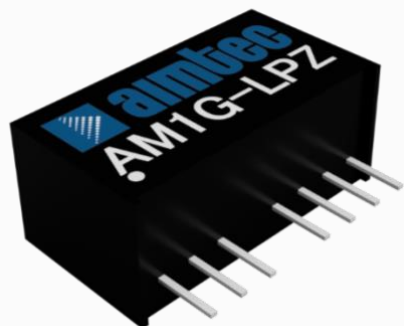


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## AM1G-LPZ



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.

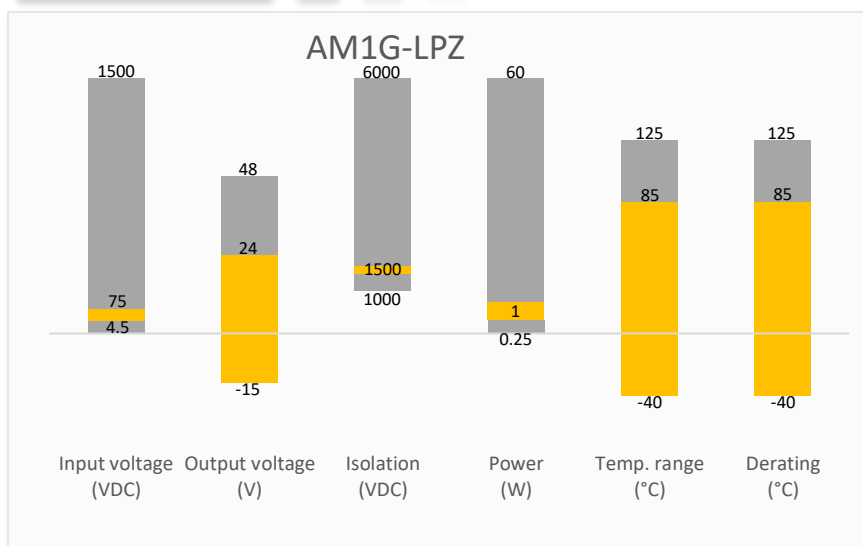
The AM1G-LPZ is suitable for many applications such as industrial systems, portable equipment, and internet of things.

## 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



## Summary



## Training



Product Training Video  
(click to open)



Press Release

Coming Soon!

Application Notes

## Applications



Industrial



Portable Equipment



IoT

## 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                    | 200/15                      | 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 | 5V <sub>in</sub>  | 281     |         | mA    |
|               | 12V <sub>in</sub> | 111     |         | mA    |
|               | 24V <sub>in</sub> | 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                               | ±0.2    | ±0.5    | %      |
| Load regulation              | 25% load step                           | ±0.5    | ±1      | %      |
| Temperature coefficient      |                                         | ±0.02   | ±0.03   | %/°C   |
| Transient Recovery Time      | 25% load step                           | 0.5     | 2       | 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      |             |         |       |
| Operating temperature    |                                | -40 to +85  |         | °C    |
| Storage temperature      |                                | -55 to +125 |         | °C    |
| Lead Temperature         | 1.5mm from case for 10 seconds |             | 300     | °C    |

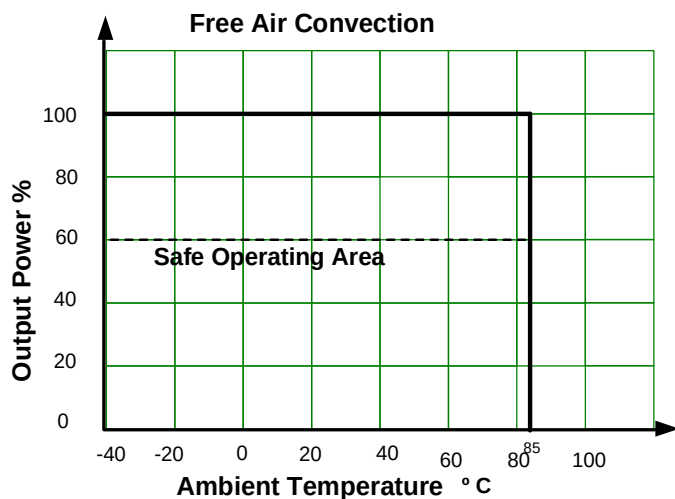
|                                                                                                                                                                                     |                                                     |    |    |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|----|----|------|
| Cooling                                                                                                                                                                             | Free air convection                                 |    |    |      |
| Humidity                                                                                                                                                                            | Non-condensing                                      | >5 | 95 | % RH |
| Case material                                                                                                                                                                       | Plastic (UL94V-0)                                   |    |    |      |
| Weight                                                                                                                                                                              |                                                     | 4  |    | 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

