

## QUAD OPERATIONAL AMPLIFIER

### ■ GENERAL DESCRIPTION

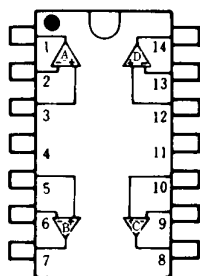
The NJM2058 integrated circuit is a quad high-gain operational amplifier internally compensated and constructed on a single silicon chip using an advanced epitaxial process.

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

### ■ FEATURES

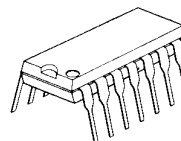
- Operating Voltage                   (±4V~±18V)
- Package Outline                   DIP14,DMP14,SSOP14
- Bipolar Technology

### ■ PIN CONFIGURATION

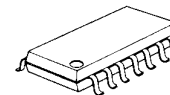


NJM2058D  
NJM2058M  
NJM2058V

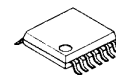
### ■ PACKAGE OUTLINE



NJM2058D



NJM2058M

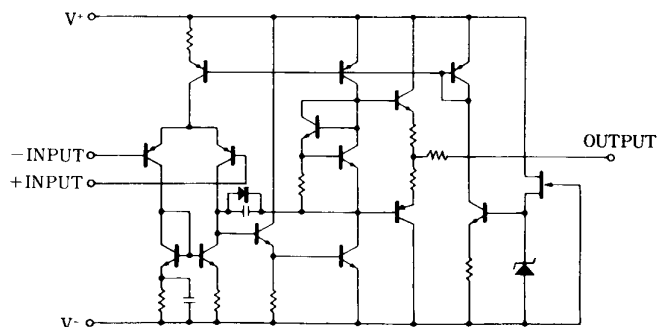


NJM2058V

### PIN FUNCTION

1. A OUTPUT
2. A -INPUT
3. A +INPUT
4. V<sup>+</sup>
5. B +INPUT
6. B -INPUT
7. B OUTPUT
8. C OUTPUT
9. C -INPUT
10. C +INPUT
11. V<sup>-</sup>
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	$V^+V^-$	$\pm 18$	V
Differential Input Voltage	$V_{ID}$	$\pm 30$	V
Input Voltage	$V_{IC}$	$\pm 15$ ( 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  $\pm 15V$ , the absolute maximum input voltage is equal to the supply voltage.

( note2 ) At on PC board

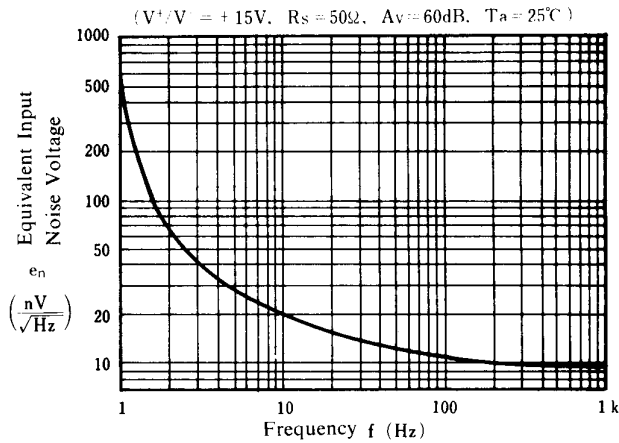
## ■ ELECTRICAL CHARACTERISTICS

( Ta=25°C,  $V^+V^- = \pm 15V$  )

