# QUAD OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

The NJM2058 integrated circuit is a quad high-gain operational amplifier internally compensated and constructed on a single silicon chip using an advanced epitaxial process.
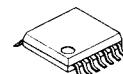
Each amplifier of the NJM2058 has the same electrical characteristics of the NJM4558.

■ FEATURES

- Operating Voltage   (±4V~±18V)
- Package Outline   DIP14,DMP14,SSOP14
- Bipolar Technology

## ■ PACKAGE OUTLINE


NJM2058D   NJM2058M

NJM2058V

■ PIN CONFIGURATION
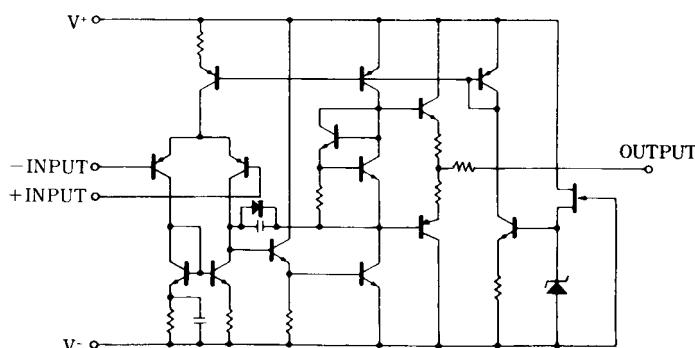
NJM2058D
NJM2058M
NJM2058V

PIN FUNCTION
1. A OUTPUT
2. A -INPUT
3. A +INPUT
4. V$^+$
5. B +INPUT
6. B -INPUT
7. B OUTPUT
8. C OUTPUT
9. C -INPUT
10. C +INPUT
11. V$^-$
12. D +INPUT
13. D -INPUT
14. D OUTPUT

■ EQUIVALENT CIRCUIT   (1/4 Shown)

NJM2058

■ 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　(note1)	V
Power Dissipation	P_D	(DIP14) 700 (DMP14) 700 (note2) (SSOP14) 300	mW
Operating Temperature Range	T_{opr}	-40~+85	°C
Storage Temperature Range	T_{stg}	-40~+125	°C

(note1) For supply voltage less than ±15V. the absolute maximum input voltage is equal to the supply voltage.
(note2) At on PC board
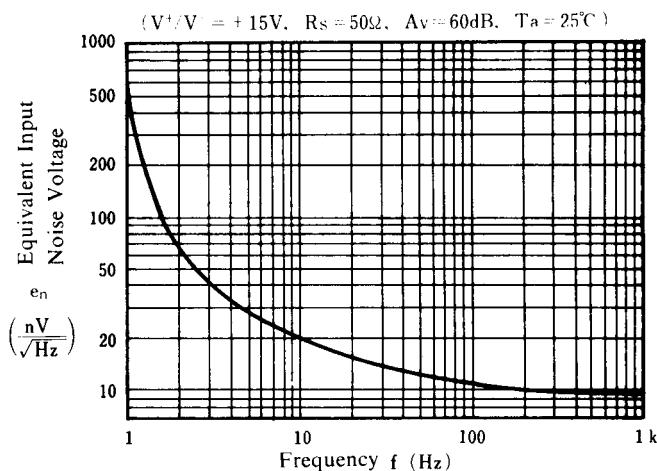
## ■ ELECTRICAL CHARACTERISTICS

