**NTE1056**

**Integrated Circuit**

**FM Stereo Multiplex Demodulator**

**Description:**
The NTE1056 is a monolithic integrated circuit FM multiplex stereo demodulator designed for use in FM stereos, phonographs and radio receivers. A multiplex stereo demodulator circuit generally consists of four main circuits, a composite signal amplifier, 19KHz pilot signal filter, 38KHz subcarrier generator and either a matrix or a switching circuit which separates the composite signal into the right and left audio channels. In addition to these circuits, an automatic stereo–monaural switching circuit, stereo signal indicator circuit, muting circuit, separation control circuit and SCA circuit are also included as supplemental circuits. The NTE 1056 is designed to include both main stereo demodulator circuits and supplemental circuits on a common monolithic substrate, and is supplied in a 14 lead DIP.

**Features:**
- Separation Control
- On, Off Level Control
- Monoaural Muting
- Either Positive or Negative Grounding are Available

**Absolute Maximum Ratings:** ($T_A = +25^\circ C$ unless otherwise specified)
- Supply Voltage, $V_{2-12}$
  - Min: 6
  - Typ: 9
  - Max: 12
  - Unit: V
- Total Current Consumption, $I_{tot}$
  - Min: 6
  - Typ: 9
  - Max: 13
  - Unit: mA
- Total Power Dissipation ($T_A \leq 75^\circ C$), $P_T$
  - Max: 250mW
- Operating Temperature Range, $T_{opr}$
  - Min: -20
  - Typ: 25
  - Max: 75
  - Unit: °C
- Storage Temperature Range, $T_{stg}$
  - Min: -65
  - Typ: 150
  - Max: 150
  - Unit: °C

**Electrical Characteristics:** ($T_A = +25^\circ C$, $V_{CC} = 9V$, unless otherwise specified)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Test Conditions</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Voltage</td>
<td>$V_{2-12}$</td>
<td></td>
<td>6</td>
<td>9</td>
<td>12</td>
<td>V</td>
</tr>
<tr>
<td>Circuit Current</td>
<td>$I_{tot}$</td>
<td>$V_{IN} = 300mV$</td>
<td>6</td>
<td>9</td>
<td>13</td>
<td>mA</td>
</tr>
<tr>
<td>Monoaural</td>
<td></td>
<td></td>
<td>6</td>
<td>9</td>
<td>13</td>
<td>mA</td>
</tr>
<tr>
<td>Channel Seperation</td>
<td></td>
<td>$V_{IN} = 300mV$</td>
<td>35</td>
<td>45</td>
<td>-</td>
<td>dB</td>
</tr>
<tr>
<td>f = 1kHz</td>
<td></td>
<td></td>
<td>25</td>
<td>29</td>
<td>-</td>
<td>dB</td>
</tr>
<tr>
<td>Channel Balance</td>
<td>ch. B</td>
<td>$V_{IN} = 300mV$</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>dB</td>
</tr>
<tr>
<td>Voltage Gain</td>
<td>$G_V$</td>
<td></td>
<td>-2.5</td>
<td>-1.5</td>
<td>-0.5</td>
<td>dB</td>
</tr>
</tbody>
</table>
### Electrical Characteristics (Cont’d):  \((T_A = +25^\circ C, \ V_{CC} = 9V, \text{unless otherwise specified})\)

<table>
<thead>
<tr>
<th>Parameter</th>
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<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistance</td>
<td>(V_{10-12})</td>
<td>(I_{10-12} = 100\mu A)</td>
<td>–</td>
<td>3.8</td>
<td>–</td>
<td>kΩ</td>
</tr>
<tr>
<td>Collector–Base Voltage (T_1)</td>
<td>(V_{13-14})</td>
<td></td>
<td>18</td>
<td>30</td>
<td>–</td>
<td>V</td>
</tr>
<tr>
<td>Emitter–Base Voltage (T_2)</td>
<td>(V_{1-2})</td>
<td></td>
<td>5</td>
<td>–</td>
<td>–</td>
<td>V</td>
</tr>
</tbody>
</table>

#### Pin Connection Diagram (Front View)

- **Pin 1**: 19kHz Tank
- **Pin 2**: \(V_{CC}\)
- **Pin 3**: 38kHz Tank
- **Pin 4**: DC Amp/Lamp Driver
- **Pin 5**: 38kHz Decoder
- **Pin 6**: Input
- **Pin 7**: Output
- **Pin 8**: Output
- **Pin 9**: Decoder Input
- **Pin 10**: Mono/Stereo Switch
- **Pin 11**: Bias Adjust
- **Pin 12**: GND
- **Pin 13**: Amp Output
- **Pin 14**: Amp Input

#### Dimensions

- 19kHz Tank: \(0.300 (7.62)\)
- 38kHz Tank: \(0.600 (15.24)\)
- DC Amp/Lamp Driver: \(0.100 (2.45)\)
- Bias Adjust: \(0.200 (5.08)\)\(\text{Max}\)
- Output: \(0.099 (2.5)\)\(\text{Min}\)