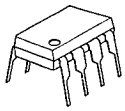
DUAL HIGH CURRENT OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

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

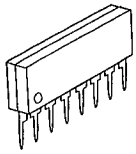
The NJM4556A combines many of the fetures of the popular NJM4558 as well as having the capability of driving 150Ω loads. In addition, the wide band-width, low noise, high slew rate and low distortion of the NJM4556A make it ideal for many audio, telecommunications and instrumentation applications.

■ PACKAGE OUTLINE

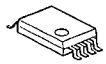


NJM4556AD

NJM4556AM



NJM4556AL

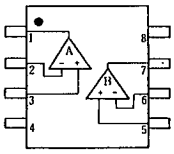


NJM4556AV

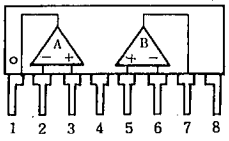
■ FEATURES

- Operating Voltage (±2V~±18V)
- High Output Current (Io=70mA)
- Slew Rate (3V/μs typ.)
- Gain Band Width Product (8MHz typ.)
- Package Outline DIP8, DMP8, SIP8, SSOP8
- Bipolar Technology

■ PIN CONFIGURATION



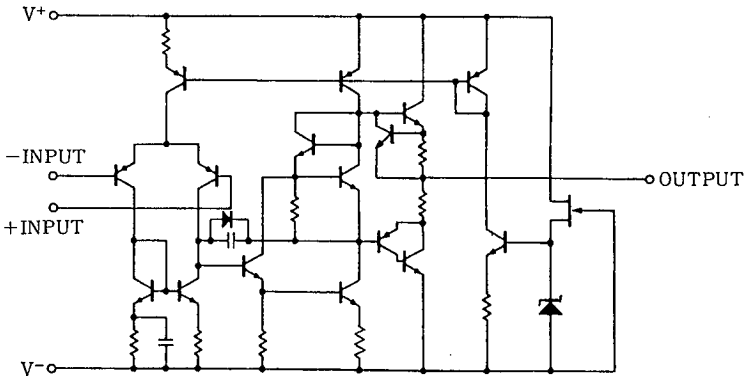
NJM4556AD
NJM4556AM
NJM4556AV



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℃)

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	mW
		(DMP8) 300	mW
		(SSOP8) 250	mW
		(SIP8) 800	mW
Operating Temperature Range	Topr	−20～+75	℃
Storage Temperature Range	Tstg	−40～+125	℃

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

■ ELECTRICAL CHARACTERISTICS (NJM4556AD/NJM4556AS)

(V^+/V^-=±15V Ta=25℃)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{IO}	$R_S \leqq 10k\Omega$	—	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	$R_L \geqq 2k\Omega$, V_O=±10V	86	100	—	dB
Maximum Output Voltage Swing 1	V_{OM1}	$R_L \geqq 2k\Omega$	±12	±13.5	—	V
Maximum Output Voltage Swing 2	V_{OM2}	$R_L \geqq 150\Omega$	±10.5	±11	—	V
Input Common Mode Voltage Range	V_{ICM}		±13.5	±14	—	V
Common Mode Rejection Ratio	CMR	$R_S \leqq 10k\Omega$	70	90	—	dB
Supply Voltage Rejection Ratio	SVR	$R_S \leqq 10k\Omega$	76.5	90	—	dB
Operating Current	I_{CC}		—	9	12	mA
Slew Rate	SR		—	3	—	V/μS
Gain Bandwidth Product	GB		—	8	—	MHz

