



# CO4558L

## Dual Operational Lowpower Amplifier for Audio

### Features

- Operating Voltage :  $\pm 1.5 \sim \pm 8V$  or  $3 \sim 16V$
- Large DC Voltage Gain: 100 dB
- High input Resistance :  $1M\Omega$
- Low Voltage Operation : 1.5V
- Bipolar Technology
- Low Power Consumption

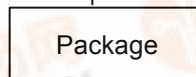
### Description

The CO4558L consists of two independent, high gain, internally compensated amplifiers which were designed specifically to operate from a single or split power supply.

Application areas include transducer amplifier, DC gain blocks and all the conventional operational amplifier circuits.

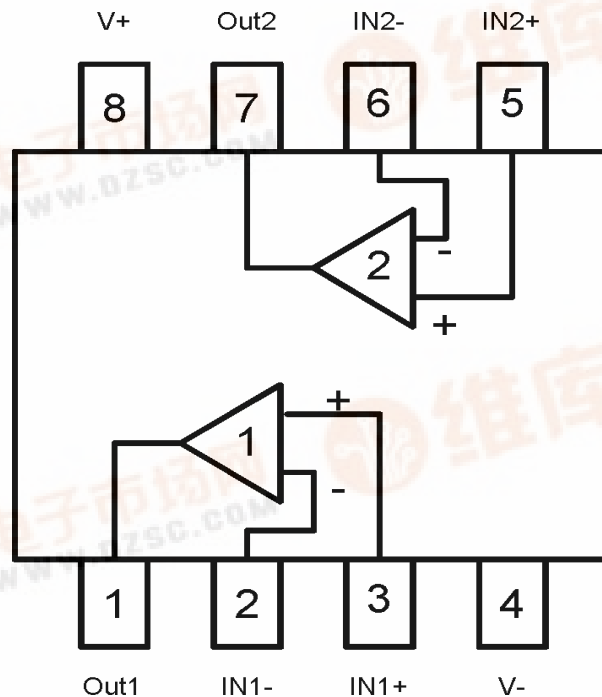
### ORDERING INFORMATION

CO4558LN



Blank SO-8  
N=PDIP8  
A=SO-8 & taping

### BLOCK DIAGRAM



\* All specs and applications shown above subject to change without prior notice.



**Absolute maximum ratings (Ta = 25°C)**

| Parameter                  | Symbol           | Limits   | unit |
|----------------------------|------------------|----------|------|
| Power supply voltage       | V+/V-            | ±8       | V    |
| Differential Input Voltage | V <sub>ID</sub>  | ±7       | V    |
| Power Dissipation          | P <sub>D</sub>   | 500      | mW   |
| Operating temperature      | T <sub>opr</sub> | 0~+85    | °C   |
| Storage temperature        | T <sub>stg</sub> | -55~+150 | °C   |

\*Stresses beyond those listed under “ absolute maximum ratings” may cause permanent damage to the device. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

**Recommended Operating Condition**

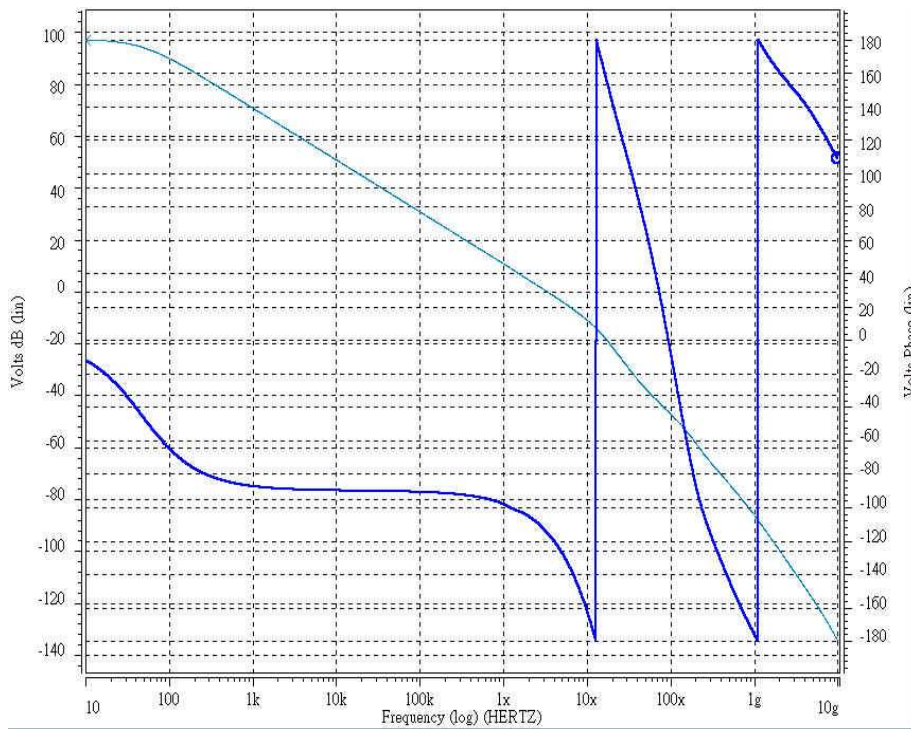
| Parameter            | Symbol | Limits        | unit |
|----------------------|--------|---------------|------|
| Power supply voltage | V+/V-  | ±1.5~±8(3~16) | V    |

