DUAL OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

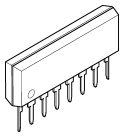
The NJM4558 is a dual high-gain operational amplifier with internal compensation circuit and constructed on a single silicon chip. It offers excellent characteristics by combining the parameters adjusted for a monolithic chip. The channel separation characteristic is suitable for measuring instruments.

■ PACKAGE OUTLINE

NJM4558D
(DIP8)

NJM4558M
(DMP8)

NJM4558V
(SSOP8)



NJM4558L
(SIP8)

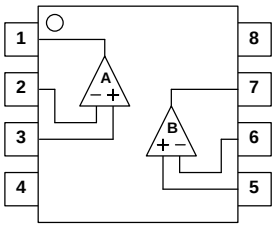
NJM4558E
(SOP8)

■ FEATURES

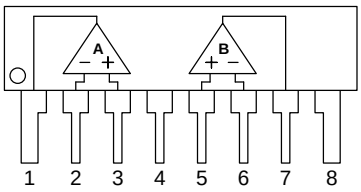
● Operating Voltage	(±4V~±18V)
● High Voltage Gain	(100dB typ.)
● High Input Resistance	(5MΩ typ.)
● Bipolar Technology	
● Package Outline	DIP8, DMP8, SIP8 SOP8 JEDEC 150mil, SSOP8

■ PIN CONFIGURATION

(Top View)



NJM4558D, NJM4558M,
NJM4558E, NJM4558V

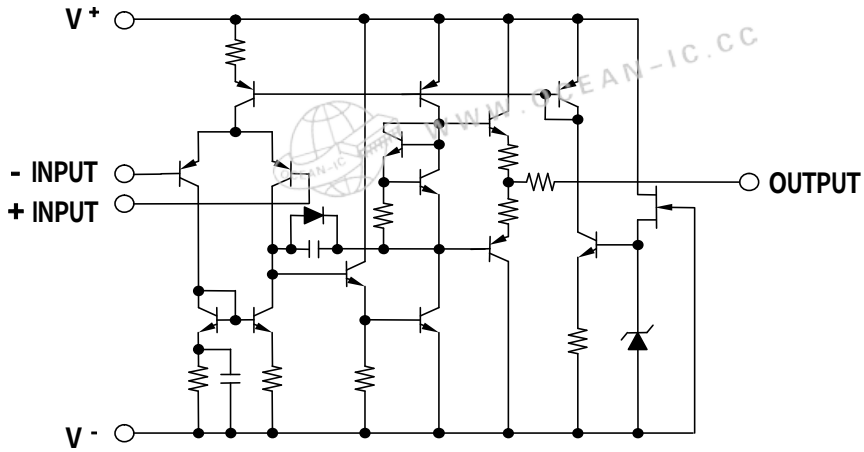


NJM4558L

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˚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	(DIP8) 500 (DMP8) 300 (SOP8) 300 (SSOP8) 250 (SIP8) 800	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.

■ ELECTRICAL CHARACTERISTICS

(V^+/V^-=±15V,Ta=25˚C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{IO}	R_S≤10kΩ	-	0.5	6	mV
Input Offset Current	I_{IO}		-	5	200	nA
Input Bias Current	I_B		-	25	500	nA
Input Resistance	R_{IN}		0.3	5	-	MΩ
Large Signal Voltage Gain	A_V	R_L≥2kΩ,V_O=±10V	86	100	-	dB
Maximum Output Voltage Swing 1	V_{OM1}	R_L≥10kΩ	± 12	± 14	-	V
Maximum Output Voltage Swing 2	V_{OM2}	R_L≥2kΩ	± 10	± 13	-	V
Input Common Mode Voltage Range	V_{ICM}		± 12	14	-	V
Common Mode Rejection Ratio	CMR	R_S≤10kΩ	70	90	-	dB
Supply Voltage Rejection Ratio	SVR	R_S≤10kΩ	76.5	90	-	dB
Operating Current	I_{CC}		-	3.5	5.7	mA
Slew Rate	SR		-	1	-	V/μs
Equivalent Input Noise Voltage (note2)	V_{NI}	RIAA,R_S=2.2kΩ,30kHz LPF	-	1.4	-	μVrms
Gain Bandwidth Product	GB		-	3	-	MHz

(note2) In regard to Noise Standard, NJRC is preparing for special D Rank type products (V_{NI}=1.8μV max.) except for SSOP package.

