

LOW-NOISE DUAL OPERATIONAL AMPLIFIER

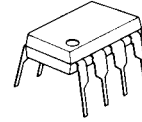
■ GENERAL DESCRIPTION

The NJM2041 is a bipolar operational amplifier which is designed as low noise version of the NJM4558 with high output current and fast slew rate ($3V/\mu s$) and wide unity gain bandwidth (7MHz) constructed using New JRC Planar epitaxial process.

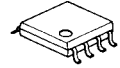
■ FEATURES

- Operating Voltage ($\pm 4V \sim \pm 22V$)
- High Output Current (25mA.)
- Slew Rate ($3V/\mu s$ typ.)
- Unity Gain Bandwidth (7MHz typ.)
- Package Outline DIP8, DMP8, SIP8
- Bipolar Technology

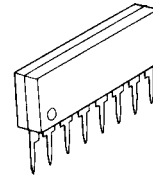
■ PACKAGE OUTLINE



NJM2041D

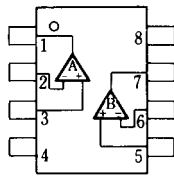


NJM2041M

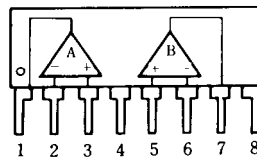


NJM2041L

■ PIN CONFIGURATION



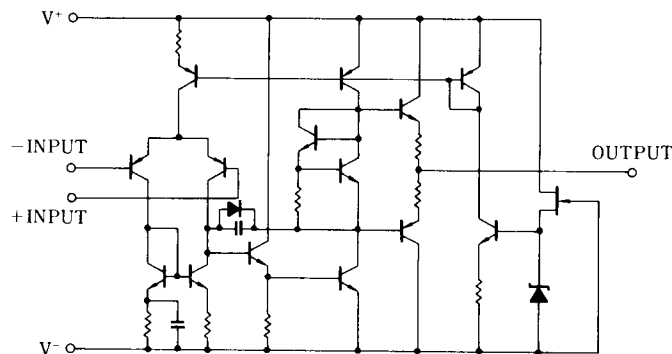
NJM2041D
NJM2041M



NJM2041L

- 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)



NJM2041

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|-----------------------------|-------------|--|------|
| Supply Voltage | V^+ / V^- | ± 22 | V |
| Differential Input Voltage | V_{ID} | ± 30 | V |
| Input Voltage | V_{IC} | ± 15 (note) | V |
| Power Dissipation | P_D | (DIP8) 500 (DMP8) 300 (SIP8) 800 | mW |
| 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.

■ ELECTRICAL CHARACTERISTICS

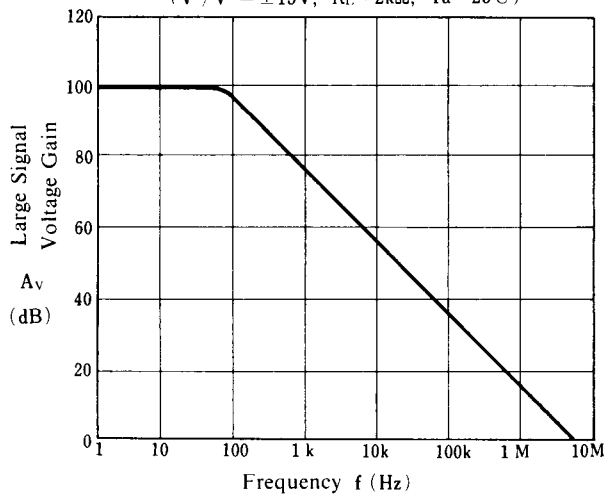
(Ta=25°C, $V^+ / V^- = \pm 15V$)

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---------------------------------|-----------|------------------------------------|------|--------|------|-------|
| Input Offset Voltage | V_{IO} | $R_S \leq 10k\Omega$ | - | 0.3 | 3 | mV |
| Input Offset Current | I_{IO} | | - | 10 | 200 | nA |
| Input Bias Current | I_B | | - | 200 | 500 | nA |
| Input Resistance | R_{IN} | | 50 | 200 | - | kΩ |
| Large signal Voltage Gain | A_V | $R_L \geq 2k\Omega, V_O = \pm 10V$ | 86 | 110 | - | dB |
| Maximum Output Voltage Swing 1 | V_{OM1} | $R_L \geq 10k\Omega$ | ± 12 | ± 14 | - | V |
| Maximum Output Voltage Swing 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 | $R_S \leq 10k\Omega$ | 70 | 100 | - | dB |
| Supply Voltage Rejection Ratio | SVR | $R_S \leq 10k\Omega$ | 76 | 100 | - | dB |
| Operating Current | I_{CC} | | - | 6 | 8 | mA |
| Slew Rate | SR | | - | 3 | - | V/μs |
| Gain Bandwidth Product | GB | | - | 7 | - | MHz |
| Equivalent Input Noise Voltage | V_{NI} | FLAT+JISA $R_S = 300\Omega$ | - | 0.48 | 0.61 | μVrms |

