

# Video Amplifier

## NE592

The NE592 is a monolithic, two-stage, differential output, wideband video amplifier. It offers fixed gains of 100 and 400 without external components and adjustable gains from 400 to 0 with one external resistor. The input stage has been designed so that with the addition of a few external reactive elements between the gain select terminals, the circuit can function as a high-pass, low-pass, or band-pass filter. This feature makes the circuit ideal for use as a video or pulse amplifier in communications, magnetic memories, display, video recorder systems, and floppy disk head amplifiers. Now available in an 8-pin version with fixed gain of 400 without external components and adjustable gain from 400 to 0 with one external resistor.

### Features

- 120 MHz Unity Gain Bandwidth
- Adjustable Gains from 0 to 400
- Adjustable Pass Band
- No Frequency Compensation Required
- Wave Shaping with Minimal External Components
- MIL-STD Processing Available
- These Devices are Pb-Free and are RoHS Compliant

### Applications

- Floppy Disk Head Amplifier
- Video Amplifier
- Pulse Amplifier in Communications
- Magnetic Memory
- Video Recorder Systems

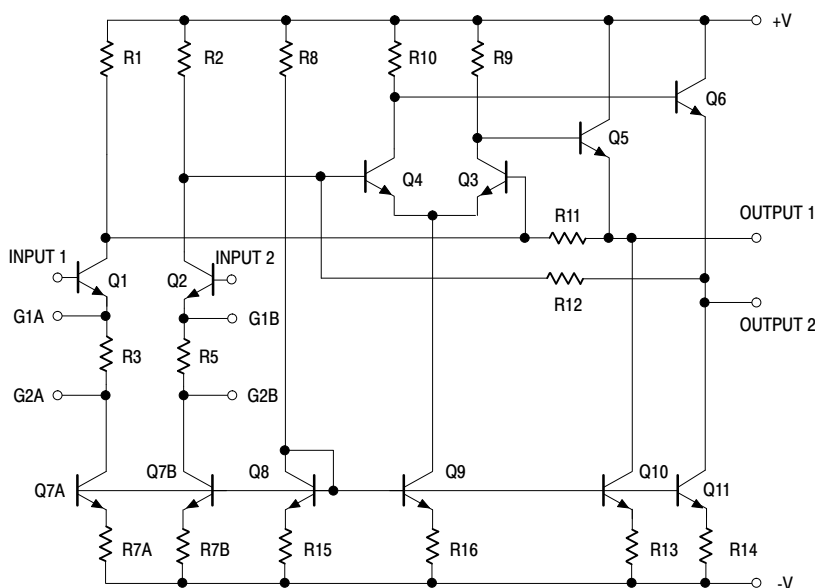
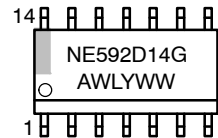
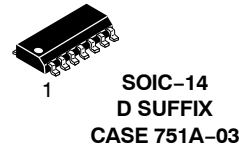
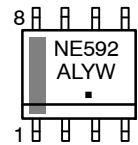
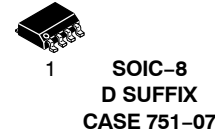


Figure 1. Block Diagram

### MARKING DIAGRAMS



A = Assembly Location  
L, WL = Wafer Lot  
Y = Year  
W, WW = Work Week  
▪ or G = Pb-Free Package

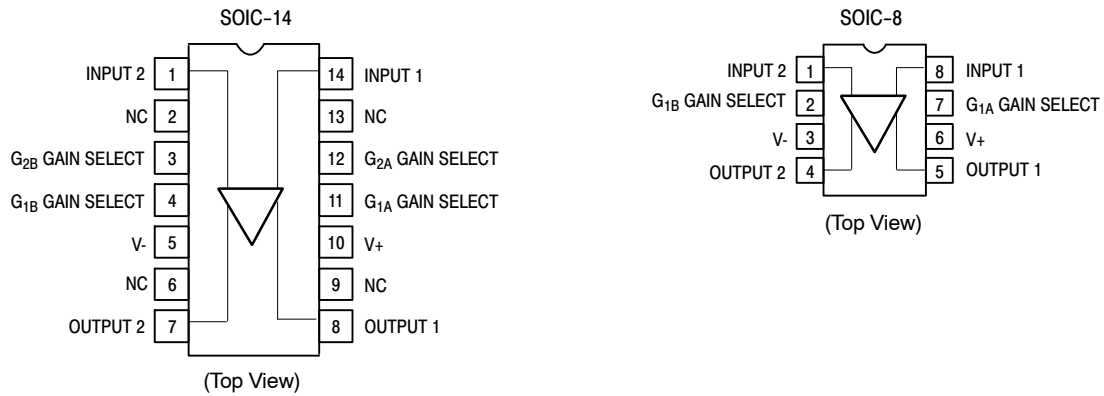
### ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 8 of this data sheet.

NOTE: Some of the devices on this data sheet have been **DISCONTINUED**. Please refer to the table on page 8.

# NE592

## PIN CONNECTIONS



### MAXIMUM RATINGS (T<sub>A</sub> = +25°C, unless otherwise noted.)

| Rating                                                                                                     | Symbol             | Value        | Unit |
|------------------------------------------------------------------------------------------------------------|--------------------|--------------|------|
| Supply Voltage                                                                                             | V <sub>CC</sub>    | ±8.0         | V    |
| Differential Input Voltage                                                                                 | V <sub>IN</sub>    | ±5.0         | V    |
| Common-Mode Input Voltage                                                                                  | V <sub>CM</sub>    | ±6.0         | V    |
| Output Current                                                                                             | I <sub>OUT</sub>   | 10           | mA   |
| Operating Ambient Temperature Range                                                                        | T <sub>A</sub>     | 0 to +70     | °C   |
| Operating Junction Temperature                                                                             | T <sub>J</sub>     | 150          | °C   |
| Storage Temperature Range                                                                                  | T <sub>STG</sub>   | 65 to +150   | °C   |
| Maximum Power Dissipation, T <sub>A</sub> = 25°C (Still Air) (Note 1)<br>SOIC-14 Package<br>SOIC-8 Package | P <sub>D MAX</sub> | 0.98<br>0.79 | W    |
| Thermal Resistance, Junction-to-Ambient<br>SOIC-14 Package<br>SOIC-8 Package                               | R <sub>θJA</sub>   | 145<br>182   | °C/W |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

