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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 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, defferential-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
 EMP8 (only NJM4558),
 SSOP8 (only NJM4558)

■ PACKAGE OUTLINE



NJM4558D NJM4559D



NJM4558M NJM4559M



NJM4558V

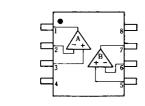


NJM4558L NJM4559L

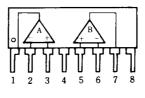


NJM4558E

■ PIN CONFIGURATION



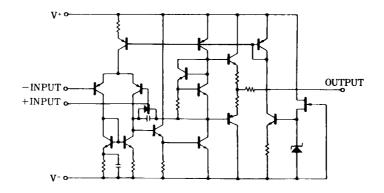
NJM4558D, NJM4558M, NJM4558V NJM4559D, NJM4559M, NJM4558E



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)



NJM4558/4559

■ 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 (note)	V
Power Dissipation	P _D	(DIP8) 500 (DMP8) 300 (EMP8) 300 (SSOP8) 250 (SIP8) 800	mW
Operating Temperature Range	T _{opr}	-40~+85	°C
Storage Temperature Range	T _{stg}	-40~+125	°C

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

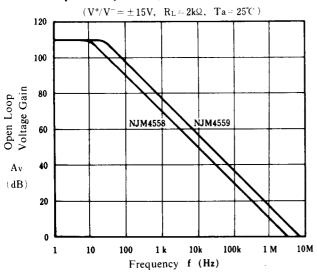
■ ELECTRICAL CHARACTERISTICS

(V⁺/V⁻=±15V,Ta=25°C)

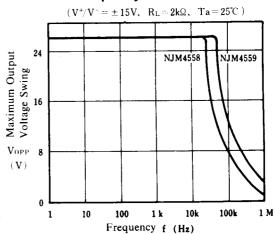
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V _{IO}	R _S ≤10kΩ	-	0.5	6	mV
Input Offset Current	I _{IO}		-	5	200	nA
Input Bias Current	I_{B}		-	25	500	nA
Input Resistance	R _{IN}		0.3	5	-	ΜΩ
Large Signal Voltage Gain	A_{V}	R _L ≥2kΩ,V _O =±10V	86	100	-	dB
Maximum Output Voltage 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 Slew Rate	Icc		-	3.5	5.7	mA
NJM4558	SR		-	1	-	V/µs
NJM4559	SR		-	2	-	V/µs
Equivalent Input Noise Voltage	V_{NI}	RIAA,R _S =2.2kΩ,30kHz LPF	-	1.4	-	μVrms
Gain Bandwidth Product	GB					
NJM4558				3		MHz
NJM4559				6		MHz

■ TYPICAL CHARACTERISTICS

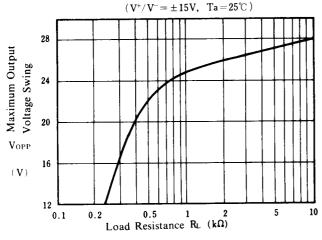
Open Loop Voltage Gain vs. Frequency



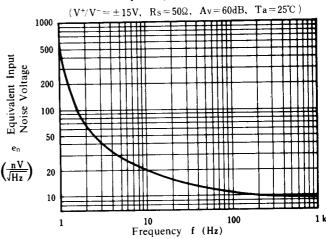
Maximum Output Voltage Swing vs. Frequency



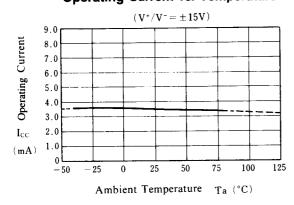
Maximum Output Voltage Swing vs. Load Resistance



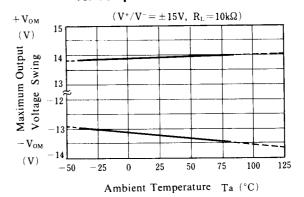
Equivalent Input Noise Voltage vs. Frequency



Operating Current vs. Temperature

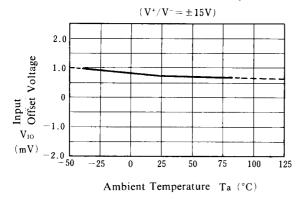


Maximum Output Voltage Swing vs. Temperature

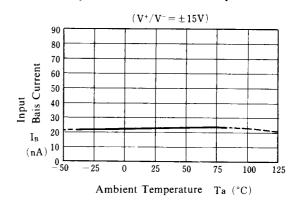


■ TYPICAL CHARACTERISTICS

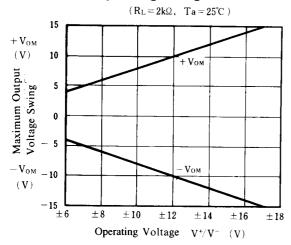
Input Offset Voltage vs. Temperature



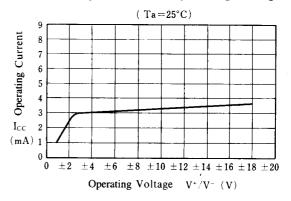
Input Bias Current vs. Temperature



Maximum Output Voltage Swing vs. Operating Voltage



Operating Current vs. Operating Voltage



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