**Electrical characteristics (unless otherwise noted, Ta = 25°C, V+ = 6V, V- = -6V)**

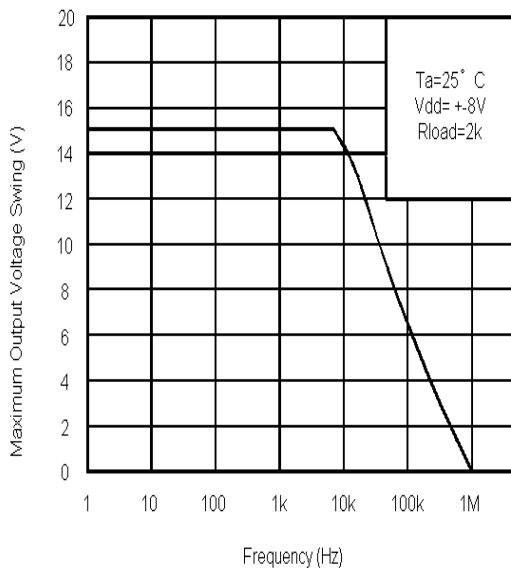
| Parameter                      | Symbol             | Min. | Typ. | Max. | Unit              | Conditions  |
|--------------------------------|--------------------|------|------|------|-------------------|---|
| Input Offset Voltage           | V <sub>IO</sub>    | -    | 0.7  | 6    | mV                | R <sub>S</sub> ≤10KΩ  |
| Input Offset Current           | I <sub>IO</sub>    | -    | 5    | 200  | nA                |   |
| Input Bias Current             | I <sub>B</sub>     | -    | 70   | 500  | nA                |   |
| Input Resistance               | R <sub>IN</sub>    | 0.5  | 0.8  | -    | MΩ                |   |
| Input Voltage Range            | V <sub>in</sub>    | -    | -    | ±5   | V                 |   |
| Large Signal Voltage Gain      | A <sub>v</sub>     | 86   | 100  | -    | dB                |   |
| Gain Bandwidth                 | GBW                | -    | 3    | -    | MHz               |   |
| Phase Margin                   | θ <sub>m</sub>     | -    | 60   | -    | deg.              |   |
| Output Voltage Swing           | V <sub>sw</sub>    | -    | ±5   | -    | V                 | R <sub>L</sub> =10KΩ  |
| DC common mode Rejection ratio | CMRR               | -    | 98   | -    | dB                |   |
| Power supply rejection Ratio   | PSRR               | -    | 95   | -    | dB                | R <sub>S</sub> ≤10KΩ, f <sub>in</sub> =100Hz<br>V <sub>p-p</sub> =100mV |
| Slew rate                      | SR                 | 0.9  | 1.0  | -    | V/μS              | R <sub>L</sub> =2KΩ<br>C <sub>L</sub> =100pF                            |
| Input Noise Voltage            | V <sub>noise</sub> | -    | 1.94 | -    | uV <sub>rms</sub> | RIAA, R <sub>S</sub> =1KΩ,<br>30kHz, LPF                                |
| Output Resistance              | R <sub>o</sub>     | -    | 75   | -    | Ω                 |   |
| Output Short-Circuit Current   | I <sub>os</sub>    | -    | 100  | -    | mA                | *   |
| Channel separation             | α                  | -    | 100  | -    | dB                | f=1KHz~20KHz  |
| Rise Time                      | T <sub>r</sub>     | -    | 55   | -    | ns                |   |
| Operating Current              | I <sub>cc</sub>    | -    | 5.5  | 10   | mA                |   |

\*1 Due to power dissipation issue, it is not allowed for both channels to operate at this condition at the same moment.

