

## QUAD OPERATIONAL AMPLIFIER

### ■ GENERAL DESCRIPTION

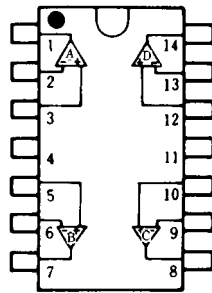
The NJM2058 integrated circuit is a quad high-gain operational amplifier internally compensated and constructed on a single silicon chip using an advanced epitaxial process.

Each amplifier of the NJM2058 has the same electrical characteristics of the NJM4558.

### ■ FEATURES

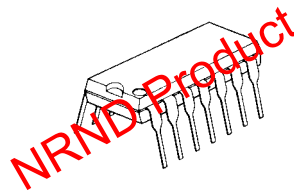
- Operating Voltage (  $\pm 4V \sim \pm 18V$  )
- Package Outline DIP14,DMP14,SSOP14
- Bipolar Technology

### ■ PIN CONFIGURATION

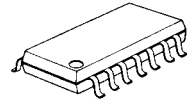


NJM2058D  
NJM2058M  
NJM2058V

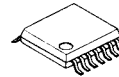
### ■ PACKAGE OUTLINE



NJM2058D



NJM2058M

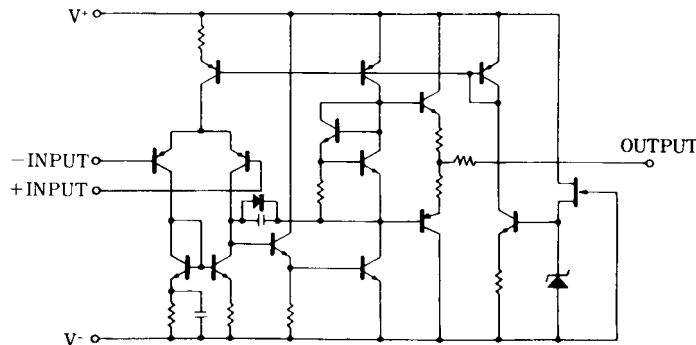


NJM2058V

### 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 )



## ■ 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

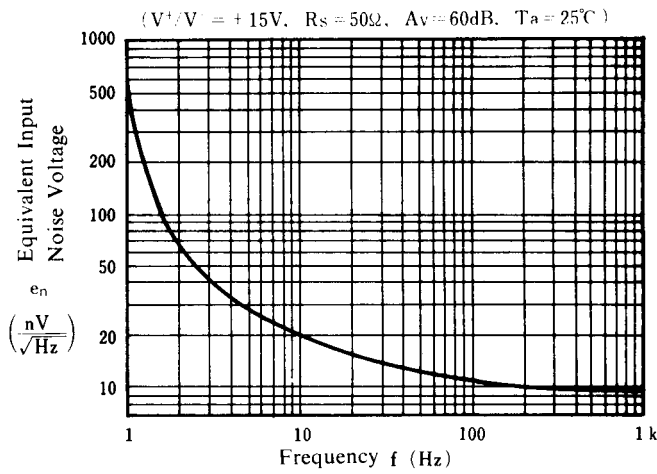
## ■ ELECTRICAL CHARACTERISTICS

( Ta=25°C,  $V^+ / V^- = \pm 15V$  )

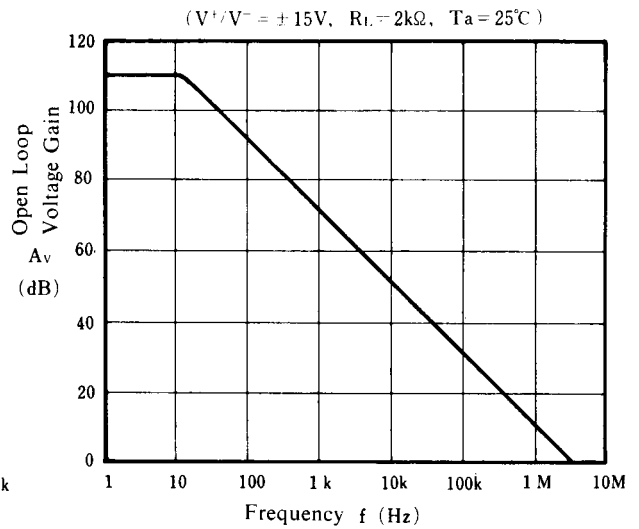
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	$V_{IO}$	$R_S \leq 10k\Omega$	-	0.5	6	mV
Input Offset Current	$I_{IO}$		-	5	200	nA
Input Bias Current	$I_B$		-	20	500	nA
Input Resistance	$R_{IN}$		0.3	1	-	MΩ
Large signal Voltage Gain	$A_V$	$R_L \geq 2k\Omega, V_O = \pm 10V$	86	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, $R_S = 2.2k\Omega, 30kHz$ LPF	-	1.4	-	μVrms

