

DUAL HIGH CURRENT OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

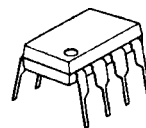
The NJM4556A integrated circuit is a high-gain, high output current dual operational amplifier capable of driving $\pm 70\text{mA}$ into 150Ω loads ($\pm 10.5\text{V}$ output voltage), and operating low supply voltage ($V^+V^-=\pm 2\text{V}\sim$).

The NJM4556A combines many of the features of the popular NJM4558 as well as having the capability of driving 150Ω loads. In addition, the wide band-width, low noise, high slew rate and low distortion of the NJM4556A make it ideal for many audio, telecommunications and instrumentation applications.

■ FEATURES

- Supply Voltage ($\pm 2\text{V}\sim\pm 18\text{V}$)
- High Output Current ($I_o=70\text{mA}$)
- Slew Rate ($3\text{V}/\mu\text{s}$ typ.)
- Gain Band Width Product (8MHz typ.)
- Equivalent Input Noise Voltage ($10\text{nV}/\sqrt{\text{Hz}}$ typ.)
- Package Outline DIP8, DMP8, SIP8, SSOP8
- Bipolar Technology

■ PACKAGE OUTLINE



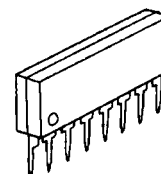
NJM4556AD



NJM4556AM

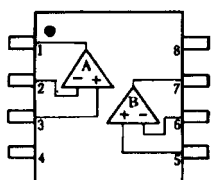


NJM4556AV

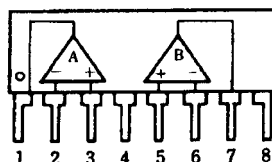


NJM4556AL

■ PIN CONFIGURATION



NJM4556AD
NJM4556AM
NJM4556AV

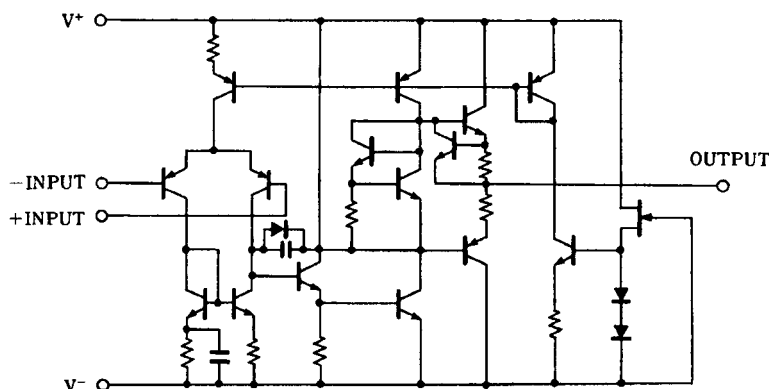


NJM4556AL

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)



NJM4556A

■ 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) 700 (DMP8) 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 $\pm 15V$, the absolute maximum input voltage is equal to the supply voltage.

■ ELECTRICAL CHARACTERISTICS (NJM4556AD / NJM4556AL)

($V^+ / V^- = \pm 15V$, Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{IO}	$R_S \leq 10k\Omega$	-	0.5	6.0	mV
Input Offset Current	I_{IO}		-	5	60	nA
Input Bias Current	I_B		-	50	500	nA
Input Resistance	R_{IN}		0.3	5	-	MΩ
Large Signal Voltage Gain	A_V	$R_L \geq 2k\Omega, V_O = \pm 10V$	86	100	-	dB
Maximum Output Voltage Swing 1	V_{OM1}	$R_L \geq 2k\Omega$	± 12	± 13.5	-	V
Maximum Output Voltage Swing 2	V_{OM2}	$R_L \geq 150\Omega$	± 10.5	± 11	-	V
Input Common Mode Voltage Range	V_{ICM}		± 13.5	± 14	-	V
Common Mode Rejection Ratio	CMR	$R_S \leq 10k\Omega$	70	90	-	dB
Supply Voltage Rejection Ratio	SVR	$R_S \leq 10k\Omega$	76.5	90	-	dB
Supply Current	I_{CC}		-	9	12	mA
Slew Rate	SR		-	3	-	V/μs
Gain Bandwidth Product	GB		-	8	-	MHz