- Derate above 25°C at the following rates:  
SOIC-14 package at 6.9 mW/°C  
SOIC-8 package at 5.5 mW/°C

## NE592

**DC ELECTRICAL CHARACTERISTICS** ( $V_{SS} = \pm 6.0$  V,  $V_{CM} = 0$ , typicals at  $T_A = +25^\circ\text{C}$ , min and max at  $0^\circ\text{C} \leq T_A \leq 70^\circ\text{C}$ , unless otherwise noted. Recommended operating supply voltages  $V_S = \pm 6.0$  V.)

| Characteristic                                                                           | Test Conditions                                                                                                                                                                            | Symbol      | Min              | Typ                 | Max                       | Unit                |
|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------|---------------------|---------------------------|---------------------|
| Differential Voltage Gain<br>Gain 1 (Note 2)<br>Gain 2 (Notes 3 and 4)                   | $R_L = 2.0$ k $\Omega$ , $V_{OUT} = 3.0$ V <sub>P-P</sub>                                                                                                                                  | $A_{VOL}$   | 250<br>80        | 400<br>100          | 600<br>120                | V/V                 |
| Input Resistance<br>Gain 1 (Note 2)<br>Gain 2 (Notes 3 and 4)                            | $T_A = 25^\circ\text{C}$<br>$0^\circ\text{C} \leq T_A \leq 70^\circ\text{C}$                                                                                                               | $R_{IN}$    | –<br>10<br>8.0   | 4.0<br>30<br>–      | –<br>–<br>–               | k $\Omega$          |
| Input Capacitance                                                                        | Gain 2 (Note 4)                                                                                                                                                                            | $C_{IN}$    | –                | 2.0                 | –                         | pF                  |
| Input Offset Current                                                                     | $T_A = 25^\circ\text{C}$<br>$0^\circ\text{C} \leq T_A \leq 70^\circ\text{C}$                                                                                                               | $I_{OS}$    | –<br>–           | 0.4<br>–            | 5.0<br>6.0                | $\mu\text{A}$       |
| Input Bias Current                                                                       | $T_A = 25^\circ\text{C}$<br>$0^\circ\text{C} \leq T_A \leq 70^\circ\text{C}$                                                                                                               | $I_{BIAS}$  | –<br>–           | 9.0<br>–            | 30<br>40                  | $\mu\text{A}$       |
| Input Noise Voltage                                                                      | BW 1.0 kHz to 10 MHz                                                                                                                                                                       | $V_{NOISE}$ | –                | 12                  | –                         | $\mu\text{V}_{RMS}$ |
| Input Voltage Range                                                                      | –                                                                                                                                                                                          | $V_{IN}$    | $\pm 1.0$        | –                   | –                         | V                   |
| Common-Mode Rejection Ratio<br>Gain 2 (Note 4)                                           | $V_{CM} \pm 1.0$ V, $f < 100$ kHz, $T_A = 25^\circ\text{C}$<br>$V_{CM} \pm 1.0$ V, $f < 100$ kHz,<br>$0^\circ\text{C} \leq T_A \leq 70^\circ\text{C}$<br>$V_{CM} \pm 1.0$ V, $f < 5.0$ MHz | CMRR        | 60<br>50<br>–    | 86<br>–<br>60       | –<br>–<br>–               | dB                  |
| Supply Voltage Rejection Ratio<br>Gain 2 (Note 4)                                        | $\Delta V_S = \pm 0.5$ V                                                                                                                                                                   | PSRR        | 50               | 70                  | –                         | dB                  |
| Output Offset Voltage<br>Gain 1<br>Gain 2 (Note 4)<br>Gain 3 (Note 5)<br>Gain 3 (Note 5) | $R_L = \infty$<br>$R_L = \infty$<br>$R_L = \infty$ , $T_A = 25^\circ\text{C}$<br>$R_L = \infty$ , $0^\circ\text{C} \leq T_A \leq 70^\circ\text{C}$                                         | $V_{OS}$    | –<br>–<br>–<br>– | –<br>–<br>0.35<br>– | 1.5<br>1.5<br>0.75<br>1.0 | V                   |
| Output Common-Mode Voltage                                                               | $R_L = \infty$ , $T_A = 25^\circ\text{C}$                                                                                                                                                  | $V_{CM}$    | 2.4              | 2.9                 | 3.4                       | V                   |
| Output Voltage Swing Differential                                                        | $R_L = 2.0$ k $\Omega$ , $T_A = 25^\circ\text{C}$<br>$R_L = 2.0$ k $\Omega$ , $0^\circ\text{C} \leq T_A \leq 70^\circ\text{C}$                                                             | $V_{OUT}$   | 3.0<br>2.8       | 4.0<br>–            | –<br>–                    | V                   |
| Output Resistance                                                                        | –                                                                                                                                                                                          | $R_{OUT}$   | –                | 20                  | –                         | $\Omega$            |
| Power Supply Current                                                                     | $R_L = \infty$ , $T_A = 25^\circ\text{C}$<br>$R_L = \infty$ , $0^\circ\text{C} \leq T_A \leq 70^\circ\text{C}$                                                                             | $I_{CC}$    | –<br>–           | 18<br>–             | 24<br>27                  | mA                  |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

**AC ELECTRICAL CHARACTERISTICS** ( $T_A = +25^\circ\text{C}$ ,  $V_{SS} = \pm 6.0$  V,  $V_{CM} = 0$ , unless otherwise noted. Recommended operating supply voltages  $V_S = \pm 6.0$  V.)

| Characteristic                                                 | Test Conditions                  | Symbol   | Min    | Typ         | Max     | Unit |
|----------------------------------------------------------------|----------------------------------|----------|--------|-------------|---------|------|
| Bandwidth<br>Gain 1 (Note 2)<br>Gain 2 (Notes 3 and 4)         | –                                | BW       | –<br>– | 40<br>90    | –<br>–  | MHz  |
| Rise Time<br>Gain 1 (Note 2)<br>Gain 2 (Notes 3 and 4)         | $V_{OUT} = 1.0$ V <sub>P-P</sub> | $t_R$    | –<br>– | 10.5<br>4.5 | 12<br>– | ns   |
| Propagation Delay<br>Gain 1 (Note 2)<br>Gain 2 (Notes 3 and 4) | $V_{OUT} = 1.0$ V <sub>P-P</sub> | $t_{PD}$ | –<br>– | 7.5<br>6.0  | 10<br>– | ns   |

- Gain select Pins  $G_{1A}$  and  $G_{1B}$  connected together.
- Gain select Pins  $G_{2A}$  and  $G_{2B}$  connected together.
- Applies to 14-pin version only.
- Applies to 14-pin version only.
- All gain select pins open.