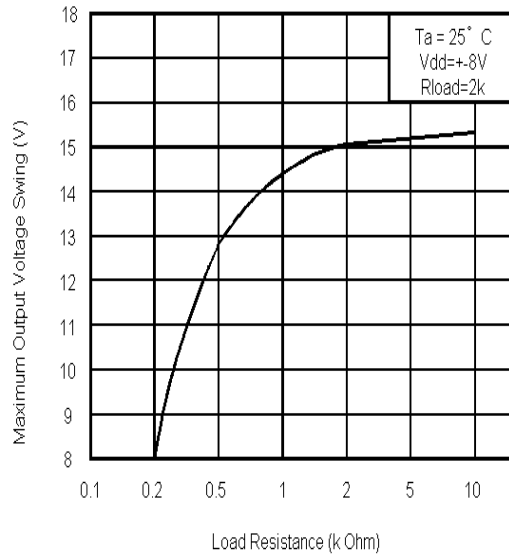
\* All specs and applications shown above subject to change without prior notice.

**Typical Curve**
**Open-Loop Gain Bandwidth and Phase Margin**


Maximum Output Voltage Swing vs Frequency

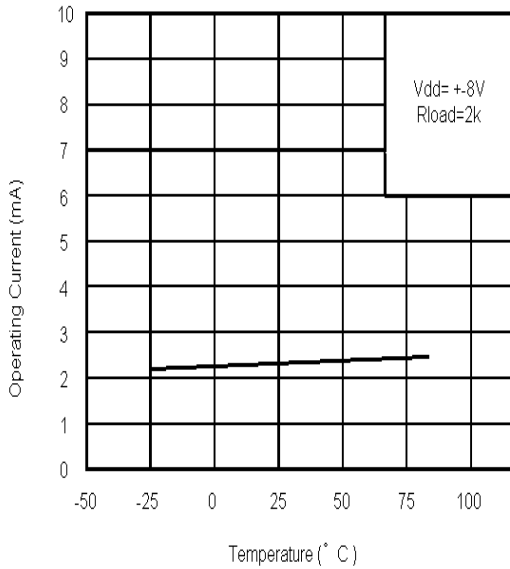


Maximum Output Voltage Swing vs Load Resistance

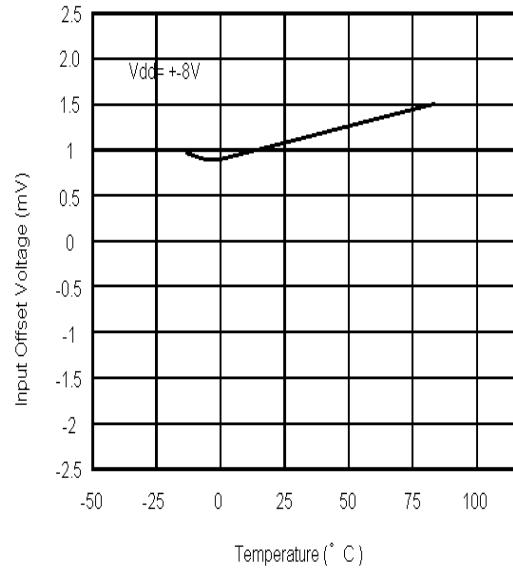


\* All specs and applications shown above subject to change without prior notice.

