

# Am592

## Differential Video Amplifier

### PRELIMINARY DATA

#### Distinctive Characteristics

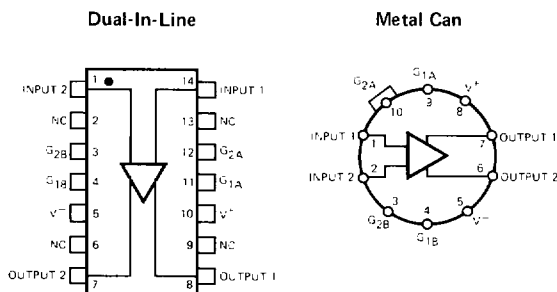
- The Am592 and Am592C differential video amplifiers are functionally, electrically and pin-for-pin equivalent to the Signetics SE592 and NE592.
- Bandwidths: 40 to 120 MHz
- Rise times: 2.5 to 10 ns
- Propagation delay: 3.6 to 10 ns
- 100% reliability assurance testing in compliance with MIL-STD-883A
- Electrically tested and optically inspected dice for hybrid manufacturers
- 120 MHz bandwidth
- Adjustable gains from 0 to 400
- Adjustable pass band
- No frequency compensation required
- Available in metal can, hermetic dual-in-line or plastic dual-in-line packages

#### FUNCTIONAL DESCRIPTION

The Am592/Am592C 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 and video recorder systems.

#### CONNECTION DIAGRAMS

##### Top Views



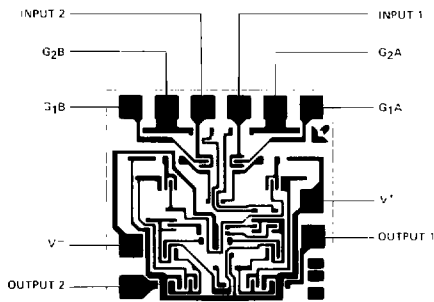
Note: On Metal Can, pin 5 is connected to case.

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#### ORDERING INFORMATION

Part Number	Package Type	Temperature Range	Order Number
Am592C	TO-100	0°C to +70°C	AM592HC
	DIP	0°C to +70°C	AM592DC
	Molded DIP	0°C to +70°C	AM592PC
	Dice	0°C to +70°C	LD592C
Am592	TO-100	-55°C to +125°C	AM592HM
	DIP	-55°C to +125°C	AM592DM
	Dice	-55°C to +125°C	LD592

#### Metallization and Pad Layout



DIE SIZE 41 X 41 mils

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# Am592

## ABSOLUTE MAXIMUM RATINGS

Supply Voltage	±8V
Differential Input Voltage	±5V
Common Mode Input Voltage	±6V
Output Current	10mA
Operating Temperature Range	
Am592	-55°C to +125°C
Am592C	0°C to +70°C
Storage Temperature Range	-65°C to +150°C

## ELECTRICAL CHARACTERISTICS Standard Conditions ( $T_A = +25^\circ\text{C}$ , $V_S = \pm 6\text{V}$ , $V_{CM} = 0$ unless otherwise specified)

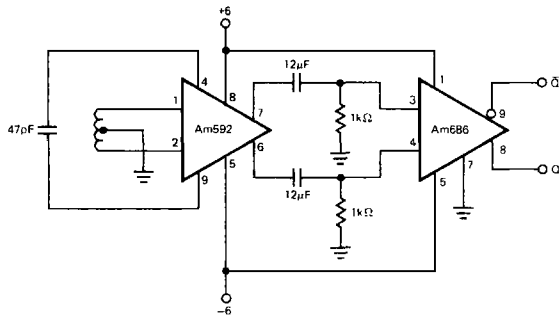
Parameter	Conditions	Am592C			Am592			Units
		Min.	Typ.	Max.	Min.	Typ.	Max.	
Differential Voltage Gain	Gain 1 Note 1	250	400	600	300	400	500	
	Gain 2 Note 2							
Bandwidth	Gain 1 Note 1							MHz
	Gain 2 Note 2							
Rise Time	Gain 1 Note 1							ns
	Gain 2 Note 2							
Propagation Delay	Gain 1 Note 1							ns
	Gain 2 Note 2							
Input Resistance	Gain 1 Note 1							kΩ
	Gain 2 Note 2							
Input Capacitance	Gain 2 Note 2							pF
Input Offset Current								μA
Input Bias Current								μA
Input Noise Voltage	BW 1kHz to 10kHz							μV rms
Input Voltage Range								Volts
Common Mode Rejection Ratio	Gain 2							dB
	Gain 2							
Supply Voltage Rejection Ratio	Gain 2							dB
Output Offset Voltage	Gain 3 Note 3							Volts
Output Common Mode Voltage	$R_L = \infty$							Volts
Output Voltage Swing	$R_L = 2\text{k}\Omega$ , Single Ended							Volts
Output Resistance								Ω
Power Supply Current	$R_L = \infty$							mA

Recommended Operating Supply Voltage ( $V_S = \pm 6.0\text{V}$ )

- Notes: 1. Gain select pins  $G_{1A}$  and  $G_{1B}$  connected together.  
 2. Gain select pins  $G_{2A}$  and  $G_{2B}$  connected together.  
 3. All gain select pins open.

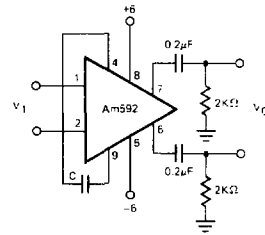
TYPICAL APPLICATIONS

DISC/TAPE PHASE MODULATED READBACK SYSTEMS



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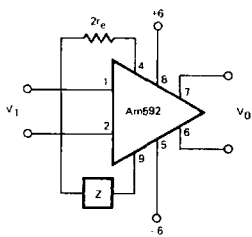
DIFFERENTIATION WITH HIGH COMMON MODE NOISE REJECTION



FOR FREQUENCY  $F_1 \ll 1/2 \pi (32) C$   
 $v_O \geq 1.4 \times 10^4 C \frac{dv_i}{dt}$

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FILTER NETWORKS



$$\frac{v_O(s)}{v_1(s)} \geq \frac{1.4 \times 10^4}{Z(s) + 2r_e}$$

$$\geq \frac{1.4 \times 10^4}{Z(s) + 32}$$

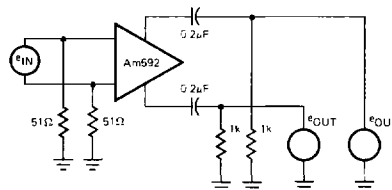
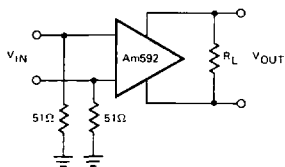
Z NETWORK	FILTER TYPE	$V_O(s)$ TRANSFER $V_1(s)$ FUNCTION
	LOW PASS	$\frac{1.4 \times 10^4}{L} \left[ \frac{1}{s + R/L} \right]$
	HIGH PASS	$\frac{1.4 \times 10^4}{R} \left[ \frac{s}{s + 1/RC} \right]$
	BAND PASS	$\frac{1.4 \times 10^4}{L} \left[ \frac{s}{s^2 + R/Ls + 1/LC} \right]$
	BAND REJECT	$\frac{1.4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

Note: In the networks above, the value used is assumed to include  $2r_e$ , or approximately 32 ohms.

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TEST CIRCUITS

( $T_A = 25^\circ C$  Unless Otherwise Noted)



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