## TYPICAL PERFORMANCE CHARACTERISTICS

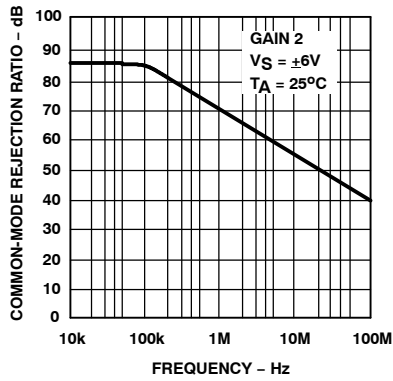


Figure 2. Common-Mode Rejection Ratio as a Function of Frequency

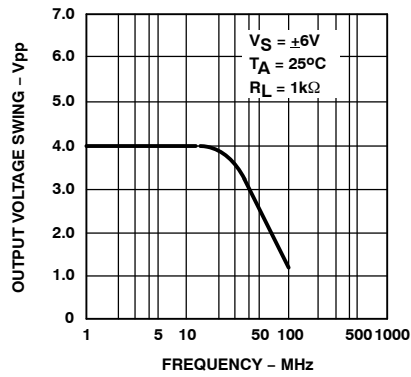


Figure 3. Output Voltage Swing as a Function of Frequency

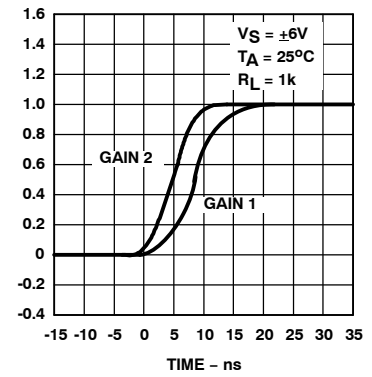


Figure 4. Pulse Response

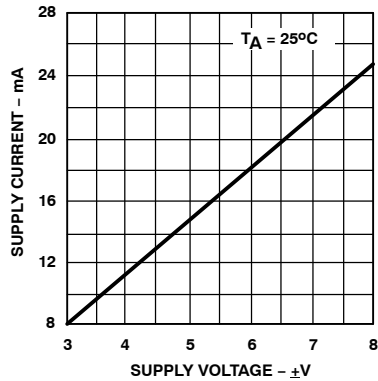


Figure 5. Supply Current as a Function of Temperature

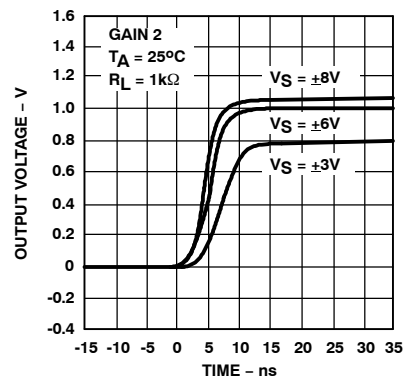


Figure 6. Pulse Response as a Function of Supply Voltage

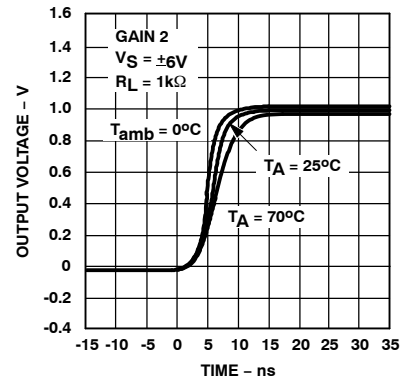


Figure 7. Pulse Response as a Function of Temperature

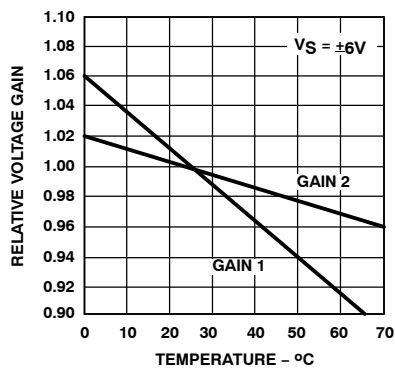


Figure 8. Voltage Gain as a Function of Temperature

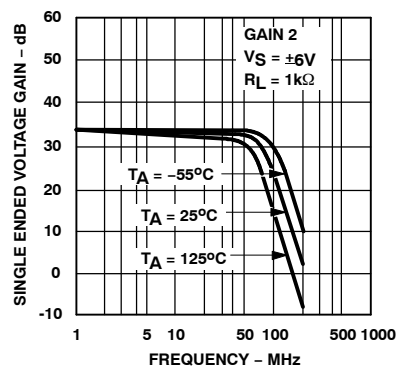


Figure 9. Gain vs. Frequency as a Function of Temperature

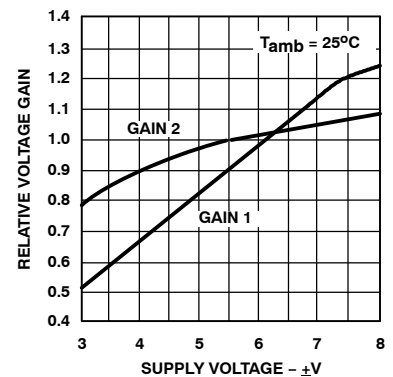


Figure 10. Voltage Gain as a Function of Supply Voltage

## TYPICAL PERFORMANCE CHARACTERISTICS

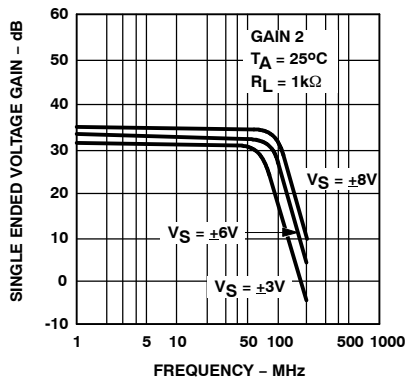


Figure 11. Gain vs. Frequency as a Function of Supply Voltage

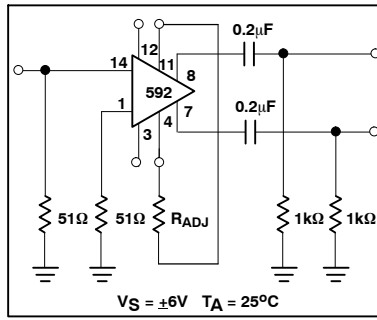


Figure 12. Voltage Gain Adjust Circuit

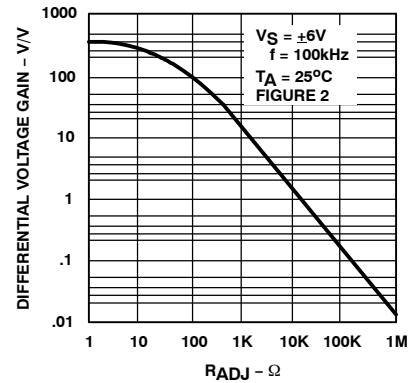


Figure 13. Voltage Gain as a Function of RADJ (Figure 2)