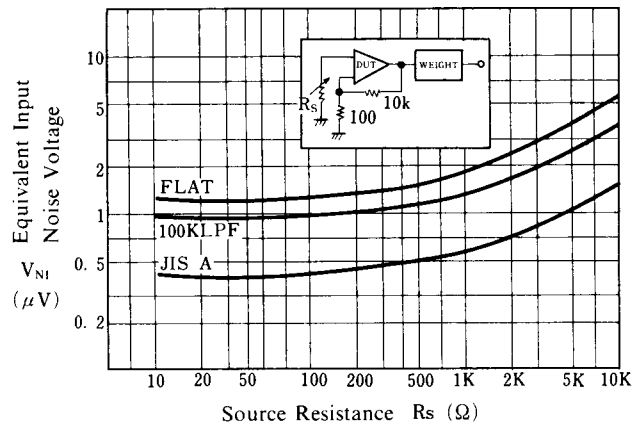
(note) New JRC's general selected products D rank are also prepared for the noise standard ($R_S = 2.2k\Omega, R_{IAA}, V_{NI} = 1.4\mu V$ Max.)

■ TYPICAL CHARACTERISTICS

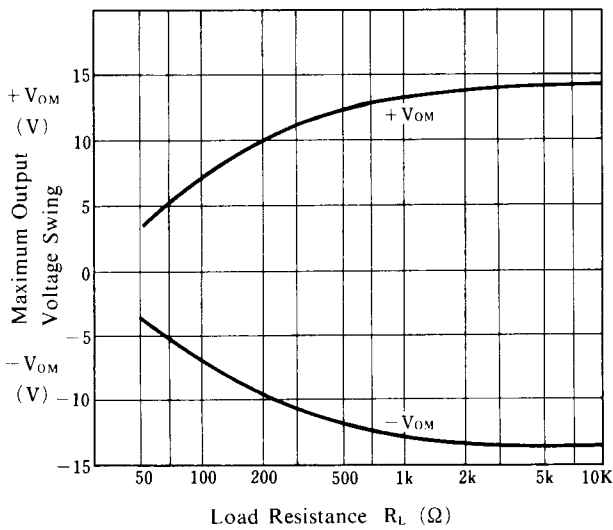
Large Signal Voltage Gain vs. Frequency
 (V⁺/V⁻ = ±15V, R_L = 2kΩ, T_a = 25°C)



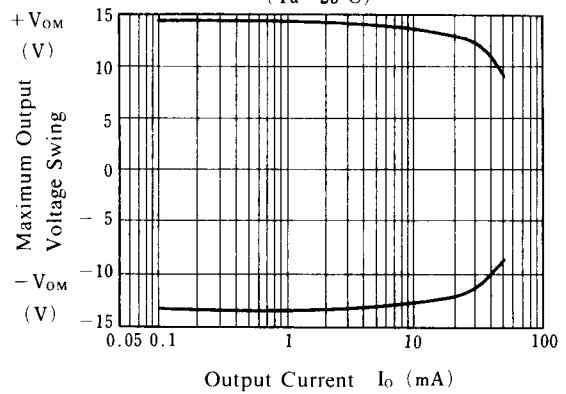
Equivalent Input Noise Voltage
 (V⁺/V⁻ = ±15V, T_a = 25°C)



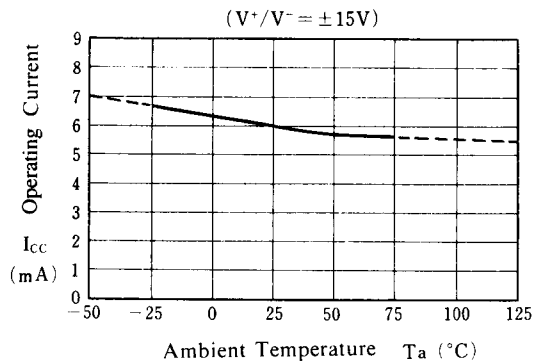
Maximum Output Voltage Swing vs. Load Resistance
 (V⁺/V⁻ = ±15V, T_a = 25°C)



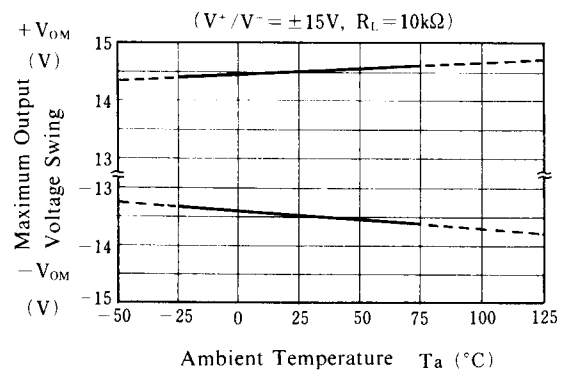
Maximum Output Voltage Swing vs. Output Current
 (T_a = 25°C)



Operating Current vs. Temperature
 (V⁺/V⁻ = ±15V)



