

## NJM4558/4559

The NJM4558/4559 integrated circuit are a dual high-gain operational amplifier internally compensated and constructed on a single silicon chip using an advanced epitaxial process.

Combining the features of the NJM741 with the close parameter matching and tracking of a dual device on a monolithic chip results in unique performance characteristics. Excellent channel separation allow the use of the dual device in single NJM741 operational amplifier applications providing density. It is especially well suited for applications in differential-in, differential-out as well as in potentiometric amplifiers and where gain and phase matched channels are mandatory.

## ■ Package Outline

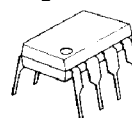
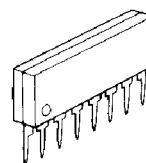
■ Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

Supply Voltage	$V^+/V^-$	$\pm 18\text{V}$
Differential Input Voltage	$V_{ID}$	$\pm 30\text{V}$
Input Voltage (note)	$V_I$	$\pm 15\text{V}$
Power Dissipation	$P_D$ (D-Type)	500mW
	(M,E-Type)	300mW
	(L-Type)	800mW
Operating Temperature Range	$T_{opr}$	$-20 \sim +75^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	$-40 \sim +125^\circ\text{C}$

(note) For supply voltage less than  $\pm 15\text{V}$ , the absolute maximum input voltage is equal to the supply voltage.

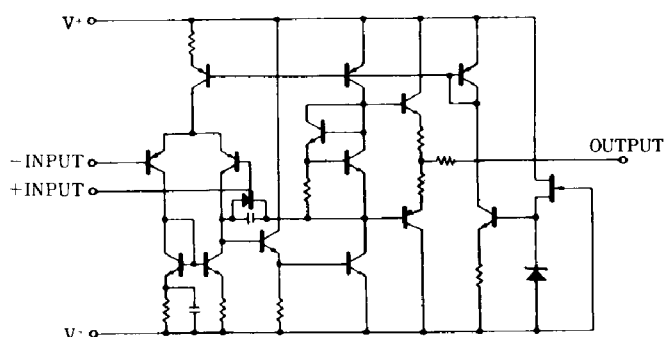
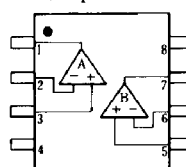
■ Electrical Characteristics ( $T_a = 25^\circ\text{C}$ ,  $V^+/V^- = \pm 15\text{V}$ )

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Input Offset Voltage	$V_{IO}$	$R_S \leq 10\text{k}\Omega$	—	0.5	6	mV
Input Offset Current	$I_{IO}$		—	5	200	nA
Input Bias Current	$I_B$		—	50	500	nA
Input Resistance	$R_{IN}$		0.3	5	—	$\text{M}\Omega$
Large Signal Voltage Gain	$A_V$	$R_L \geq 2\text{k}\Omega$ , $V_O = \pm 10\text{V}$	86	100	—	dB
Maximum Output Voltage Swing 1	$V_{OM1}$	$R_L \geq 10\text{k}\Omega$	$\pm 12$	$\pm 14$	—	V
Maximum Output Voltage Swing 2	$V_{OM2}$	$R_L \geq 2\text{k}\Omega$	$\pm 10$	$\pm 13$	—	V
Input Common Mode Voltage Range	$V_{ICM}$		$\pm 12$	$\pm 14$	—	V
Common Mode Rejection Ratio	CMR	$R_S \leq 10\text{k}\Omega$	70	90	—	dB
Supply Voltage Rejection Ratio	SVR	$R_S \leq 10\text{k}\Omega$	76.5	90	—	dB
Supply Current	$I_{CC}$		—	3.5	5.7	mA
Slew Rate						
NJM4558	SR		—	1	—	$\text{V}/\mu\text{s}$
NJM4559	SR		—	2	—	$\text{V}/\mu\text{s}$
Equivalent Input Noise Voltage	$V_{NI}$	RIAA, $R_S = 1\text{k}\Omega$ , 30kHz LPF	—	1.4	—	$\mu\text{Vrms}$

NJM4558D  
NJM4559DNJM4558M  
NJM4559MNJM4558E  
NJM4559ENJM4558L  
NJM4559L

## ■ Connection Diagram

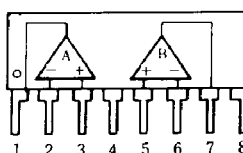
## ■ Equivalent Circuit (1/2 Shown)

D,M,E-Type  
(Top View)