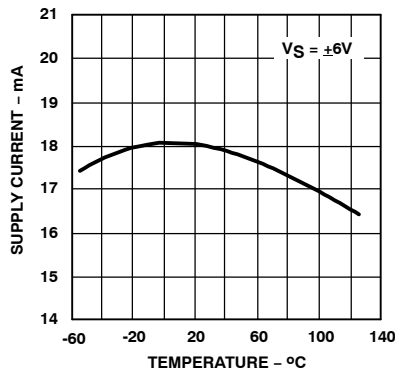


Figure 14. Supply Current as a Function of Temperature

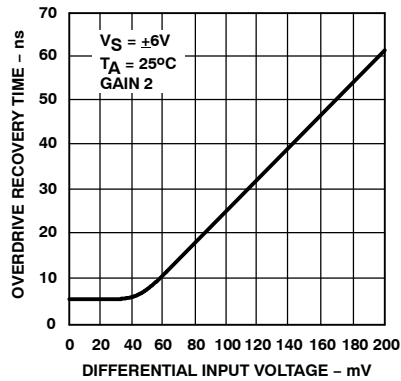


Figure 15. Differential Overdrive Recovery Time

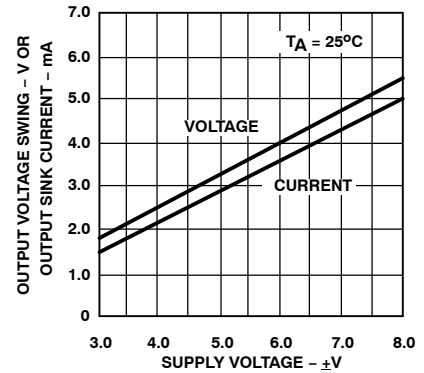


Figure 16. Output Voltage and Current Swing as a Function of Supply Voltage

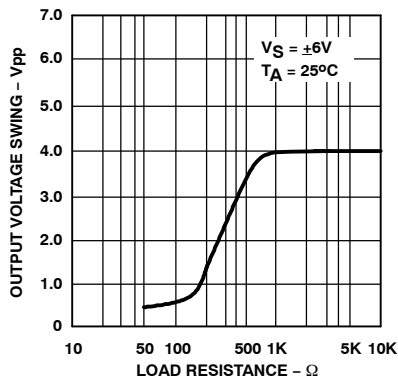


Figure 17. Output Voltage Swing as a Function of Load Resistance

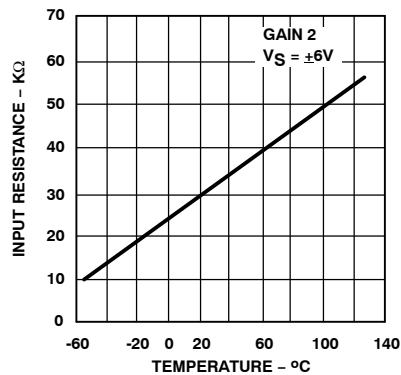


Figure 18. Input Resistance as a Function of Temperature

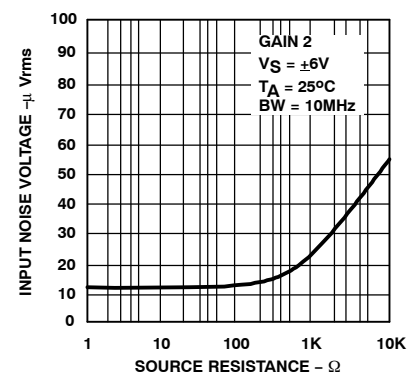


Figure 19. Input Noise Voltage as a Function of Source Resistance

## TYPICAL PERFORMANCE CHARACTERISTICS

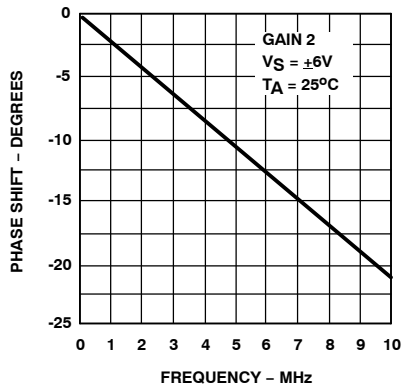


Figure 20. Phase Shift as a Function of Frequency

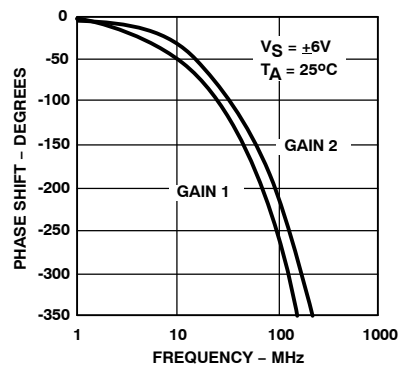


Figure 21. Phase Shift as a Function of Frequency

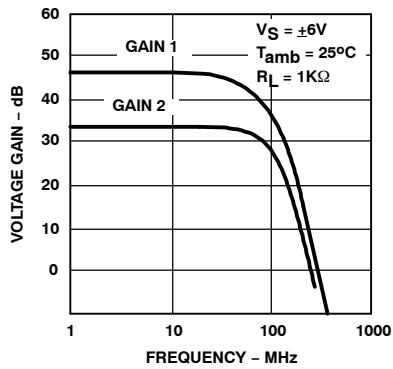


Figure 22. Voltage Gain as a Function of Frequency

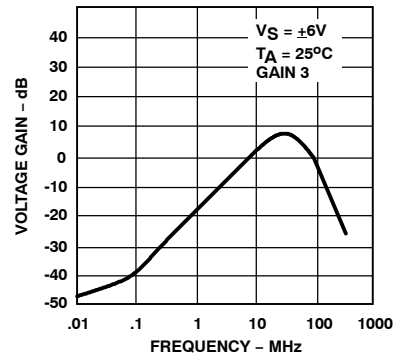


Figure 23. Voltage Gain as a Function of Frequency

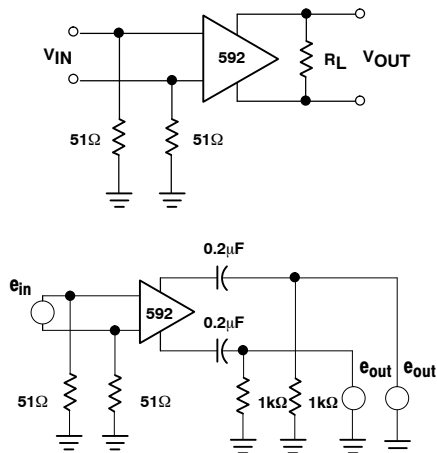
TEST CIRCUITS ( $T_A = 25^\circ\text{C}$ , UNLESS OTHERWISE NOTED.)

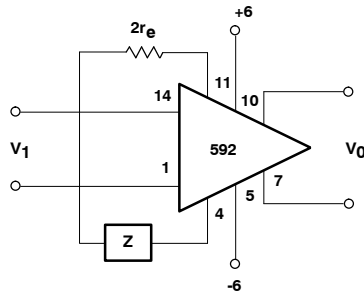
Figure 24. Test Circuits

# NE592

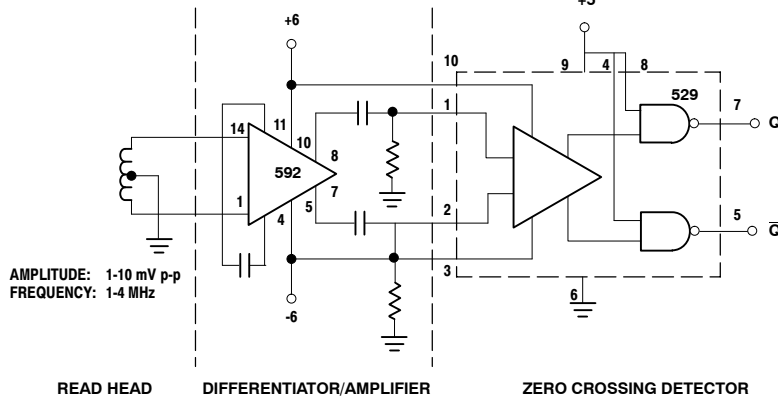
NOTE:

$$\frac{V_0(s)}{V_1(s)} \approx \frac{1.4 \cdot 10^4}{Z(s) + 2r_e}$$

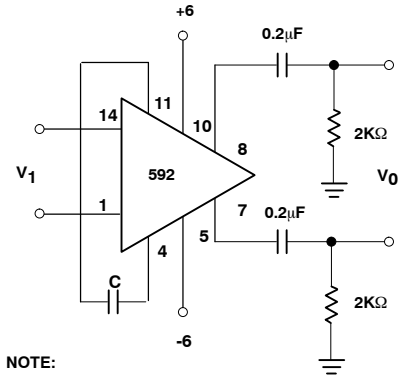
$$\approx \frac{1.4 \cdot 10^4}{Z(s) + 32}$$



Basic Configuration



Disc/Tape Phase-Modulated Readback Systems



NOTE:

For frequency  $F_1 \ll 1/2 \pi (32) C$

$$V_O \approx 1.4 \times 10^4 C \frac{dV_i}{dt}$$

