NE592

V A

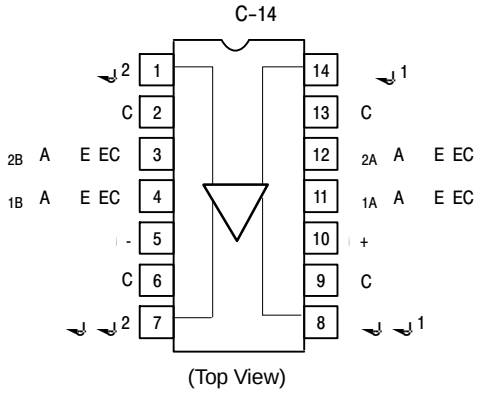
The NE592 is a monolithic, two-stage, differential output, wideband video amplifier. It offers fixed gains of 100 and 400 without external components and adjustable gains from 400 to 0 with one external resistor. The input stage has been designed so that with the addition of a few external reactive elements 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.

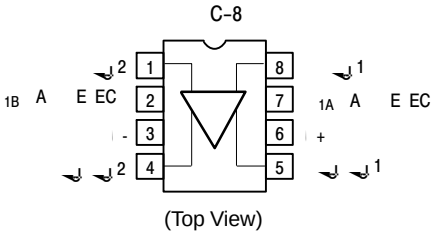
Features

- 120 MHz Unity Gain Bandwidth
- Adjustable Gains from 0 to 400
- Adjustable Pass Band
- No Frequency Compensation Required
- Wave Shaping with Minimal External Components
-

March, 2016 − Rev. 5
Publication Order Number:
NE592/D

PIN CONNECTIONS





MAXIMUM RATINGS (T_A = +25°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	°C
Operating Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	65 to +150	°C
Maximum Power Dissipation, T_A = 25°C (Still Air) (Note 1) SOIC-14 Package SOIC-8 Package	$P_{D\ MAX}$	 0.98 0.79	W
Thermal Resistance, Junction−to−Ambient SOIC-14 Package SOIC-8 Package	$R_{\theta JA}$	 145 182	°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.

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

DC ELECTRICAL CHARACTERISTICS (V_{SS} = ±6.0 V, V_{CM} = 0, typicals at T_A = +25°C, min and max at 0°C ≤ T_A ≤ 70°C, unless otherwise noted. Recommended operating supply voltages V_S = ±6.0 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 kΩ, V_{OUT} = 3.0 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°C 0°C ≤ T_A ≤ 70°C	R_{IN}	 – 10 8.0	 4.0 30 –	 – – –	kΩ
Input Capacitance	Gain 2 (Note 4)	C_{IN}	–	2.0	–	pF
Input Offset Current	T_A = 25°C 0°C ≤ T_A ≤ 70°C	I_{OS}	– –	0.4 –	5.0 6.0	μA
Input Bias Current	T_A = 25°C 0°C ≤ T_A ≤ 70°C	I_{BIAS}	– –	9.0 –	30 40	μA
Input Noise Voltage	BW 1.0 kHz to 10 MHz	V_{NOISE}	–	12	–	μV

