DUAL OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

The NJM4558/4559 integrated circuit is 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 allows 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.

■ FEATURES

- Operating Voltage (±4V~±18V)
- High Voltage Gain (100dB typ.)
- High Input Resistance (5MΩ typ.)
- Bipolar Technology
- Package Outline DIP8, DMP8, SIP8
  SOP8 JEDEC 150mil (only NJM4558),
  SSOP8 (only NJM4558)

■ PACKAGE OUTLINE



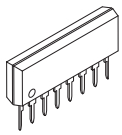
NJM4558D
NJM4559D
(DIP8)



NJM4558M
NJM4559M
(DMP8)



NJM4558V
(SSOP8)



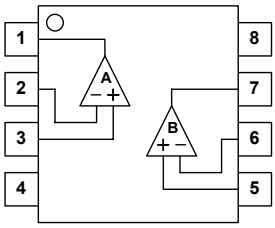
NJM4558L
NJM4559L
(SIP8)



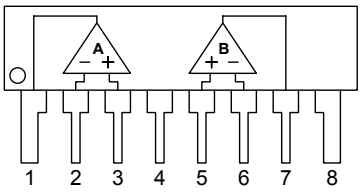
NJM4558E
(SOP8)

■ PIN CONFIGURATION

(Top View)



NJM4558D, NJM4558M, NJM4558E, NJM4558V
NJM4559D, NJM4559M

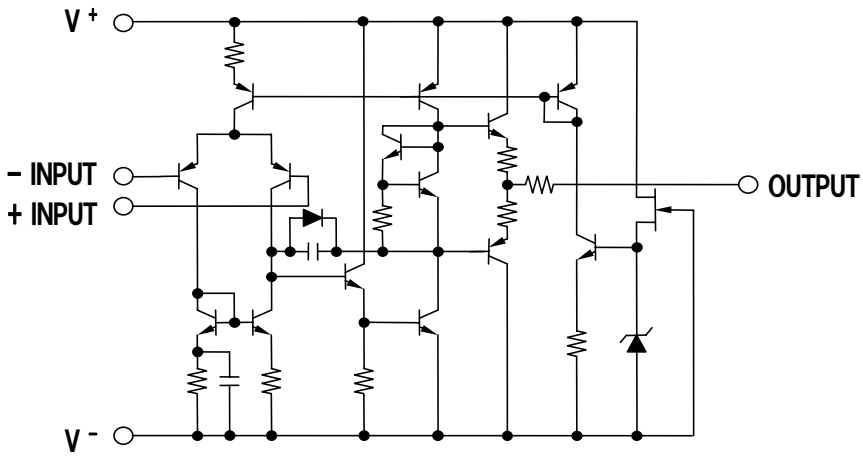


NJM4558L
NJM4559L

PIN FUNCTION

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

■ EQUIVALENT CIRCUIT (1/2 Shown)



■ ABSOLUTE MAXIMUM RATINGS

(Ta=25˚C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+/V^-	± 18	V
Differential Input Voltage	V_{ID}	± 30	V
Input Voltage	V_{IC}	± 15 (note1)	V
Power Dissipation	P_D	(DIP8) 500 (DMP8) 300 (SOP8) 300 (SSOP8) 250 (SIP8) 800	mW
Operating Temperature Range	T_{opr}	-40~+85	˚C
Storage Temperature Range	T_{stg}	-40~+125	˚C

(note1) For supply voltage less than ±15V,the absolute maximum input voltage is equal to the supply voltage.