(Ta=25°C,$V^+\!/V^-$=±15V)
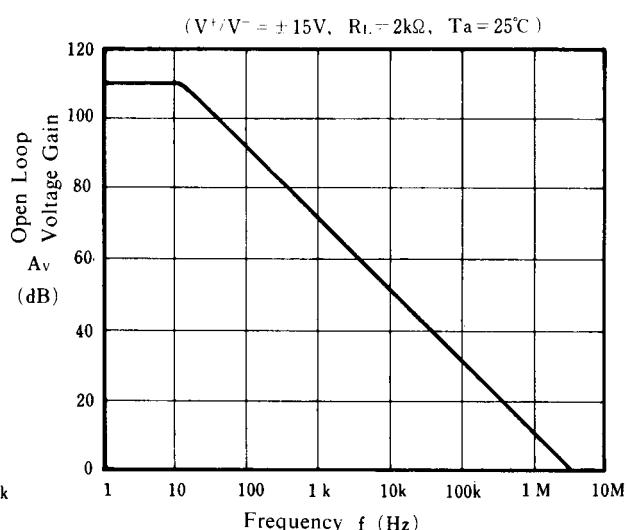
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{IO}	$R_S{\leq}10k\Omega$	-	0.5	6	mV
Input Offset Current	I_{IO}		-	5	200	nA
Input Bias Current	I_B		-	20	500	nA
Input Resistance	R_{IN}		0.3	1	-	MΩ
Large signal Voltage Gain	A_V	$R_L{\geq}2k\Omega,V_O{=}{\pm}10V$	86	100	-	dB
Maximum Output Voltage Swing 1	V_{OM1}	$R_L{\geq}10k\Omega$	± 12	± 14	-	V
Maximum Output Voltage Swing 2	V_{OM2}	$R_L{\geq}2k\Omega$	± 10	± 13	-	V
Input Common Mode Voltage Range	V_{ICM}		± 12	± 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
Operating Current	I_{CC}		-	7	11.3	mA
Slew Rate	SR		-	1	-	V/μs
Equivalent Input Noise Voltage	V_{NI}	RIAA,R_S=2.2kΩ,30kHz LPF	-	1.4	-	μVrms

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■ TYPICAL CHARACTERISTICS
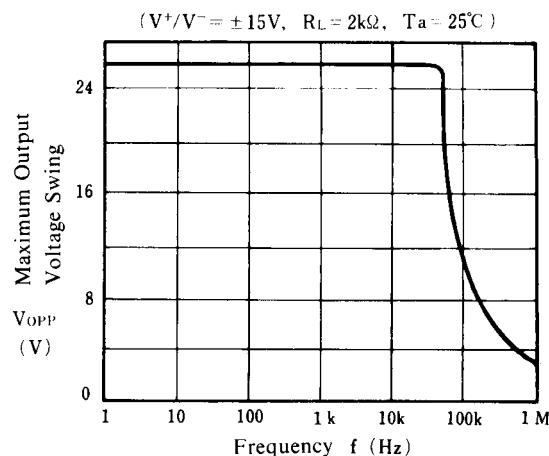
Equivalent Input Noise Voltage vs. Frequency

$(V^+/V^- = +15V, R_S = 50\Omega, A_V = 60dB, Ta = 25°C)$
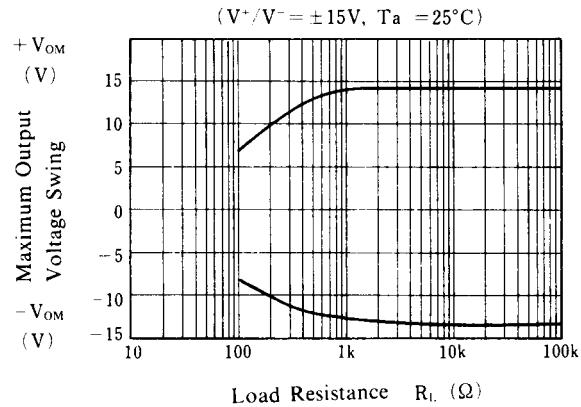
Open Loop Voltage Gain vs. Frequency

