

#### DUAL OPERATIONAL AMPLIFIER

#### **■ GENERAL DESCRIPTION**

NJM4580 is the dual operational amplifier, specially designed for improving the tone control, which is most suitable for the audio application.

Featuring noiseless, higher gain bandwidth, high output current and low distortion ratio, and it is most suitable not only for acoustic electronic parts of audio pre-amp and active filter, but also for the industrial measurement tools. It is also suitable for the head phone amp at higher output current, and further more, it can be applied for the handy type set operational amplifier of genenal purpose in application of low voltage single supply type which is properly biased of the input low voltage source.

#### **FEATURES**

Operating Voltage

Low Input Noise Voltage Wide Gain Bandwidth Product

Low Distortion

Slew Rate

Package Outline

Bipolar Technology

 $(\pm 2V \sim \pm 18V)$ 

 $(0.8 \mu Vrms typ.)$ 

(15MHz typ.)

(0.0005% typ.)

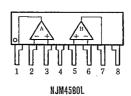
 $(5V/\mu s typ.)$ 

DIP8, SIP8, EMP8, SSOP8, DMP8

### **■ PIN CONFIGURATION**







#### **■ PACKAGE OUTLINE**







NJM4580M



NJM45BOE



NJM4580L



NJM4580V

### PIN FUNCTION

1. A OUTPUT

A -INPUT

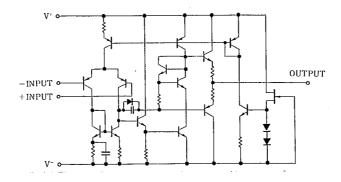
3. A + INPUT 4. V

5. B +INPUT

6. B -INPUT

7. BOUTPUT

#### ■ EQUIVALENT CIRCUIT (1/2 Shown)



#### ■ ABSOLUTE MAXIMUM RATINGS

(Ta=25℃)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V*/V~	±18	V
Input Voltage	Vic	±15 (note)	V
Differential Input Voltage	V <sub>ID</sub>	±30 (note)	V
Output Current	Io	±50	mA
Power Dissipation		(DIP8) 800	mW
		(SIP8) 800	mW
	PD	(DMP8) 300	mW
		(EMP8) 300	mW
		(SSOP8) 250	mW
Operating Temperature Range	Topr	-40~+85	℃
Storage Temperature Range	Tstg	-40~+125	೮

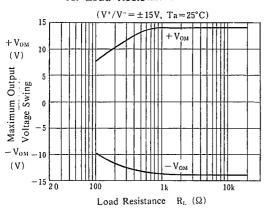
#### **■ ELECTRICAL CHARACTERISTICS**

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

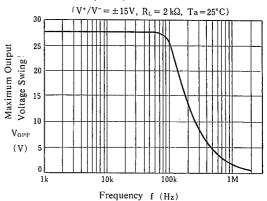
PARAMETER	SYMBOL	TEST CONDITION .	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V <sub>IO</sub>	$R_S \leq 10 k\Omega$		0.5	3	mV
Input Offset Current	I <sub>IO</sub>		_	5	200	n A
Input Bias Current	l <sub>B</sub>		—	100	500	пA
Large Signal Voltage Gain	Av	$R_L \ge 2k\Omega$ , $V_O = \pm 10V$	90	110	l —	dB
Output Voltage Swing	V <sub>OM</sub>	$R_L \ge 2k\Omega$	±12	±13.5		V .
Input Common Mode Voltage Range	VICM		±12	±13.5	l —	V
Common Mode Rejection Ratio	CMR	$R_S \leq 10 k\Omega$	80	110		dB
Supply Voltage Rejection Ratio	SVR	$R_S \leq 10 k\Omega$	80	110	l —	dB
Operating Current	Icc		l —	6	9	mA
Slew Rate	SR	$R_L \ge 2k\Omega$		5	_	V/μs
Gain Bandwidth Product	GB	f=10kHz		15	<u> </u>	MHz
Total Harmonic Distortion	THD	$A_V = 20 dB$ , $V_O = 5V$ , $R_L = 2k\Omega$ , $f = 1kHz$	_	0.0005		%
Input Noise Voltage	V <sub>NI</sub>	RIAA $R_s = 2.2k\Omega$ , 30kHzLPF		0.8	-	$\mu V_{rms}$
	1	1	1	1	1	1 -

#### **TYPICAL CHARACTERISTICS**

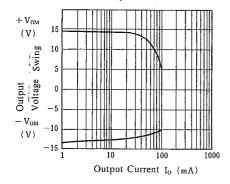
# Maximum Output Voltage Swing vs. Load Resistance



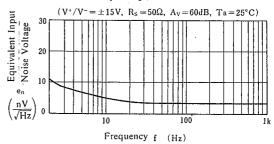
# Maximum Output Voltage Swing vs. Frquency



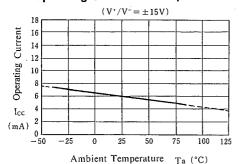
# Output Voltage Swing vs. Output Current



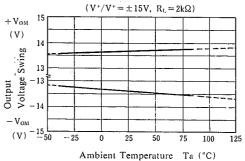
# Equivalent Input Noise Voltage vs. Frequency



#### Operating Current vs. Temperature

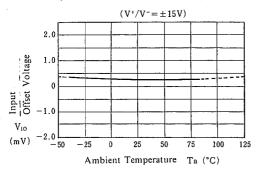


#### Output Voltage Swing vs. Temperature

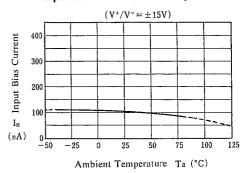


#### **TYPICAL CHARACTERISTICS**

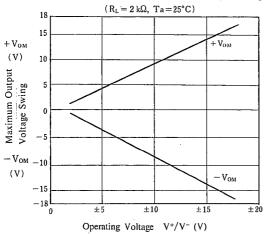
#### Input Offset Voltage vs. Temperature



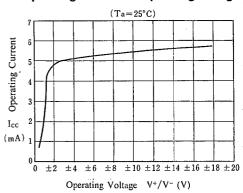
#### Input Bias Current vs. Temperature



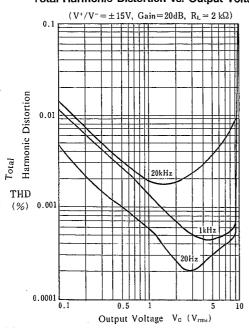
#### Maximum Output Voltage Swing vs. Operating Voltage



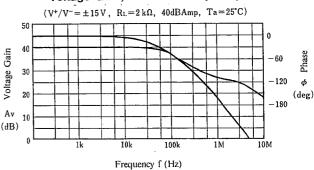
#### Operating Current vs. Operating Voltage



#### Total Harmonic Distortion vs. Output Voltage



#### Voltage Gain, Phase vs. Frequency



### **MEMO**

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