TYPICAL PERFORMANCE CHARACTERISTICS

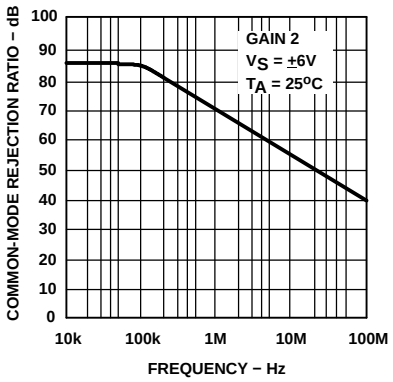


Figure 2. Common−Mode Rejection Ratio as a Function of Frequency

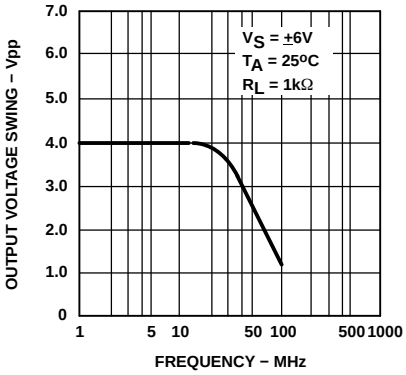


Figure 3. Output Voltage Swing as a Function of Frequency

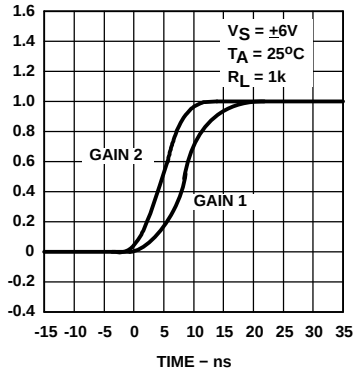
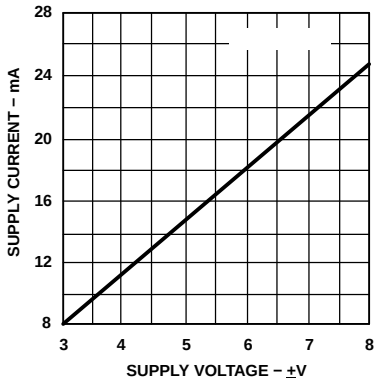


Figure 4. Pulse Response



TYPICAL PERFORMANCE CHARACTERISTICS

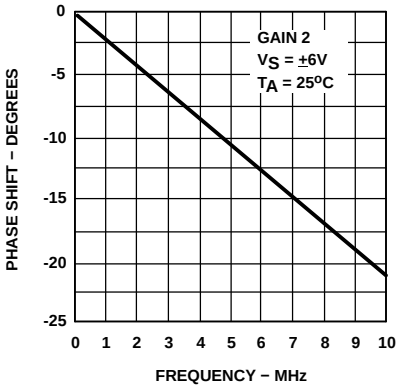


Figure 20. Phase Shift as a Function of Frequency

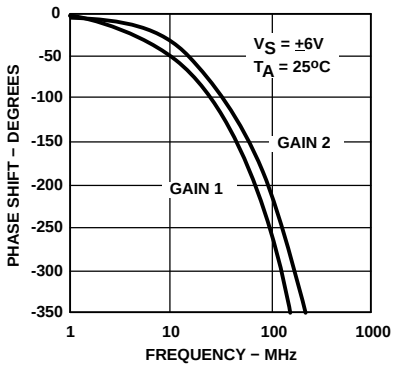


Figure 21. Phase Shift as a Function of Frequency

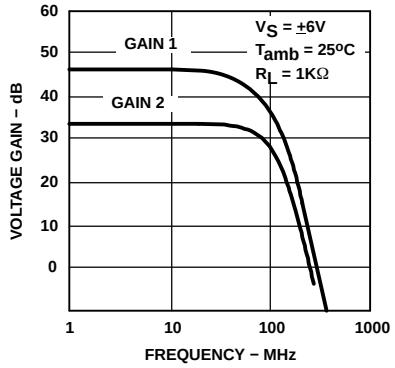


Figure 22. Voltage Gain as a Function of Frequency

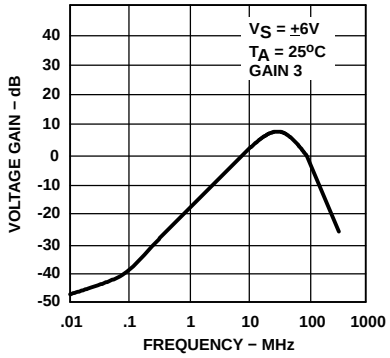
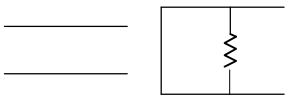
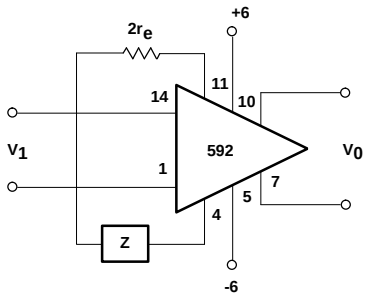