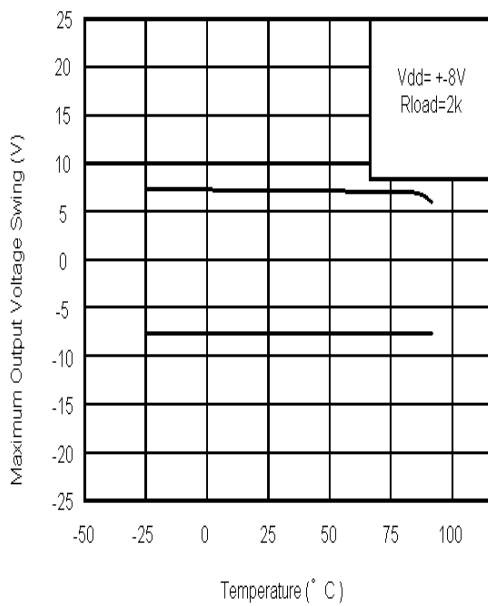
Operating Current vs Temperature



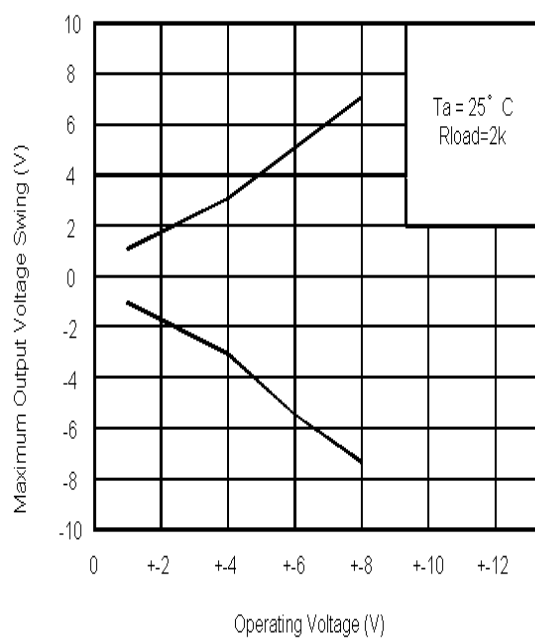
Input Offset Voltage vs Temperature



Maximum Output Voltage Swing vs Temperature

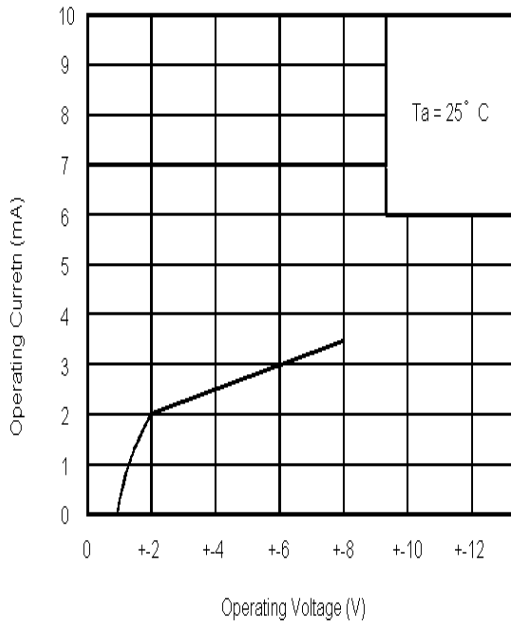


Maximum Output Voltage Swing vs Operating Voltage

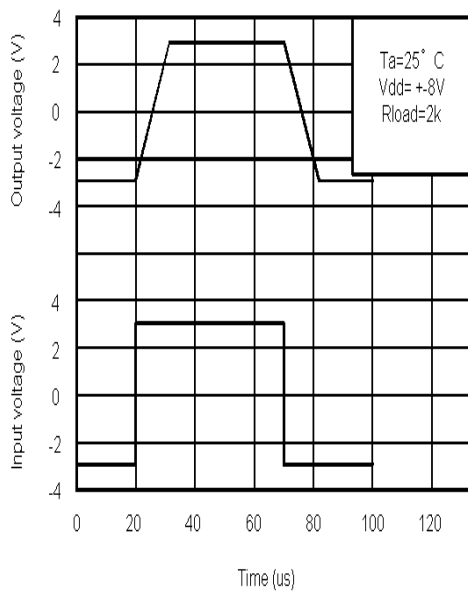


\* All specs and applications shown above subject to change without prior notice.