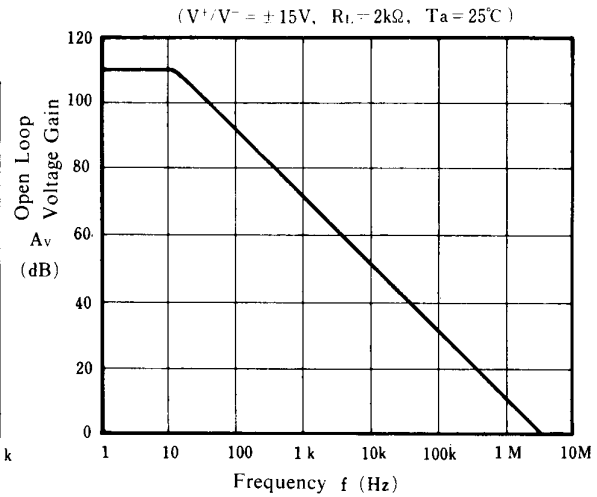
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	$V_{IO}$	$R_S \leq 10k\Omega$	-	0.5	6	mV
Input Offset Current	$I_{IO}$		-	5	200	nA
Input Bias Current	$I_B$		-	20	500	nA
Input Resistance	$R_{IN}$		0.3	1	-	MΩ
Large signal Voltage Gain	$A_V$	$R_L \geq 2k\Omega, V_O = \pm 10V$	86	100	-	dB
Maximum Output Voltage Swing 1	$V_{OM1}$	$R_L \geq 10k\Omega$	$\pm 12$	$\pm 14$	-	V
Maximum Output Voltage Swing 2	$V_{OM2}$	$R_L \geq 2k\Omega$	$\pm 10$	$\pm 13$	-	V
Input Common Mode Voltage Range	$V_{ICM}$		$\pm 12$	$\pm 14$	-	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



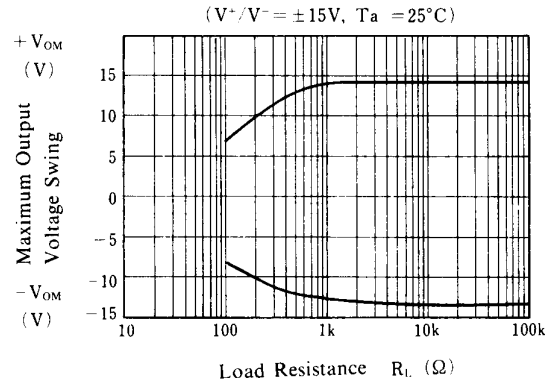
### Open Loop Voltage Gain vs. Frequency



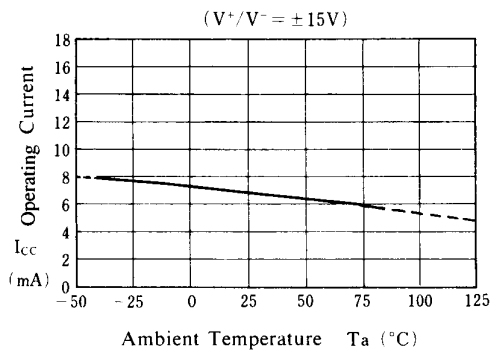
### Maximum Output Voltage Swing vs. Frequency



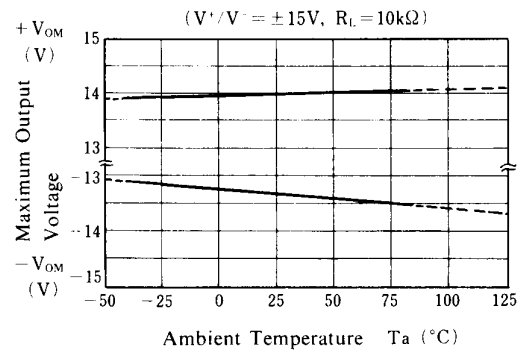
### Maximum Output Voltage Swing vs. Load Resistance



### Operating Current vs. Temperature



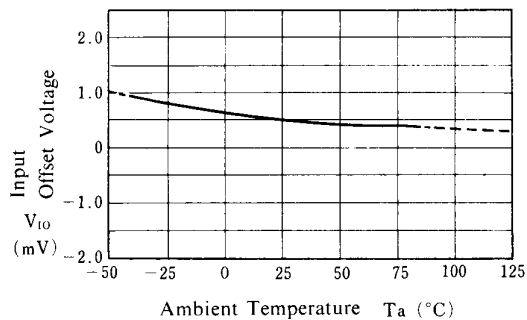
### Maximum Output Voltage Swing vs. Temperature



## ■ TYPICAL CHARACTERISTICS

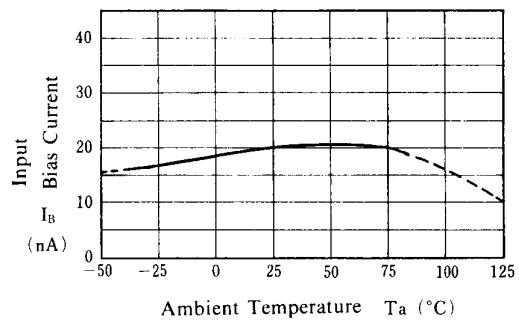
**Input Offset Voltage vs. Temperature**