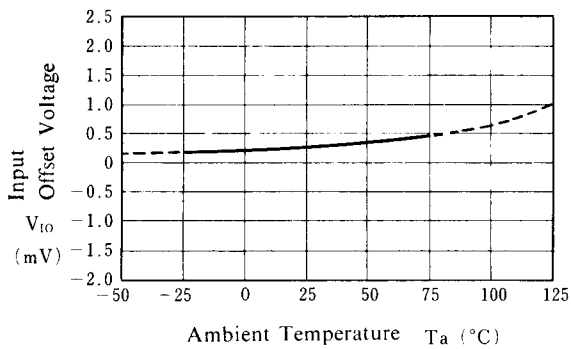
Maximum Output Voltage Swing vs. Temperature
 (V⁺/V⁻ = ±15V, R_L = 10kΩ)



■ TYPICAL CHARACTERISTICS

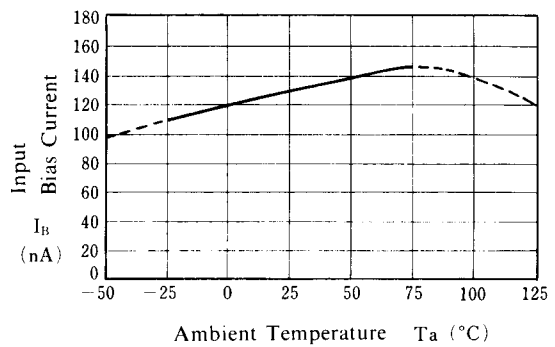
Input Offset Voltage vs. Temperature

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



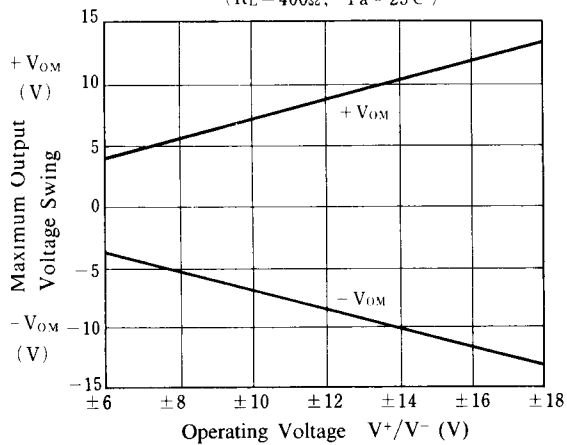
Input Bias Current vs. Temperature

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



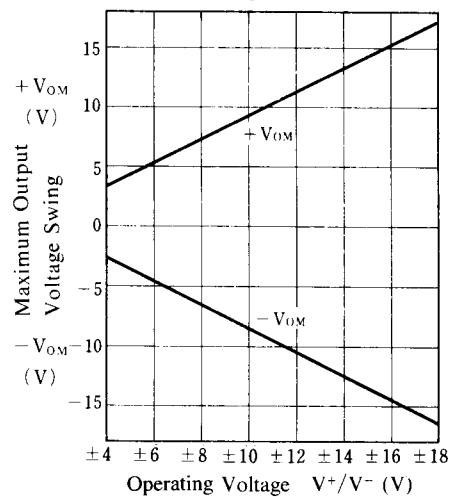
Maximum Output Voltage Swing vs. Operating Voltage

($R_L = 400\Omega$, $T_a = 25^\circ C$)



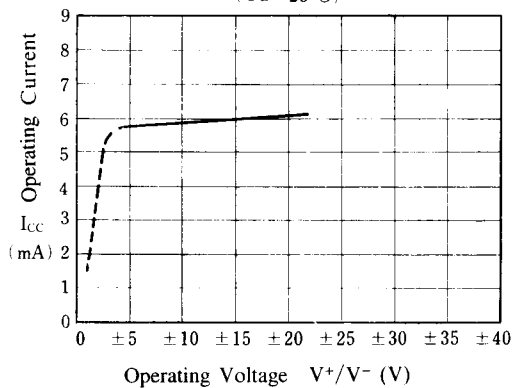
Maximum Output Voltage Swing vs. Operating Voltage

($R_L = 2k\Omega$)



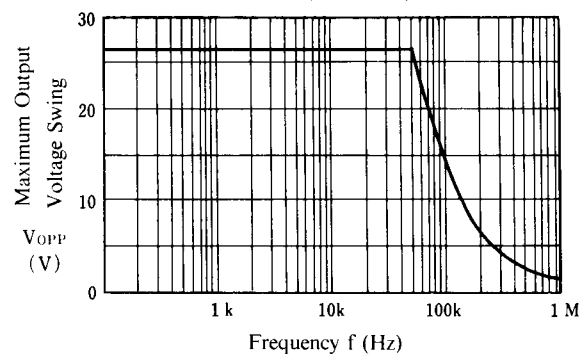
Operating Current vs. Operating Voltage

($T_a = 25^\circ C$)



Maximum Output Voltage Swing vs. Frequency

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



[CAUTION]

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