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.
- Package Outline: DIP8, DMP8
- Bipolar Technology

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

■ PIN CONFIGURATION

NJM2072D
NJM2072M

■ BLOCK DIAGRAM
### ABSOLUTE MAXIMUM RATINGS

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>SYMBOL</th>
<th>RATINGS</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Voltage</td>
<td>V⁺</td>
<td>8</td>
<td>V</td>
</tr>
<tr>
<td>Power Dissipation</td>
<td>P_D</td>
<td>( DIP8 ) 500</td>
<td>mW</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( DMP8 ) 300</td>
<td></td>
</tr>
<tr>
<td>Operating Temperature Range</td>
<td>T_οp</td>
<td>-40°C~+85°C</td>
<td></td>
</tr>
<tr>
<td>Storage Temperature Range</td>
<td>T_stg</td>
<td>-40°C~+125°C</td>
<td></td>
</tr>
<tr>
<td>Maximum Input Voltage</td>
<td>V_Vmax</td>
<td>V⁺-1</td>
<td>V</td>
</tr>
</tbody>
</table>

### ELECTRICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>SYMBOL</th>
<th>TEST CONDITION</th>
<th>MIN.</th>
<th>TYP.</th>
<th>MAX.</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Voltage</td>
<td>V⁺</td>
<td>V_in=0mVrms,R_L=∞</td>
<td>0.9</td>
<td>-</td>
<td>7</td>
<td>V</td>
</tr>
<tr>
<td>Operating Current</td>
<td>I_CC</td>
<td></td>
<td>0.2</td>
<td>0.55</td>
<td>1.5</td>
<td>mA</td>
</tr>
<tr>
<td>Input Sensitivity</td>
<td>V_RS</td>
<td>f=1kHz</td>
<td>-39</td>
<td>-36</td>
<td>-33</td>
<td>dBV</td>
</tr>
<tr>
<td>Attack Time (note 1)</td>
<td>T_ATC</td>
<td>f=1kHz,C_R=10μF</td>
<td>-</td>
<td>1</td>
<td>25</td>
<td>mSec</td>
</tr>
<tr>
<td>Recovery Time (note 2)</td>
<td>T_REC</td>
<td>f=1kHz,C_R=10μF</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>mSec</td>
</tr>
<tr>
<td>Output Current at ON (OUT1)</td>
<td>I_O1ON</td>
<td>V_in=30mVrms,V_O=0.3V</td>
<td>1</td>
<td>3</td>
<td>-</td>
<td>mA</td>
</tr>
<tr>
<td>Output Current at ON (OUT2)</td>
<td>I_O2ON</td>
<td>V_in=0mVrms,V_O=0.3V</td>
<td>1</td>
<td>3</td>
<td>-</td>
<td>mA</td>
</tr>
<tr>
<td>Output Current at OFF (OUT1)</td>
<td>I_O1OFF</td>
<td>V_in=0mVrms,V_O=8V</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>μA</td>
</tr>
<tr>
<td>Output Current at OFF (OUT2)</td>
<td>I_O2OFF</td>
<td>V_in=30mVrms,V_O=8V</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>μA</td>
</tr>
<tr>
<td>Input Resistance</td>
<td>R_in</td>
<td></td>
<td>16</td>
<td>20</td>
<td>24</td>
<td>kΩ</td>
</tr>
<tr>
<td>Charge Current</td>
<td>I_chg</td>
<td></td>
<td>1.0</td>
<td>2.0</td>
<td>3.0</td>
<td>μA</td>
</tr>
</tbody>
</table>

( 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

Input Sensitivity vs. Operating Voltage

Output Voltage vs. Input Voltage

Output Current at ON vs. Output Voltage

Input Sensitivity vs. Frequency

Input Sensitivity vs. Ambient Temperature

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TYPICAL CHARACTERISTICS

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

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

Recovery Time Characteristics
($f = 1 kHz$)

Input Sensitivity vs. Operating Voltage
($f = 1 kHz$)
■ TYPICAL APPLICATIONS

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

$$R_p = \frac{(V_{\text{MIN}} + 0.2)}{0.3} \text{ (kΩ)}$$

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.

$V_{\text{MIN}}$ is minimum supply voltage.

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