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## SIGNAL LEVEL SENSOR SYSTEM

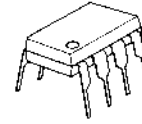
### ■ GENERAL DESCRIPTION

The NJM2072 is a monolithic integrated circuit designed for signal level sensor system. The NJM2072 features low power, low voltage operation, and high input sensitivity and is suited for the signal level sensor system for micro cassette, vox for telecommunications.

### ■ FEATURES

- Operating Voltage +0.9 to +7V
- Low Operating Current 0.55mA typ.
- High Input Sensitivity -36dBV typ.
- Package Outline DIP8, DMP8
- Bipolar Technology

### ■ PACKAGE OUTLINE

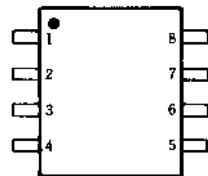


NJM2072D



NJM2072M

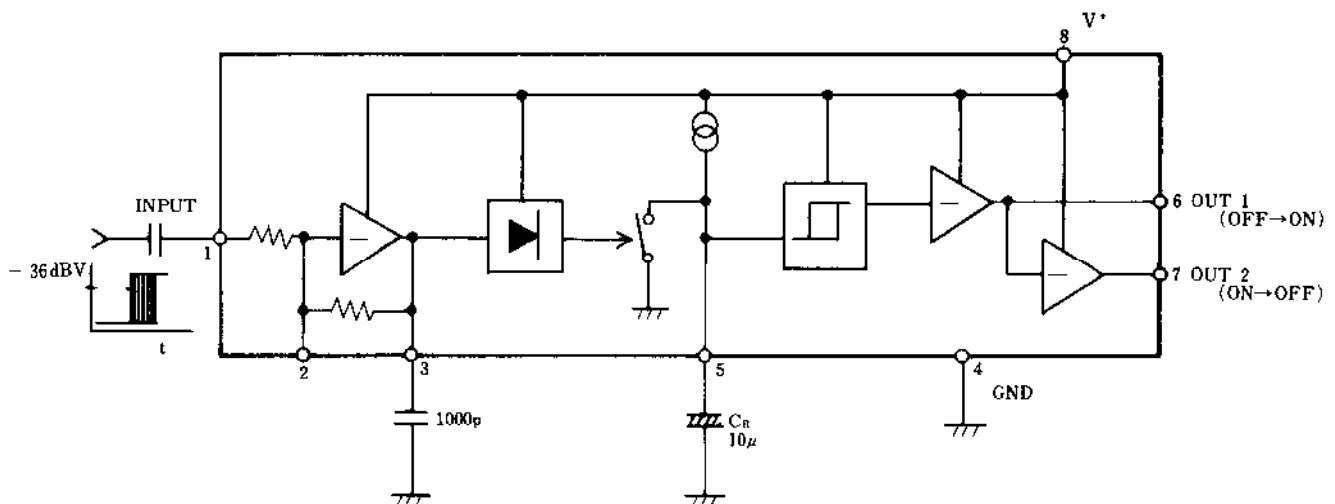
### ■ PIN CONFIGURATION

NJM2072D  
NJM2072M

#### PIN FUNCTION

1. INPUT
2. Gain Control
3. Amp. Output
4. GND
5. Capacitor for Recovery time
6. OUT1
7. OUT2
8.  $V^+$

### ■ BLOCK DIAGRAM



## ■ ABSOLUTE MAXIMUM RATINGS

( Ta=25°C )

| PARAMETER                   | SYMBOL     | RATINGS                      | UNIT |
|-----------------------------|------------|------------------------------|------|
| Supply Voltage              | $V^+$      | 8                            | V    |
| Power Dissipation           | $P_D$      | ( DIP8 ) 500<br>( DMP8 ) 300 | mW   |
| Operating Temperature Range | $T_{opr}$  | -40~+85                      | °C   |
| Storage Temperature Range   | $T_{stg}$  | -40~+125                     | °C   |
| Maximum Input Voltage       | $V_{imax}$ | $V^+ - 1$                    | V    |