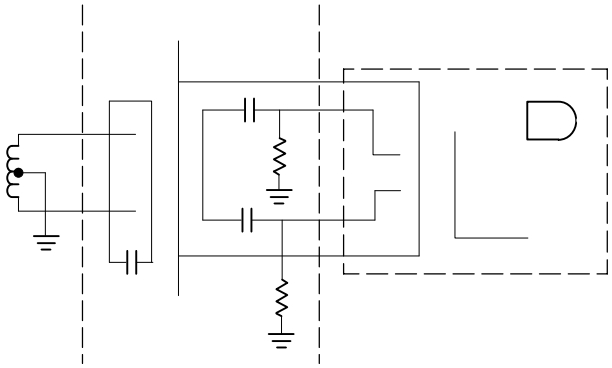
Figure 23. Voltage Gain as a Function of Frequency



NOTE:



Basic Configuration



Disc/Tape Phase-Modulated Readback Systems

NOTE:

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

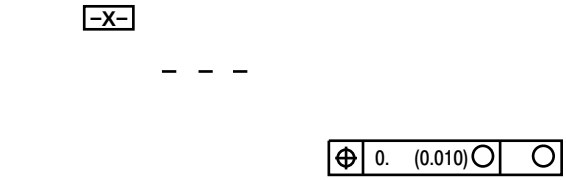
$$V_O \quad 1.4 \times 10^4 C \frac{dVi}{dT}$$

Differentiation with High Common-Mode Noise Rejection

ORDERING INFORMATION

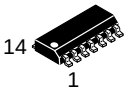
Device	Temperature Range	Package	Shipping†
NE592D8G	0 to +70°C	SOIC−8 (Pb−Free)	98 Units/Rail
NE592D8R2G			2500 / Tape & Reel
NE592D14G		SOIC−14 (Pb−Free)	55 Units/Rail
NE592D14R2G			2500 / Tape & Reel

†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.



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

0. (0.010) 1 0 1 1 0 0 1 . 0 0 0 0 . 1 1 0 1 1 . 1 0 . 0 0 0 1 . 1 1 0 0 1 1 0 ( ) 0 1 . 1 1 0 0 1 1 . 1 1 . 1 0 0 . 0 0 0 . 1 1 . 1 0 0 . 0 0 0 1 1 . 1 0 0 0 1 0 0 0 0 .)



SCALE 1:1

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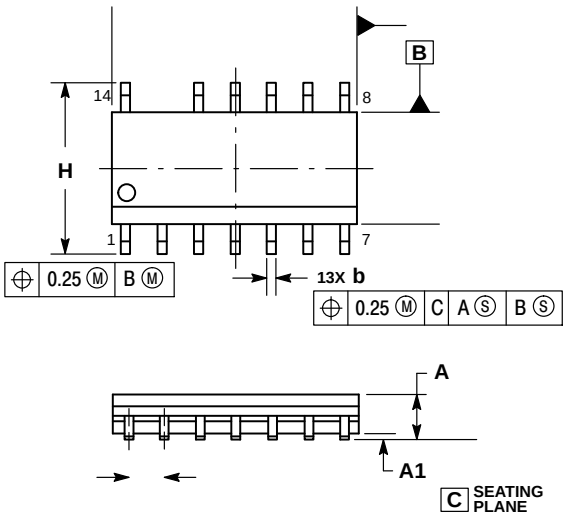
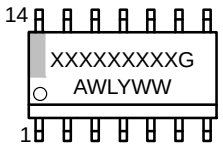


NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSION b DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE PROTRUSION SHALL BE 0.13 TOTAL IN EXCESS OF AT MAXIMUM MATERIAL CONDITION.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD PROTRUSIONS.
5. MAXIMUM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

GENERIC
MARKING DIAGRAM*



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

STYLES ON PAGE 2

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STYLE 7:
PIN 1. ANODE/CATHODE
2. COMMON ANODE
3. COMMON CATHODE
4. ANODE/CATHODE
5. ANODE/CATHODE