$(V^+/V^- = \pm15V, R_L = 2k\Omega, Ta = 25°C)$
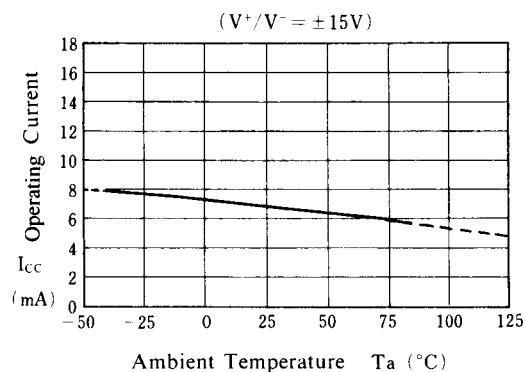
Maximum Output Voltage Swing vs. Frequency

$(V^+/V^- = \pm15V, R_L = 2k\Omega, Ta = 25°C)$
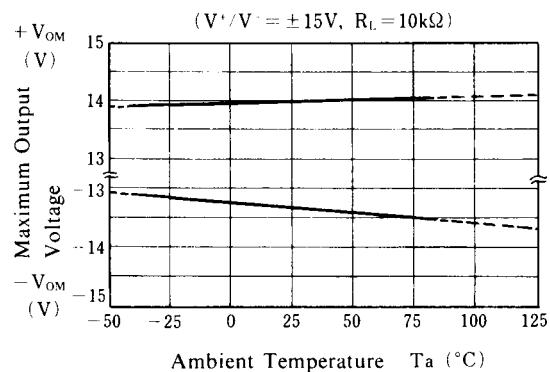
Maximum Output Voltage Swing vs. Load Resistance

$(V^+/V^- = \pm15V, Ta = 25°C)$

Operating Current vs. Temperature
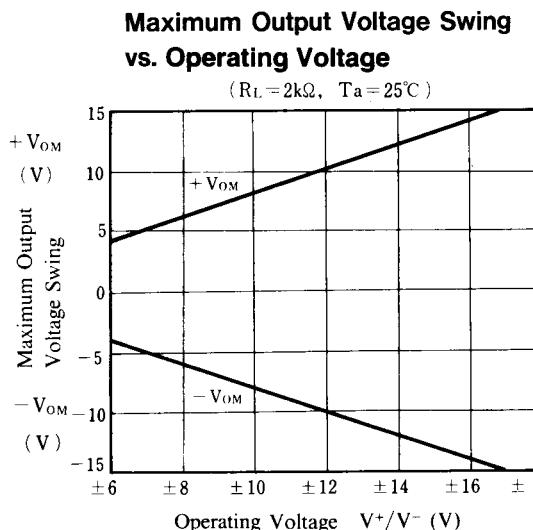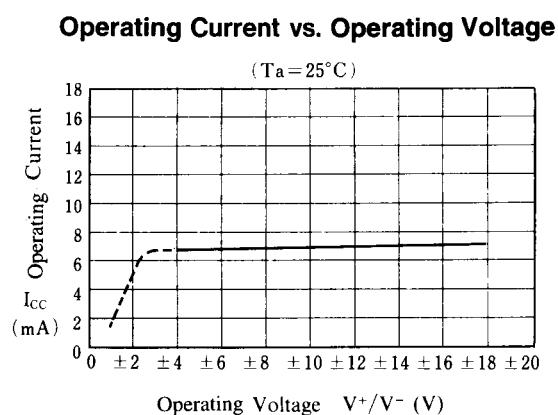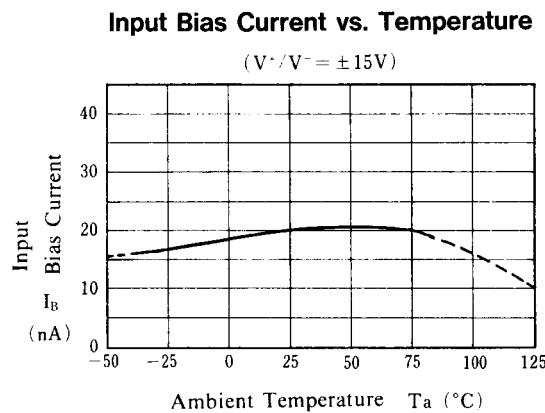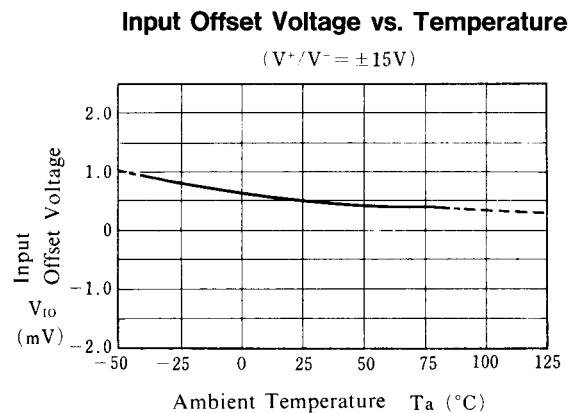
$(V^+/V^- = \pm15V)$

