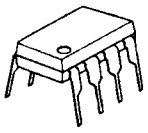
DUAL HIGH CURRENT OPERATIONAL AMPLIFIER

■ 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.

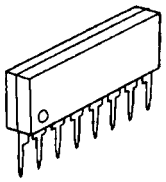
■ PACKAGE OUTLINE



NJM4556AD

NJM4556AM

NJM4556AV

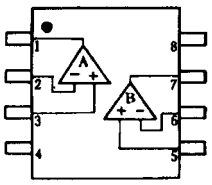


NJM4556AL

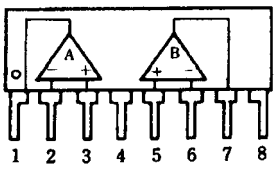
■ FEATURES

- Operating 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



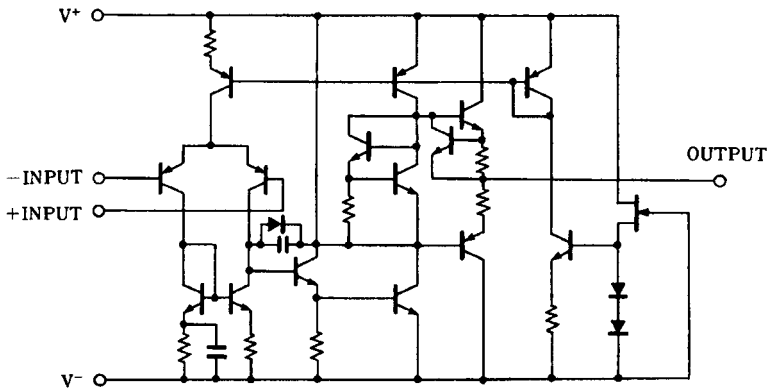
NJM4556AD
NJM4556AM
NJM4556AV



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}	-20~+75	°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
Operating Current	I_{CC}		-	9	12	mA
Slew Rate	SR		-	3	-	V/μs
Gain Bandwidth Product	GB		-	8	-	MHz

■ ELECTRICAL CHARACTERISTICS (NJM4556AM / NJM4556AV)

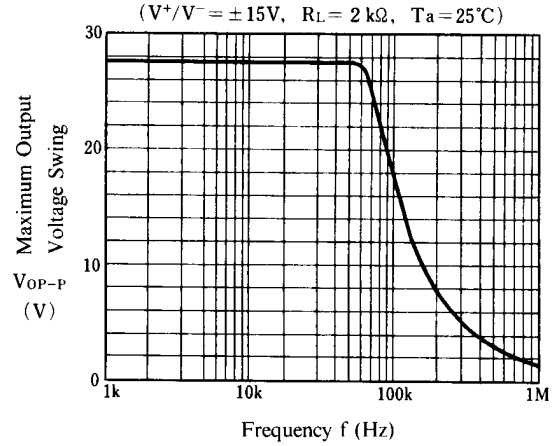
(V^+/V^-=±15V,Ta=25°C)

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 I_{SOURCE}=40mA	7.5	-	-	V
Maximum Output Voltage Swing 2	V_{OM2}	V_{IN}^+=3V,V_{IN}^-=4V,V^+=9V I_{SINK}=40mA	-	-	2.1	V
Input Common Mode Voltage Range 1	V_{ICM1}	V^+=9V,V_{IL}	-	-	1.5	V
Input Common Mode Voltage Range 2	V_{ICM2}	V^+=9V,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	-	8	12	mA
Slew Rate	SR		-	3	-	V/μs
Gain Bandwidth Product	GB		-	8	-	MHz

