

NE592

Video Amplifier

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



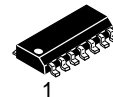
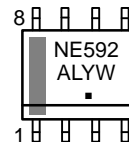
ON Semiconductor®

www.onsemi.com

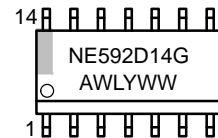
MARKING DIAGRAMS



**SOIC-8
D SUFFIX
CASE 751**



**SOIC-14
D SUFFIX
CASE 751A**



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.

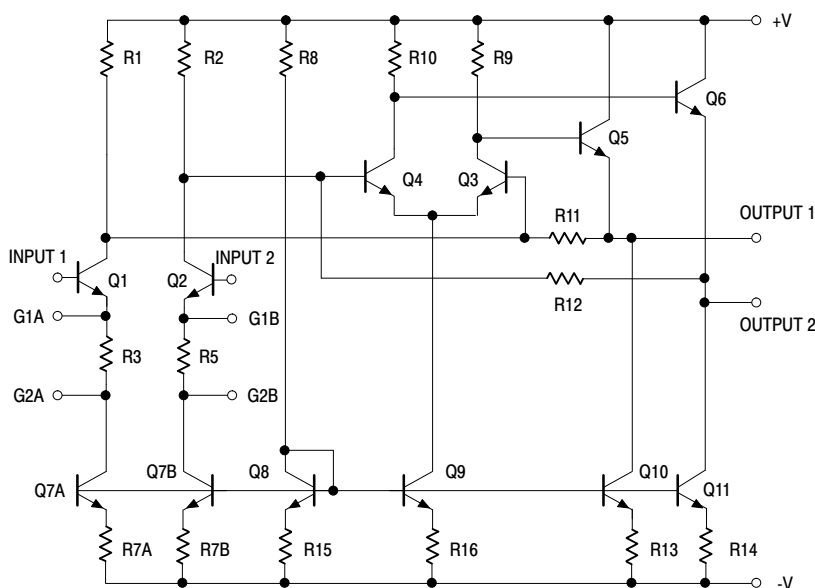
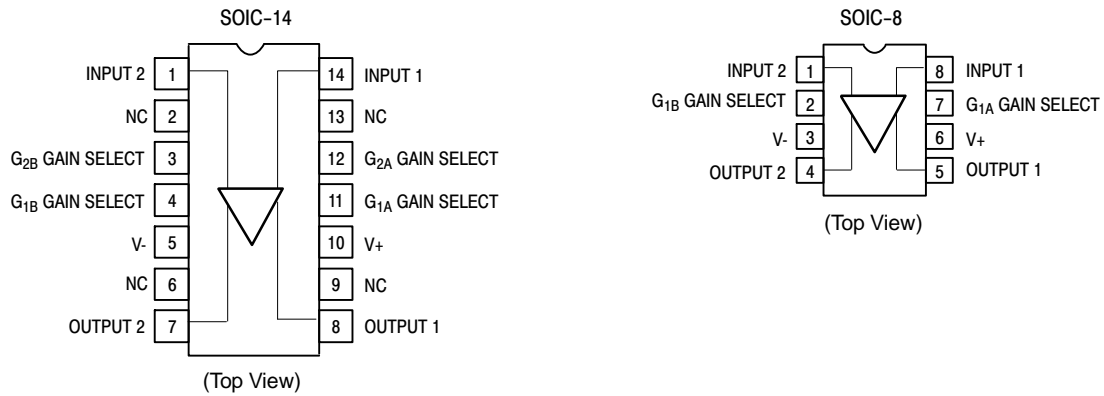


Figure 1. Block Diagram

NE592

PIN CONNECTIONS



MAXIMUM RATINGS ($T_A = +25^\circ\text{C}$, unless otherwise noted.)