## ■ ELECTRICAL CHARACTERISTICS

( Ta=25°C,  $V^+=3V$  )

| PARAMETER                      | SYMBOL       | TEST CONDITION                 | MIN. | TYP. | MAX. | UNIT       |
|--------------------------------|--------------|--------------------------------|------|------|------|------------|
| Operating Voltage              | $V^+$        |                                | 0.9  | -    | 7    | V          |
| Operating Current              | $I_{CC}$     | $V_{in}=0mV_{rms}, R_L=\infty$ | 0.2  | 0.55 | 1.5  | mA         |
| Input Sensitivity              | $V_{ins}$    | $f=1kHz$                       | -39  | -36  | -33  | dBV        |
| Attack Time ( note1 )          | $T_{alc}$    | $f=1kHz, C_R=10\mu F$          | -    | 1    | 25   | mSec       |
| Recovery Time ( note2 )        | $T_{rec}$    | $f=1kHz, C_R=10\mu F$          | -    | 2    | -    | Sec        |
| Output Current at ON ( OUT1 )  | $I_{01 on}$  | $V_{in}=30mV_{rms}, V_O=0.3V$  | 1    | 3    | -    | mA         |
| Output Current at ON ( OUT2 )  | $I_{02 on}$  | $V_{in}=0mV_{rms}, V_O=0.3V$   | 1    | 3    | -    | mA         |
| Output Current at OFF ( OUT1 ) | $I_{01 off}$ | $V_{in}=0mV_{rms}, V_O=8V$     | -    | -    | 1    | $\mu A$    |
| Output Current at OFF ( OUT2 ) | $I_{02 off}$ | $V_{in}=30mV_{rms}, V_O=8V$    | -    | -    | 1    | $\mu A$    |
| Input Resistance               | $R_{in}$     |                                | 16   | 20   | 24   | k $\Omega$ |
| Charge Current                 | $I_{chg}$    |                                | 1.0  | 2.0  | 3.0  | $\mu A$    |

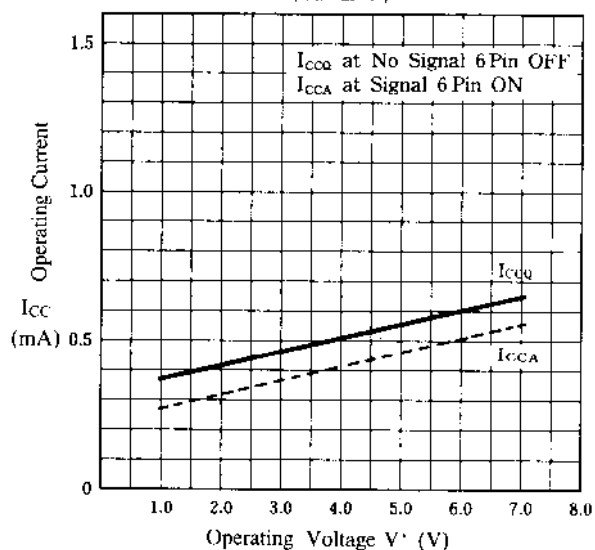
( note1 ) Attack Time: Period from putting input signal of more than minimum input sensitive signal to output level change.

( note2 ) Recovery Time: Period from input signal becoming lower than minimum input sensitive signal to output level change.

## ■ TYPICAL CHARACTERISTICS

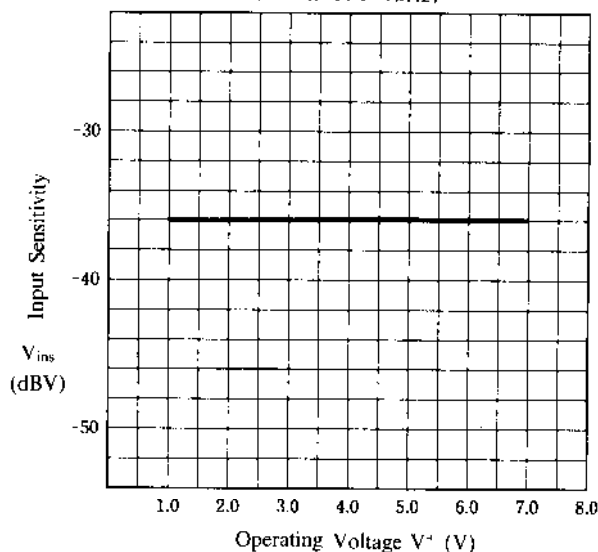
**Operating Current  
vs. Operating Voltage**