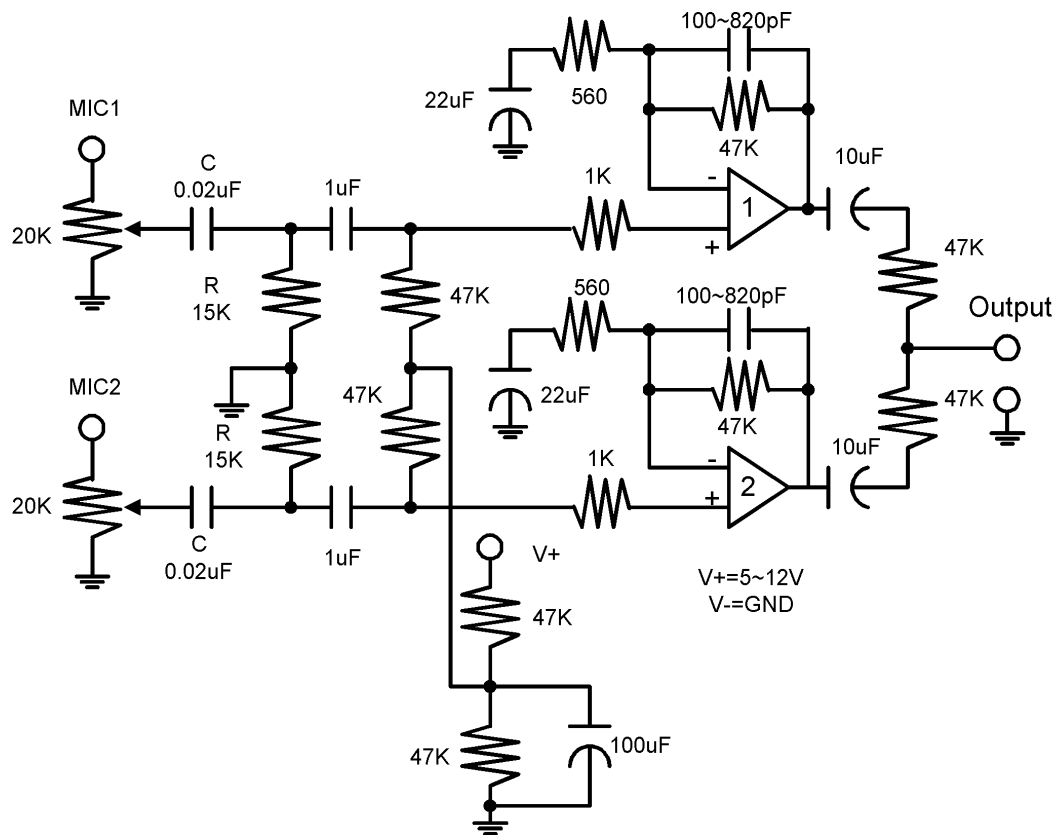
Operating Current vs Operating Voltage



Voltage Follower pulse response



\* All specs and applications shown above subject to change without prior notice.

**Application Circuit**
**MIC Pre-Amp circuit for ECHO Application**


- Change the value of the R and C to adjust the cutoff frequency of the high pass filter as you like.
- The output is connected to the input point of the echo application circuit.

\* All specs and applications shown above subject to change without prior notice.