Rating	Symbol	Value	Unit
Supply Voltage	V_{CC}	± 8.0	V
Differential Input Voltage	V_{IN}	± 5.0	V
Common-Mode Input Voltage	V_{CM}	± 6.0	V
Output Current	I_{OUT}	10	mA
Operating Ambient Temperature Range	T_A	0 to +70	$^\circ\text{C}$
Operating Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	65 to +150	$^\circ\text{C}$
Maximum Power Dissipation, $T_A = 25^\circ\text{C}$ (Still Air) (Note 1)	$P_{D\ MAX}$	SOIC-14 Package 0.98 SOIC-8 Package 0.79	W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	SOIC-14 Package 145 SOIC-8 Package 182	$^\circ\text{C}/\text{W}$

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 $6.9\ \text{mW}/^\circ\text{C}$
 SOIC-8 package at $5.5\ \text{mW}/^\circ\text{C}$

NE592

DC ELECTRICAL CHARACTERISTICS ($V_{SS} = \pm 6.0\text{ V}$, $V_{CM} = 0$, 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 $V_S = \pm 6.0\text{ V}$.)

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

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

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

TYPICAL PERFORMANCE CHARACTERISTICS

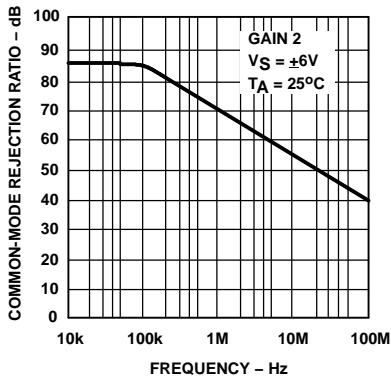


