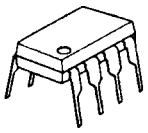
DUAL HIGH CURRENT OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

The NJM4556A integrated circuit is a high-gain,high output current dual operational amplifier capable of driving ±70mA into 150Ω loads (±10.5V output voltage),and operating low supply voltage (V^+/V^-=±2V~).

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.

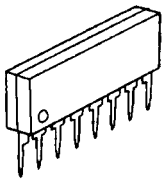
■ PACKAGE OUTLINE



NJM4556AD

NJM4556AM

NJM4556AV

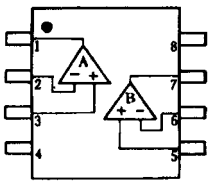


NJM4556AL

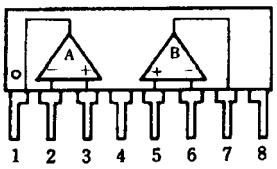
■ FEATURES

- Supply Voltage (±2V~±18V)
- High Output Current (I_O=70mA)
- Slew Rate (3V/μs typ.)
- Gain Band Width Product (8MHz typ.)
- Equivalent Input Noise Voltage (10nV/√Hz typ.)
- Package Outline DIP8,DMP8,SIP8,SSOP8
- Bipolar Technology

■ PIN CONFIGURATION



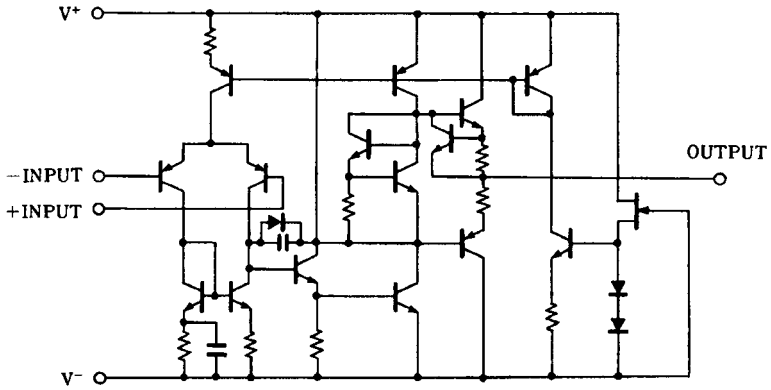
NJM4556AD
NJM4556AM
NJM4556AV



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)



■ 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 ±15V,the absolute maximum input voltage is equal to the supply voltage.

■ ELECTRICAL CHARACTERISTICS (NJM4556AD / NJM4556AL)

(V^+/V^-=±15V,Ta=25˚C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{IO}	R_S≤10kΩ	-	0.5	6.0	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≥2kΩ,V_O=±10V	86	100	-	dB
Maximum Output Voltage Swing 1	V_{OM1}	R_L≥2kΩ	± 12	± 13.5	-	V
Maximum Output Voltage Swing 2	V_{OM2}	R_L≥150Ω	± 10.5	± 11	-	V
Input Common Mode Voltage Range	V_{ICM}		± 13.5	± 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
Supply Current	I_{CC}		-	9	12	mA
Slew Rate	SR		-	3	-	V/μs
Gain Bandwidth Product	GB		-	8	-	MHz

■ ELECTRICAL CHARACTERISTICS (NJM4556AM / NJM4556AV)

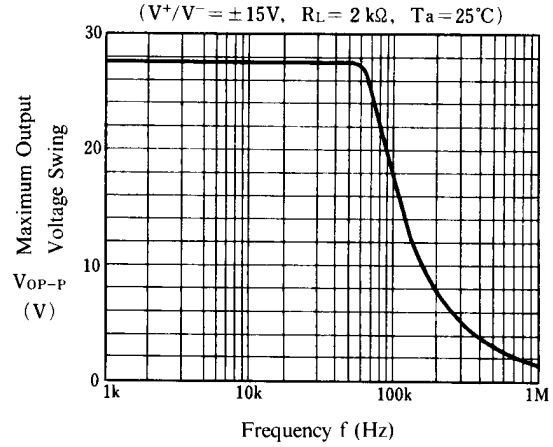
(V^+/V^-=±15V,Ta=25˚C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{IO}	R_S≤10kΩ	-	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≥2kΩ,V_O=±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≤10kΩ	70	90	-	dB
Supply Voltage Rejection Ratio	SVR	R_S≤10kΩ	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