1F-5 NO.66 SEC.2 NAN-KAN RD., LUCHU, TAOYUAN, TAIWAN, R.O.C

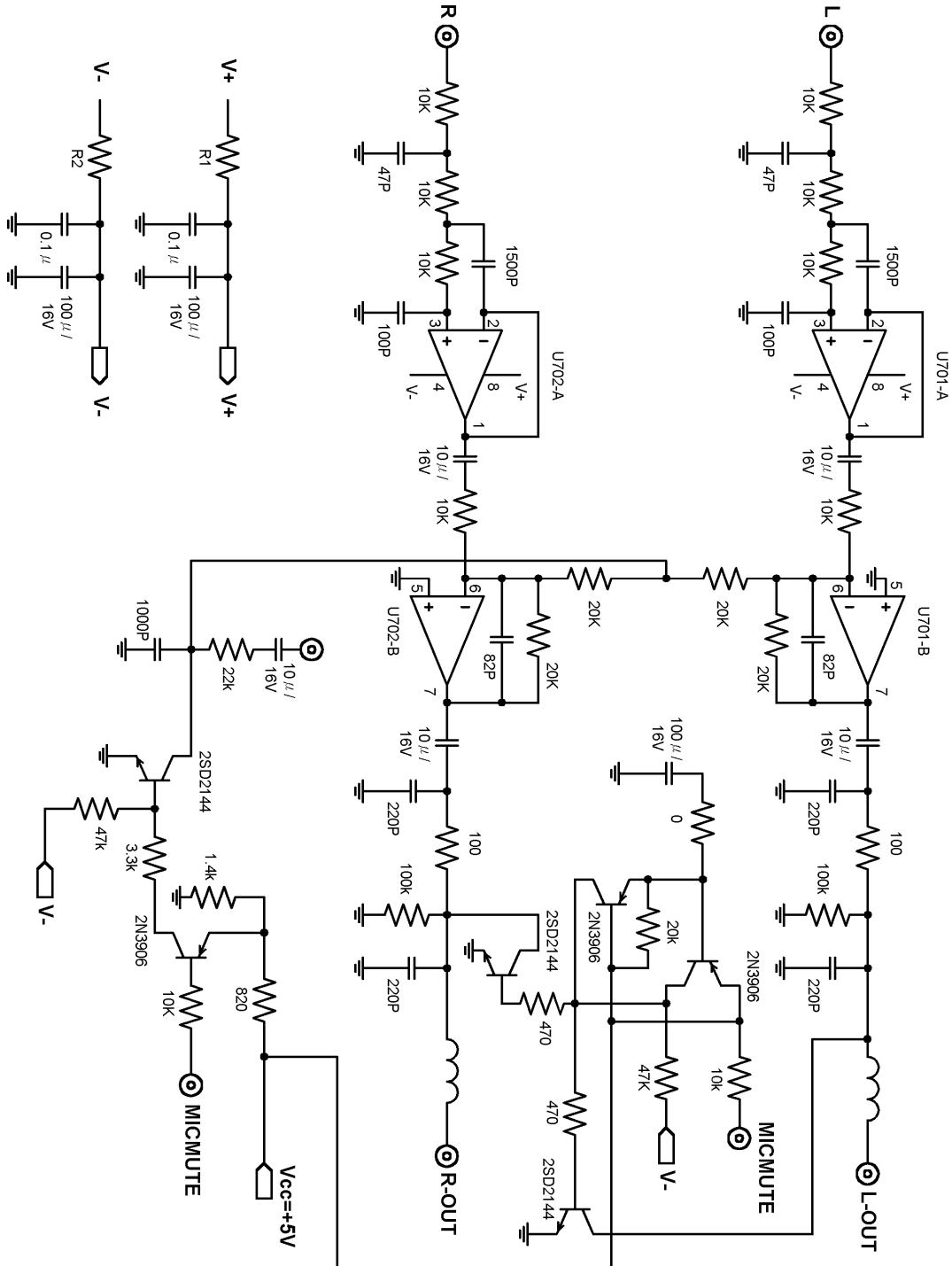
Tel:886-3-3529445

Fax:886-3-3521052

Email: server@ceramate.com.tw

Http: www.ceramate.com.tw

Rev 1.1 Dec 26,2001



\* All specs and applications shown above subject to change without prior notice.