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



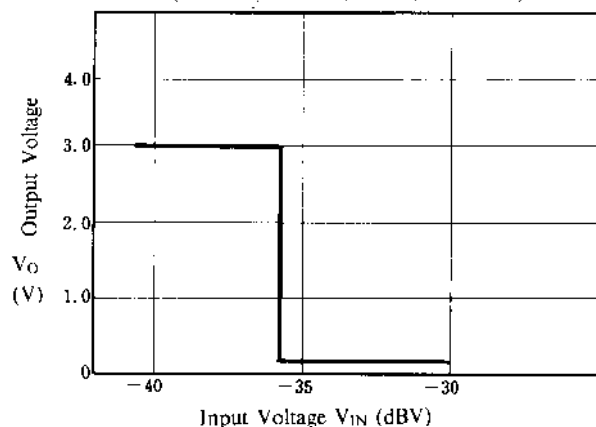
**Input Sensitivity  
vs. Operating Voltage**

( $T_a = 25^\circ\text{C}$ ,  $f = 1\text{kHz}$ )

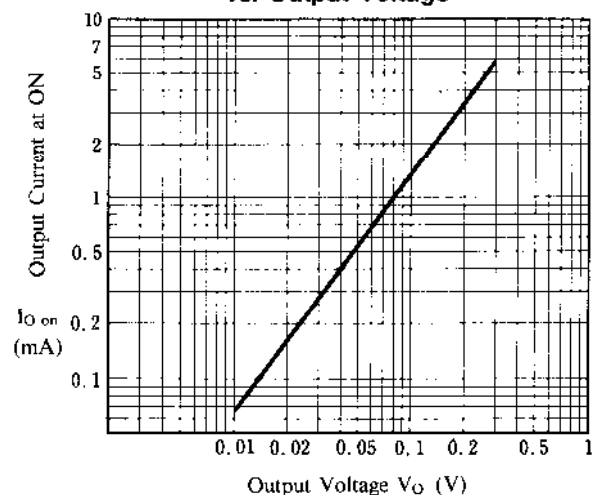


**Output Voltage  
vs. Input Voltage**

( $V^- = 3\text{V}$ ,  $f = 1\text{kHz}$ , 6 Pin,  $T_a = 25^\circ\text{C}$ )

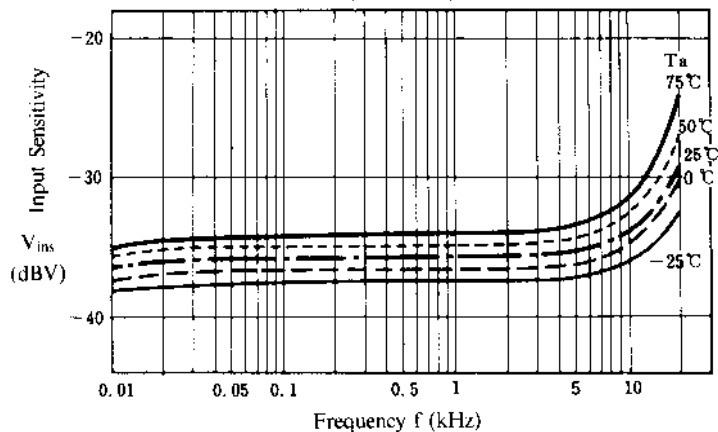


**Output Current at ON  
vs. Output Voltage**



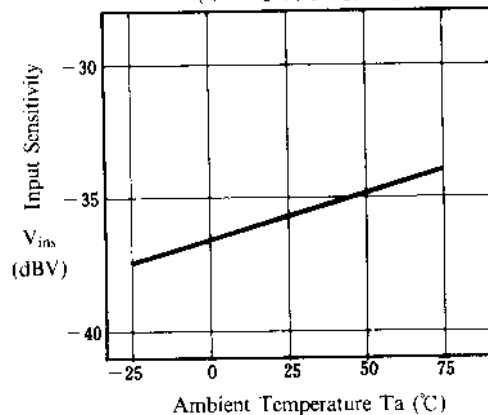
**Input Sensitivity  
vs. Frequency**

( $V^- = 3\text{V}$ )



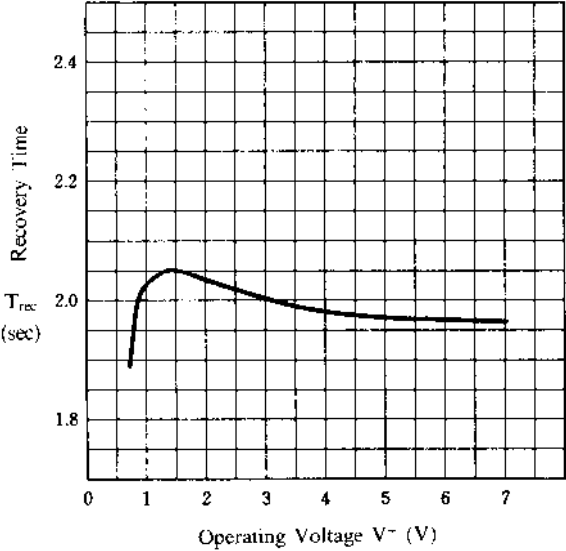
**Input Sensitivity  
vs. Ambient Temperature**