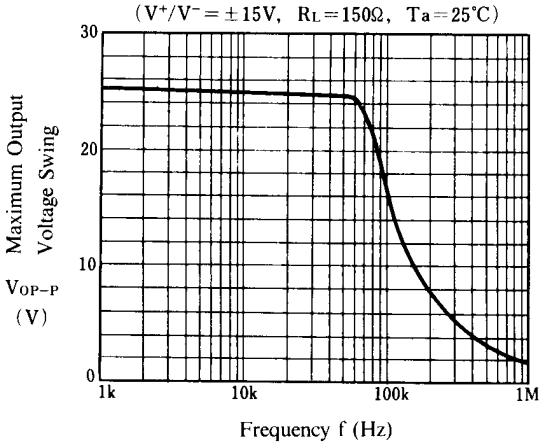
Maximum Output Voltage Swing vs. Frequency

($V^+/V^-=\pm15V$, $R_L=2k\Omega$, $Ta=25°C$)



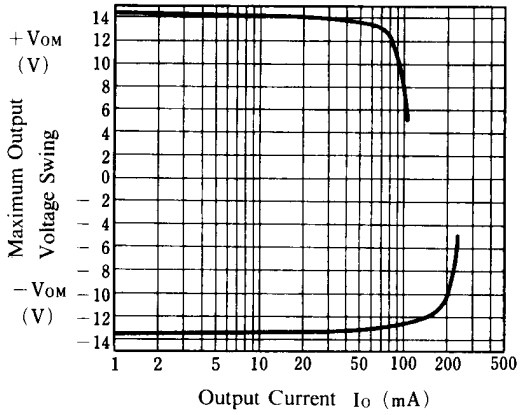
Maximum Output Voltage Swing vs. Frequency

($V^+/V^-=\pm15V$, $R_L=150\Omega$, $Ta=25°C$)



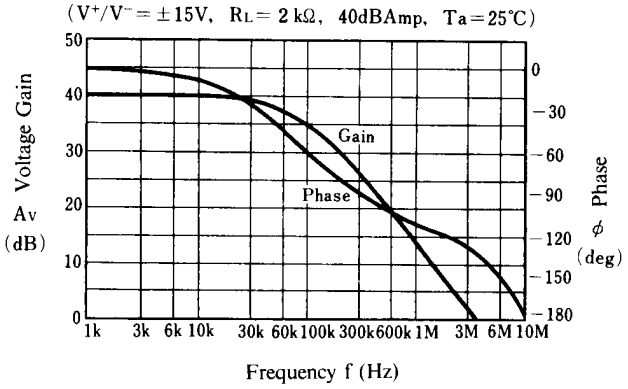
Maximum Output Voltage Swing vs. Output Current

($V^+/V^-=\pm15V$, $Ta=25°C$)



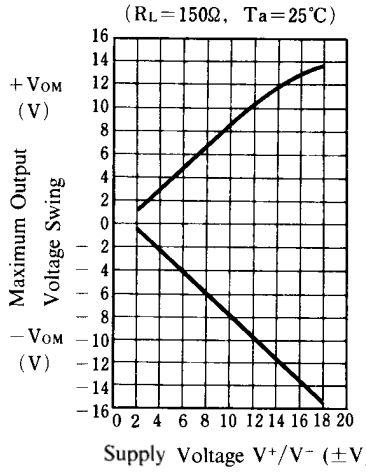
Voltage Gain, Plase Shift vs. Frequency

($V^+/V^-=\pm15V$, $R_L=2k\Omega$, 40dBAmp, $Ta=25°C$)



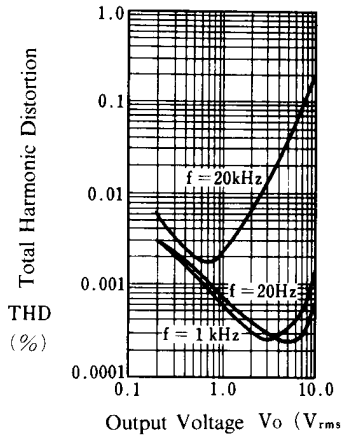
Maximum Output Voltage Swing vs. Supply Voltage

($R_L=150\Omega$, $Ta=25°C$)



