

VIDEO AMPLIFIER

■ GENERAL DESCRIPTION

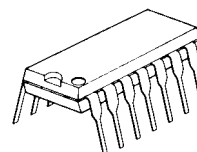
The **NJM592** is a video amplifier of differential input and differential output.

The **NJM592** is suitable for a preamplifier of memory equipment and video and pulse signal amplifier.

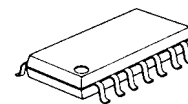
■ FEATURES

- Wide Frequency Range (40MHz, 90MHz typ.)
- Differential Input, Differential Output.
- With Gain Select Terminal
- Package Outline DIP8/14, DMP8/14, SSOP8/14.
- Bipolar Technology

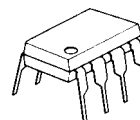
■ PACKAGE OUTLINE



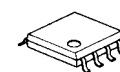
NJM592D



NJM592M



NJM592D8



NJM592M8

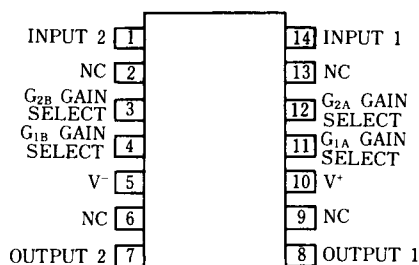


NJM592V8

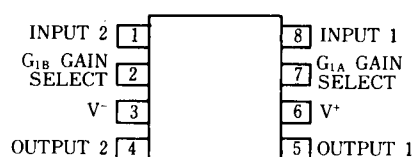


NJM592V

■ PIN CONFIGURATION

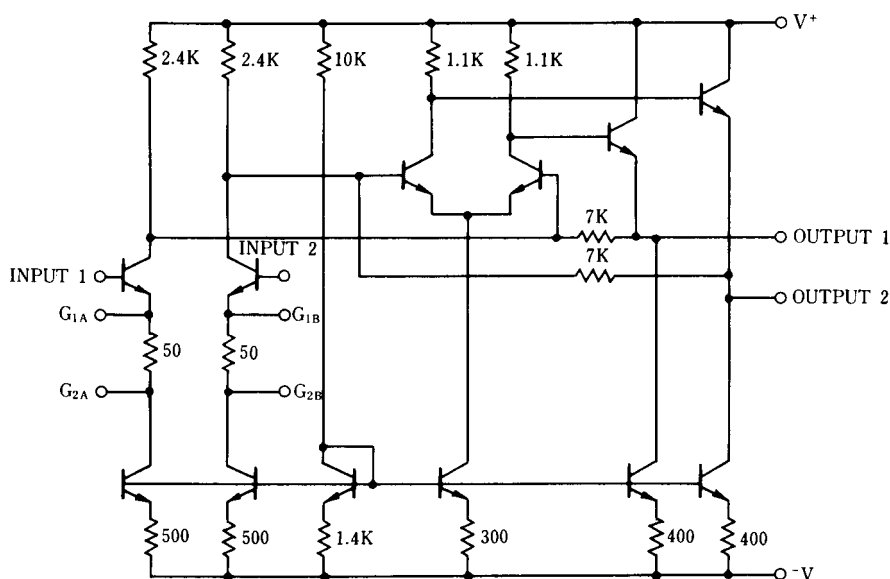


NJM592D
NJM592M
NJM592V



NJM592D8
NJM592M8
NJM592V8

■ EQUIVALENT CIRCUIT



NJM592

■ ABSOLUTE MAXIMUM RATINGS

(T_a=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V ⁺ /V	±8	V
Differential Input Voltage	V _{DIF}	±5	V
Common Mode Input Voltage	V _{CM}	±6	V
Output Current	I _O	10	mA
Operating Temperature Range	T _{opr}	-40 to +85	°C
Storage Temperature Range	T _{stg}	-40 to +125	°C
Power Dissipation	P _D	(DIP14) 500	mW
		(DMP14) 300	mW
		(SSOP14) 300	mW
		(DIP8) 500	mW
		(DMP8) 300	mW
		(SSOP8) 250	mW

■ ELECTRICAL CHARACTERISTICS

($T_a=25^{\circ}\text{C}$, $V^+=\pm 6\text{V}$, $V_{\text{CM}}=0$)

