

Figure 1. The physic Photo of MP108

- Piezo Transducer Drive
- Industrial Instrumentation
- Reflectometers
- Ultra-Sound Transducer Drive

### DESCRIPTION

Upgraded replacement for MP108 with much higher efficiency upgraded replacement for MP108 with much higher efficiency thus produces much less heat. The MP108T operational amplifier is a surface mount constructed component that provides a cost-effective solution in many industrial applications. The MP108T has many optional features such as four-wire current limit sensing and external compensation. The 300kHz power bandwidth and 10A output of the MP108 makes it a good choice for piezo transducer drive applications. The MP108T is built on a thermally conductive but electrically insulating substrate that can be mounted to a heat sink.

### FEATURES

- High Voltage: 200V
- High Output Current: 10A
- 300kHz Power Bandwidth
- Low Cost

### APPLICATIONS

## ABSOLUTE MAXIMUM RATINGS

Table 1.

| Parameter                         | Symbol                             | Min. | Max.                               | Units |
|-----------------------------------|------------------------------------|------|------------------------------------|-------|
| Supply Voltage, total             | +V <sub>S</sub> to -V <sub>S</sub> |      | 200                                | V     |
| Supply Voltage, +V <sub>B</sub>   | +V <sub>B</sub>                    |      | 200                                | V     |
| Supply Voltage, -V <sub>B</sub>   | -V <sub>B</sub>                    |      | 200                                | V     |
| Output Current, peak, within SOA  | I <sub>O</sub>                     |      | 12                                 | A     |
| Power Dissipation, internal, DC   | P <sub>D</sub>                     |      | 30                                 | W     |
| Input Voltage                     |                                    |      | +V <sub>B</sub> to -V <sub>B</sub> | V     |
| Differential Input Voltage        |                                    |      | ±25                                | V     |
| Temperature, pin solder, 10s      |                                    |      | 225                                | °C    |
| Temperature, junction             | T <sub>J</sub>                     |      | 150                                | °C    |
| Temperature, storage              |                                    | -40  | +105                               | °C    |
| Operating Temperature Range, case | T <sub>C</sub>                     | -40  | +85                                | °C    |



## PIN DESCRIPTION

**Table 2. D-Sub Pin Function Descriptions**

| Pin #                 | Name | Description  |
|-----------------------|------|--|
| 1                     | TP   | Apex test pin, do not connect.   |
| 2                     | BPLT | AC coupling to backplate. Connect to signal ground.  |
| 3                     | GND  | Ground. Connect both pins to systemsignal ground.  |
| 4, 8 ,14, 15, 16      | +Vs  | The positive supply rail.  |
| 5, 6                  | CC   | Compensation capacitor connection. Select value based on Phase Compensation. See applicable section.   |
| 11, 12, 13,20, 21, 22 | +OUT | The output. Connect these pins to the MP108T side of the current limit resistor and the +CL pin. Output current is sourced from these pins through the current limit resistor to the load. |
| 17, 18, 19,25, 30     | -Vs  | The negative supply rail.  |
| 27                    | -CL  | Connect to the load side of the current limit resistor and feedback resistor. Current limit will activate as the voltage across R <sub>CL</sub> exceeds 0.65V.                             |
| 28                    | +CL  | Connect to the OUT side of the current limit resistor. Current limit will activate as the voltage across R <sub>CL</sub> exceeds 0.65 V.   |
| 32                    | 5V   | Input Supply Voltage for internal DC-DC.   |
| 33                    | +IN  | The non-inverting input.   |
| 34                    | -IN  | The inverting input.   |
| All Others            | NC   | No connection.   |