( $V^+ = 3\text{V}$ ,  $f = 1\text{kHz}$ )

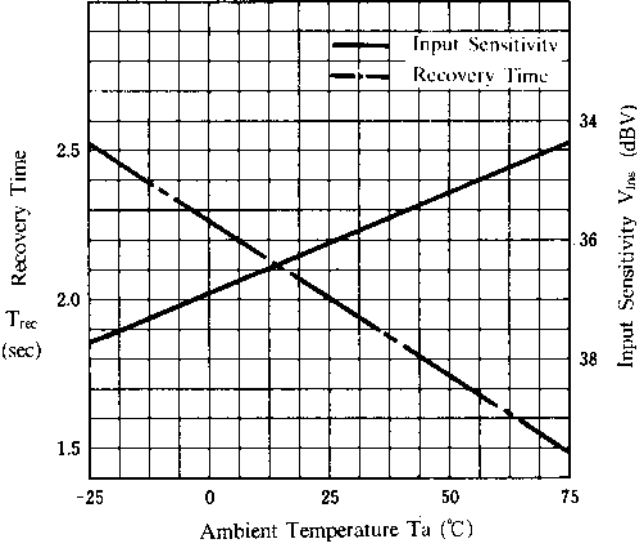


■ TYPICAL CHARACTERISTICS

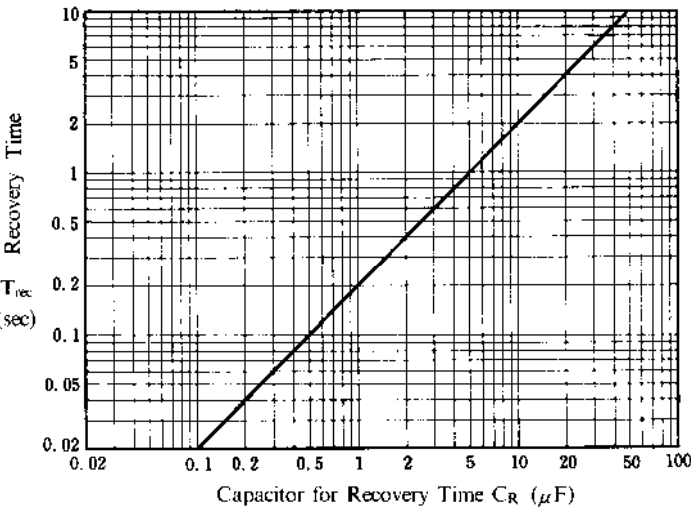
Recovery Time  
vs. Operating Voltage  
( $T_a = 25^\circ\text{C}$ ,  $C_R = 10\mu\text{F}$ )



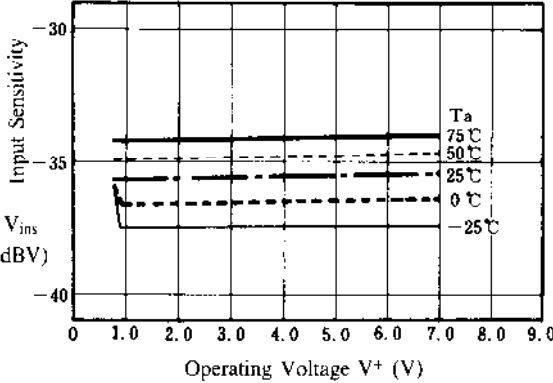
Input Sensitivity Recovery Time  
vs. Ambient Temperature  
( $V^+ = 3\text{V}$ ,  $C_R = 10\mu\text{F}$ )



