

# NJM4565

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. The NJM4565 is classified to four ranks (general, A,B,D-rank) by electrical characteristics (input offset current, input bias current, equivalent input noise voltage).

### Absolute Maximum Ratings (Ta=25°C)

Supply Voltage	$V^+/V^-$	±18V
Differential Input Voltage	$V_{ID}$	±30V
Input Voltage (note)	$V_I$	±15V
Power Dissipation	$P_D$ (D-Type)	500mW
	(M-Type)	300mW
	(L-Type)	800mW
Operating Temperature Range	$T_{opr}$	-20~+75°C
Storage Temperature Range	$T_{stg}$	-40~+125°C

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

### Recommended Operating Conditions

Supply Voltage	$V^+/V^-$	±4~±18V
Load Resistance	$I_O$	≤ ±25mA

### Electrical Characteristics (Ta=25°C, $V^+/V^- = ±15V$ )

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Input Offset Voltage	$V_{IO}$	$R_S ≤ 10kΩ$	—	0.5	3.0	mV
Input Offset Current	$I_{IO}$		—	50	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
Supply Current	$I_{CC}$		—	4.5	7	mA
Slew Rate	SR		—	4	—	V/μs
Unity Gain Bandwidth	GB		—	10	—	MHz
Equivalent Input Noise Voltage	$V_{NI}$	RIAA, $R_S = 2.2kΩ, 30kHz$ LPF	—	—	—	μV

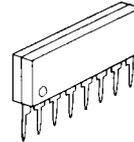
### Package Outline



NJM4565D

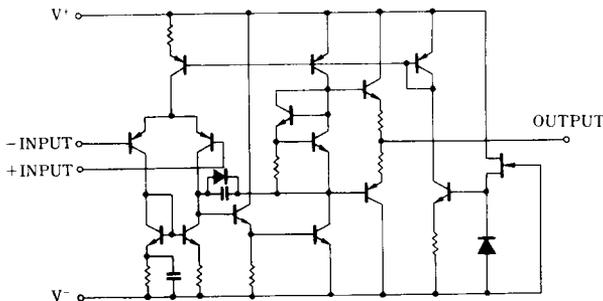


NJM4565M



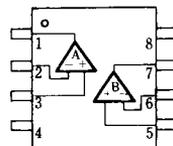
NJM4565L

### Equivalent Circuit (1/2 shown)



### Connection Diagram

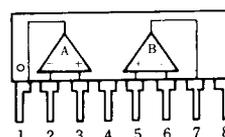
D.M-Type  
(Top View)



PIN FUNCTION

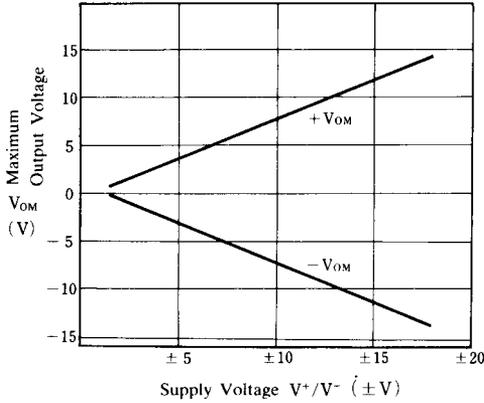
1. A OUTPUT
2. A-INPUT
3. A+INPUT
4.  $V^-$
5. B+INPUT
6. B-INPUT
7. B OUTPUT
8.  $V^+$

L-Type

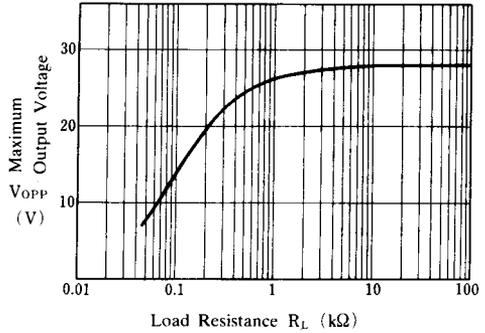


■ Electrical Characteristics

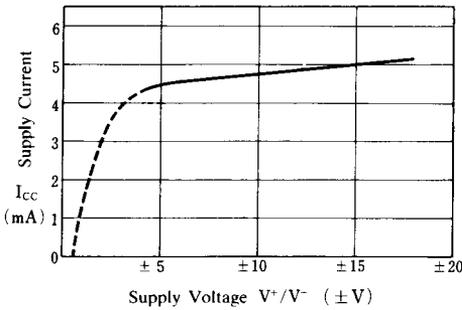
**Maximum Output Voltage Swing vs. Supply Voltage**  
( $R_L = 400\Omega$ ,  $T_a = 25^\circ\text{C}$ )



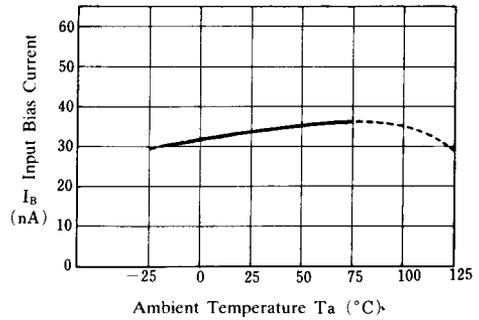
**Maximum Output Voltage Swing vs. Load Resistance**  
( $V^+/V^- = \pm 15V$ ,  $T_a = 25^\circ\text{C}$ )



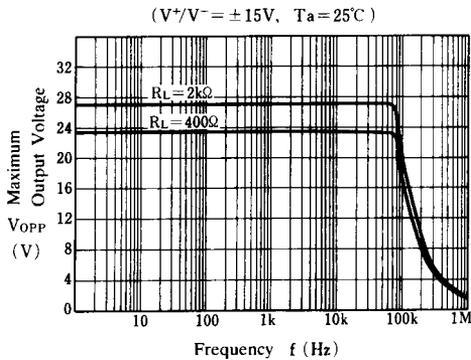
**Supply Current vs. Supply Voltage**  
( $T_a = 25^\circ\text{C}$ )



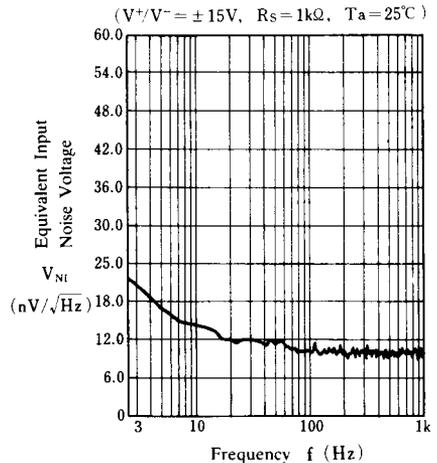
**Input Bias Current vs. Temperature**  
( $V^+/V^- = \pm 15V$ )



**Maximum Output Voltage Swing vs. Frequency**  
( $V^+/V^- = \pm 15V$ ,  $T_a = 25^\circ\text{C}$ )



**Equivalent Input Noise Voltage vs. Frequency**  
( $V^+/V^- = \pm 15V$ ,  $R_S = 1k\Omega$ ,  $T_a = 25^\circ\text{C}$ )



# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Nisshinbo Micro Devices:](#)

[NJM4565MA](#) [NJM4559E](#) [NJM4565DD](#)