## SPECIFICATIONS

**Table 3. At T<sub>A</sub> = +25°C, V<sub>IN</sub> = 12V, unless otherwise noted.**

| Parameter                      | Test Conditions  | MP108T |      |      | MP108TA |                  |      | Unit  |
|--------------------------------|------------------|--------|------|------|---------|------------------|------|-------|
|                                |                  | Min.   | Typ. | Max. | Min.    | Typ.             | Max. |       |
| <b>INPUT</b>                   |                  |        |      |      |         |                  |      |       |
| Offset Voltage                 | 1                | 5      |      | *    | 3       | 1                | 5    | mV    |
| Offset Voltage vs. Temperature | 50               |        |      | *    |         | 50               |      | μV/°C |
| Offset Voltage vs. Supply      |                  | 20     |      |      | *       |                  | 20   | μV/V  |
| Bias Current, initial          |                  | 100    |      |      | 70      |                  | 100  | pA    |
| Bias Current vs. Supply        |                  | 0.1    |      |      | *       |                  | 0.1  | pA/V  |
| Offset Current, initial        |                  | 50     |      |      | 30      |                  | 50   | pA    |
| Input Resistance, DC           | 10 <sup>11</sup> |        |      | *    |         | 10 <sup>11</sup> |      | Ω     |



| Parameter                 | Test Conditions           | MP108T      |              |             | MP108TA |      |      | Unit        |
|---------------------------|---------------------------|-------------|--------------|-------------|---------|------|------|-------------|
|                           |                           | Min.        | Typ.         | Max.        | Min.    | Typ. | Max. |             |
| Input Capacitance         | 4                         |             |              | *           |         | 4    |      | pF          |
| Common Mode Voltage Range |                           |             |              | $+V_B - 15$ |         |      | *    | V           |
| Common Mode Voltage Range |                           |             |              | $-V_B + 15$ |         |      | *    | V           |
| Common Mode Rejection, DC |                           | 92          |              |             | *       |      |      | dB          |
| Noise                     | 1MHz BW, $R_s = 1k\Omega$ |             | 10           |             |         | *    |      | $\mu V$ RMS |
| <b>OUTPUT</b>             |                           |             |              |             |         |      |      |             |
| Voltage Swing             | $I_o = 10A$               | $+V_S - 10$ | $+V_S - 8.6$ |             | *       | *    |      | V           |
| Voltage Swing             | $I_o = -10A$              | $-V_S + 10$ | $-V_S + 7$   |             | *       | *    |      | V           |
| Current, Continuous, DC   |                           | 10          |              |             | 11      |      |      | A           |
| Slew Rate, $A V = -20$    | $C_c = 10pF$              | 150         | 170          |             | *       | *    |      | $V/\mu s$   |
| Settling Time to 0.1%     | 2V step                   |             | 1            |             |         | *    |      | $\mu s$     |
| Resistance                | No load, DC               |             | 5            |             |         | *    |      | $\Omega$    |