Figure 2. Common-Mode Rejection Ratio as a Function of Frequency

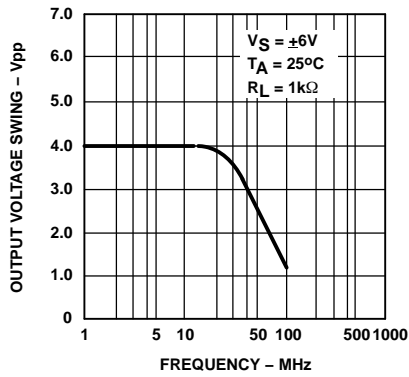


Figure 3. Output Voltage Swing as a Function of Frequency

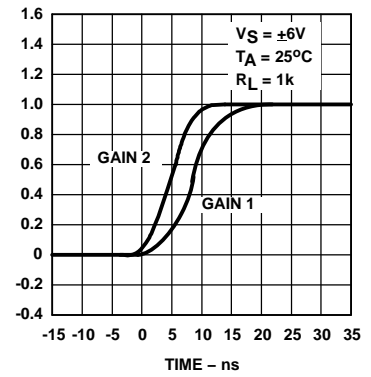


Figure 4. Pulse Response

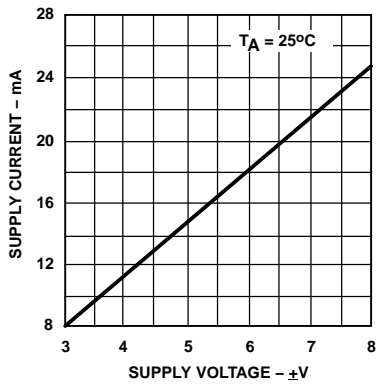


Figure 5. Supply Current as a Function of Temperature

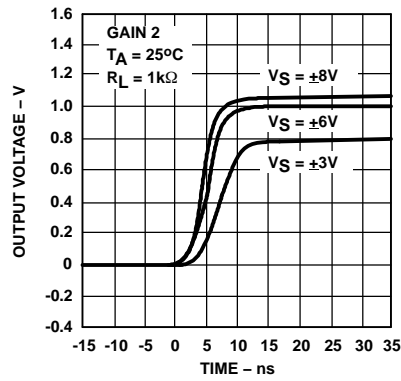


Figure 6. Pulse Response as a Function of Supply Voltage

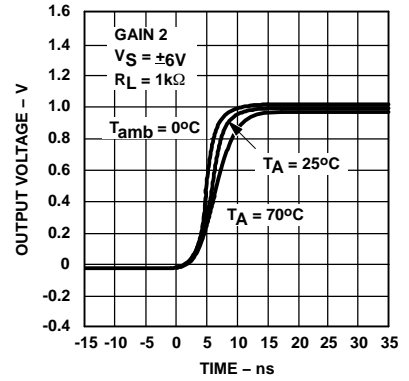


Figure 7. Pulse Response as a Function of Temperature

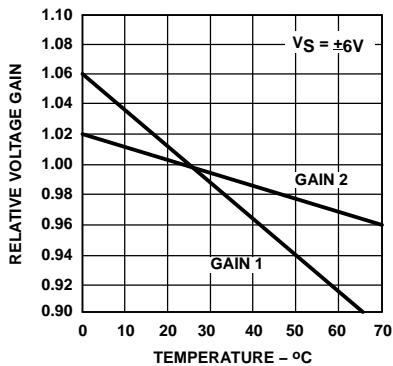


Figure 8. Voltage Gain as a Function of Temperature

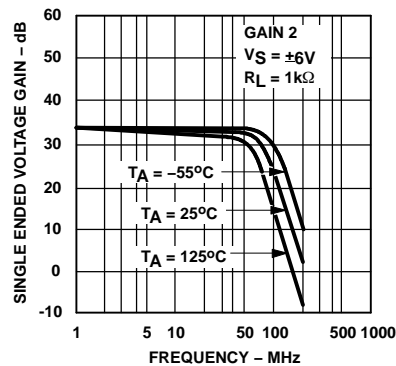


Figure 9. Gain vs. Frequency as a Function of Temperature

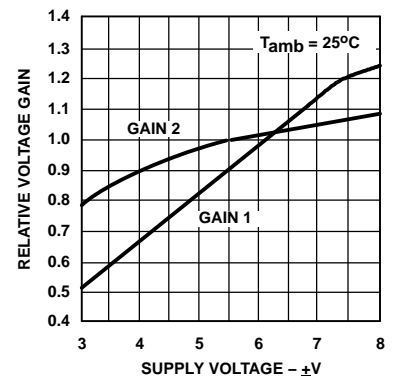


Figure 10. Voltage Gain as a Function of Supply Voltage

TYPICAL PERFORMANCE CHARACTERISTICS

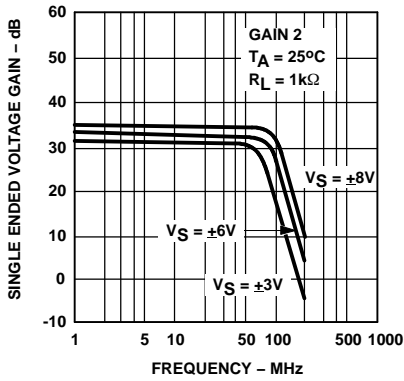


Figure 11. Gain vs. Frequency as a Function of Supply Voltage

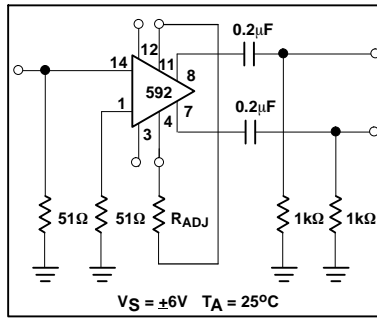


Figure 12. Voltage Gain Adjust Circuit

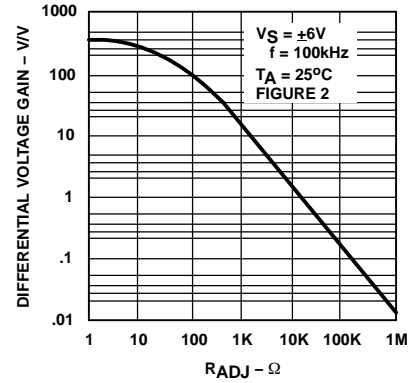


Figure 13. Voltage Gain as a Function of RADJ (Figure 2)