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



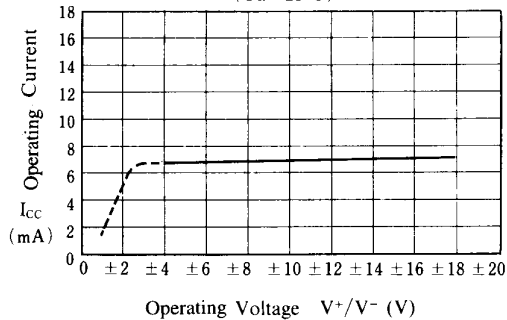
**Input Bias Current vs. Temperature**

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



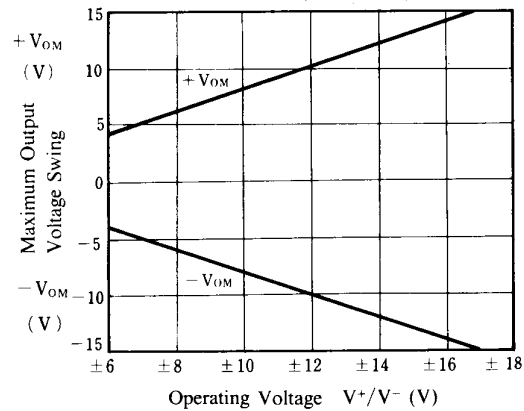
**Operating Current vs. Operating Voltage**

( $T_a = 25^\circ C$ )



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

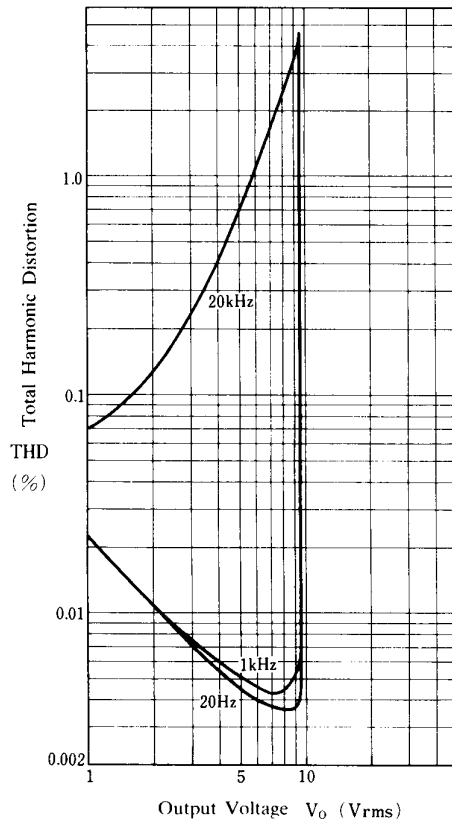
( $R_L = 2k\Omega, T_a = 25^\circ C$ )



## ■ TYPICAL CHARACTERISTICS

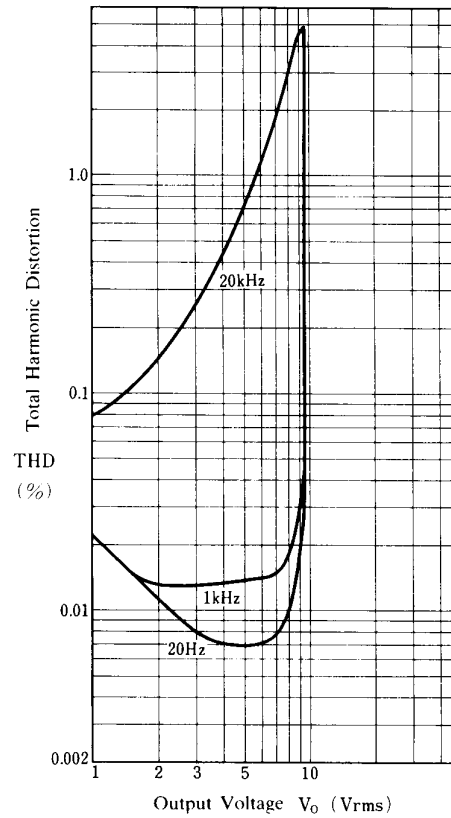
### Total Harmonic Distortion

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