■ ELECTRICAL CHARACTERISTICS (NJM4556AM / NJM4556AV)

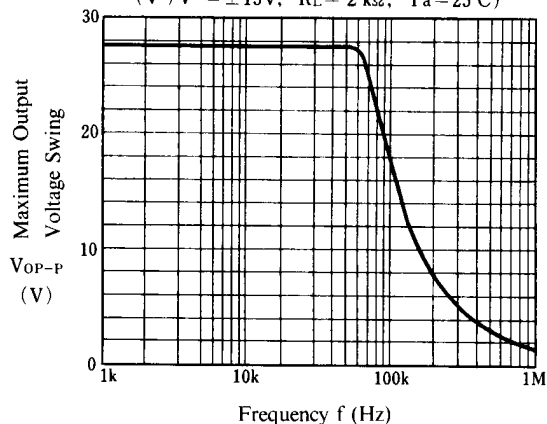
($V^+ / V^- = \pm 15V$, Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{IO}	$R_S \leq 10k\Omega$	-	0.5	6.0	mV
Input Offset Current	I_{IO}		-	5	60	nA
Input Bias Current	I_B		-	50	500	nA
Large Signal Voltage Gain	A_V	$R_L \geq 2k\Omega, V_O = \pm 10V$	86	100	-	dB
Maximum Output Voltage Swing 1	V_{OM1}	$V_{IN}^+ = 4V, V_{IN}^- = 3V, V^+ = 9V, V^- = 0V$ $I_{SOURCE} = 40mA$	7.5	-	-	V
Maximum Output Voltage Swing 2	V_{OM2}	$V_{IN}^+ = 3V, V_{IN}^- = 4V, V^+ = 9V, V^- = 0V$ $I_{SINK} = 40mA$	-	-	2.1	V
Input Common Mode Voltage Range 1	V_{ICM1}	$V^+ = 9V, V^- = 0V, V_{IL}$	-	-	1.5	V
Input Common Mode Voltage Range 2	V_{ICM2}	$V^+ = 9V, V^- = 0V, V_{IH}$	8	-	-	V
Common Mode Rejection Ratio	CMR	$R_S \leq 10k\Omega$	70	90	-	dB
Supply Voltage Rejection Ratio	SVR	$R_S \leq 10k\Omega$	76.5	90	-	dB
Supply Current	I_{CC}	$V^+ = 9V, V^- = 0V$	-	8	12	mA
Slew Rate	SR		-	3	-	V/μs
Gain Bandwidth Product	GB		-	8	-	MHz

■ TYPICAL CHARACTERISTICS

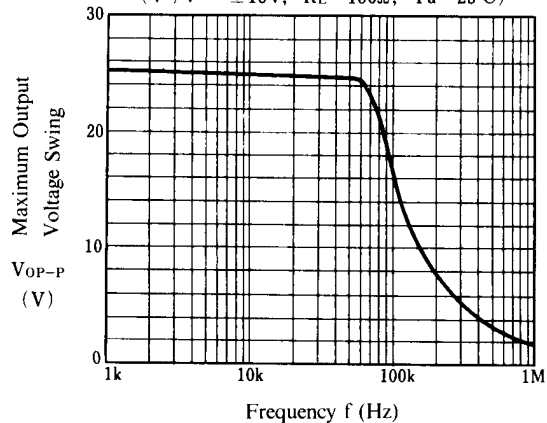
Maximum Output Voltage Swing vs. Frequency

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



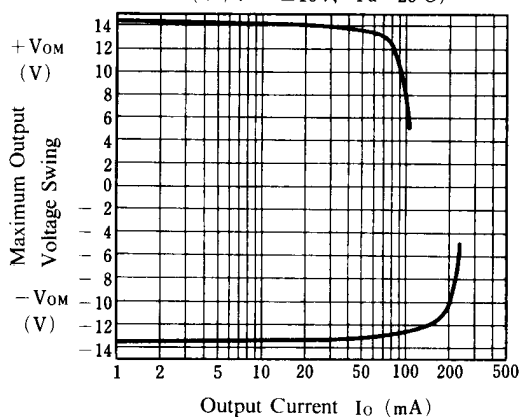
Maximum Output Voltage Swing vs. Frequency