PARAMETER	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Differential Voltage Gain 1 (note 1)	$R_1=2\text{k}\Omega$, $V_{\text{OUT}}=3V_{\text{P-P}}$	250	400	600	V/V
Differential Voltage Gain 2 (note 2, 4)		80	100	120	
Bandwidth (note 1)		-	40	-	MHz
Bandwidth 2 Gain 2 (note 2, 4)		-	90	-	
Rise Time Gain 1 (note 1)	$V_{\text{OUT}}=1V_{\text{P-P}}$	-	10.5	-	ns
Rise Time Gain 2 (note 2, 4)		-	4.5	-	
Propagation Delay 1 Gain 1 (note 1)	$V_{\text{OUT}}=1V_{\text{P-P}}$	-	7.5	-	ns
Propagation Delay 2 Gain 2 (note 2, 4)		-	6.0	-	
Input Resistance Gain 1 (note1)		-	4.0	-	k Ω
Input Resistance Gain 2 (note 2, 4)		-	30	-	
Input Capacitance Gain 2 (note2, 4)		-	2.0	-	pF
Input Offset Current		-	0.4	5.0	μA
Input Bias Current		-	9.0	30	μA
Input Noise Voltage	BW=1kHz to 10MHz	-	12	-	μVrms
Input Voltage Range		-	-	± 1.0	V
Common Mode Rejection Ratio Gain 2 (note 4)	$V_{\text{CM}}=\pm 1\text{V}$, $f<100\text{kHz}$	60	86	-	dB
Common Mode Rejection Ratio Gain 2 (note 4)	$V_{\text{CM}}=\pm 1\text{V}$, $f=5\text{MHz}$	-	60	-	
Supply Voltage Rejection Ratio Gain 2 (note 4)	$\Delta V^+/\text{V}=\pm 0.5\text{V}$	50	70	-	dB
Output Offset Voltage Gain 1 (note 1)	$R_L=\infty$	-	-	1.5	V
Output Offset Voltage Gain 2 (note2, 4)	$R_L=\infty$	-	-	1.5	
Output Offset Voltage Gain 3 (note 3)	$R_L=\infty$	-	0.35	0.75	
Output Common Mode Voltage	$R_L=\infty$	2.4	2.9	3.4	V
Output Voltage Swing	$R_L=2\text{k}\Omega$	3.0	4.0	-	V
Output Resistance		-	20	-	Ω
Output Current	$R_L=\infty$	-	18	24	mA