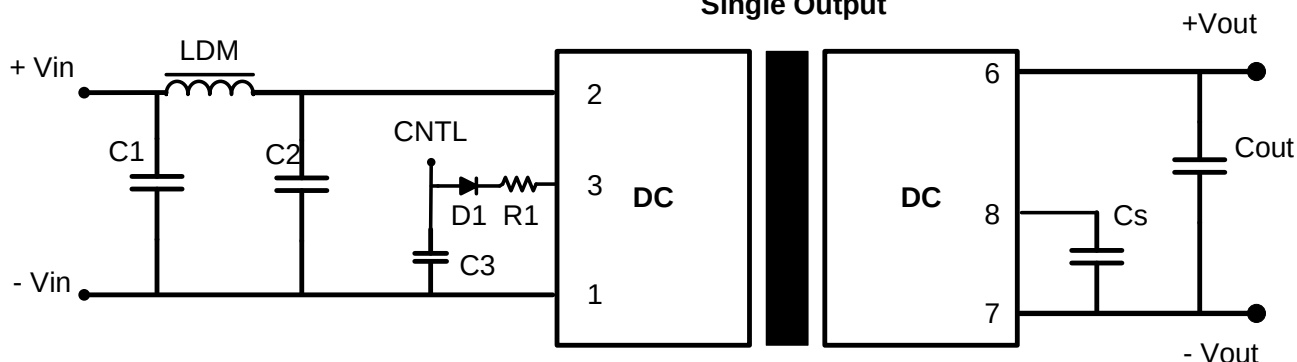
|           |                                                                 |                                                                             |
|-----------|-----------------------------------------------------------------|-----------------------------------------------------------------------------|
| 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 $\pm 4\text{KV}$ perf. 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, $\pm 2\text{KV}$ with recommended EMC circuit, Criteria B |
|           | Surge Immunity                                                  | IEC/EN 61000-4-5, L-L $\pm 2\text{KV}$ , Criteria B                         |
|           | RF, Conducted Disturbance Immunity                              | IEC/EN 61000-4-6, 3 Vr.m.s, Criteria A                                      |
|           | Voltage dips, Short Interruptions & Voltage variations Immunity | IEC/EN 61000-4-29, 0-70%, Criteria B                                        |

