4-Input / 1-Output Stereo Audio Selector

**GENERAL DESCRIPTION**
The NJM2755 is 4 Input / 1 Output Stereo Audio Selector. The NJM2755 consists of switches and buffer operational amplifiers. Based on the internal switch op-amp technology, the NJM2755 features lower output noise, lower distortion and higher channel separation than the general Multiplexers or Analogue Switches.
The NJM2755 contains compatibility with NJM2752(2in-1out SW), NJM2753(3in-1out SW).

**APPLICATIONS**
- LCD-TV/PDP-TV
- Car Stereo
- Any Audio System

**FEATURES**
- Operating Voltage 4.7 to 10V
- 4 Input / 1 Output Stereo Audio Selectors
- Low Output Noise -114dBV typ.
- Low Distortion 0.0009% typ.
- Bipolar Technology
- Package Outline SSOP16

**BLOCK DIAGRAM**
The NJM2755 contains compatibility with NJM2752 (2in-1out SW), NJM2753 (3in-1out SW).
# Absolute Maximum Ratings (Ta=25°C)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Rating</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Voltage</td>
<td>V⁺</td>
<td>12</td>
<td>V</td>
</tr>
<tr>
<td>Power Dissipation</td>
<td>Pₒ</td>
<td>SSOP16 490</td>
<td>mW</td>
</tr>
<tr>
<td></td>
<td></td>
<td>630</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1) EIA/JEDEC STANDARD Test board (76.2x114.3x1.6mm, 2layer, FR-4) mounting</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2) EIA/JEDEC STANDARD Test board (76.2x114.3x1.6mm, 4layer, FR-4) mounting</td>
<td></td>
</tr>
<tr>
<td>Operating Temperature Range</td>
<td>TₒPR</td>
<td>-40 to +85</td>
<td>°C</td>
</tr>
<tr>
<td>Storage Temperature Range</td>
<td>TₛTR</td>
<td>-40 to +150</td>
<td>°C</td>
</tr>
</tbody>
</table>

# Electrical Characteristics (Ta=25°C, V⁺=9V)

<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></td>
<td>4.7</td>
<td>9.0</td>
<td>10</td>
<td>V</td>
</tr>
<tr>
<td>Supply Current</td>
<td>IₐC</td>
<td>No Signal</td>
<td>-</td>
<td>10</td>
<td>15</td>
<td>mA</td>
</tr>
<tr>
<td>Reference Voltage</td>
<td>VₛREF</td>
<td></td>
<td>-</td>
<td>4.5</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td>Voltage Gain</td>
<td>Gᵥ</td>
<td>Vin=1Vrms, f=1kHz</td>
<td>-1</td>
<td>0</td>
<td>1</td>
<td>dB</td>
</tr>
<tr>
<td>Total Harmonic Distortion</td>
<td>THD+N</td>
<td>Vin=1Vrms, f=1kHz</td>
<td>-</td>
<td>0.0009</td>
<td>0.03</td>
<td>%</td>
</tr>
<tr>
<td>Output Noise Voltage</td>
<td>VₛNO</td>
<td>A-Weighted</td>
<td>-</td>
<td>-114</td>
<td>-100</td>
<td>dBV</td>
</tr>
<tr>
<td>Maximum Output Voltage</td>
<td>VₛOM</td>
<td>f=1kHz, THD=1%</td>
<td>6</td>
<td>(2.0)</td>
<td>8</td>
<td>(2.5)</td>
</tr>
<tr>
<td>Cross Talk</td>
<td>CT</td>
<td>Vin=1Vrms, f=1kHz, A-Weighted</td>
<td>85</td>
<td>100</td>
<td>-</td>
<td>dB</td>
</tr>
<tr>
<td>Channel Separation</td>
<td>CS</td>
<td>Vin=1Vrms, f=1kHz, A-Weighted</td>
<td>90</td>
<td>110</td>
<td>-</td>
<td>dB</td>
</tr>
<tr>
<td>Switch-ON Voltage Level</td>
<td>VₛCH</td>
<td></td>
<td>2.4</td>
<td>-</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td>Switch-OFF Voltage Level</td>
<td>VₛₐL</td>
<td></td>
<td>-</td>
<td>-</td>
<td>0.5</td>
<td>V</td>
</tr>
<tr>
<td>Input Impedance</td>
<td>RₛN</td>
<td></td>
<td>-</td>
<td>100</td>
<td>-</td>
<td>kΩ</td>
</tr>
<tr>
<td>Output Impedance</td>
<td>RₛOUT</td>
<td></td>
<td>-</td>
<td>45</td>
<td>-</td>
<td>Ω</td>
</tr>
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</table>

# Switch Control Logic

<table>
<thead>
<tr>
<th>CNT2</th>
<th>CNT1</th>
<th>Input Selector Ach / Bch</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>L</td>
<td>1</td>
</tr>
<tr>
<td>L</td>
<td>H</td>
<td>2</td>
</tr>
<tr>
<td>H</td>
<td>L</td>
<td>3</td>
</tr>
<tr>
<td>H</td>
<td>H</td>
<td>4</td>
</tr>
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</table>
### TERMINAL DESCRIPTION