($V^+/V^- = \pm 15V$, $R_L = 150\Omega$, $T_a = 25^\circ\text{C}$)



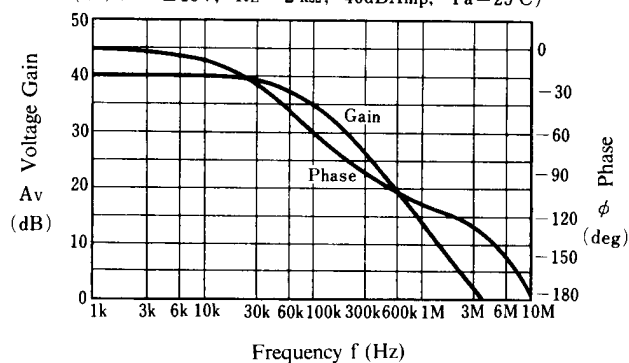
Maximum Output Voltage Swing vs. Output Current

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



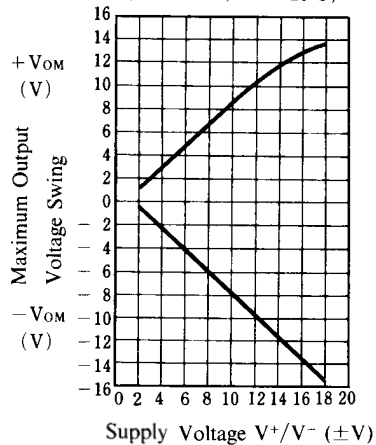
Voltage Gain, Phase Shift vs. Frequency

($V^+/V^- = \pm 15V$, $R_L = 2\text{ k}\Omega$, 40dBamp , $T_a = 25^\circ\text{C}$)



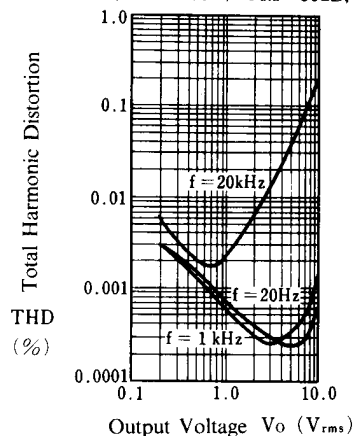
Maximum Output Voltage Swing vs. Supply Voltage

($R_L = 150\Omega$, $T_a = 25^\circ\text{C}$)