■ TYPICAL CHARACTERISTICS

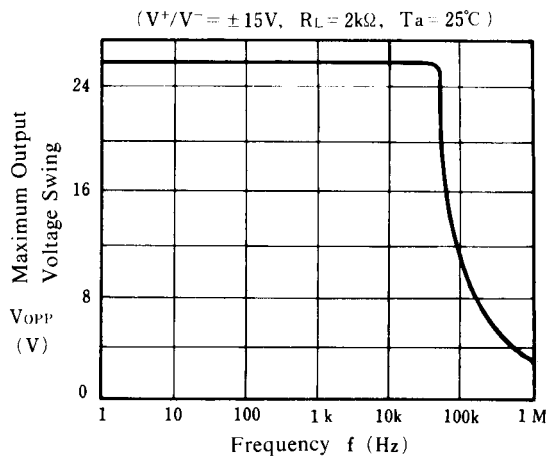
**Equivalent Input Noise Voltage vs. Frequency**



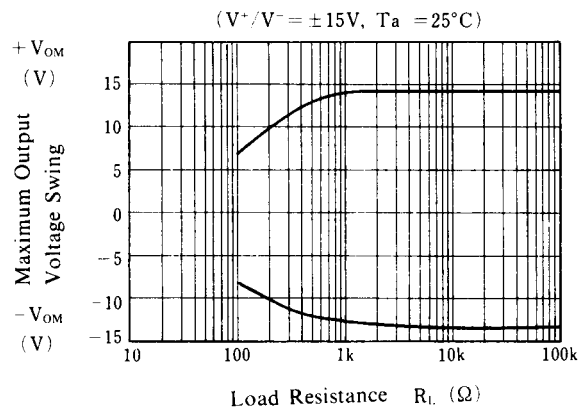
**Open Loop Voltage Gain vs. Frequency**



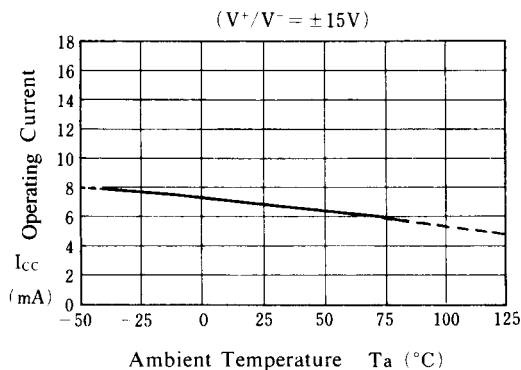
**Maximum Output Voltage Swing vs. Frequency**



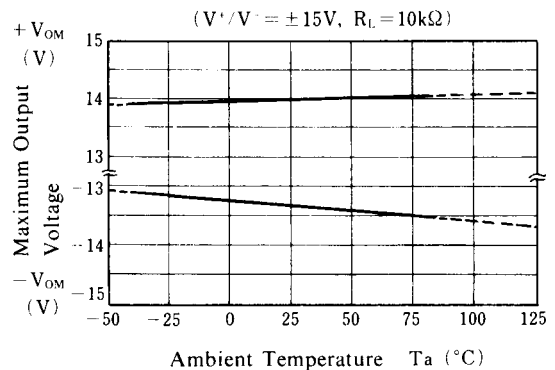
**Maximum Output Voltage Swing vs. Load Resistance**



**Operating Current vs. Temperature**



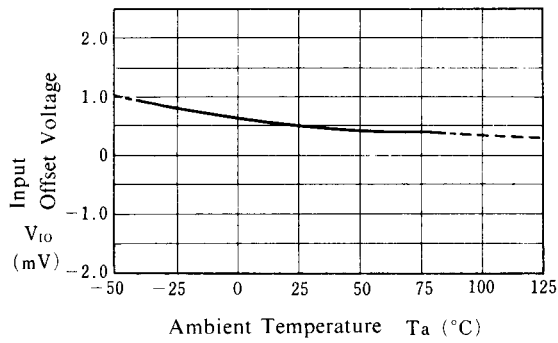
**Maximum Output Voltage Swing vs. Temperature**



■ TYPICAL CHARACTERISTICS

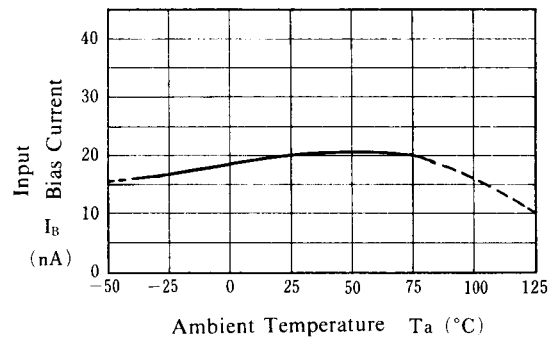
**Input Offset Voltage vs. Temperature**