Differentiation with High Common-Mode Noise Rejection

Figure 25. Typical Applications

| Z NETWORK | FILTER TYPE | $V_0(s)$ TRANSFER<br>$V_1(s)$ FUNCTION                                          |
|-----------|-------------|---------------------------------------------------------------------------------|
|           | LOW PASS    | $\frac{1.4 \times 10^4}{L} \left[ \frac{1}{s + R/L} \right]$                    |
|           | HIGH PASS   | $\frac{1.4 \times 10^4}{R} \left[ \frac{s}{s + 1/RC} \right]$                   |
|           | BAND PASS   | $\frac{1.4 \times 10^4}{L} \left[ \frac{s}{s^2 + R/Ls + 1/LC} \right]$          |
|           | BAND REJECT | $\frac{1.4 \times 10^4}{R} \left[ \frac{s^2 + 1/LC}{s^2 + 1/LC + s/RC} \right]$ |

NOTES:

In the networks above, the R value used is assumed to include  $2r_e$ , or approximately  $32\Omega$ .

$S = j\Omega$

$\Omega = 2\pi f$

Figure 26. Filter Networks

## NE592

### ORDERING INFORMATION

| Device      | Temperature Range | Package              | Shipping†          |
|-------------|-------------------|----------------------|--------------------|
| NE592D8R2G  | 0 to +70°C        | SOIC-8<br>(Pb-Free)  | 2500 / Tape & Reel |
| NE592D14R2G |                   | SOIC-14<br>(Pb-Free) | 2500 / Tape & Reel |

### DISCONTINUED (Note 6)

|           |            |                      |               |
|-----------|------------|----------------------|---------------|
| NE592D8G  | 0 to +70°C | SOIC-8<br>(Pb-Free)  | 98 Units/Rail |
| NE592D14G |            | SOIC-14<br>(Pb-Free) | 55 Units/Rail |

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, [BRD8011/D](#).