**TYPICAL APPLICATION**

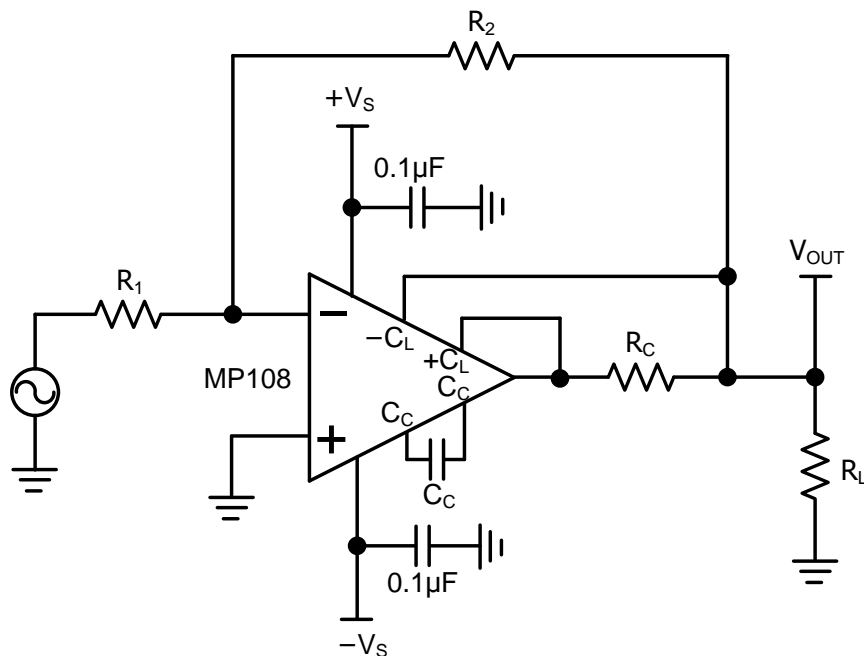


Figure 2. Typical Application

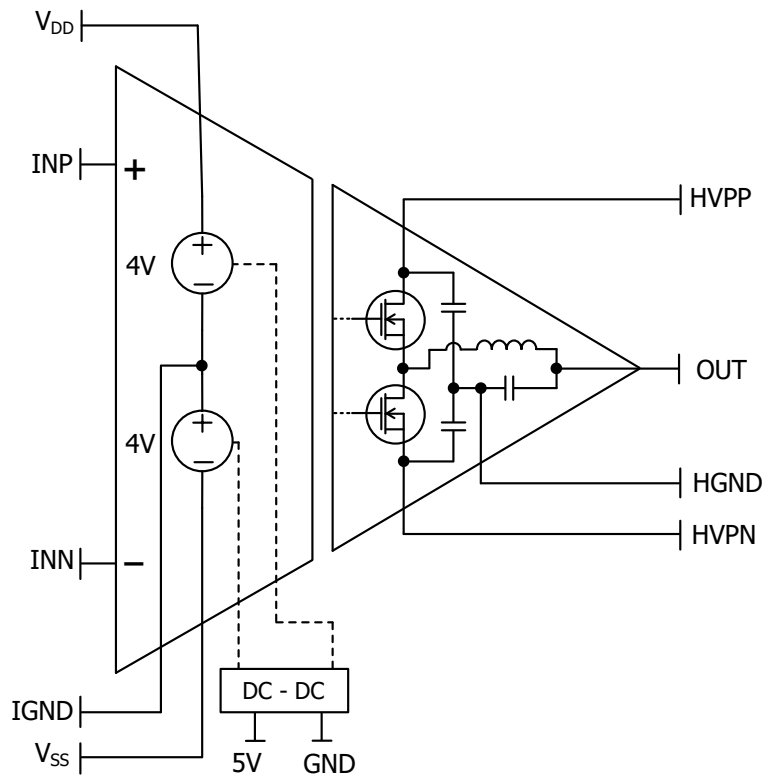


Figure 3. Isolation Amplifier Symbol

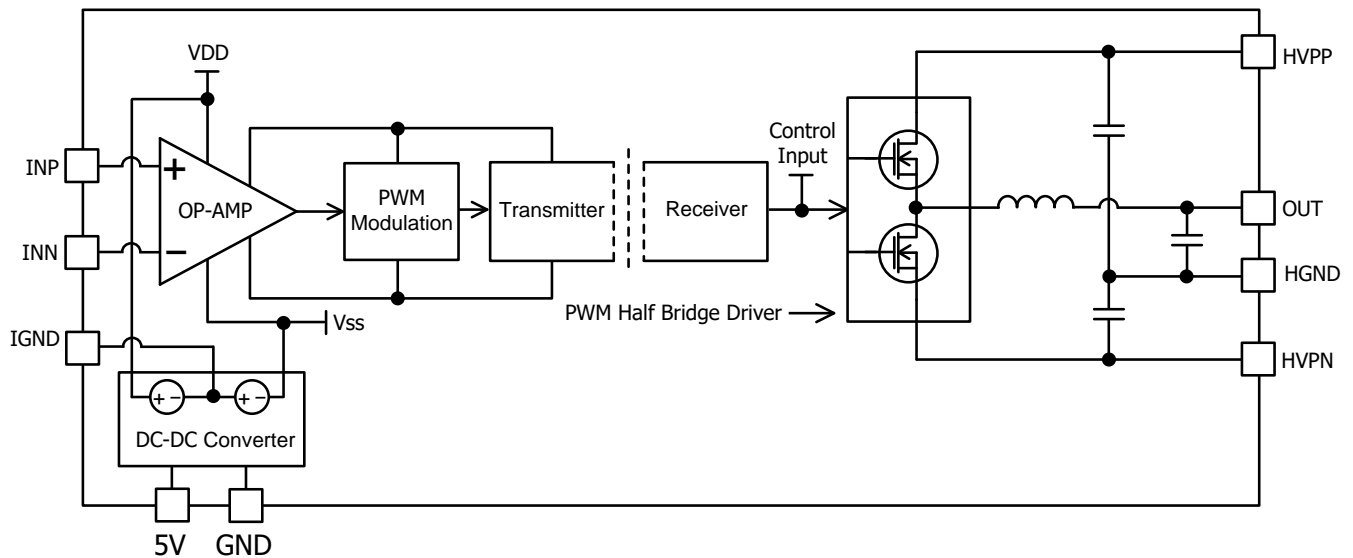