■ TYPICAL CHARACTERISTICS

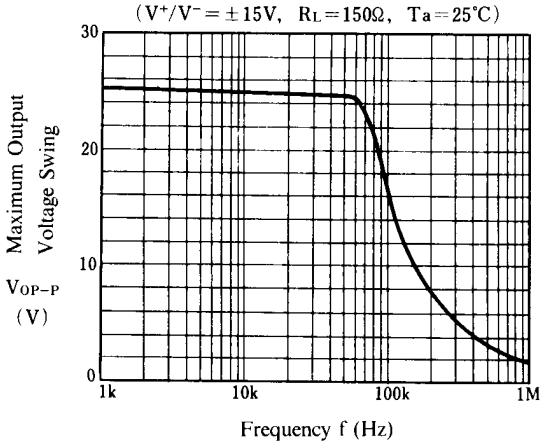
Maximum Output Voltage Swing vs. Frequency

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



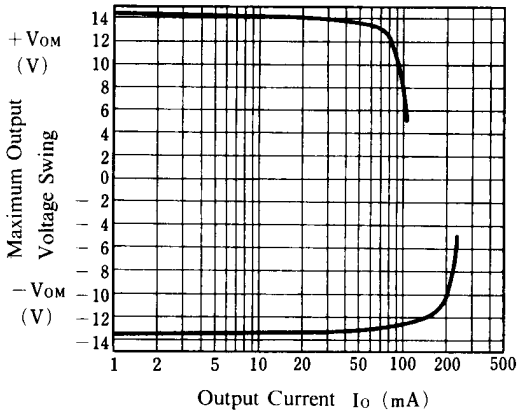
Maximum Output Voltage Swing vs. Frequency

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



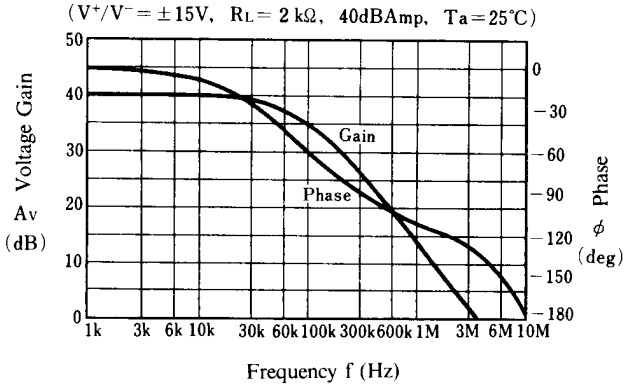
Maximum Output Voltage Swing vs. Output Current

($V^+/V^-=\pm15V$, $Ta=25°C$)



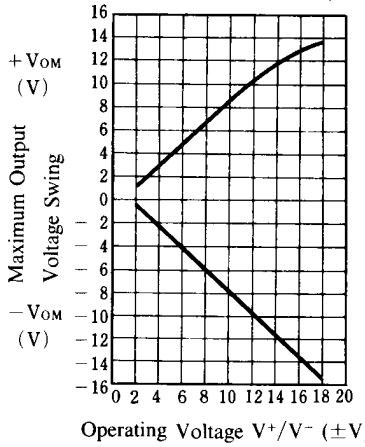
Voltage Gain, Plase Shift vs. Frequency

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



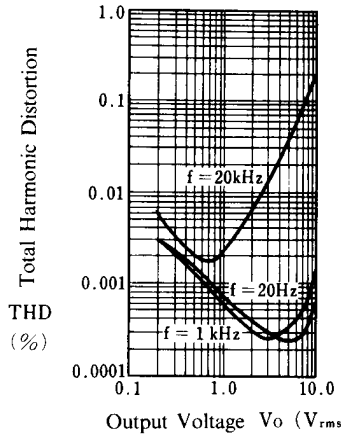
Maximum Output Voltage Swing vs. Operating Voltage

($R_L=150\Omega$, $Ta=25°C$)