■ ELECTRICAL CHARACTERISTICS

(V^+/V^-=±15V,Ta=25˚C)

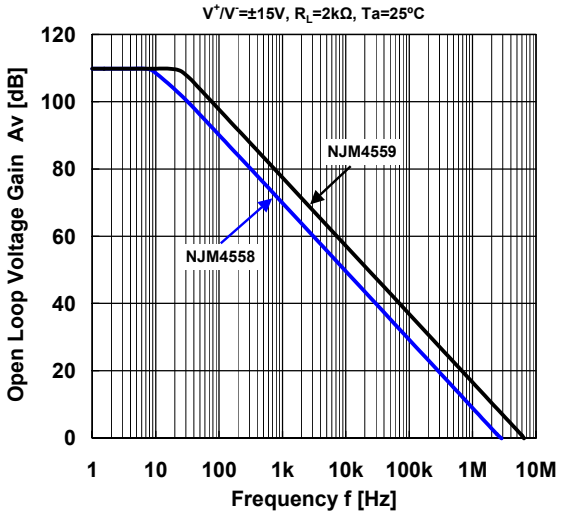
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{IO}	R_S≦10kΩ	-	0.5	6	mV
Input Offset Current	I_{IO}		-	5	200	nA
Input Bias Current	I_B		-	25	500	nA
Input Resistance	R_{IN}		0.3	5	-	MΩ
Large Signal Voltage Gain	A_V	R_L≧2kΩ,V_O=±10V	86	100	-	dB
Maximum Output Voltage Swing 1	V_{OM1}	R_L≧10kΩ	± 12	± 14	-	V
Maximum Output Voltage Swing 2	V_{OM2}	R_L≧2kΩ	± 10	± 13	-	V
Input Common Mode Voltage Range	V_{ICM}		± 12	14	-	V
Common Mode Rejection Ratio	CMR	R_S≦10kΩ	70	90	-	dB
Supply Voltage Rejection Ratio	SVR	R_S≦10kΩ	76.5	90	-	dB
Operating Current	I_{CC}		-	3.5	5.7	mA
Slew Rate						
NJM4558	SR		-	1	-	V/μs
NJM4559	SR		-	2	-	V/μs
Equivalent Input Noise Voltage (note2)	V_{NI}	RIAA,R_S=2.2kΩ,30kHz LPF	-	1.4	-	μVrms
Gain Bandwidth Product	GB					
NJM4558				3		MHz
NJM4559				6		MHz

(note2) In regard to Noise Standard, NJRC is preparing for special D Rank type products (V_{NI}=1.8μV max.) except for SSOP package.

■ TYPICAL CHARACTERISTICS

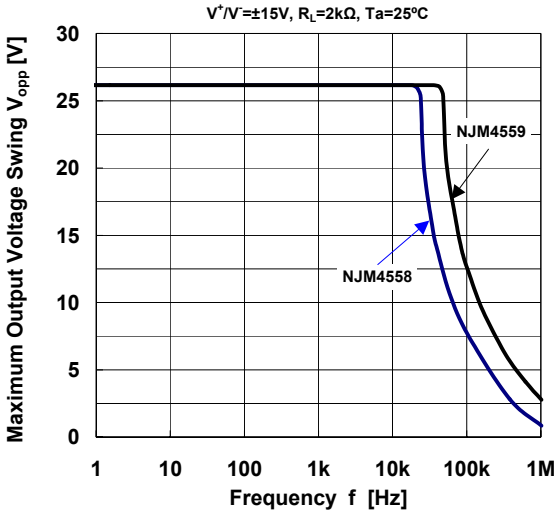
Open Loop Voltage Gain vs. Frequency

V^+/V^-=±15V, R_L=2kΩ, Ta=25ºC



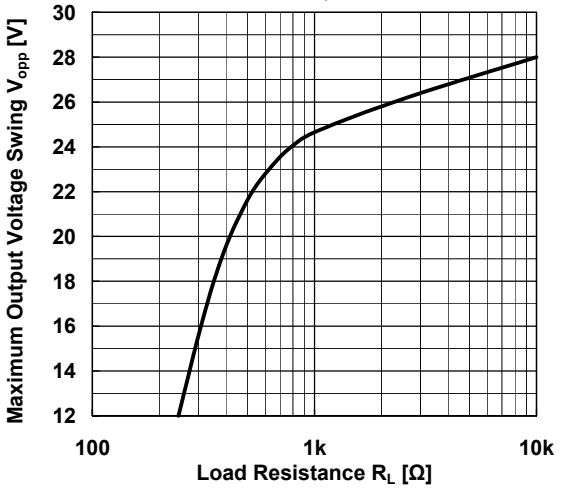
Maximum Output Voltage Swing vs. Frequency