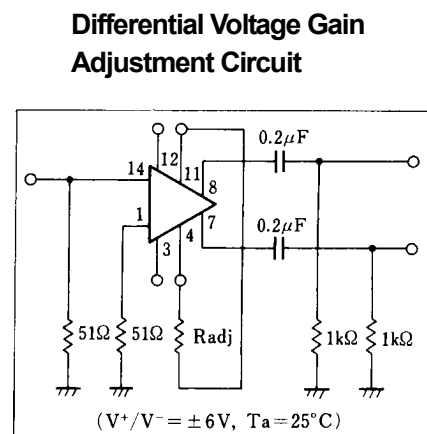
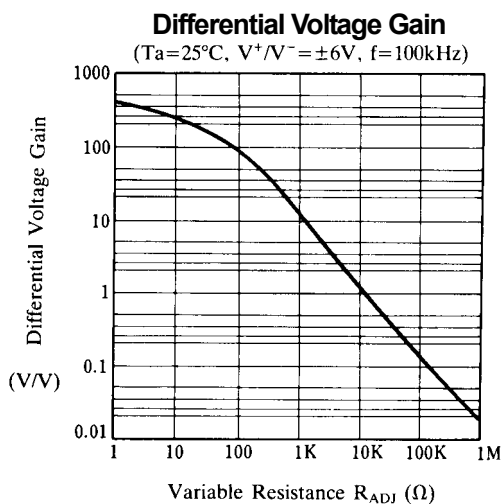
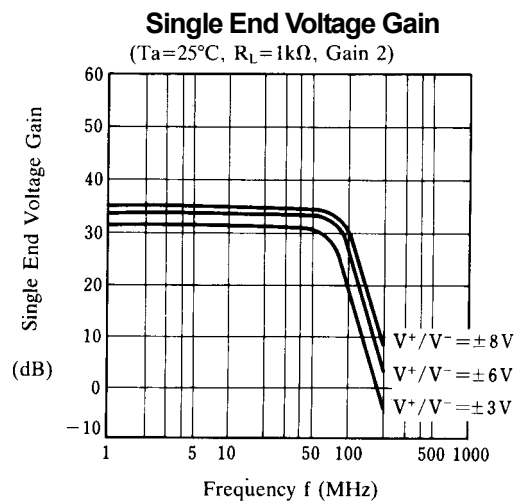
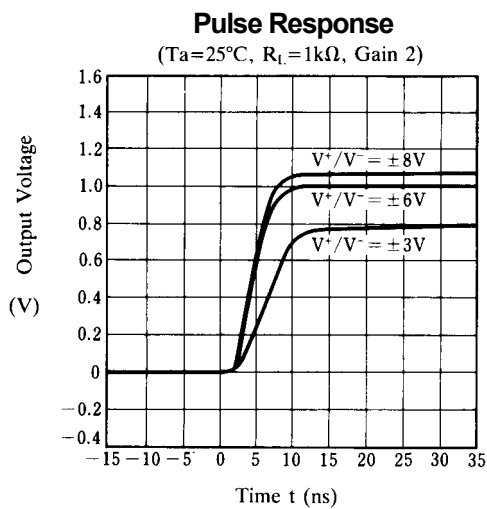
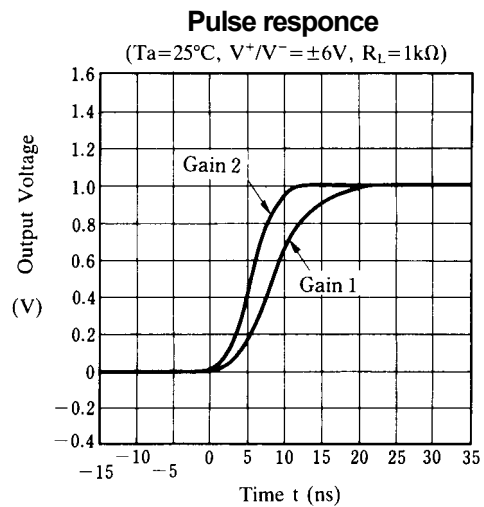
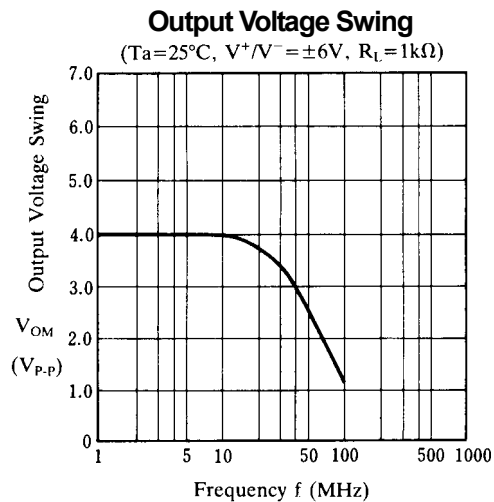
(note 1) : Gain select pins G_{1A} and G_{1B} connected together. (Gain 1)

(note 2) : Gain select pins G_{2A} and G_{2B} connected together. (Gain 2)

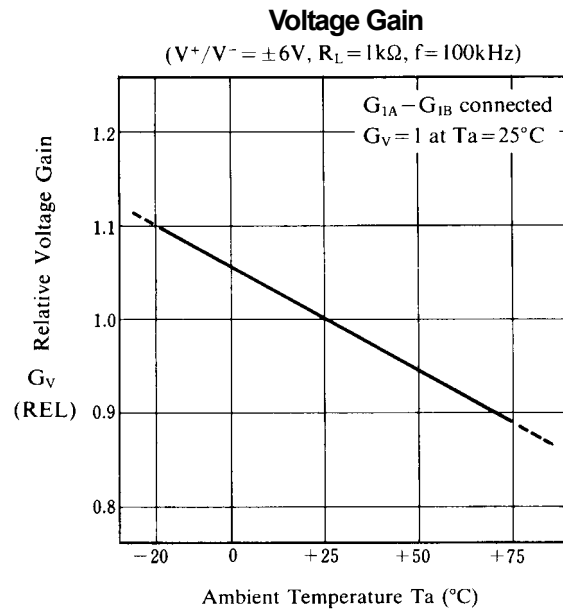
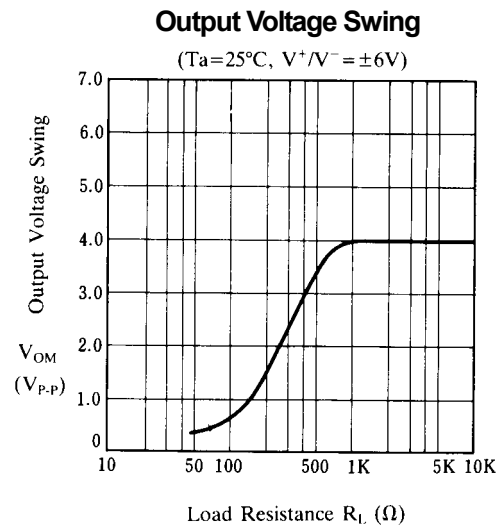
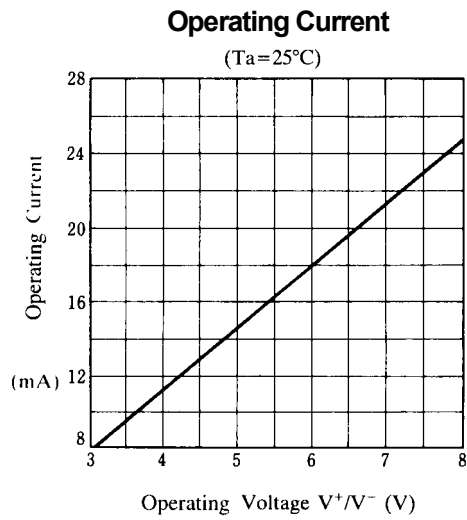
(note 3) : All gain select pins open.