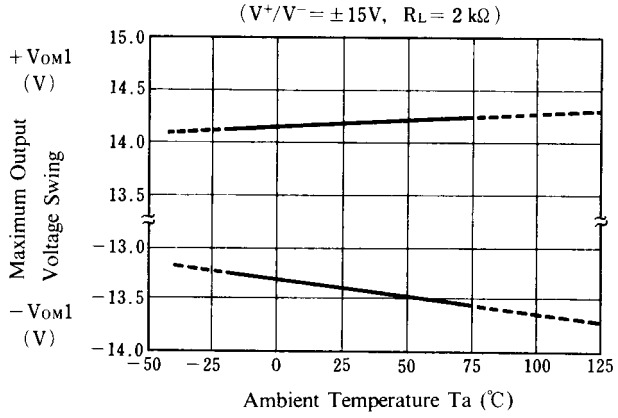
Total Harmonic Distortion vs. Output Voltage

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

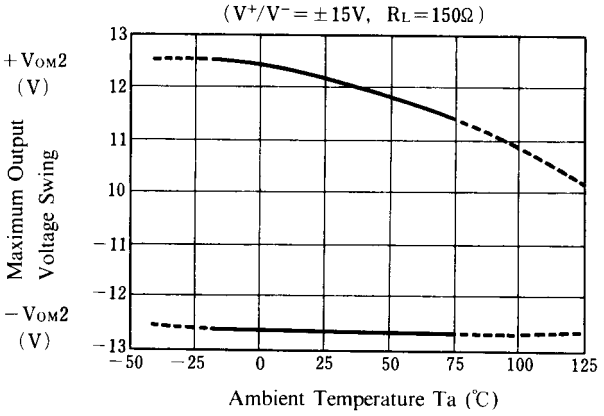


■ TYPICAL CHARACTERISTICS

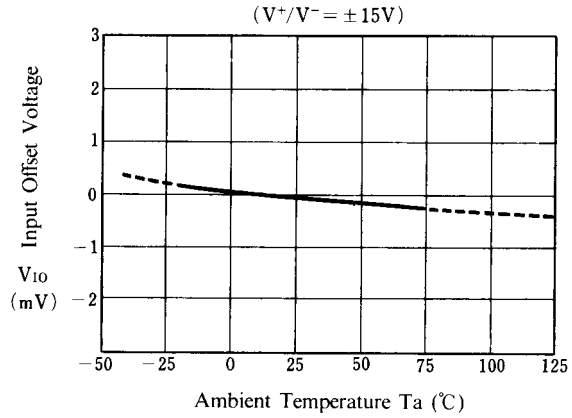
Maximum Output Voltage Swing vs. Temperature



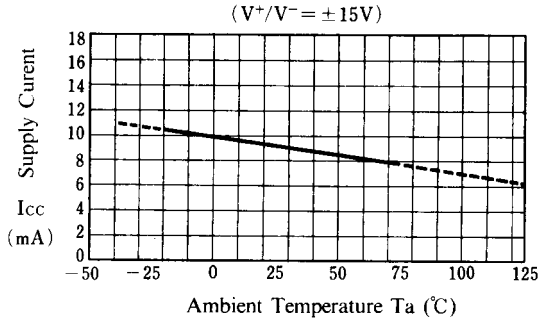
Maximum Output Voltage Swing vs. Temperature



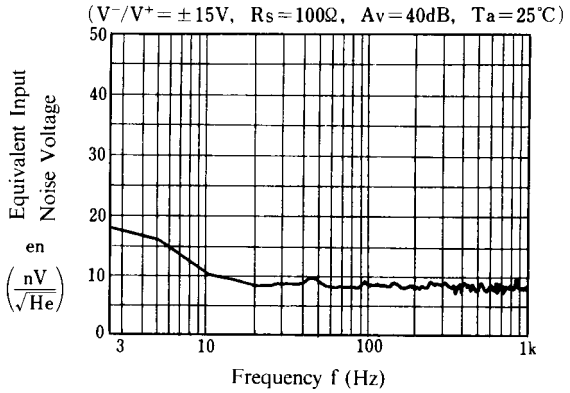
Input Offset Voltage vs. Temperature



Supply Current vs. Temperature



Equivalent Input Noise Voltage vs. Frequency



Operating Current vs. Operating Voltage