V^+/V^-=±15V, R_L=2kΩ, Ta=25ºC



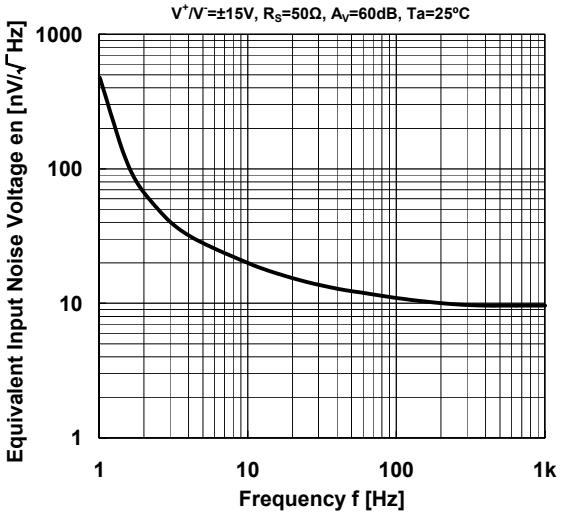
Maximum Output Voltage Swing vs. Load Resistance

V^+/V^-=±15V, Ta=25ºC



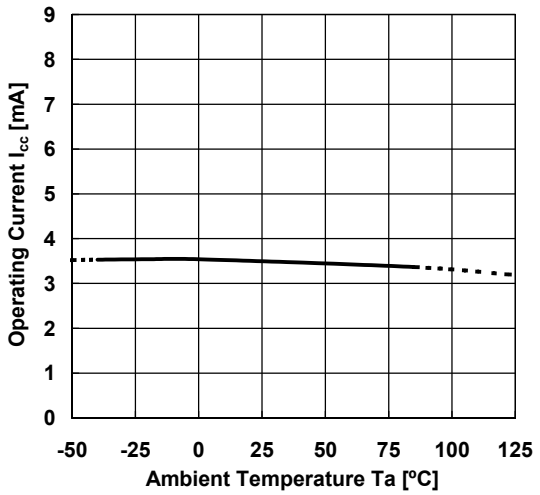
Equivalent Input Noise Voltage vs. Frequency