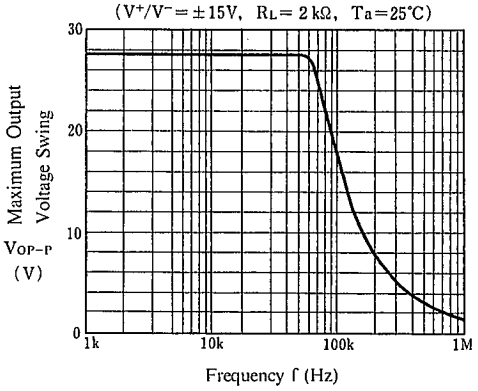
■ ELECTRICAL CHARACTERISTICS (NJM4556AM/NJM4556AV)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{IO}	$R_s \leqq 10k\Omega$	—	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	$R_L \geqq 2k\Omega$, V_O=±10V	86	100	—	dB
Maximum Output Voltage Swing 1	V_{OM1}	V_{IN}^+=4V, V_{IN}^-=3V, V^+=9V Isource=40mA	7.5	—	—	V
Maximum Output Voltage Swing 2	V_{OM2}	V_{IN}^+=3V, V_{IN}^-=4V, V^+=9V Isink=40mA	—	—	2.1	V
Input Common Mode Voltage Range 1	$V_{ICM}1$	V^+=9V, V_{IL}	—	—	1.5	V
Input Common Mode Voltage Range 2	$V_{ICM}2$	V^+=9V, V_{IH}	8	—	—	V
Common Mode Rejection Ratio	CMR	$R_S \leqq 10k\Omega$	70	90	—	dB
Supply Voltage Rejection Ratio	SVR	$R_S \leqq 10k\Omega$	76.5	90	—	dB
Supply Current	I_{CC}	V^+=9V	—	8	12	mA
Slew Rate	SR		—	3	—	V/μS
Gain Bandwith Product	GB		—	8	—	MHz

■ TYPICAL CHARACTERISTICS

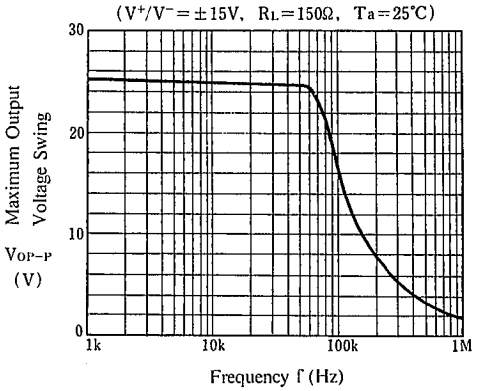
Maximum Output Voltage Swing vs. Frequency

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



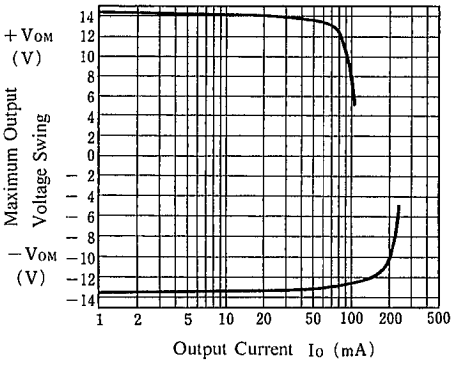
Maximum Output Voltage Swing vs. Frequency

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



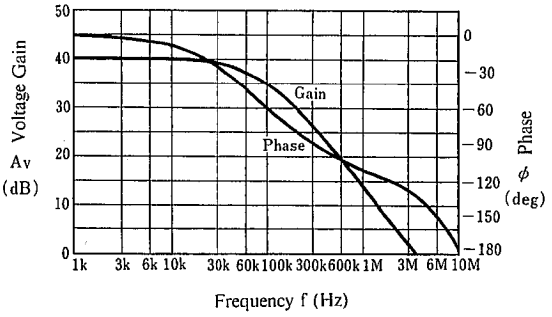
Maximum Output Voltage Swing vs. Output Current

($V^+/V^-=\pm15V$, $Ta=25°C$)



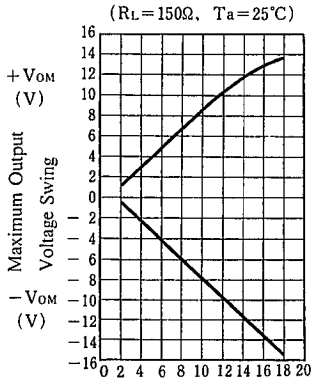
Voltage Gain, Phase Shift vs. Frequency

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



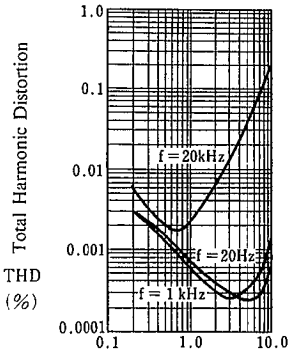
Maximum Output Voltage Swing vs. Operating Voltage