<table>
<thead>
<tr>
<th>PIN No.</th>
<th>SYMBOL</th>
<th>FUNCTION</th>
<th>EQUIVALENT CIRCUIT</th>
<th>TERMINAL VOLTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>IN1A</td>
<td>Ach Input Terminal1</td>
<td>![Circuit Diagram 1]</td>
<td>V+/2</td>
</tr>
<tr>
<td>4</td>
<td>IN2A</td>
<td>Ach Input Terminal2</td>
<td>![Circuit Diagram 2]</td>
<td>0V (GND)</td>
</tr>
<tr>
<td>6</td>
<td>IN3A</td>
<td>Ach Input Terminal3</td>
<td>![Circuit Diagram 3]</td>
<td>V+/2</td>
</tr>
<tr>
<td>8</td>
<td>IN4A</td>
<td>Ach Input Terminal4</td>
<td>![Circuit Diagram 4]</td>
<td>V+/2</td>
</tr>
<tr>
<td>9</td>
<td>IN4B</td>
<td>Bch Input Terminal4</td>
<td>![Circuit Diagram 5]</td>
<td>V+/2</td>
</tr>
<tr>
<td>11</td>
<td>IN3B</td>
<td>Bch Input Terminal3</td>
<td>![Circuit Diagram 6]</td>
<td>V+/2</td>
</tr>
<tr>
<td>13</td>
<td>IN2B</td>
<td>Bch Input Terminal2</td>
<td>![Circuit Diagram 7]</td>
<td>V+/2</td>
</tr>
<tr>
<td>15</td>
<td>IN1B</td>
<td>Bch Input Terminal1</td>
<td>![Circuit Diagram 8]</td>
<td>V+/2</td>
</tr>
<tr>
<td>5</td>
<td>CNT1</td>
<td>Control Switch Terminal1</td>
<td>![Circuit Diagram 9]</td>
<td>V+/2</td>
</tr>
<tr>
<td>7</td>
<td>CNT2</td>
<td>Control Switch Terminal2</td>
<td>![Circuit Diagram 10]</td>
<td>V+/2</td>
</tr>
<tr>
<td>1</td>
<td>OUTA</td>
<td>Ach Output Terminal</td>
<td>![Circuit Diagram 11]</td>
<td>V+/2</td>
</tr>
<tr>
<td>16</td>
<td>OUTB</td>
<td>Bch Output Terminal</td>
<td>![Circuit Diagram 12]</td>
<td>V+/2</td>
</tr>
<tr>
<td>12</td>
<td>Vref</td>
<td>Reference Terminal</td>
<td>![Circuit Diagram 13]</td>
<td>V+/2</td>
</tr>
<tr>
<td>3</td>
<td>V+</td>
<td>Power Supply Terminal</td>
<td>![Circuit Diagram 14]</td>
<td>V+</td>
</tr>
<tr>
<td>14</td>
<td>GND</td>
<td>GND Terminal</td>
<td>![Circuit Diagram 15]</td>
<td>0V</td>
</tr>
</tbody>
</table>
MEASUREMENT CIRCUIT
Application note:
Resistor (100kΩ) and capacitor (1µF) connected to CNT1 are added to reduce pop-noise.
The value of input capacitor connected to IN1A and IN2A depends on cut-off frequency (calculated by $f_c=1/2\pi RC$) you need. $R$(input impedance)=$100k\Omega$. 
TYPICAL CHARACTERISTICS

ICC vs Supply Voltage
No signal

VREF vs Supply Voltage
No signal

GAIN vs Frequency V=9V, I/O: INA1-A out

THD+N vs Input Voltage
BW: 400-30kHz, f=1kHz, I/O: INA1-A out

Maximum Output Voltage vs Frequency
V=9V, THD=1%, I/O: INA1-A out
## Typical Characteristics

### Maximum Output Voltage vs Supply Voltage

**THD=1%, I/O: INA1-Aout**

- **Supply Voltage [±V]**
  - 0
  - 0.5
  - 1
  - 1.5
  - 2
  - 2.5
  - 3
  - 3.5
  - 4

- **Maximum Output Voltage [Vrms]**
  - 0
  - 0.5
  - 1
  - 1.5
  - 2
  - 2.5
  - 3
  - 3.5
  - 4

### Maximum Output Voltage vs Load Resistance

**V=9V, THD=1%, f=1kHz, I/O: INA1-Aout / INB1-Bout**

- **RL [Ω]**
  - 1
  - 10
  - 100
  - 1000
  - 10000
  - 100000

- **Maximum Output Voltage [Vrms]**
  - 0
  - 0.5
  - 1
  - 1.5
  - 2
  - 2.5
  - 3
  - 3.5
  - 4

### Cross Talk vs Frequency

**V=9V, Vin=1Vrms, BW:10-80kHz, I/O: INA2-INA4/Aout, Select Channel:1ch**

- **Frequency [Hz]**
  - 10
  - 100
  - 1000
  - 10000
  - 100000

- **Cross Talk [dB]**
  - -110
  - -100
  - -90
  - -80
  - -70
  - -60
  - -50
  - -40

- **Rg=0Ω**
- **Rg=620Ω**
- **Rg=3.3kΩ**
- **Rg=5.1kΩ**

### Channel Separation vs Frequency

**V=9V, Vin=1Vrms, BW:10-80kHz, I/O: INB1-Aout**

- **Frequency [Hz]**
  - 10
  - 100
  - 1000
  - 10000
  - 100000

- **Channel Separation [dB]**
  - -110
  - -100
  - -90
  - -80
  - -70
  - -60
  - -50
  - -40

- **-40 to 105°C**
[CAUTION]

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