Maximum Output Voltage Swing vs. Tempertature

$(V^+/V^- = \pm15V, R_L = 10k\Omega)$

NJM2058

■ TYPICAL CHARACTERISTICS

Input Offset Voltage vs. Temperature

$(V^+/V^- = \pm 15V)$

Input Offset Voltage V_{IO} (mV)

Ambient Temperature Ta (°C)

Input Bias Current vs. Temperature

$(V^+/V^- = \pm 15V)$

Input Bias Current I_B (nA)

Ambient Temperature Ta (°C)

Operating Current vs. Operating Voltage

$(Ta = 25°C)$

Operating Current I_{CC} (mA)

Operating Voltage V^+/V^- (V)

Maximum Output Voltage Swing vs. Operating Voltage

$(R_L = 2k\Omega, \ Ta = 25°C)$

Maximum Output Voltage Swing
$+V_{OM}$ (V)
$-V_{OM}$ (V)

Operating Voltage V^+/V^- (V)

■ TYPICAL CHARACTERISTICS
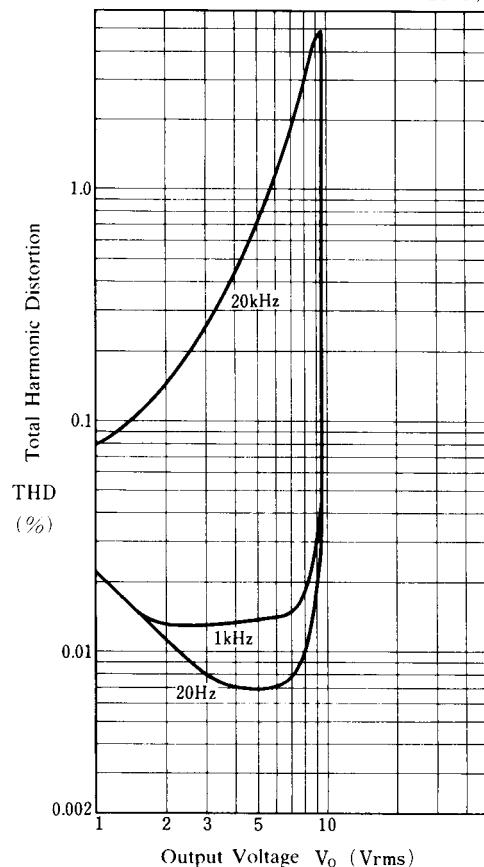
Total Harmonic Distortion

($V^+/V^- = \pm 15V$, Gain $=40dB$, $R_L = 10k\Omega$, Ta $= 25°C$)

Total Harmonic Distortion
THD (%)

Output Voltage V_O (Vrms)

Total Harmonic Distortion

($V^+/V^- = \pm 15V$, Gain $=40dB$, $R_L = 2k\Omega$, Ta $= 25°C$)

Total Harmonic Distortion
THD (%)

Output Voltage V_O (Vrms)

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