

## ULTRA WIDE BAND, HIGH SLEW RATE SINGLE OPERATIONAL AMPLIFIER

## ■ GENERAL DESCRIPTION

The NJM2136 is an ultra wide band, high slew rate single operational amplifier operated from low voltage ( $\pm 1.35\text{V}$ ).

It can apply to active filter, high speed analog and digital signal processor, line driver, HDTV, industrial measurement equipment and others.

It can also apply to portable communication items because of low operating voltage and low operating current.

## ■ PACKAGE OUTLINE



NJM2136V

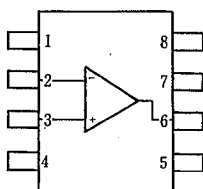


NJM2136M

## ■ FEATURES

- Input Offset Voltage Balance
- Operating Voltage ( $\pm 1.35\text{V} \sim \pm 6\text{V}$ )
- Ultra Wide Band (200MHz typ.)
- High Slew Rate ( $45\text{V}/\mu\text{s}$  typ.)
- Low Operating Current (0.63mA typ.)
- Bipolar Technology
- Package Outline SSOP8, DMP8

## ■ PIN CONFIGURATION

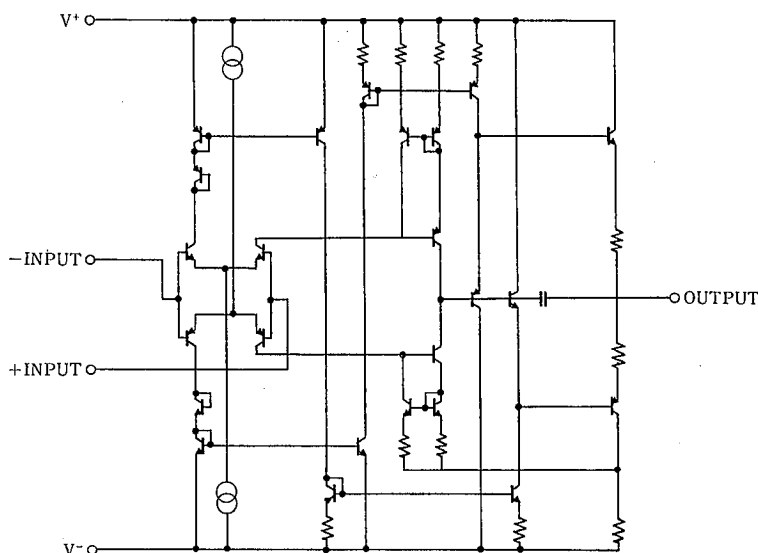


NJM2136M  
NJM2136V

## PIN FUNCTION

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

## ■ EQUIVALENT CIRCUIT



■ ABSOLUTE MAXIMUM RATINGS

( $T_a=25^{\circ}\text{C}$ )

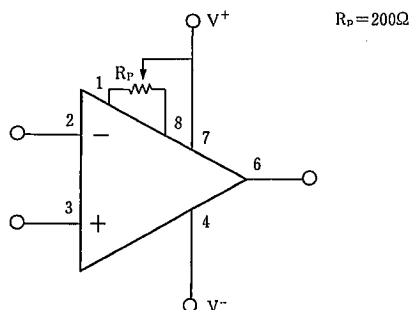
| PARAMETER                   | SYMBOL    | RATINGS                     | UNIT               |
|-----------------------------|-----------|-----------------------------|--------------------|
| Supply Voltage              | $V^+/V^-$ | $\pm 6.75$                  | V                  |
| Differential Input Voltage  | $V_{ID}$  | $\pm 3$                     | V                  |
| Power Dissipation           | $P_D$     | (SSOP-8) 250<br>(DMP-8) 300 | mW                 |
| Operating Temperature Range | $T_{opr}$ | $-40 \sim +85$              | $^{\circ}\text{C}$ |
| Storage Temperature Range   | $T_{stg}$ | $-50 \sim +125$             | $^{\circ}\text{C}$ |

■ ELECTRICAL CHARACTERISTICS

( $V^+/V^- = \pm 2.5\text{V}$ ,  $T_a=25^{\circ}\text{C}$ )

| PARAMETER                       | SYMBOL    | TEST CONDITIONS                          | MIN.       | TYP.       | MAX.       | UNIT             |
|---------------------------------|-----------|------------------------------------------|------------|------------|------------|------------------|
| Operating Voltage               | $V^+/V^-$ |                                          | $\pm 1.35$ | $\pm 2.50$ | $\pm 6.00$ | V                |
| Input Offset Voltage            | $V_{IO}$  | $R_S \leq 0\Omega$                       | —          | 1.0        | 5.0        | mV               |
| Input Bias Current              | $I_B$     |                                          | —          | 0.5        | 2.0        | $\mu\text{A}$    |
| Input Offset Current            | $I_{IO}$  |                                          | —          | 20         | 200        | nA               |
| Large Signal Voltage Gain       | $A_V$     | $R_L \geq 10\text{k}\Omega$              | 65         | 75         | —          | dB               |
| Input Common Mode Voltage Range | $V_{ICM}$ |                                          | 1.2        | 1.5        | —          | V                |
|                                 |           |                                          | -1.2       | -1.5       | —          |                  |
| Common Mode Rejection Ratio     | CMR       | $-1\text{V} \leq V_{cm} \leq +1\text{V}$ | 45         | 60         | —          | dB               |
| Supply Voltage Rejection Ratio  | +SVR      |                                          | 70         | 100        | —          | dB               |
|                                 | -SVR      |                                          | 50         | 60         | —          |                  |
| Maximum Output Voltage Swing    | $V_{OM}$  | $R_L = 1\text{k}\Omega$                  | 1.1        | 1.4        | —          | V                |
|                                 |           |                                          | -0.9       | -1.2       | —          |                  |
| Operating Current               | $I_{CC}$  | $R_L = \infty$ (all Amp.)                | —          | 0.63       | 0.82       | mA               |
| Slew Rate                       | SR        | $A_V = 0\text{dB}$                       | —          | 45         | —          | V/ $\mu\text{s}$ |
| Gain Bandwidth Product          | GB        | 60dB · 500kHz                            | 120        | 200        | —          | MHz              |
| Phase Margin                    | $\phi_M$  | 40dB                                     | —          | 25         | —          | deg              |
| Unity Gain Bandwidth            | $f_T$     | 40dB                                     | —          | 40         | —          | MHz              |

■ OFFSET ADJUSTMENT METHOD



(note) The electrical characteristics change a little, in case the  $R_P$  is connected.

## MEMO

**[CAUTION]**

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