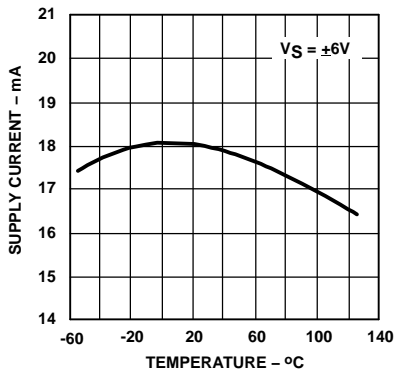


Figure 14. Supply Current as a Function of Temperature

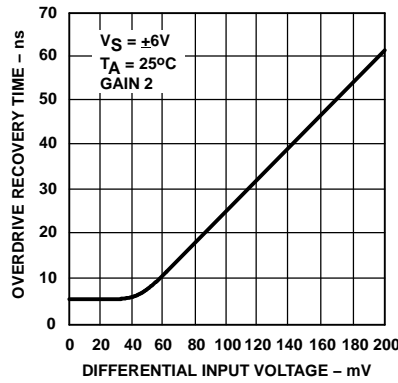


Figure 15. Differential Overdrive Recovery Time

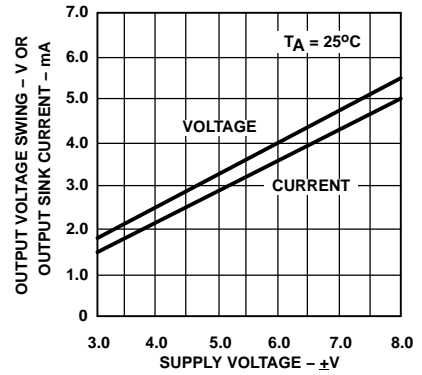


Figure 16. Output Voltage and Current Swing as a Function of Supply Voltage

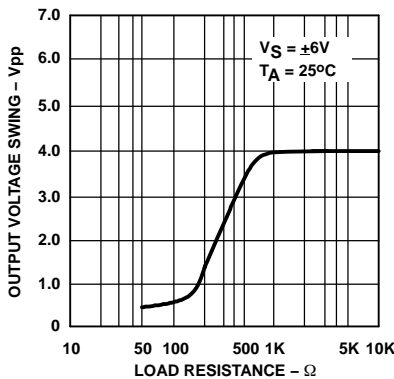


Figure 17. Output Voltage Swing as a Function of Load Resistance

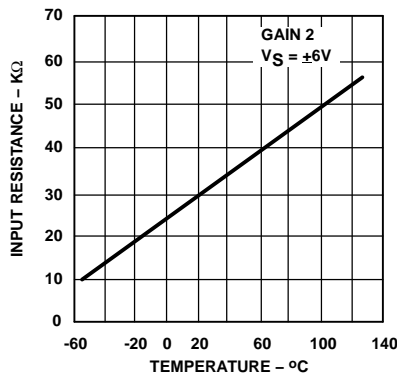


Figure 18. Input Resistance as a Function of Temperature

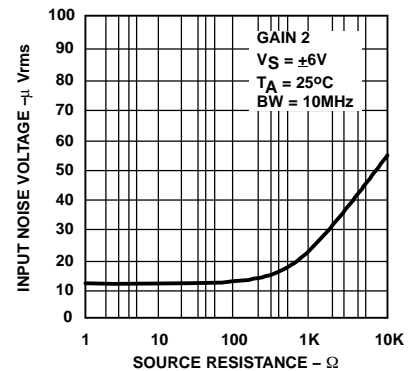


Figure 19. Input Noise Voltage as a Function of Source Resistance

TYPICAL PERFORMANCE CHARACTERISTICS

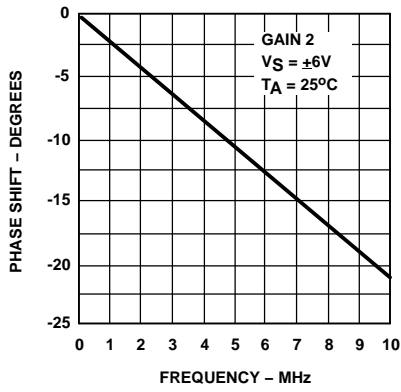


Figure 20. Phase Shift as a Function of Frequency

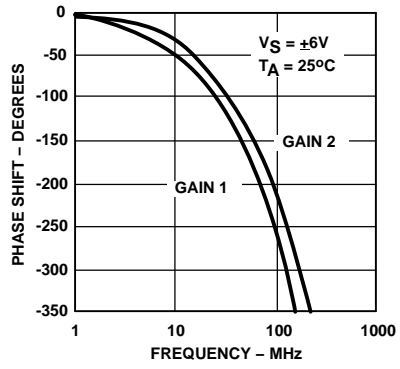


