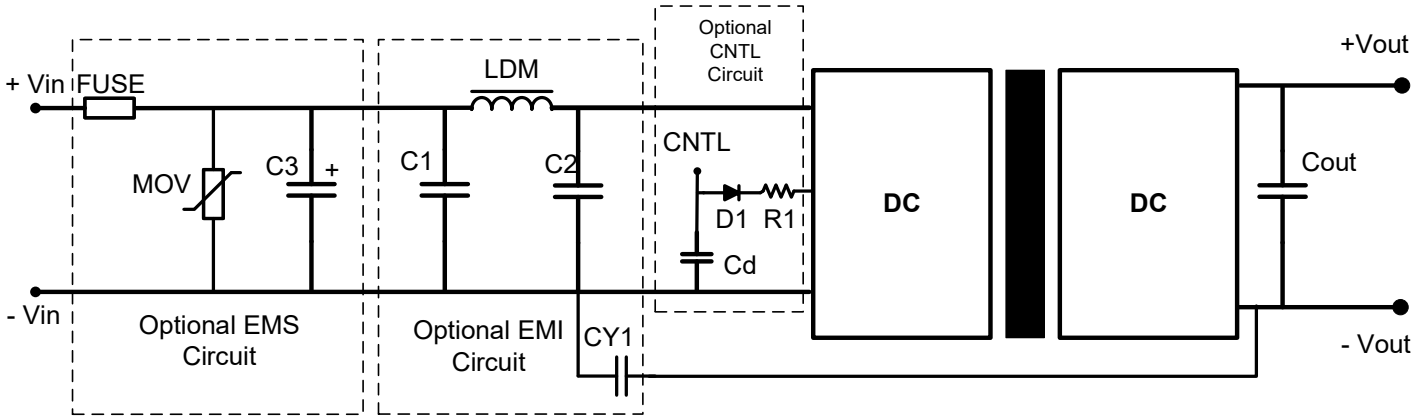



| Model | C1 | C2 | Cout | C3 | LDM | LDM1 | D1 | R1 |
|---|---|---|---|---|---|---|---|---|
| 5Vin | 100µF | 47µF | 100µF | 47nF/100V | 4.7µH~12µH | 2.2µH~10µH | 60V, 1A | See formula |
| 12Vin | 100µF | 47µF | 100µF | 47nF/100V | 4.7µH~12µH | 2.2µH~10µH | 60V, 1A | See formula |
| 24Vin | 10µF | 1µF | 100µF | 47nF/100V | 4.7µH~12µH | 2.2µH~10µH | 60V, 1A | See formula |
| 48Vin | 10µF | 1µF | 100µF | 47nF/100V | 4.7µH~12µH | 2.2µH~10µH | 60V, 1A | See formula |

***Resistor R may be calculated using following formula:** $R1 = \frac{V_C - V_D - 1.0}{I_C} - 300$

***VC is the Ctrl to GND voltage, VD is voltage drop on D1, IC is current flow into Ctrl.**

## EMI recommended circuit

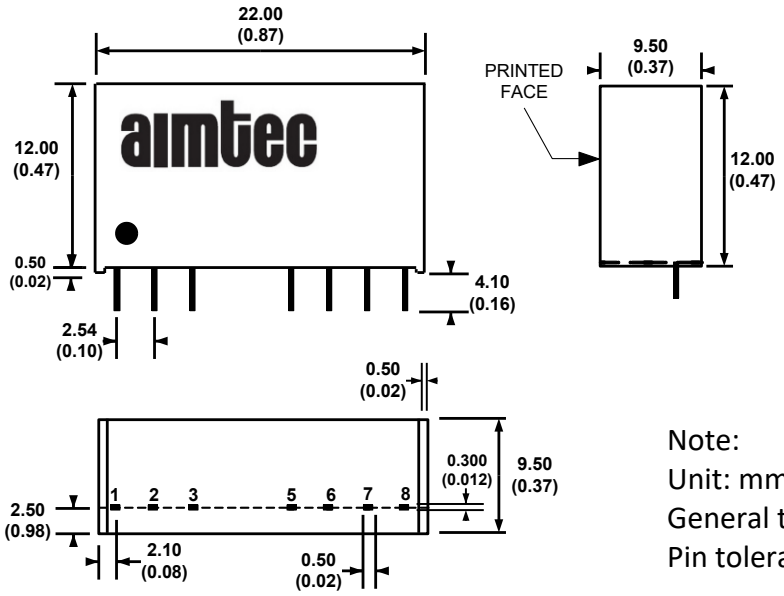



| Model | C3 | C1, C2 | Cd | CY1 | D1 | LDM | MOV | R1 | Cout |
|---|---|---|---|---|---|---|---|---|---|
| 5Vin | 1000µF, 25V | 4.7µF, 50V | 47nF/100V | 1nF/2000V | 60V, 1A | 12µH | - | See formula | 100µF |
| 12Vin | 1000µF, 25V | 4.7µF, 50V | 47nF/100V | 1nF/2000V | 60V, 1A | 12µH | 14D390K | See formula | 100µF |
| 24Vin | 330µF, 50V | 4.7µF, 50V | 47nF/100V | 1nF/2000V | 60V, 1A | 12µH | 14D560K | See formula | 100µF |
| 48Vin | 330µF, 100V | 4.7µF, 100V | 47nF/100V | 1nF/2000V | 60V, 1A | 12µH | 14D101K | See formula | 100µF |

Note: Fuse is user selectable, slow blow type
R1 = ((Vcd – Vd1 – 1.0) / Icntl) - 300


Downloaded from Arrow.com.

## Dimensions




| Pin Out Specifications | | |
|---|---|---|
| Pin | Single output | Dual output |
| 1 | -V Input | -V Input |
| 2 | +V Input | +V Input |
| 3 | Ctrl-Control input (can be left open) | Ctrl-Control input (can be left open) |
| 5 | N.C. | N.C. |
| 6 | +V Output | +V Output |
| 7 | -V Output | Common |
| 8 | N.C. | -V Output |

Note:
Unit: mm(inch)
General tolerances: ±0.25(±0.01)
Pin tolerance: ±0.10(±0.004)

**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 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 the ones listed in this datasheet. **7.** Warranty is in accordance with Aimtec's standard Terms of Sale available at www.aimtec.com.


Downloaded from Arrow.com.