1F-5 NO.66 SEC.2 NAN-KAN RD., LUCHU, TAOYUAN, TAIWAN, R.O.C

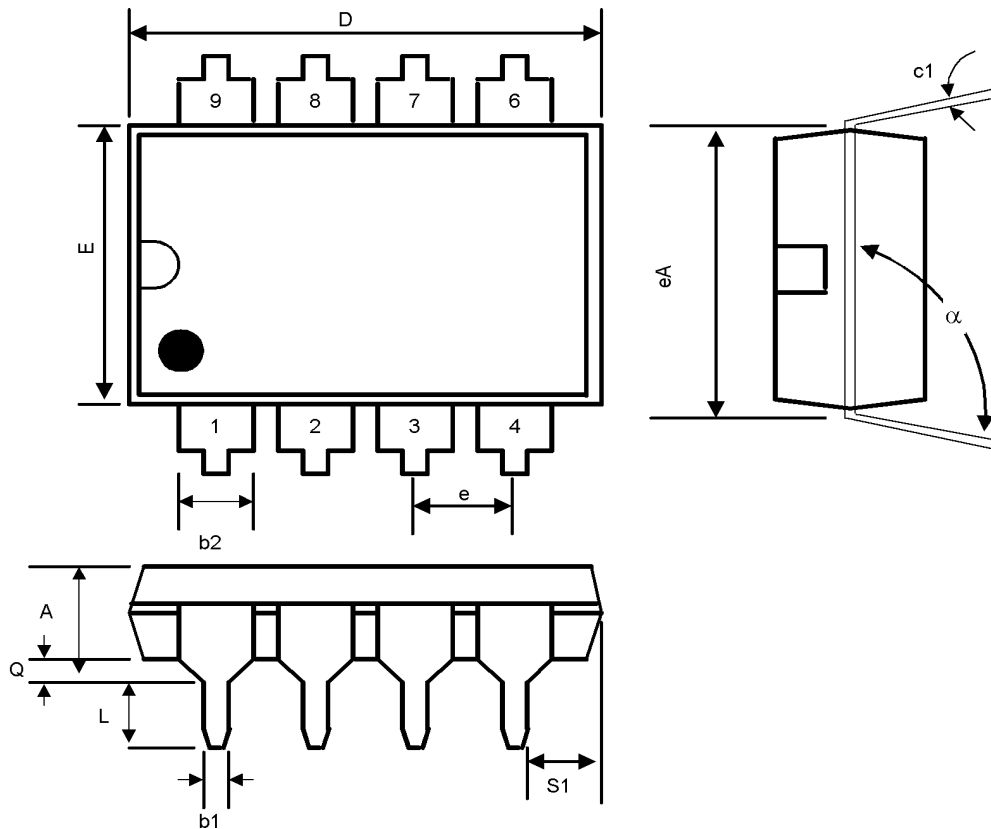
Tel:886-3-3529445

Fax:886-3-3521052

Email: server@ceramate.com.tw

Http: www.ceramate.com.tw

Rev 1.1 Dec 26,2001

**Package Outlines : DIP-8**


| SYMBOL   | INCHES          |                  | MILLIMETERS     |                  | NOTES |
|----------|-----------------|------------------|-----------------|------------------|-------|
|          | MIN             | MAX              | MIN             | MAX              |       |
| A        | -               | 0.200            | -               | 5.08             | -     |
| b1       | 0.014           | 0.023            | 0.36            | 0.58             | -     |
| b2       | 0.045           | 0.065            | 1.14            | 1.65             | -     |
| c1       | 0.008           | 0.015            | 0.20            | 0.38             | -     |
| D        | 0.355           | 0.400            | 9.02            | 10.16            | -     |
| E        | 0.220           | 0.310            | 5.59            | 7.87             | -     |
| e        | 0.100 BSC       |                  | 2.54 BSC        |                  | -     |
| eA       | 0.300 BSC       |                  | 7.62 BSC        |                  | -     |
| L        | 0.125           | 0.200            | 3.18            | 5.08             | -     |
| Q        | 0.015           | 0.060            | 0.38            | 1.52             | -     |
| s1       | 0.005           | -                | 0.13            | -                | -     |
| $\alpha$ | 90 <sup>0</sup> | 105 <sup>0</sup> | 90 <sup>0</sup> | 105 <sup>0</sup> | -     |

\* All specs and applications shown above subject to change without prior notice.