Figure 21. Phase Shift as a Function of Frequency

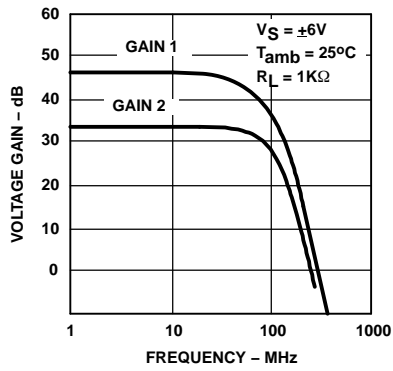


Figure 22. Voltage Gain as a Function of Frequency

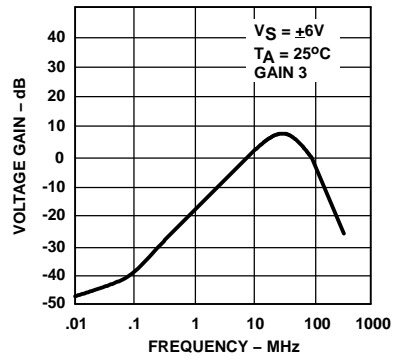


Figure 23. Voltage Gain as a Function of Frequency

TEST CIRCUITS ($T_A = 25^\circ C$, unless otherwise noted.)

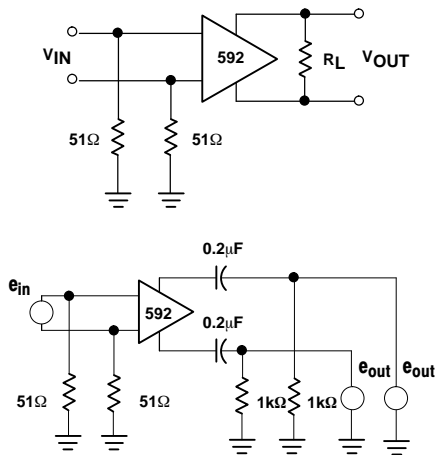


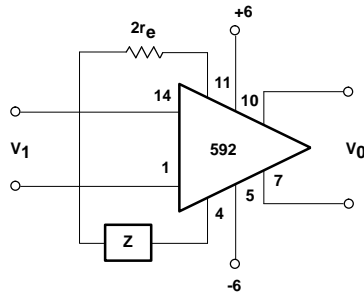
Figure 24. Test Circuits

NE592

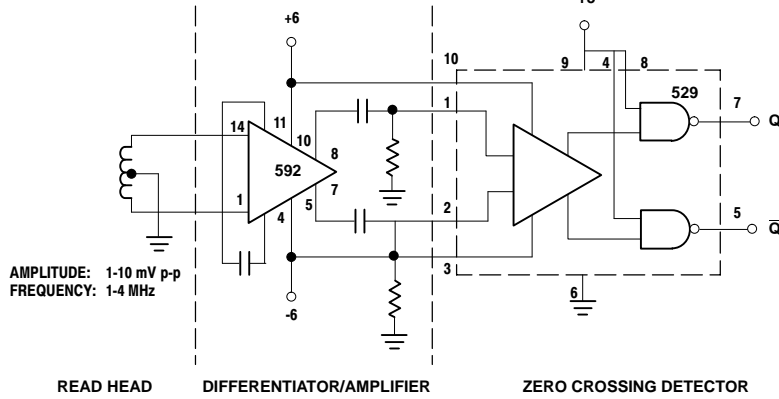
NOTE:

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

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

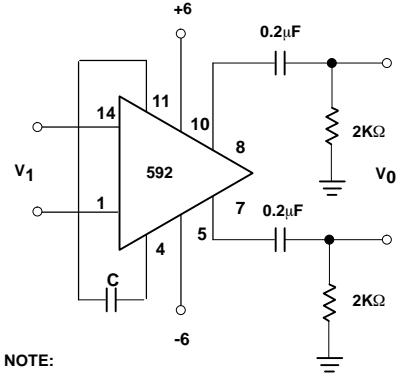


Basic Configuration



AMPLITUDE: 1-10 mV p-p
FREQUENCY: 1-4 MHz

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 $V_1(s)$ 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 32Ω .

