

Single Supply Quad Operational Amplifier with Full Swing Output

■ GENERAL DESCRIPTION

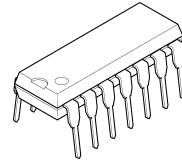
The NJM2747 is a quad low supply voltage operational amplifier with Full swing output.

It is suitable for audio section of portable sets, PCs and any General-purpose use.

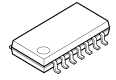
■ FEATURES

- Operating Voltage : 2.5V to 14V
- Output Full Swing : $V_{OH} \geq 4.9V$ Typ. (at $V^+ = 5V, R_L = 5k\Omega$)
: $V_{OL} \leq 0.1V$ Typ. (at $V^+ = 5V, R_L = 5k\Omega$)
- Offset Voltage : 1mV Typ
- Slew Rate : 3.5V/ μs Typ.
- Low Distortion : 0.001% typ. (at $V^+ = 5V, f = 1kHz$)
- Low Input Voltage Noise : 10nV/ \sqrt{Hz} typ.
- Bipolar Technology
- Package Outline : DIP14, DMP14, SSOP14

■ PACKAGE OUTLINE



NJM2747D

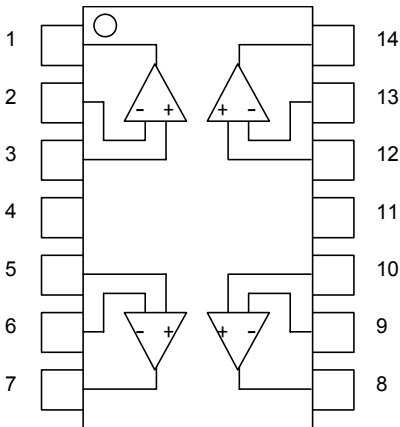


NJM2747M



NJM2747V

■ PIN CONFIGURATION



PIN FUNCTION

| | |
|-------------|--------------|
| 1. A OUTPUT | 8. C OUTPUT |
| 2. A -INPUT | 9. C -INPUT |
| 3. A +INPUT | 10. A +INPUT |
| 4. V^+ | 11. GND |
| 5. B +INPUT | 12. D +INPUT |
| 6. B -INPUT | 13. D -INPUT |
| 7. B OUTPUT | 14. D OUTPUT |

NJM2747D
NJM2747M
NJM2747V
(Top View)

■ ABSOLUTE MAXIMUM RATINGS

| PARAMETER | SYMBOL | RATINGS | UNIT |
|----------------------------------|-----------|---|-------------|
| Supply Voltage | V^+ | 15 | V |
| Differential Input Voltage Range | V_{ID} | ± 15 (Note1) | V |
| Common Mode Input Voltage Range | V_{ICM} | 0 to 15 (Note1) | V |
| Power Dissipation | P_D | DIP14 (870) DMP14 (450) (Note2) DMP14 (560) (Note3) SSOP14 (420) (Note2) SSOP14 (520) (Note3) | mW |
| Operating Temperature Range | T_{opr} | -40 to +85 | $^{\circ}C$ |
| Storage Temperature Range | T_{stg} | -50 to +125 | $^{\circ}C$ |

(Note1) For supply voltage less than 15V, the absolute maximum input voltage is equal to the supply voltage.

(Note2) On the PCB "EIA/JEDEC (76.2x114.3x1.6mm, two layers, FR-4)"

(Note3) On the PCB "EIA/JEDEC (76.2x114.3x1.6mm, four layers, FR-4)"

■ OPERATING VOLTAGE ($T_a=25^{\circ}C$)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|----------------|--------|-----------|------|
| Supply Voltage | V^+ | 2.5 to 14 | V |

■ ELECTRICAL CHARACTERISTICS

●DC CHARACTERISTICS ($V^+=5V, T_a=25^{\circ}C$)

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---------------------------------|-----------|---|------|------|------|------|
| Operating Current | I_{CC} | $R_L=\infty, V_{IN}=2.5V,$ No Signal Apply | - | 8 | 11 | mA |
| Input Offset Voltage | V_{IO} | $R_S \leq 10k\Omega$ | - | 1 | 6 | mV |
| Input Bias Current | I_B | | - | 100 | 350 | nA |
| Input Offset Current | I_{IO} | | - | 5 | 100 | nA |
| Large Signal Voltage Gain | A_V | $R_L \geq 10k\Omega$ to 2.5V, $V_O=0.5V$ to 4.5V | 65 | 85 | - | dB |
| Common Mode Rejection Ratio | CMR | $0V \leq V_{CM} \leq 4V$ | 60 | 75 | - | dB |
| Supply Voltage Rejection Ratio | SVR | $V^+=2.5V$ to 14V | 60 | 80 | - | dB |
| Output Voltage | V_{OH} | $R_L=5k\Omega$ to 2.5V | 4.75 | 4.9 | - | V |
| | V_{OL} | $R_L=5k\Omega$ to 2.5V | - | 0.1 | 0.25 | V |
| Input Common Mode Voltage Range | V_{ICM} | CMR $\geq 60dB$ | 0 | - | 4 | V |

●AC CHARACTERISTICS ($V^+=5V, T_a=25^{\circ}C$)

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|--------------------------------|----------|---|------|-------|------|----------------|
| Unity Gain Bandwidth | GB | $f=10kHz$ | - | 10 | - | MHz |
| Phase Margin | Φ_M | $R_L=10k\Omega, C_L=10pF$ | - | 75 | - | Deg |
| Equivalent Input Noise Voltage | V_{NI} | $f=1kHz, V_{CM}=2.5V$ | - | 10 | - | nV/\sqrt{Hz} |
| Total Harmonic Distortion | THD | $f=1kHz, A_V=+2$ $R_L=10k\Omega$ to 2.5V, $V_O=1.5V_{rms}$ | - | 0.001 | - | % |
| Amp to Amp Separation | CS | $f=1kHz$ $R_L=10k\Omega$ to 2.5V, $V_O=1.5V_{rms}$ | - | 120 | - | dB |

●AC CHARACTERISTICS ($V^+=5V, T_a=25^{\circ}C$)

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|-----------|--------|--|------|------|------|------------|
| Slew Rate | SR | (Note 4), $A_V=1, V_{IN}=2V_{pp}$ $R_L=10k\Omega$ to 2.5V $C_L=10pF$ to 2.5V | - | 3.5 | - | V/ μs |

(Note 4) Number specified is the slower of the positive and negative slew rates.

■ MEMO

[CAUTION]

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