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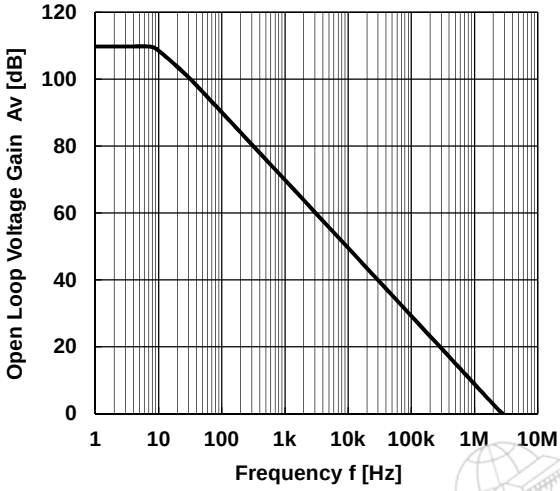
■ TYPICAL CHARACTERISTICS

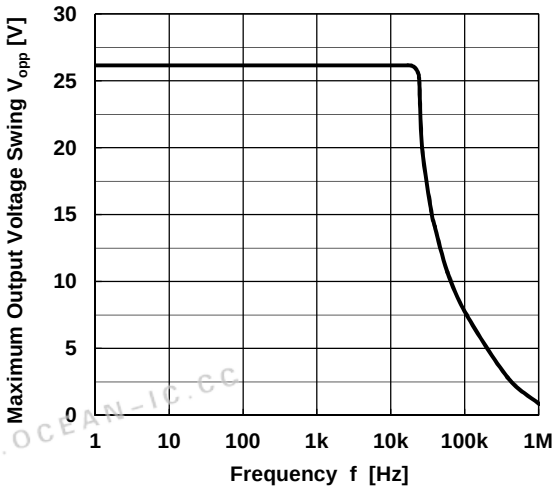
Open Loop Voltage Gain vs. Frequency

V^+/V^-=±15V, R_L=2kΩ, Ta=25ºC



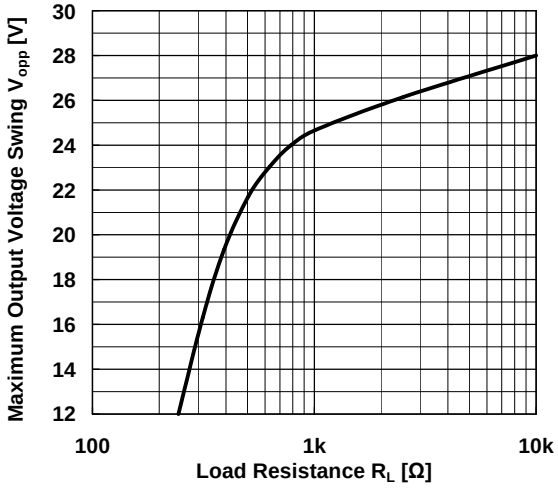
Maximum Output Voltage Swing vs. Frequency

V^+/V^-=±15V, R_L=2kΩ, Ta=25ºC



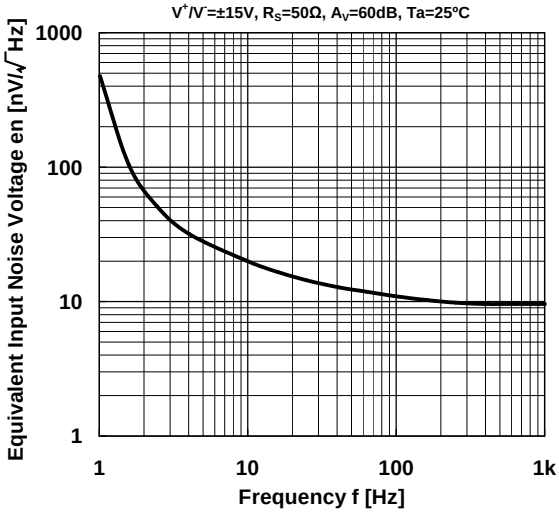
Maximum Output Voltage Swing vs. Load Resistance

V^+/V^-=±15V, Ta=25ºC



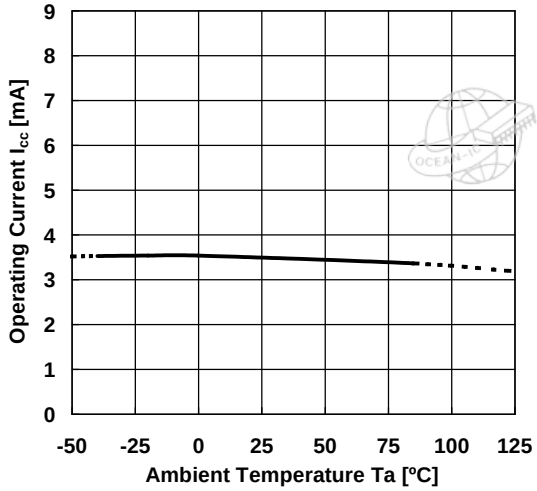
Equivalent Input Noise Voltage vs. Frequency