($R_L=150\Omega$, $Ta=25°C$)



Total Harmonic Distortion vs. Output Voltage

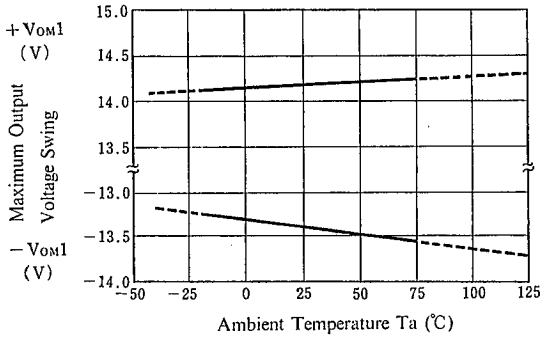
($V^+/V^-=\pm15V$, $R_L=200\Omega$, $G_{ain}=30dB$, $Ta=25°C$)



■ TYPICAL CHARACTERISTICS

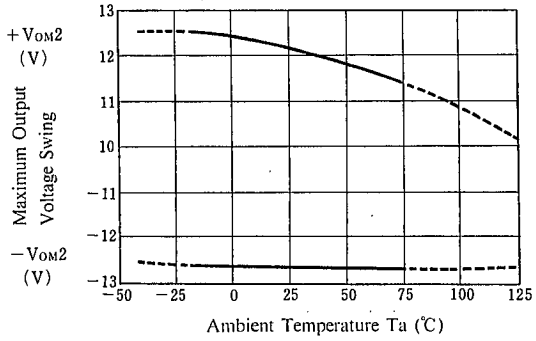
Maximum Output Voltage Swing vs. Temperature

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



Maximum Output Voltage Swing vs. Temperature

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



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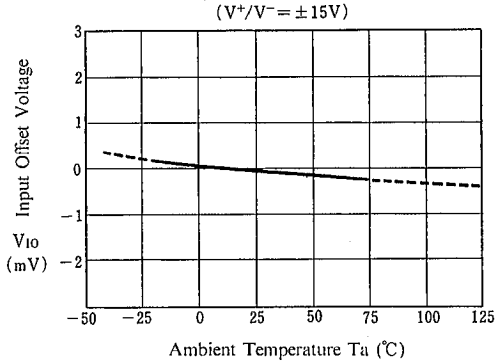
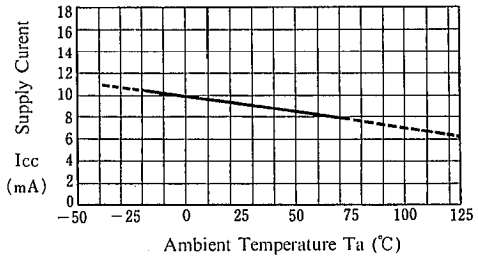
Input Offset Voltage vs. Temperature

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



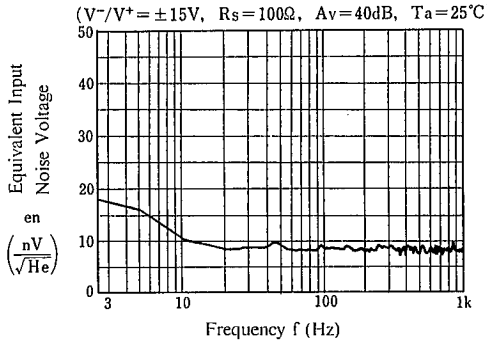
Supply Current vs. Temperature

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



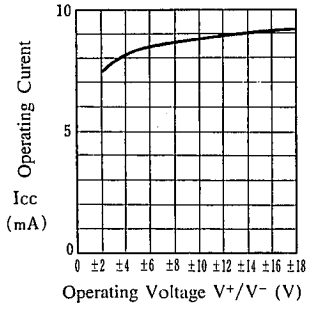
Equivalent Input Noise Voltage vs. Frequency

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



Operating Current vs. Operating Voltage

($Ta=25℃$)



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