Total Harmonic Distortion vs. Output Voltage

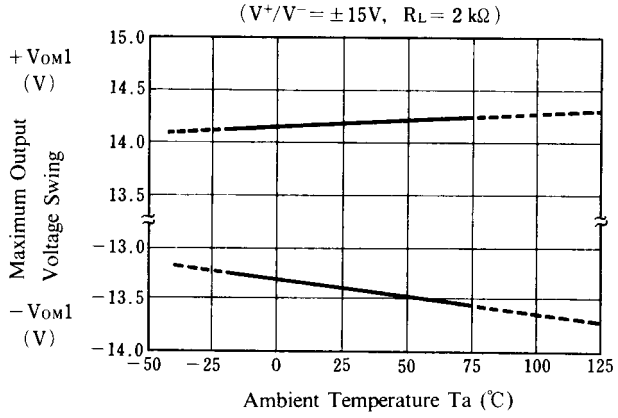
($V^+/V^-=\pm15V$, $R_L=200\Omega$, $G_{ain}=30dB$, $Ta=25°C$)



■ TYPICAL CHARACTERISTICS

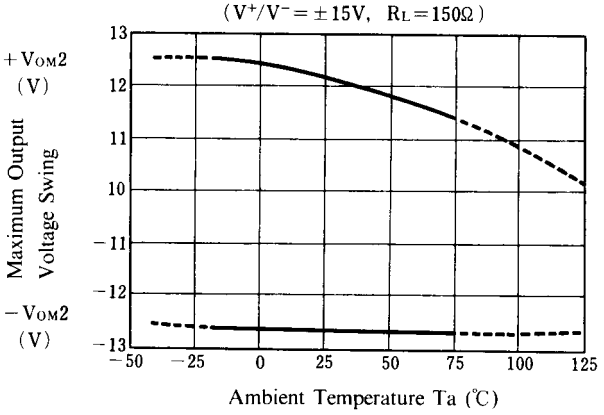
Maximum Output Voltage Swing vs. Temperature

($V^+/V^-=\pm15V$, $R_L=2\,k\Omega$)



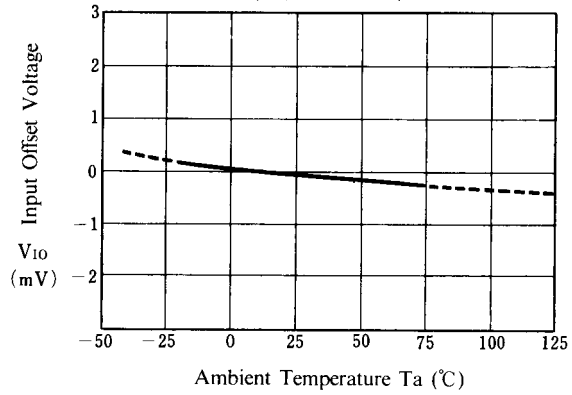
Maximum Output Voltage Swing vs. Temperature

($V^+/V^-=\pm15V$, $R_L=150\Omega$)



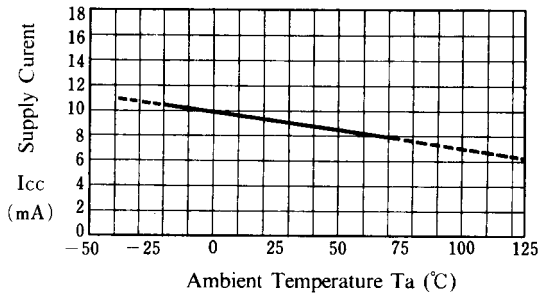
Input Offset Voltage vs. Temperature

($V^+/V^-=\pm15V$)



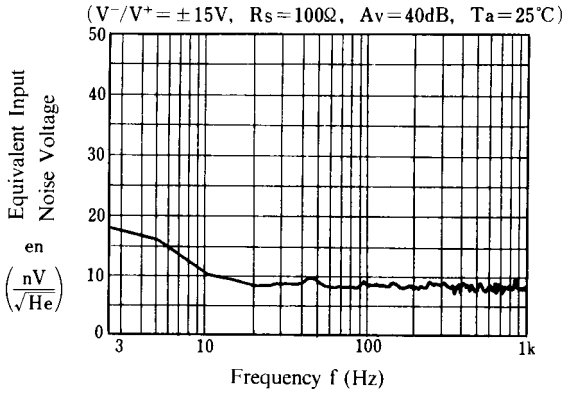
Supply Current vs. Temperature

($V^+/V^-=\pm15V$)



Equivalent Input Noise Voltage vs. Frequency

($V^-/V^+=\pm15V$, $R_S=100\Omega$, $A_V=40dB$, $Ta=25℃$)



Supply Current vs. Supply Voltage

($Ta=25℃$)