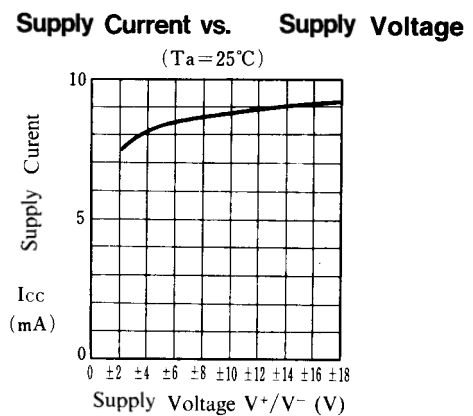
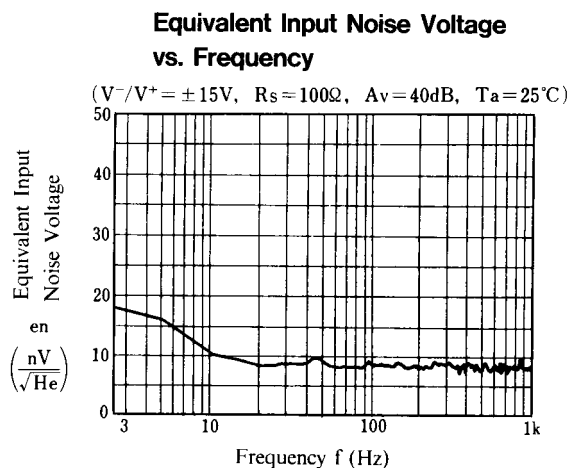
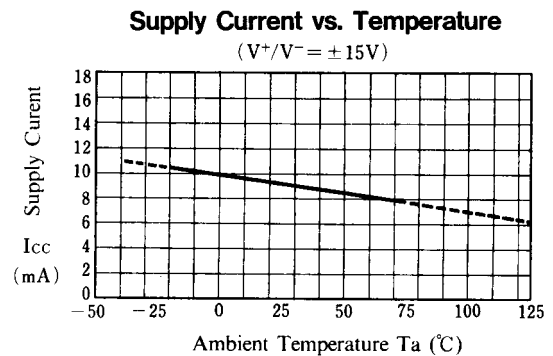
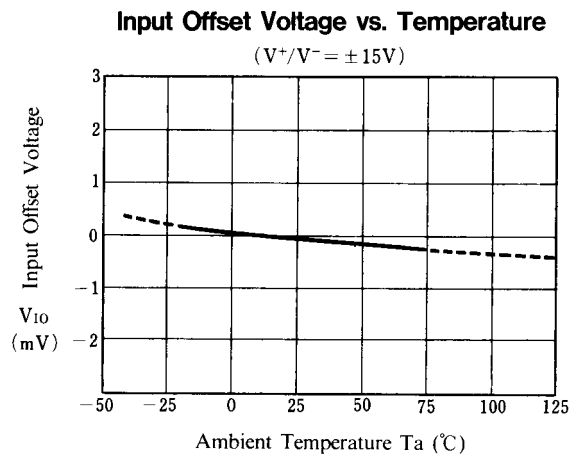
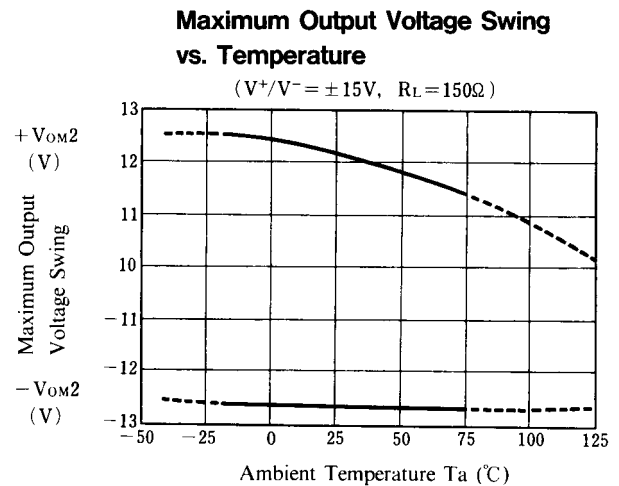
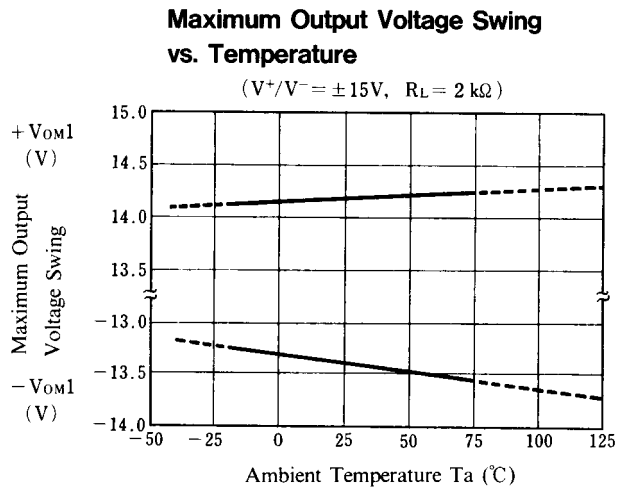


Total Harmonic Distortion vs. Output Voltage

($V^+/V^- = \pm 15V$, $R_L = 200\Omega$, $G_{ain} = 30\text{dB}$, $T_a = 25^\circ\text{C}$)



■ TYPICAL CHARACTERISTICS



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