1F-5 NO.66 SEC.2 NAN-KAN RD., LUCHU, TAOYUAN, TAIWAN, R.O.C

Tel:886-3-3529445

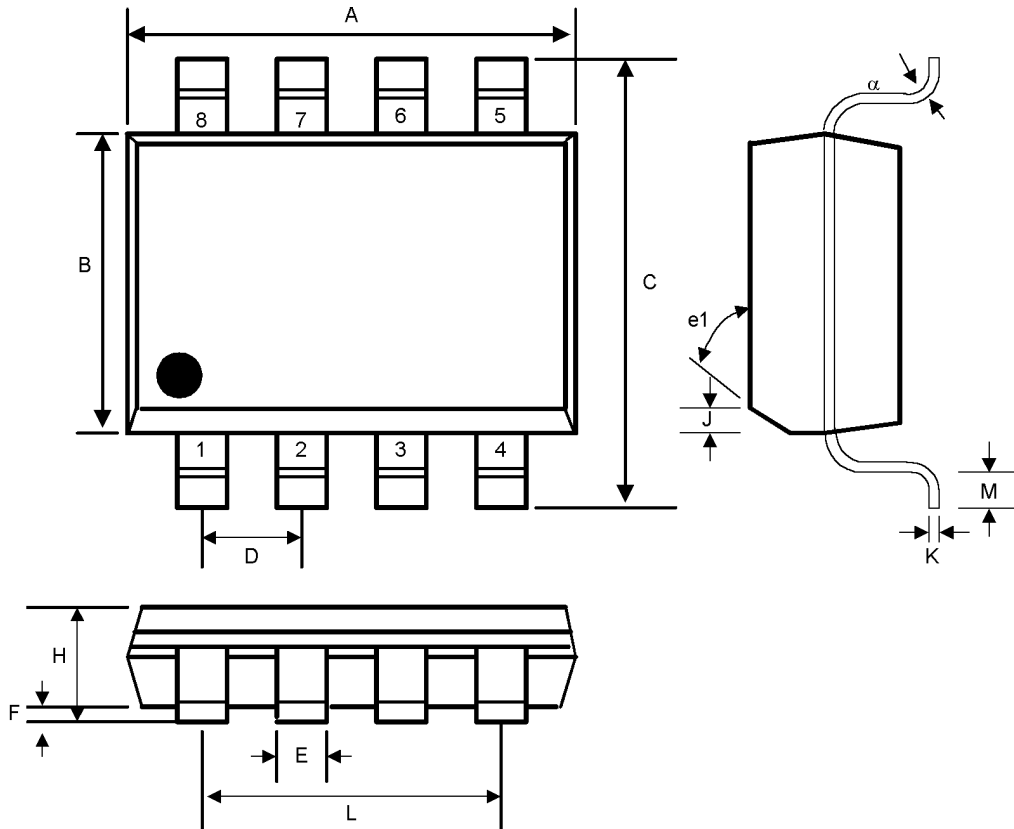
Fax:886-3-3521052

Email: server@ceramate.com.tw

Http: www.ceramate.com.tw

Rev 1.1 Dec 26,2001



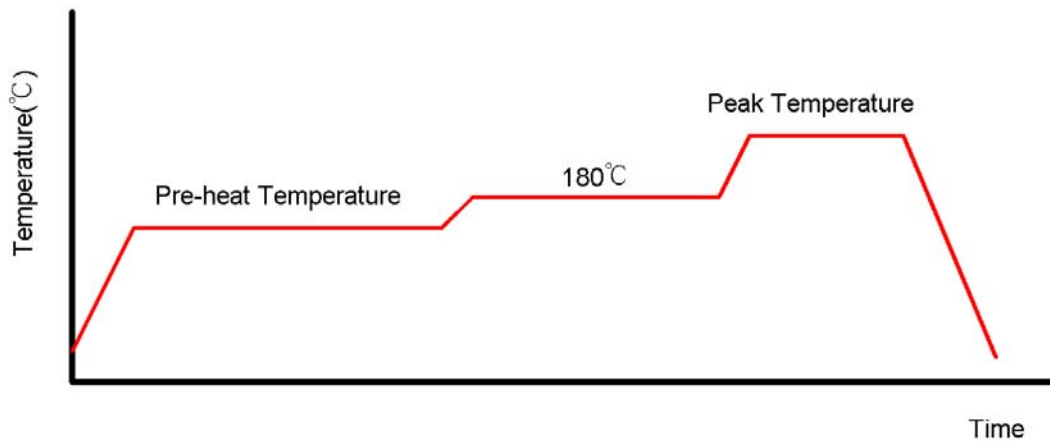
**Small Outline SOP-8**


| SYMBOL | INCHES    |       | MILLIMETERS |      | NOTES |
|--------|-----------|-------|-------------|------|-------|
|        | MIN       | MAX   | MIN         | MAX  |       |
| A      | 0.188     | 0.197 | 4.80        | 5.00 | -     |
| B      | 0.149     | 0.158 | 3.80        | 4.00 | -     |
| C      | 0.228     | 0.244 | 5.80        | 6.20 | -     |
| D      | 0.050 BSC |       | 1.27 BSC    |      | -     |
| E      | 0.013     | 0.020 | 0.33        | 0.51 | -     |
| F      | 0.004     | 0.010 | 0.10        | 0.25 | -     |
| H      | 0.053     | 0.069 | 1.35        | 1.75 | -     |
| J      | 0.011     | 0.019 | 0.28        | 0.48 | -     |
| K      | 0.007     | 0.010 | 0.19        | 0.25 | -     |
| M      | 0.016     | 0.050 | 0.40        | 1.27 | -     |
| L      | 0.150 REF |       | 3.81 REF    |      | -     |
| e1     | 45°       |       | 45°         |      | -     |
| α      | 0°        | 8°    | 0°          | 8°   | -     |

\* All specs and applications shown above subject to change without prior notice.

**Reflow Condition (IR/Convection or VPR Reflow)**

Reference JEDEC Standard J-STD-020A


**Classification Reflow Profiles**

|  | Convection or IR/Convection | VPR                    |
|--|-----------------------------|------------------------|
| Average Heating Rate(180°C to peak)        | 5°C/second max.             | 10°C/second max.       |
| Preheat Temperature(125±20°C)              | 120 seconds max.            |                        |
| Temperature maintained above 180°C         | 10~150 seconds              |                        |
| Time within 5°C of actual Peak Temperature | 10~20 seconds               | 60 seconds             |
| Peak Temperature Range(Note 1)             | 219~225°C or 235~240°C      | 219~225°C or 235~240°C |
| Cooling Rate                               | 6°C /second max.            | 10°C/second max.       |
| Time 25°C to Peak Temperature              | 6 minutes max.              |                        |

\*1 The maximum peak temperatures for IR and VP reflow are depending on package dimensions.

**Package Reflow Conditions**

| Pkg. Thickness ≥2.5mm and all bags | Pkg. Thickness <2.5mm and Pkg. Volume ≥350 mm <sup>3</sup> | Pkg. Thickness <2.5mm and Pkg. Volume <350 mm <sup>3</sup> |
|------------------------------------|--|--|
| Convection 219~225°C               |  | Convection 235~240°C                                       |
| VPR 219~225°C                      |  | VPR 235~240°C  |
| IR/Convection 219~225°C            |  | IR/Convection 235~240°C                                    |

\* All specs and applications shown above subject to change without prior notice.

This datasheet has been download from:

[www.datasheetcatalog.com](http://www.datasheetcatalog.com)

Datasheets for electronics components.