(note 4) : Apply to only 14 pins package.

■ TYPICAL CHARACTERISTICS

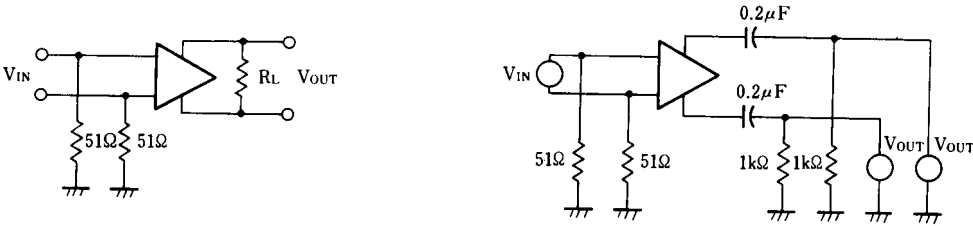


■ TYPICAL CHARACTERISTICS



NJM592

TEST CIRCUIT



TYPICAL APPLICATION

Basic Circuit

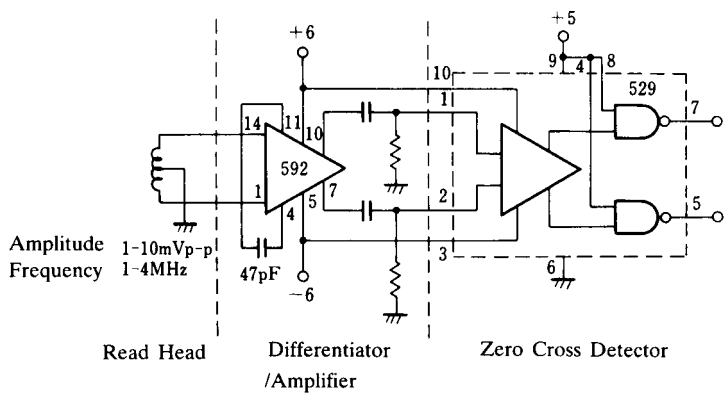
$$\frac{V_0(s)}{V_1(s)} \approx \frac{1.4 \times 10^4}{Z(s) + 2r_e}$$

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

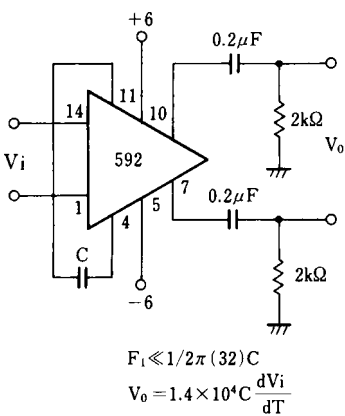
Filter Network

Z NETWORK	FILTER TYPE	$\frac{V_0(s)}{V_1(s)}$ TRANSFER FUNCTION
	LOW PASS	$\frac{1.0 \times 10^4}{L} \left[\frac{1}{s + R/L} \right]$
	HIGH PASS	$\frac{1.4 \times 10^4}{R} \left[\frac{s}{s + 1/RC} \right]$
	BAND PASS	$\frac{1.4 \times 10^4}{L} \left[\frac{s}{s^2 + R/L s + 1/LC} \right]$
	BAND REJECT	$\frac{1.4 \times 10^4}{R} \left[\frac{s^2 + 1/LC}{s^2 + 1/LC + s/RC} \right]$

Disk/Tape Phase Modulated Readback Systems



Differentiation with High Comon Mode Noise Rejection



[CAUTION]
The specifications on this databook are only given for information, without any guarantee as regards either mistakes or omissions. The application circuits in this databook are described only to show representative usages of the product and not intended for the guarantee or permission of any right including the industrial rights.