6. **DISCONTINUED:** These devices are not recommended for new design. Please contact your **onsemi** representative for information. The most current information on these devices may be available on [www.onsemi.com](http://www.onsemi.com).



SCALE 1:1

SOIC-8 NB  
CASE 751-07  
ISSUE AK

DATE 16 FEB 2011



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
4. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.
5. DIMENSION D DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 (0.005) TOTAL IN EXCESS OF THE D DIMENSION AT MAXIMUM MATERIAL CONDITION.
6. 751-01 THRU 751-06 ARE OBSOLETE. NEW STANDARD IS 751-07.

| DIM | MILLIMETERS |      | INCHES    |       |
|-----|-------------|------|-----------|-------|
|     | MIN         | MAX  | MIN       | MAX   |
| A   | 4.80        | 5.00 | 0.189     | 0.197 |
| B   | 3.80        | 4.00 | 0.150     | 0.157 |
| C   | 1.35        | 1.75 | 0.053     | 0.069 |
| D   | 0.33        | 0.51 | 0.013     | 0.020 |
| G   | 1.27 BSC    |      | 0.050 BSC |       |
| H   | 0.10        | 0.25 | 0.004     | 0.010 |
| J   | 0.19        | 0.25 | 0.007     | 0.010 |
| K   | 0.40        | 1.27 | 0.016     | 0.050 |
| M   | 0°          | 8°   | 0°        | 8°    |
| N   | 0.25        | 0.50 | 0.010     | 0.020 |
| S   | 5.80        | 6.20 | 0.228     | 0.244 |

GENERIC  
MARKING DIAGRAM\*



XXXXXX = Specific Device Code  
A = Assembly Location  
L = Wafer Lot  
Y = Year  
W = Work Week  
▪ = Pb-Free Package

XXXXXX = Specific Device Code  
A = Assembly Location  
Y = Year  
WW = Work Week  
▪ = Pb-Free Package

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

\*For additional information on our Pb-Free strategy and soldering details, please download the **onsemi** Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

STYLES ON PAGE 2

|                  |             |                                                                                                                                                                                     |
|------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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| DESCRIPTION:     | SOIC-8 NB   | PAGE 1 OF 2                                                                                                                                                                         |

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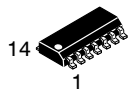
**SOIC-8 NB**  
**CASE 751-07**  
**ISSUE AK**