V^+/V^-=±15V, R_S=50Ω, A_V=60dB, Ta=25ºC



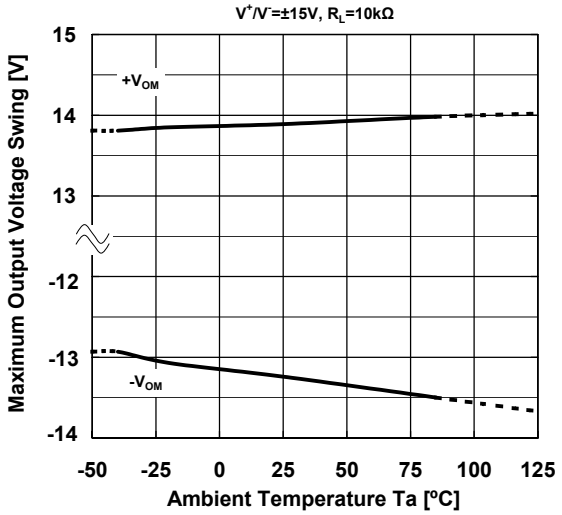
Operating Current vs. Temperature

V^+/V^-=±15V

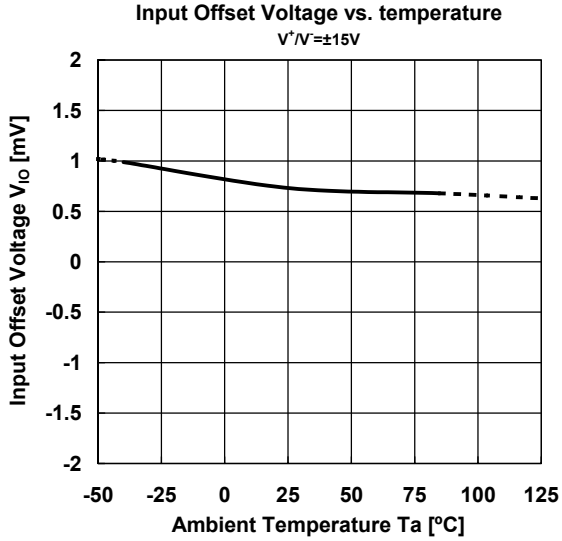


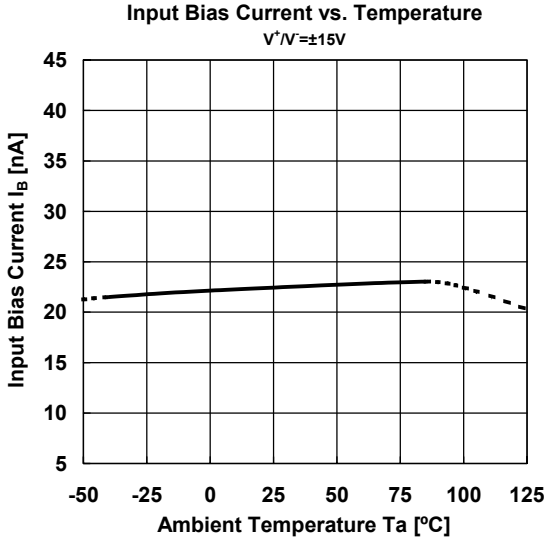
Maximum Output Voltage Swing vs. Temperature

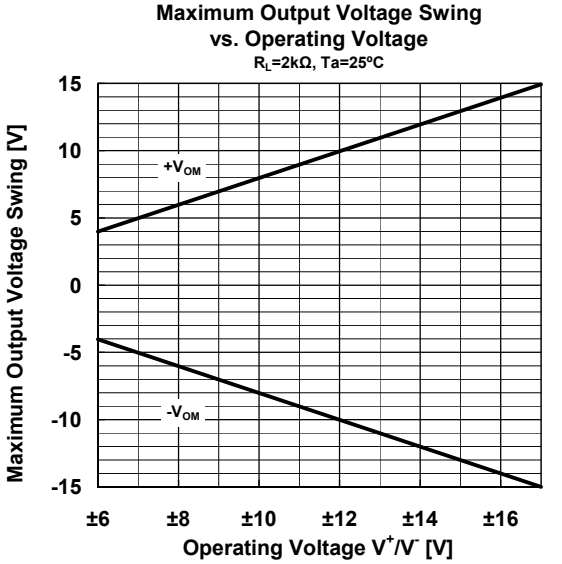
V^+/V^-=±15V, R_L=10kΩ

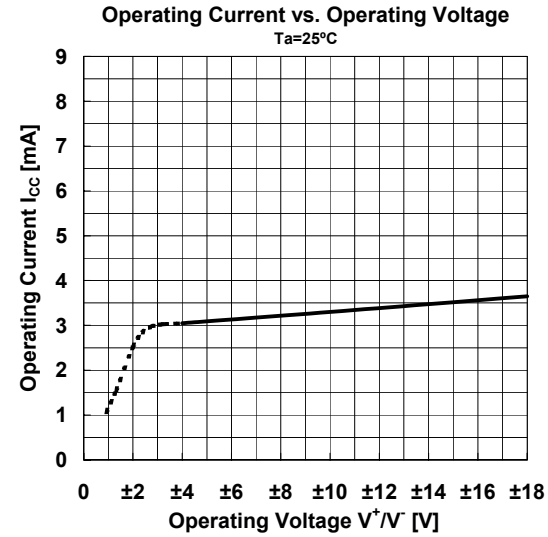


■ TYPICAL CHARACTERISTICS









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