$S = j\Omega$

$\Omega = 2\pi f$

Figure 26. Filter Networks

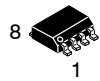
NE592

ORDERING INFORMATION

Device	Temperature Range	Package	Shipping†
NE592D8G	0 to +70°C	SOIC-8 (Pb-Free)	98 Units/Rail
NE592D8R2G			2500 / Tape & Reel
NE592D14G		SOIC-14 (Pb-Free)	55 Units/Rail
NE592D14R2G			2500 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

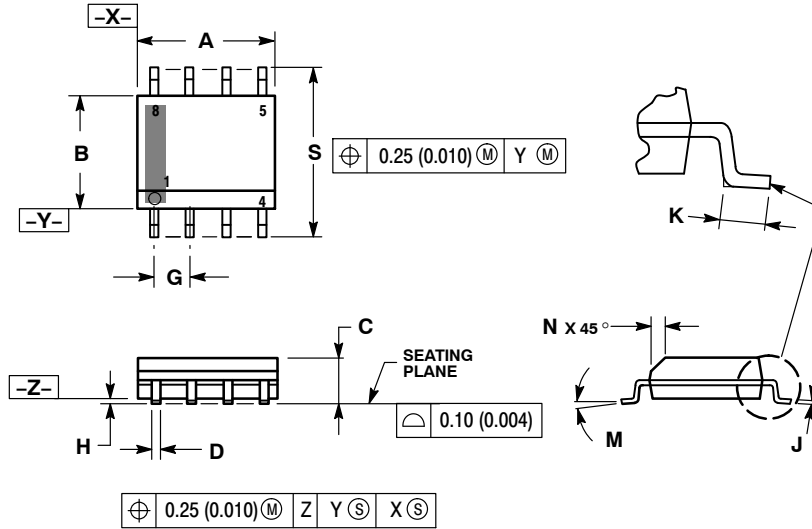
MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS



SCALE 1:1

SOIC-8 NB
CASE 751-07
ISSUE AK

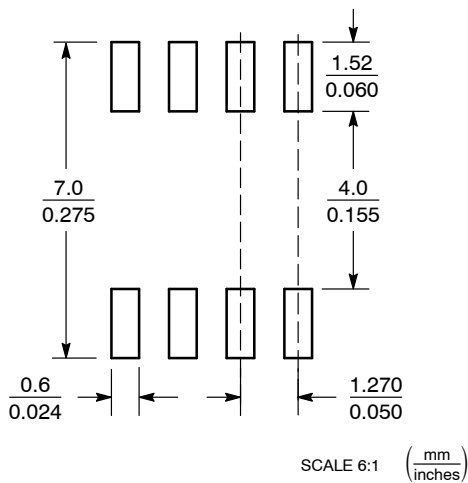
DATE 16 FEB 2011



- 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.

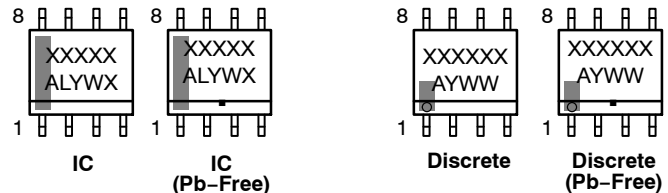
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.80	5.00	0.189	0.197
B	3.80	4.00	0.150	0.157
C	1.35	1.75	0.053	0.069
D	0.33	0.51	0.013	0.020
G	1.27 BSC		0.050 BSC	
H	0.10	0.25	0.004	0.010
J	0.19	0.25	0.007	0.010
K	0.40	1.27	0.016	0.050
M	0°	8°	0°	8°
N	0.25	0.50	0.010	0.020
S	5.80	6.20	0.228	0.244

SOLDERING FOOTPRINT*



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

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.

STYLES ON PAGE 2

DOCUMENT NUMBER:	98ASB42564B	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
DESCRIPTION:	SOIC-8 NB	PAGE 1 OF 2

onsemi and ONsemi are trademarks of Semiconductor Components Industries, LLC dba onsemi or its subsidiaries in the United States and/or other countries. onsemi reserves the right to make changes without further notice to any products herein. onsemi makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does onsemi assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. onsemi does not convey any license under its patent rights nor the rights of others.