Figure 4. Detailed Block Diagram



**DIMENSIONS**

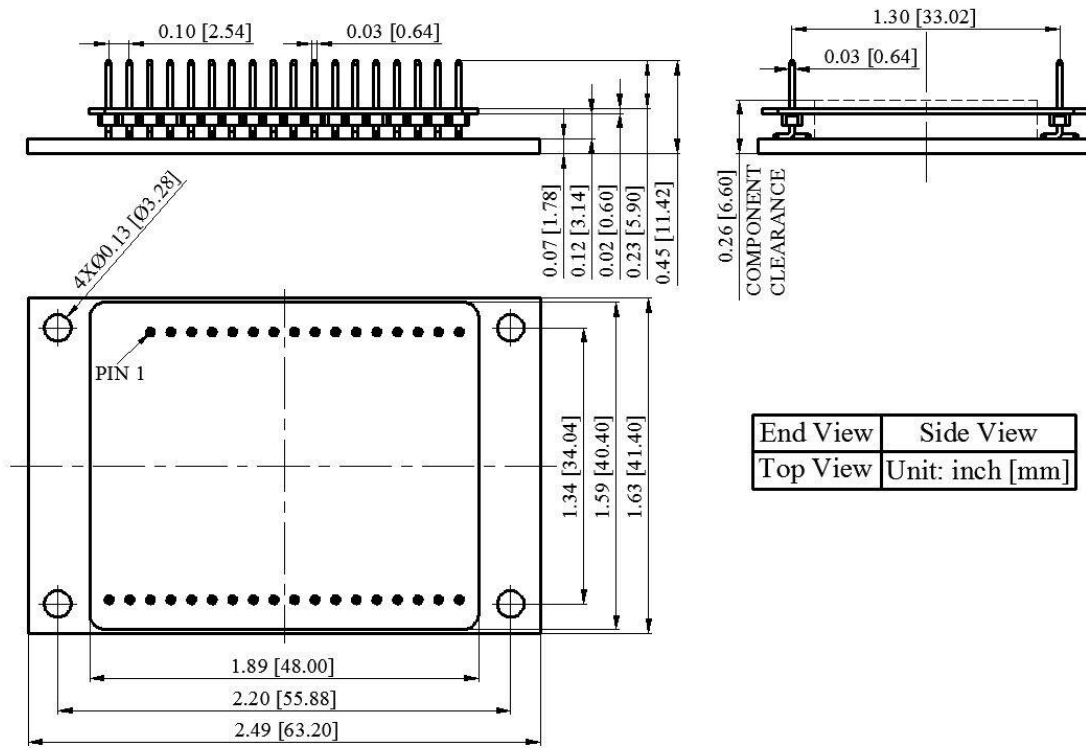


Figure 5. Outline Dimensions

**ORDERING INFORMATION**

| Part Number | Buy Now |
|-------------|---------|
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