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



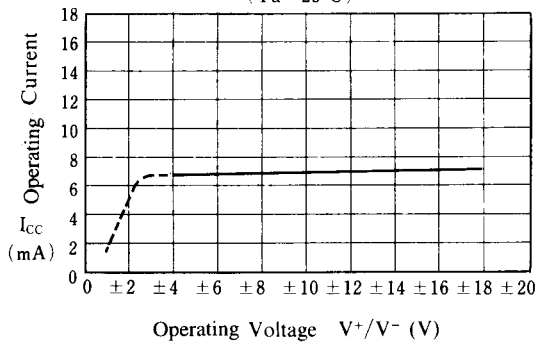
**Input Bias Current vs. Temperature**

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



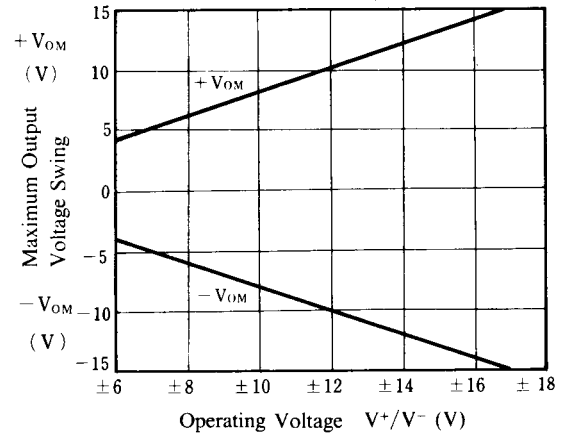
**Operating Current vs. Operating Voltage**

( $T_a = 25^\circ C$ )



**Maximum Output Voltage Swing vs. Operating Voltage**

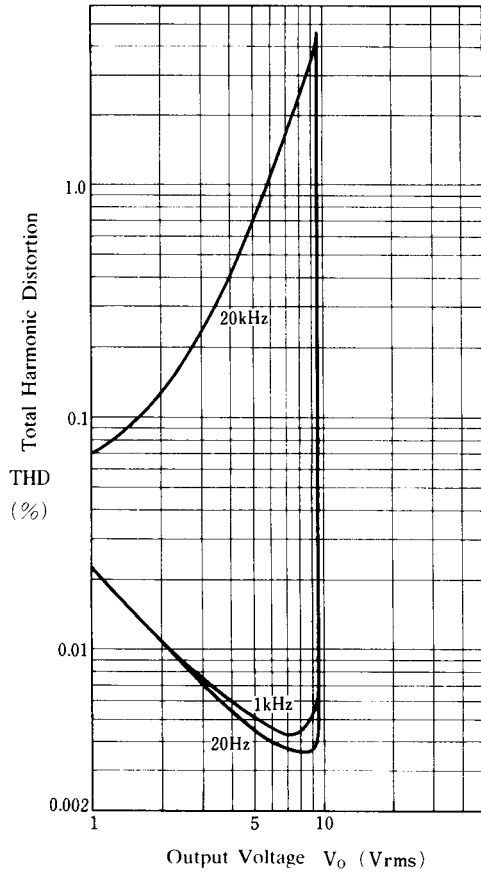
( $R_L = 2k\Omega, T_a = 25^\circ C$ )



■ TYPICAL CHARACTERISTICS

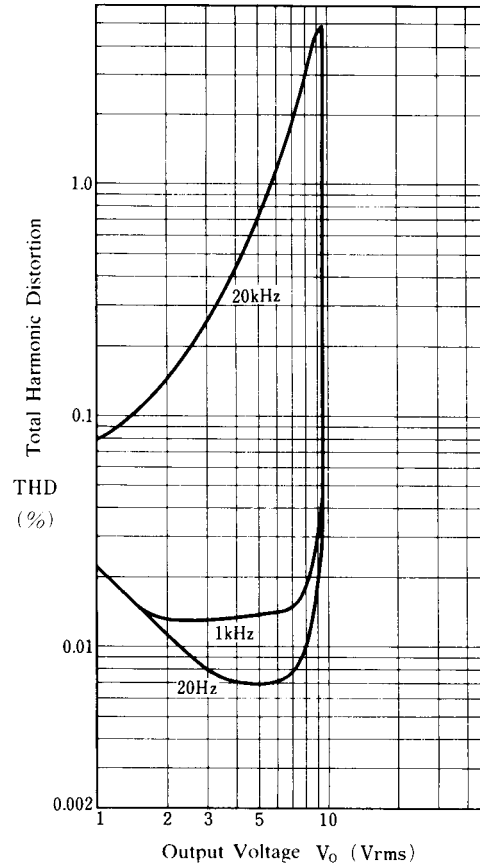
**Total Harmonic Distortion**

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



**Total Harmonic Distortion**

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



[CAUTION]  
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