## Derating

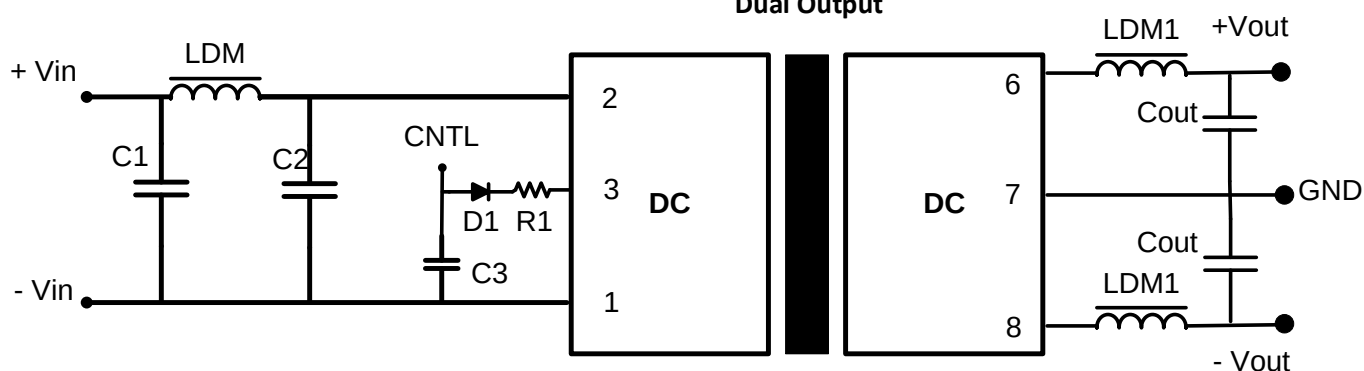


## Typical application circuit

Single Output

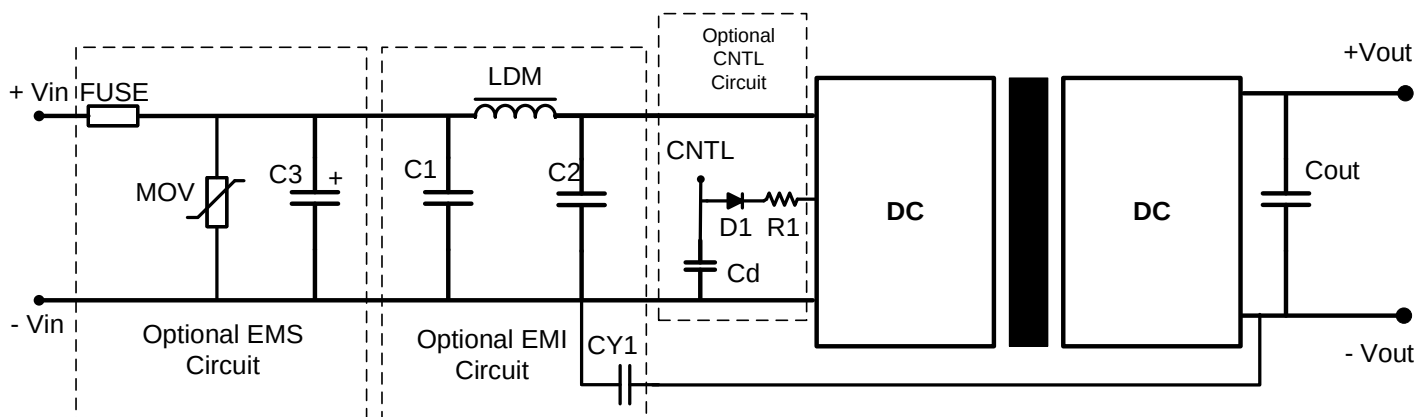


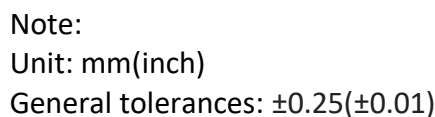
Dual Output



| Model | C1          | C2         | Cout        | C3        | Cs                    | LDM                   | LDM1                   | D1      | R1          |
|-------|-------------|------------|-------------|-----------|-----------------------|-----------------------|------------------------|---------|-------------|
| 5Vin  | 100 $\mu$ F | 47 $\mu$ F | 100 $\mu$ F | 47nF/100V | 10 $\mu$ F~22 $\mu$ F | 47 $\mu$ H~12 $\mu$ H | 2.2 $\mu$ H~10 $\mu$ H | 60V, 1A | See formula |
| 12Vin | 100 $\mu$ F | 47 $\mu$ F | 100 $\mu$ F | 47nF/100V | 10 $\mu$ F~22 $\mu$ F | 47 $\mu$ H~12 $\mu$ H | 2.2 $\mu$ H~10 $\mu$ H | 60V, 1A | See formula |
| 24Vin | 10 $\mu$ F  | 1 $\mu$ F  | 100 $\mu$ F | 47nF/100V | 10 $\mu$ F~22 $\mu$ F | 47 $\mu$ H~12 $\mu$ H | 2.2 $\mu$ H~10 $\mu$ H | 60V, 1A | See formula |
| 48Vin | 10 $\mu$ F  | 1 $\mu$ F  | 100 $\mu$ F | 47nF/100V | 10 $\mu$ F~22 $\mu$ F | 47 $\mu$ H~12 $\mu$ H | 2.2 $\mu$ H~10 $\mu$ H | 60V, 1A | See formula |

## EMI recommended circuit



$$R1 = (V_{cd} - V_{d1} - 1.0) / I_{cnt1} - 300$$


6