DUAL OPERATIONAL AMPLIFIER

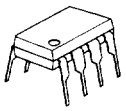
■ GENERAL DESCRIPTION

The NJM4565 integrated circuit is a high-gain, wide-bandwidth, dual low noise operational amplifier capable of driving 20V peak-to-peak into 400Ω load. The NJM4565 is good characteristics compared to the NJM4560.

■ FEATURES

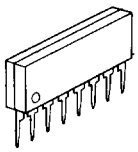
- Operating Voltage (±4V～±18V)
- Wide Gain Bandwidth Product (4MHz typ.)
- Slew Rate (4V/μs typ.)
- Package Outline DIP8, DMP8, SSOP8, SIP8
- Bipolar Technology

■ PACKAGE OUTLINE



NJM4565D

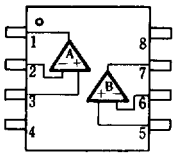
NJM4565M



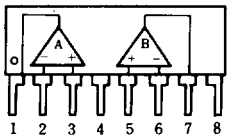
NJM4565L

NJM4565V

■ PIN CONFIGURATION



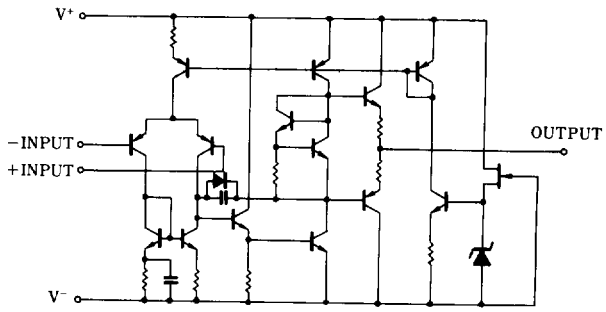
NJM4565D
NJM4565M
NJM4565V



NJM4565L

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℃)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+/V^-	±18	V
Differential Input Voltage	V_{ID}	±30	V
Input Voltage	V_I	±15 (note)	V
Power Dissipation	P_D	(DIP8) 500	mW
		(DMP8) 300	mW
		(SSOP8) 250	mW
		(SIP8) 800	mW
Operating Temperature Range	Topr	−20～+75	℃
Storage Temperature Range	Tstg	−40～+125	℃

(note) For supply voltage less than ±15V, the absolute maximum input voltage is equal to the supply voltage.

■ ELECTRICAL CHARACTERISTICS

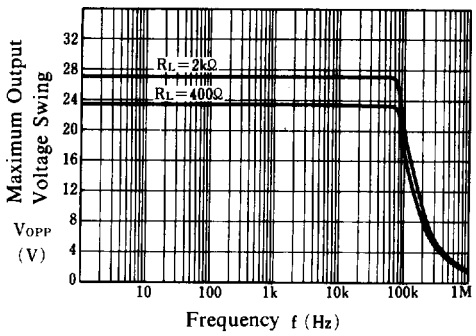
(Ta=25℃, V^+/V^-=±15V)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{IO}	R_S≦10kΩ	—	0.5	3.0	mV
Input Offset Current	I_{IO}		—	2	50	nA
Input Bias Current	I_B		—	50	200	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 1	V_{OM1}	R_L≧2kΩ	±12	±14	—	V
Maximum Output Voltage 2	V_{OM2}	I_O=25mA	±10	±11.5	—	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}		—	4.5	7	mA
Slew Rate	SR		—	4	—	V/μs
Gain Bandwidth Product	GB		—	10	—	MHz
Equivalent Input Noise Voltage	V_{NI}	RIAA, R_S=2.2kΩ, 30kHz LPF	—	1.2	—	μV

■ TYPICAL CHARACTERISTICS

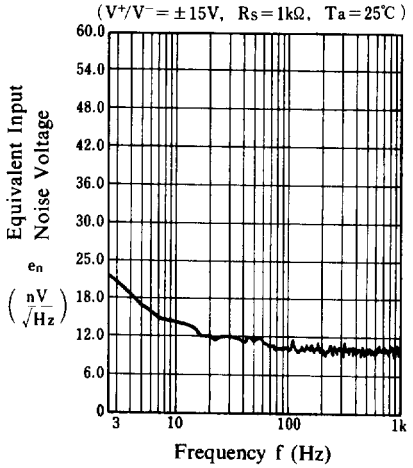
Maximum Output Voltage Swing vs. Frequency

($V^+/V^-=\pm15V$, Ta=25°C)



