



DUAL OPERATIONAL AMPLIFIER

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}	$-40 \sim +125^\circ\text{C}$

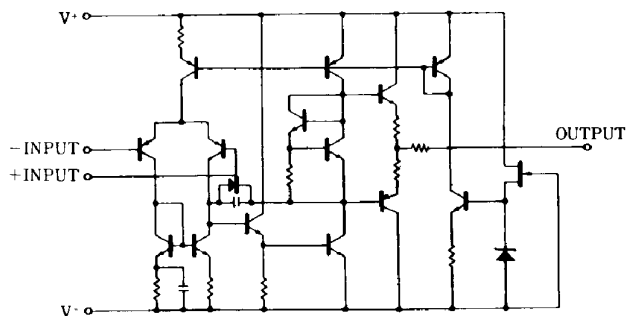
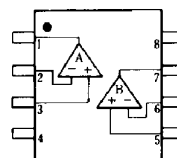
(note) For supply voltage less than $\pm 15\text{V}$, the absolute maximum input voltage is equal to the supply voltage.

■ 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	—	M Ω
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}	$R_L \geq 10\text{k}\Omega$	± 12	± 14	—	V
Maximum Output Voltage Swing 2	V_{OM2}	$R_L \geq 2\text{k}\Omega$	± 10	± 13	—	V
Input Common Mode Voltage Range	V_{ICM}		± 12	± 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	—	V/ μs
NJM4559	SR		—	2	—	V/ μs
Equivalent Input Noise Voltage	V_{NI}	RIAA, $R_S = 1\text{k}\Omega$, 30kHz LPF	—	1.4	—	μVrms

■ Connection Diagram

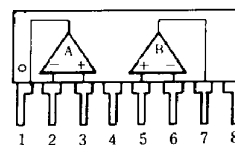
■ Equivalent Circuit (1/2 Shown)

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^+

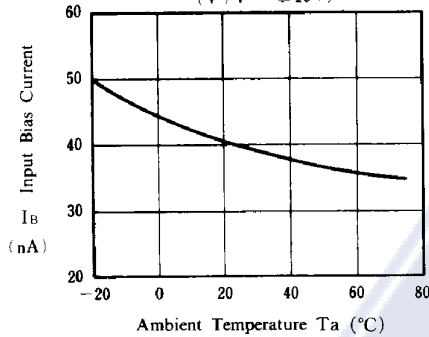
L-Type



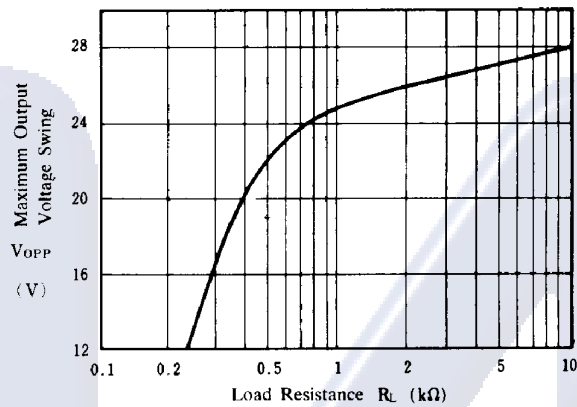
NJM4558/4559

■ Typical Characteristics

Input Bias Current vs. Ambient

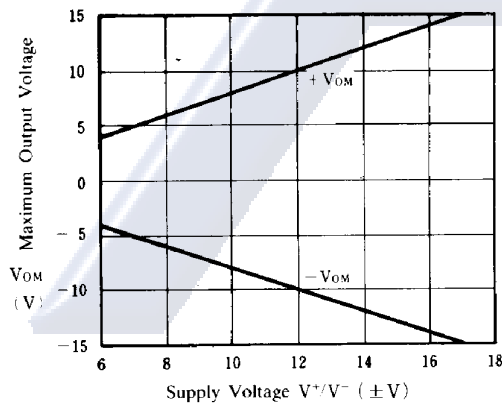
 $(V^+/V^- = \pm 15V)$ 

Maximum Output Voltage Swing vs. Load Resistance

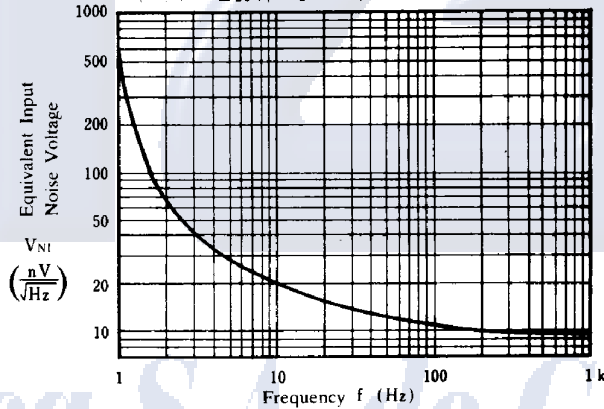
 $(V^+/V^- = \pm 15V, T_a = 25^\circ C)$ 

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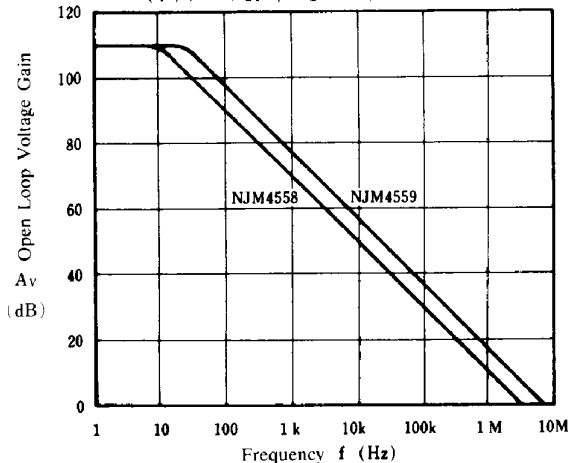
Maximum Output Voltage Swing vs. Supply Voltage

 $(R_L = 2k\Omega, T_a = 25^\circ C)$ 

Equivalent Input Noise Voltage vs. Frequency

 $(V^+/V^- = \pm 15V, R_S = 50\Omega, A_v = 60dB, T_a = 25^\circ C)$ 

Open Loop Voltage Gain vs. Frequency

 $(V^+/V^- = \pm 15V, R_L = 2k\Omega, T_a = 25^\circ C)$ 

Maximum Output Voltage Swing vs. Frequency

 $(V^+/V^- = \pm 15V, R_L = 2k\Omega, T_a = 25^\circ C)$ 