NTE1616
Integrated Circuit
TV Sound IF Amp/Detector, Driver

Description:
The NTE1616 is a TV sound integrated circuit in a 14–Lead DIP type package that can be operated with no adjustment, using ceramic filters externally. This device contains a DC controlled attenuator, which has wide effective area and gentle characteristic in the changing, so it is convenient especially for a remote controlled set.

Features:
- Gentle Changing DC Controlled Attenuator is Convenient for Remote Controlled Sets.
- Operation with Ceramic Filters makes TV Sound Circuit No Adjustment Completely
- SRPP Output Circuit can be Driven Directly
- Muting Works Quickly
- Low Distortion Demodulation

Absolute Maximum Ratings:  $(T_A = +25^\circ C$ unless otherwise specified)
- Power Supply Voltage, $V_{CC}$: 0 to 15V
- Voltage (Pin13, Pin14), $V_{13}, V_{14}$: 0 to 15V
- Output Current (Pin2), $I_2$: 0 to 20mA
- Power Dissipation ($T_A = 75^\circ C$), $P_D$: 350mW
- Operating Temperature Range, $T_{opr}$: $-20^\circ C$ to $+75^\circ C$
- Storage Temperature Range, $T_{stg}$: $-40^\circ C$ to $+125^\circ C$

Electrical Characteristics:  $(V_{CC} = 12V, T_A = +25^\circ C \pm 3^\circ C f = 4.5mHz, \Delta f = \pm 25kHz, f_M = 400Hz, AM MOD = 30%$ 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>Total Supply Current</td>
<td>$I_{CC}$</td>
<td>$V_{CC} = 12V$ Zero Carrier</td>
<td>15</td>
<td>20</td>
<td>25</td>
<td>mA</td>
</tr>
<tr>
<td>IF Limiting Voltage</td>
<td>$V_{i(lim)}$</td>
<td>$-3dB$ point</td>
<td>–</td>
<td>200</td>
<td>400</td>
<td>$\mu V_{rms}$</td>
</tr>
<tr>
<td>Detector Output Voltage</td>
<td>$V_{O\ AF}$</td>
<td>$V_i = 10mV_{rms}$</td>
<td>450</td>
<td>600</td>
<td>750</td>
<td>mV_{rms}</td>
</tr>
<tr>
<td>Detector Output Distortion</td>
<td>$THD_{DET}$</td>
<td>$V_i = 10mV_{rms}$</td>
<td>–</td>
<td>0.4</td>
<td>1.0</td>
<td>%</td>
</tr>
<tr>
<td>AM Rejection</td>
<td>$AMR$</td>
<td>$V_i \geq 3mV_{rms}$</td>
<td>–44</td>
<td>–55</td>
<td>–</td>
<td>dB</td>
</tr>
<tr>
<td>DC VR Maximum Attenuation</td>
<td>$ATT_{VR}$</td>
<td>$f_m = 400Hz, V_i = 600mV_{rms}$</td>
<td>70</td>
<td>80</td>
<td>–</td>
<td>dB</td>
</tr>
<tr>
<td>DC VR Distortion</td>
<td>$THD_{VR}$</td>
<td>$f_m = 400Hz, V_i = 600mV_{rms} V_8$</td>
<td>–</td>
<td>0.4</td>
<td>1.0</td>
<td>%</td>
</tr>
</tbody>
</table>
Electrical Characteristics (Cont’d): \( (V_{CC} = 12V, \ T_A = +25^\circ C \pm 3^\circ C \ f = 4.5mHz, \ \Delta f = \pm 25kHz, \ f_M = 400Hz, \ AM \ MOD = 30\% \) unless otherwise specified)

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<tr>
<td>AF Voltage Gain</td>
<td>( G_{VAF} )</td>
<td>( f_{in} = 400Hz, \ V_i = 100mV_{rms}, R_3 = 1k\Omega )</td>
<td>11.5</td>
<td>15.0</td>
<td>–</td>
<td>dB</td>
</tr>
<tr>
<td>IF Input Resistance</td>
<td>( R_{in} )</td>
<td>–</td>
<td>1.5</td>
<td>–</td>
<td>–</td>
<td>k\Omega</td>
</tr>
<tr>
<td>IF Input Capacitance</td>
<td>( C_{in} )</td>
<td>–</td>
<td>2.0</td>
<td>–</td>
<td>–</td>
<td>pF</td>
</tr>
<tr>
<td>Pin4 Input Resistance</td>
<td>( R_{in4} )</td>
<td>–</td>
<td>20</td>
<td>–</td>
<td>–</td>
<td>k\Omega</td>
</tr>
<tr>
<td>Pin4 Input Capacitance</td>
<td>( C_{in4} )</td>
<td>–</td>
<td>2.9</td>
<td>–</td>
<td>–</td>
<td>pF</td>
</tr>
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</table>

Pin Connection Diagram

- \( V_{CC} \)
- AF Output
- Feedback
- Attenuator Input
- Detector Output
- Muting
- GND
- (+) IF Amp Input
- (–) IF Amp Input
- Low Pass Capacitor
- Regulated Voltage
- Discriminator
- Discriminator
- DC Attenuator

Dimensions:
- .785 (19.95) Max
- .300 (7.62)
- .200 (5.08) Max
- .100 (2.45)
- .099 (2.5) Min
- .600 (15.24)