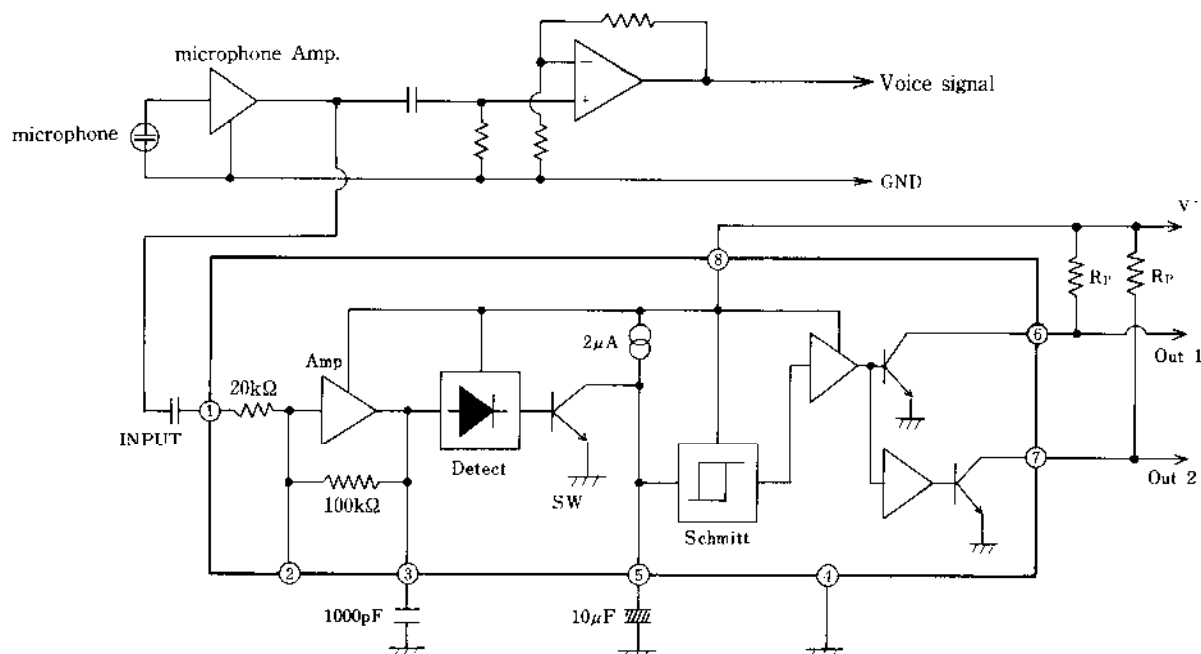
Recovery Time Characteristics  
( $f = 1\text{kHz}$ )



Input Sensitivity  
vs. Operating Voltage  
( $f = 1\text{kHz}$ )



## ■ TYPICAL APPLICATIONS

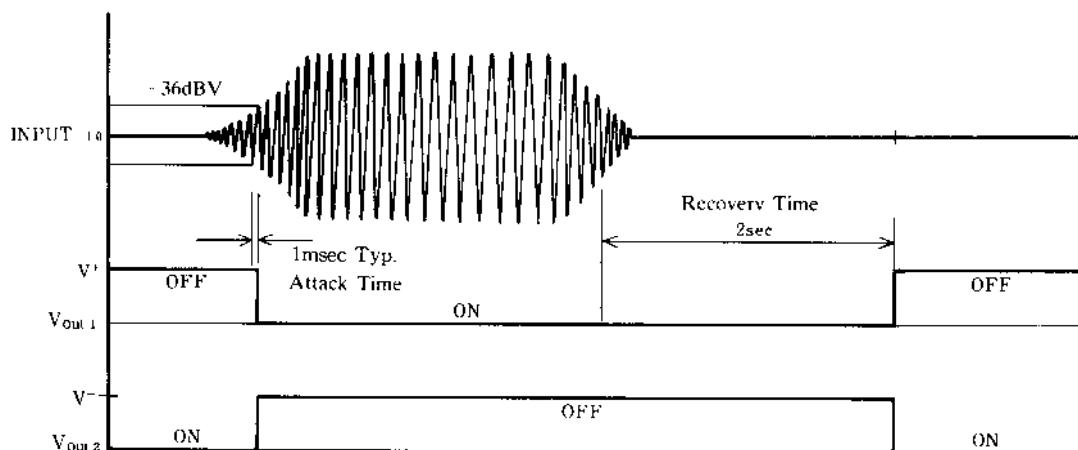


Pins 6 and 7 show an open collector. Mount resistor  $R_P$  shown by the following equation.

$$R_P = (V_{MIN}^+ - 0.2) / 0.3 \text{ (k}\Omega\text{)}$$

Resistor  $R_P$  to pin 7 is omissible, if pin 6 only is used. But resistor  $R_P$  to pin 6 should be put when Out2 only is used.

$V_{MIN}^+$  is minimum supply voltage.



### [CAUTION]

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