SOIC-8 NB
CASE 751-07
ISSUE AK

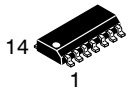
DATE 16 FEB 2011

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

DOCUMENT NUMBER:	98ASB42564B	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
DESCRIPTION:	SOIC-8 NB	PAGE 2 OF 2

onsemi and **ONSEMI** are trademarks of Semiconductor Components Industries, LLC dba **onsemi** or its subsidiaries in the United States and/or other countries. **onsemi** reserves the right to make changes without further notice to any products herein. **onsemi** makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. **onsemi** does not convey any license under its patent rights nor the rights of others.

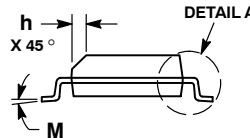
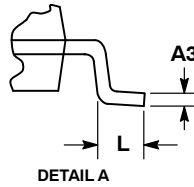
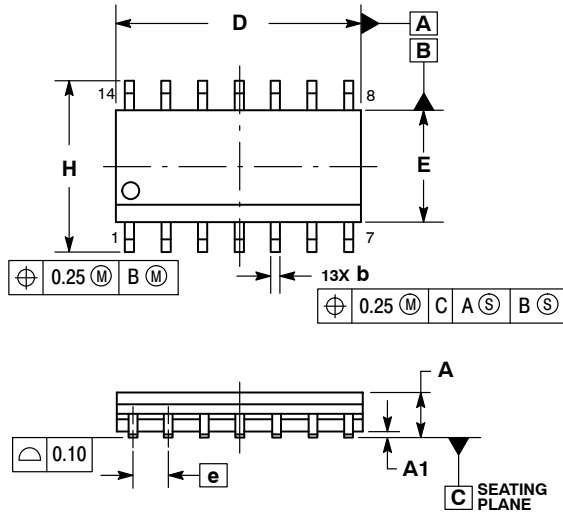
MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS



SCALE 1:1

SOIC-14 NB
CASE 751A-03
ISSUE L

DATE 03 FEB 2016

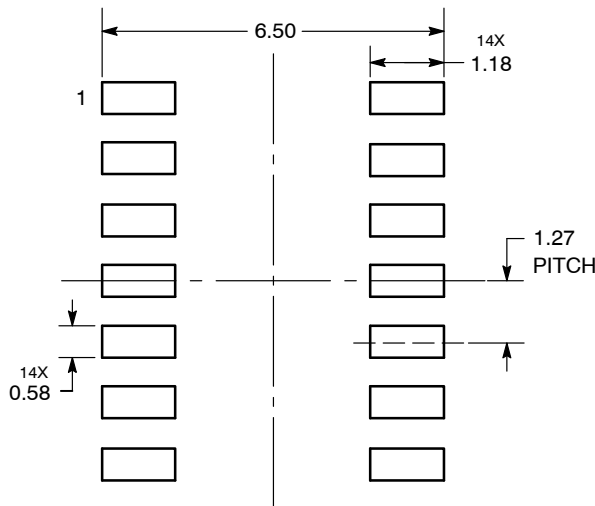


NOTES:

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°

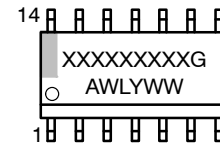
SOLDERING FOOTPRINT*



DIMENSIONS: MILLIMETERS

*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor 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

DOCUMENT NUMBER:	98ASB42565B	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
DESCRIPTION:	SOIC-14 NB	PAGE 1 OF 2

onsemi and ONSEMI are trademarks of Semiconductor Components Industries, LLC dba onsemi or its subsidiaries in the United States and/or other countries. onsemi reserves the right to make changes without further notice to any products herein. onsemi makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does onsemi assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. onsemi does not convey any license under its patent rights nor the rights of others.

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

DOCUMENT NUMBER:	98ASB42565B	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
DESCRIPTION:	SOIC-14 NB	PAGE 2 OF 2

onsemi and **ONSEMI** are trademarks of Semiconductor Components Industries, LLC dba **onsemi** or its subsidiaries in the United States and/or other countries. **onsemi** reserves the right to make changes without further notice to any products herein. **onsemi** makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. **onsemi** does not convey any license under its patent rights nor the rights of others.

onsemi, **Onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:

Technical Library: www.onsemi.com/design/resources/technical-documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support

For additional information, please contact your local Sales Representative at www.onsemi.com/support/sales