DATE 16 FEB 2011

|                                                                                                                                                                                                   |                                                                                                                                                                                          |                                                                                                                                                                                    |                                                                                                                                                                                                        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>STYLE 1:</b><br>PIN 1. EMITTER<br>2. COLLECTOR<br>3. COLLECTOR<br>4. EMITTER<br>5. EMITTER<br>6. BASE<br>7. BASE<br>8. EMITTER                                                                 | <b>STYLE 2:</b><br>PIN 1. COLLECTOR, DIE, #1<br>2. COLLECTOR, #1<br>3. COLLECTOR, #2<br>4. COLLECTOR, #2<br>5. BASE, #2<br>6. EMITTER, #2<br>7. BASE, #1<br>8. EMITTER, #1               | <b>STYLE 3:</b><br>PIN 1. DRAIN, DIE #1<br>2. DRAIN, #1<br>3. DRAIN, #2<br>4. DRAIN, #2<br>5. GATE, #2<br>6. SOURCE, #2<br>7. GATE, #1<br>8. SOURCE, #1                            | <b>STYLE 4:</b><br>PIN 1. ANODE<br>2. ANODE<br>3. ANODE<br>4. ANODE<br>5. ANODE<br>6. ANODE<br>7. ANODE<br>8. COMMON CATHODE                                                                           |
| <b>STYLE 5:</b><br>PIN 1. DRAIN<br>2. DRAIN<br>3. DRAIN<br>4. DRAIN<br>5. GATE<br>6. GATE<br>7. SOURCE<br>8. SOURCE                                                                               | <b>STYLE 6:</b><br>PIN 1. SOURCE<br>2. DRAIN<br>3. DRAIN<br>4. SOURCE<br>5. SOURCE<br>6. GATE<br>7. GATE<br>8. SOURCE                                                                    | <b>STYLE 7:</b><br>PIN 1. INPUT<br>2. EXTERNAL BYPASS<br>3. THIRD STAGE SOURCE<br>4. GROUND<br>5. DRAIN<br>6. GATE 3<br>7. SECOND STAGE Vd<br>8. FIRST STAGE Vd                    | <b>STYLE 8:</b><br>PIN 1. COLLECTOR, DIE #1<br>2. BASE, #1<br>3. BASE, #2<br>4. COLLECTOR, #2<br>5. COLLECTOR, #2<br>6. EMITTER, #2<br>7. EMITTER, #1<br>8. COLLECTOR, #1                              |
| <b>STYLE 9:</b><br>PIN 1. EMITTER, COMMON<br>2. COLLECTOR, DIE #1<br>3. COLLECTOR, DIE #2<br>4. EMITTER, COMMON<br>5. EMITTER, COMMON<br>6. BASE, DIE #2<br>7. BASE, DIE #1<br>8. EMITTER, COMMON | <b>STYLE 10:</b><br>PIN 1. GROUND<br>2. BIAS 1<br>3. OUTPUT<br>4. GROUND<br>5. GROUND<br>6. BIAS 2<br>7. INPUT<br>8. GROUND                                                              | <b>STYLE 11:</b><br>PIN 1. SOURCE 1<br>2. GATE 1<br>3. SOURCE 2<br>4. GATE 2<br>5. DRAIN 2<br>6. DRAIN 2<br>7. DRAIN 1<br>8. DRAIN 1                                               | <b>STYLE 12:</b><br>PIN 1. SOURCE<br>2. SOURCE<br>3. SOURCE<br>4. GATE<br>5. DRAIN<br>6. DRAIN<br>7. DRAIN<br>8. DRAIN                                                                                 |
| <b>STYLE 13:</b><br>PIN 1. N.C.<br>2. SOURCE<br>3. SOURCE<br>4. GATE<br>5. DRAIN<br>6. DRAIN<br>7. DRAIN<br>8. DRAIN                                                                              | <b>STYLE 14:</b><br>PIN 1. N-SOURCE<br>2. N-GATE<br>3. P-SOURCE<br>4. P-GATE<br>5. P-DRAIN<br>6. P-DRAIN<br>7. N-DRAIN<br>8. N-DRAIN                                                     | <b>STYLE 15:</b><br>PIN 1. ANODE 1<br>2. ANODE 1<br>3. ANODE 1<br>4. ANODE 1<br>5. CATHODE, COMMON<br>6. CATHODE, COMMON<br>7. CATHODE, COMMON<br>8. CATHODE, COMMON               | <b>STYLE 16:</b><br>PIN 1. EMITTER, DIE #1<br>2. BASE, DIE #1<br>3. EMITTER, DIE #2<br>4. BASE, DIE #2<br>5. COLLECTOR, DIE #2<br>6. COLLECTOR, DIE #2<br>7. COLLECTOR, DIE #1<br>8. COLLECTOR, DIE #1 |
| <b>STYLE 17:</b><br>PIN 1. VCC<br>2. V2OUT<br>3. V1OUT<br>4. TXE<br>5. RXE<br>6. VEE<br>7. GND<br>8. ACC                                                                                          | <b>STYLE 18:</b><br>PIN 1. ANODE<br>2. ANODE<br>3. SOURCE<br>4. GATE<br>5. DRAIN<br>6. DRAIN<br>7. CATHODE<br>8. CATHODE                                                                 | <b>STYLE 19:</b><br>PIN 1. SOURCE 1<br>2. GATE 1<br>3. SOURCE 2<br>4. GATE 2<br>5. DRAIN 2<br>6. MIRROR 2<br>7. DRAIN 1<br>8. MIRROR 1                                             | <b>STYLE 20:</b><br>PIN 1. SOURCE (N)<br>2. GATE (N)<br>3. SOURCE (P)<br>4. GATE (P)<br>5. DRAIN<br>6. DRAIN<br>7. DRAIN<br>8. DRAIN                                                                   |
| <b>STYLE 21:</b><br>PIN 1. CATHODE 1<br>2. CATHODE 2<br>3. CATHODE 3<br>4. CATHODE 4<br>5. CATHODE 5<br>6. COMMON ANODE<br>7. COMMON ANODE<br>8. CATHODE 6                                        | <b>STYLE 22:</b><br>PIN 1. I/O LINE 1<br>2. COMMON CATHODE/VCC<br>3. COMMON CATHODE/VCC<br>4. I/O LINE 3<br>5. COMMON ANODE/GND<br>6. I/O LINE 4<br>7. I/O LINE 5<br>8. COMMON ANODE/GND | <b>STYLE 23:</b><br>PIN 1. LINE 1 IN<br>2. COMMON ANODE/GND<br>3. COMMON ANODE/GND<br>4. LINE 2 IN<br>5. LINE 2 OUT<br>6. COMMON ANODE/GND<br>7. COMMON ANODE/GND<br>8. LINE 1 OUT | <b>STYLE 24:</b><br>PIN 1. BASE<br>2. EMITTER<br>3. COLLECTOR/ANODE<br>4. COLLECTOR/ANODE<br>5. CATHODE<br>6. CATHODE<br>7. COLLECTOR/ANODE<br>8. COLLECTOR/ANODE                                      |
| <b>STYLE 25:</b><br>PIN 1. VIN<br>2. N/C<br>3. REXT<br>4. GND<br>5. IOUT<br>6. IOUT<br>7. IOUT<br>8. IOUT                                                                                         | <b>STYLE 26:</b><br>PIN 1. GND<br>2. dv/dt<br>3. ENABLE<br>4. ILIMIT<br>5. SOURCE<br>6. SOURCE<br>7. SOURCE<br>8. VCC                                                                    | <b>STYLE 27:</b><br>PIN 1. ILIMIT<br>2. OVLO<br>3. UVLO<br>4. INPUT+<br>5. SOURCE<br>6. SOURCE<br>7. SOURCE<br>8. DRAIN                                                            | <b>STYLE 28:</b><br>PIN 1. SW_TO_GND<br>2. DASIC_OFF<br>3. DASIC_SW_DET<br>4. GND<br>5. V_MON<br>6. VBULK<br>7. VBULK<br>8. VIN                                                                        |
| <b>STYLE 29:</b><br>PIN 1. BASE, DIE #1<br>2. EMITTER, #1<br>3. BASE, #2<br>4. EMITTER, #2<br>5. COLLECTOR, #2<br>6. COLLECTOR, #2<br>7. COLLECTOR, #1<br>8. COLLECTOR, #1                        | <b>STYLE 30:</b><br>PIN 1. DRAIN 1<br>2. DRAIN 1<br>3. GATE 2<br>4. SOURCE 2<br>5. SOURCE 1/DRAIN 2<br>6. SOURCE 1/DRAIN 2<br>7. SOURCE 1/DRAIN 2<br>8. GATE 1                           |                                                                                                                                                                                    |                                                                                                                                                                                                        |

|                         |                    |                                                                                                                                                                                     |
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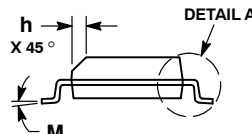
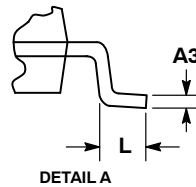
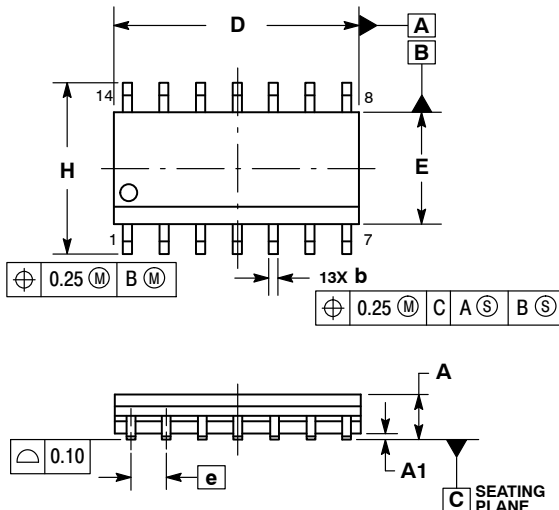
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SCALE 1:1