## PIN FUNCTION

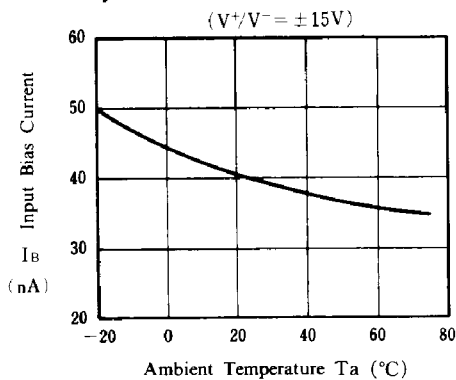
1. A OUTPUT
2. A-INPUT
3. A+INPUT
4.  $V^-$
5. B+INPUT
6. B-INPUT
7. B OUTPUT
8.  $V^+$

L-Type

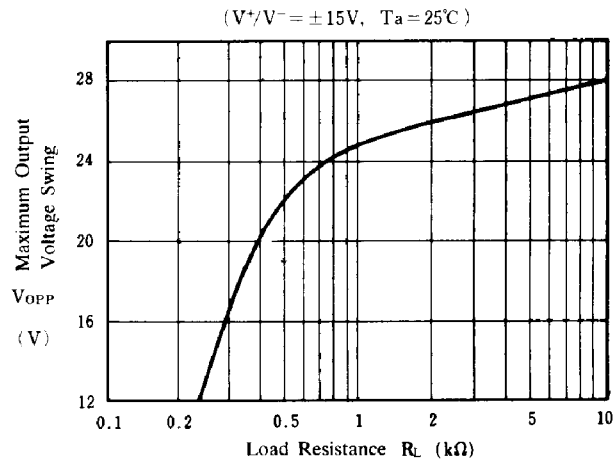


■ Typical Characteristics

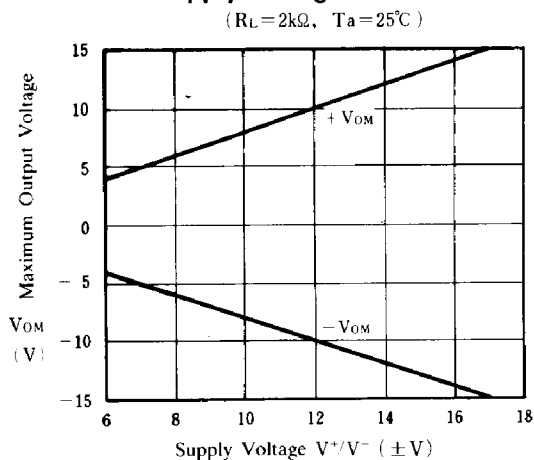
Input Bias Current vs. Ambient



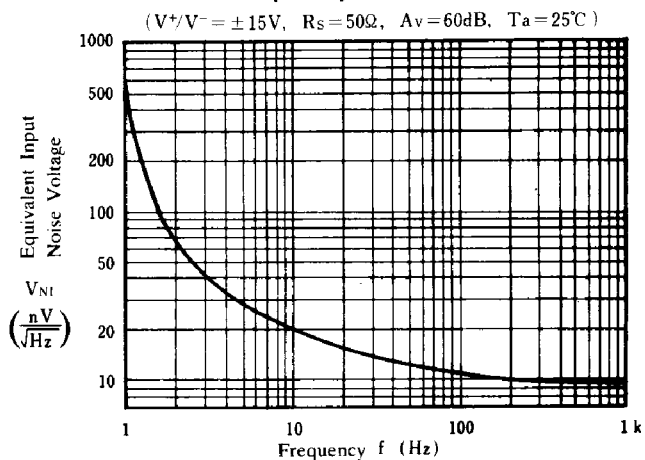
Maximum Output Voltage Swing vs. Load Resistance



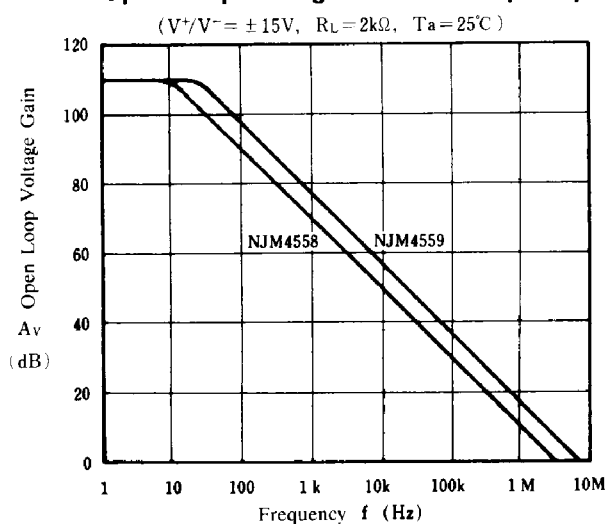
Maximum Output Voltage Swing vs. Supply Voltage



Equivalent Input Noise Voltage vs. Frequency



Open Loop Voltage Gain vs. Frequency



Maximum Output Voltage Swing vs. Frequency