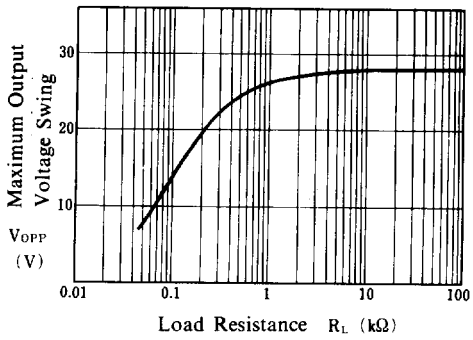
Equivalent Input Noise Voltage vs. Frequency

($V^+/V^-=\pm15V$, Rs=1kΩ, Ta=25°C)



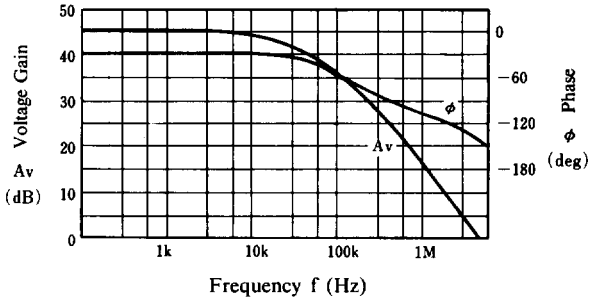
Maximum Output Voltage Swing vs. Load Resistance

($V^+/V^-=\pm15V$, Ta=25°C)



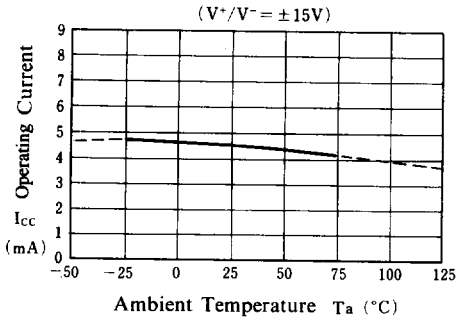
Voltage Gain Phase vs. Frequency

($V^+/V^-=\pm15V$, RL=2kΩ, 40dBAmp, Ta=25°C)



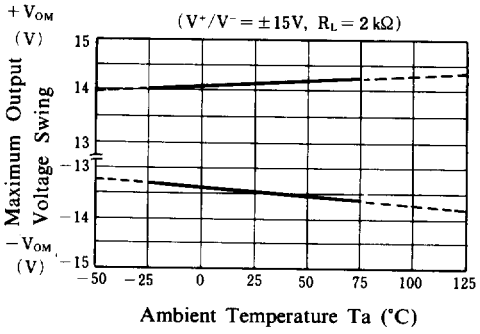
Operating Current vs. Temperature

($V^+/V^-=\pm15V$)



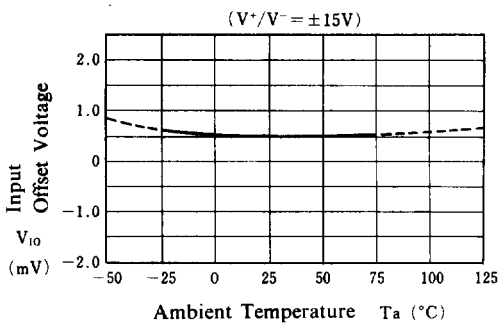
Maximum Output Voltage Swing vs. Temperature

($V^+/V^-=\pm15V$, RL=2kΩ)

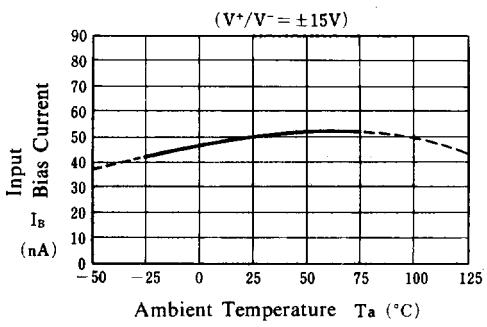


■ TYPICAL CHARACTERISTICS

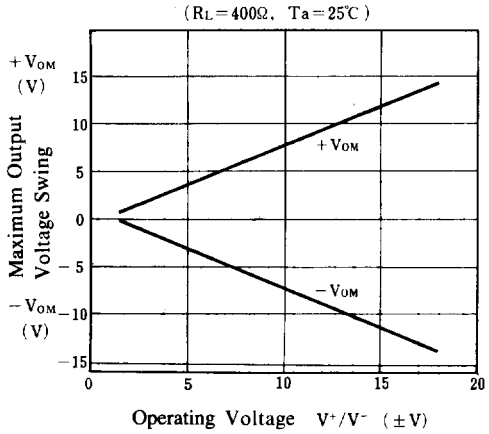
Input Offset Voltage vs. Temperature



Input Bias Current vs. Temperature



Maximum Output Voltage Swing vs. Operating Voltage



Operating Current vs. Operating Voltage