SOIC-14 NB  
CASE 751A-03  
ISSUE L

DATE 03 FEB 2016

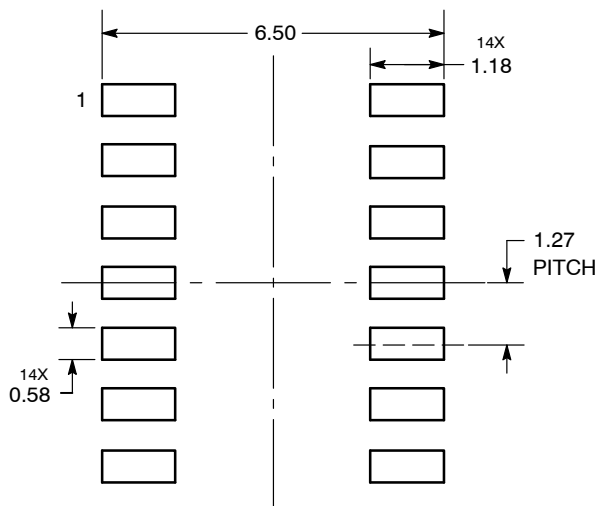


NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSION b DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE PROTRUSION SHALL BE 0.13 TOTAL IN EXCESS OF AT MAXIMUM MATERIAL CONDITION.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD PROTRUSIONS.
5. MAXIMUM MOLD PROTRUSION 0.15 PER SIDE.

| DIM | MILLIMETERS |      | INCHES    |       |
|-----|-------------|------|-----------|-------|
|     | MIN         | MAX  | MIN       | MAX   |
| A   | 1.35        | 1.75 | 0.054     | 0.068 |
| A1  | 0.10        | 0.25 | 0.004     | 0.010 |
| A3  | 0.19        | 0.25 | 0.008     | 0.010 |
| b   | 0.35        | 0.49 | 0.014     | 0.019 |
| D   | 8.55        | 8.75 | 0.337     | 0.344 |
| E   | 3.80        | 4.00 | 0.150     | 0.157 |
| e   | 1.27 BSC    |      | 0.050 BSC |       |
| H   | 5.80        | 6.20 | 0.228     | 0.244 |
| h   | 0.25        | 0.50 | 0.010     | 0.019 |
| L   | 0.40        | 1.25 | 0.016     | 0.049 |
| M   | 0°          | 7°   | 0°        | 7°    |

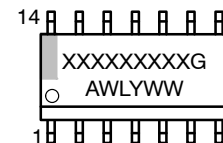
SOLDERING FOOTPRINT\*



DIMENSIONS: MILLIMETERS

\*For additional information on our Pb-Free strategy and soldering details, please download the **onsemi** Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

GENERIC  
MARKING DIAGRAM\*



XXXXXX = Specific Device Code  
A = Assembly Location  
WL = Wafer Lot  
Y = Year  
WW = Work Week  
G = Pb-Free Package

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

STYLES ON PAGE 2

|                  |             |                                                                                                                                                                                     |
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SOIC-14  
CASE 751A-03  
ISSUE L

DATE 03 FEB 2016

STYLE 1:  
PIN 1. COMMON CATHODE  
2. ANODE/CATHODE  
3. ANODE/CATHODE  
4. NO CONNECTION  
5. ANODE/CATHODE  
6. NO CONNECTION  
7. ANODE/CATHODE  
8. ANODE/CATHODE  
9. ANODE/CATHODE  
10. NO CONNECTION  
11. ANODE/CATHODE  
12. ANODE/CATHODE  
13. NO CONNECTION  
14. COMMON ANODE

STYLE 2:  
CANCELLED

STYLE 3:  
PIN 1. NO CONNECTION  
2. ANODE  
3. ANODE  
4. NO CONNECTION  
5. ANODE  
6. NO CONNECTION  
7. ANODE  
8. ANODE  
9. ANODE  
10. NO CONNECTION  
11. ANODE  
12. ANODE  
13. NO CONNECTION  
14. COMMON CATHODE

STYLE 4:  
PIN 1. NO CONNECTION  
2. CATHODE  
3. CATHODE  
4. NO CONNECTION  
5. CATHODE  
6. NO CONNECTION  
7. CATHODE  
8. CATHODE  
9. CATHODE  
10. NO CONNECTION  
11. CATHODE  
12. CATHODE  
13. NO CONNECTION  
14. COMMON ANODE

STYLE 5:  
PIN 1. COMMON CATHODE  
2. ANODE/CATHODE  
3. ANODE/CATHODE  
4. ANODE/CATHODE  
5. ANODE/CATHODE  
6. NO CONNECTION  
7. COMMON ANODE  
8. COMMON CATHODE  
9. ANODE/CATHODE  
10. ANODE/CATHODE  
11. ANODE/CATHODE  
12. ANODE/CATHODE  
13. NO CONNECTION  
14. COMMON ANODE

STYLE 6:  
PIN 1. CATHODE  
2. CATHODE  
3. CATHODE  
4. CATHODE  
5. CATHODE  
6. CATHODE  
7. CATHODE  
8. ANODE  
9. ANODE  
10. ANODE  
11. ANODE  
12. ANODE  
13. ANODE  
14. ANODE

STYLE 7:  
PIN 1. ANODE/CATHODE  
2. COMMON ANODE  
3. COMMON CATHODE  
4. ANODE/CATHODE  
5. ANODE/CATHODE  
6. ANODE/CATHODE  
7. ANODE/CATHODE  
8. ANODE/CATHODE  
9. ANODE/CATHODE  
10. ANODE/CATHODE  
11. COMMON CATHODE  
12. COMMON ANODE  
13. ANODE/CATHODE  
14. ANODE/CATHODE

STYLE 8:  
PIN 1. COMMON CATHODE  
2. ANODE/CATHODE  
3. ANODE/CATHODE  
4. NO CONNECTION  
5. ANODE/CATHODE  
6. ANODE/CATHODE  
7. COMMON ANODE  
8. COMMON ANODE  
9. ANODE/CATHODE  
10. ANODE/CATHODE  
11. NO CONNECTION  
12. ANODE/CATHODE  
13. ANODE/CATHODE  
14. COMMON CATHODE

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