V^+/V^-=±15V, R_S=50Ω, A_V=60dB, Ta=25ºC



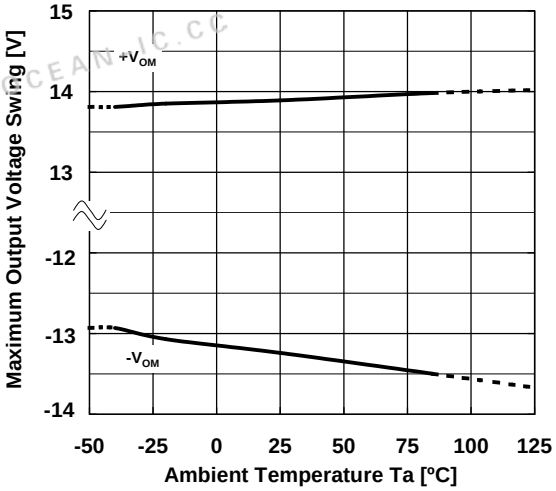
Operating Current vs. Temperature

V^+/V^-=±15V



Maximum Output Voltage Swing vs. Temperature

V^+/V^-=±15V, R_L=10kΩ



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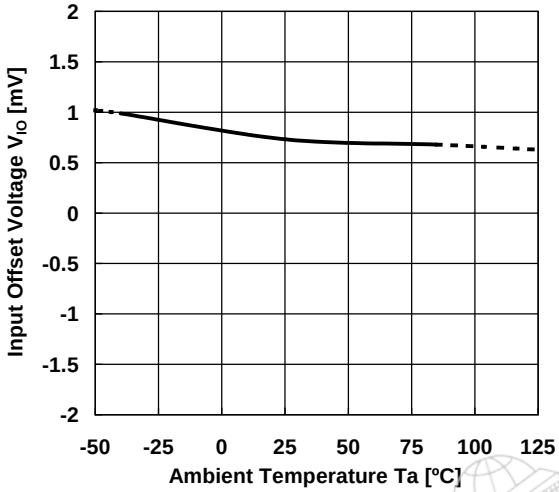
■ TYPICAL CHARACTERISTICS

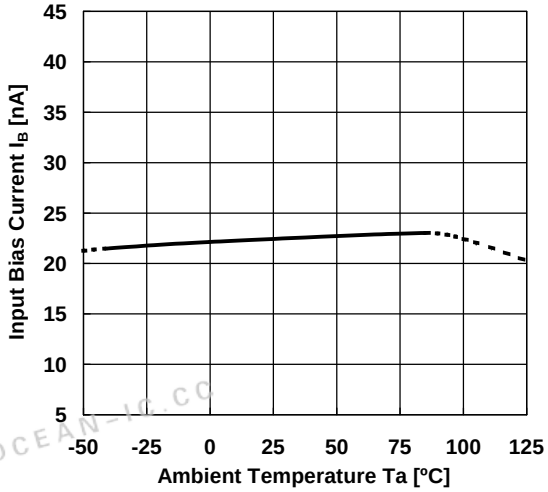
Input Offset Voltage vs. temperature

V^+/V^-=±15V



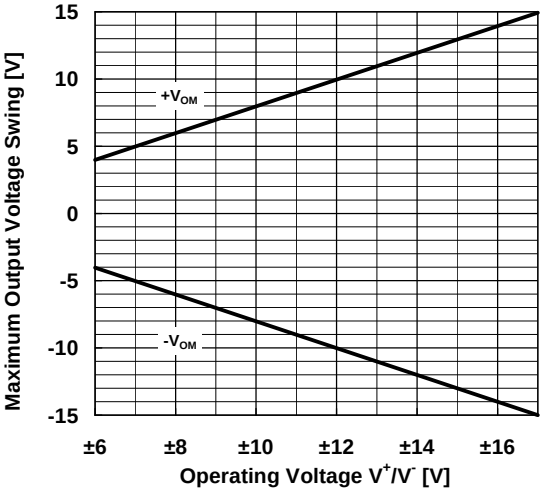
Input Bias Current vs. Temperature

V^+/V^-=±15V



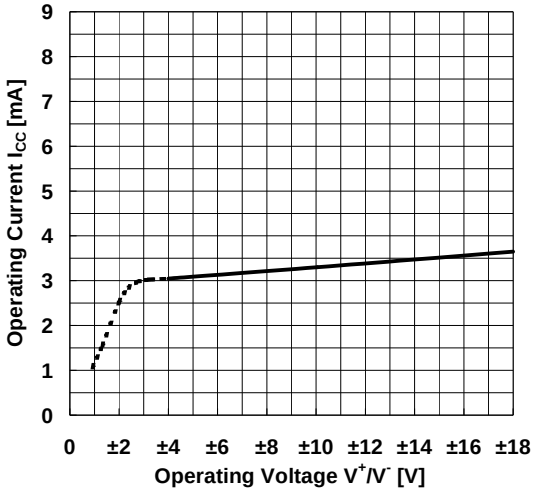
Maximum Output Voltage Swing vs. Operating Voltage

R_L=2kΩ, Ta=25ºC



Operating Current vs. Operating Voltage

Ta=25ºC



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