**NTE1461**  
**Integrated Circuit**  
**Phase Lock Loop (PLL) FM Stereo Demod**

**Description:**  
The NTE1461 is a multiplex integrated circuit in a 16–Lead SIP type package designed for use in FM car stereo applications. Due to its low distortion factor, this device can be used as a multiplex stereo demodulator appropriate for car component stereo units.

**Functions:**  
- **Stereo Noise Control (SNC Pin):**  
  Through controlling the quality of sound from stereo mode to monaural mode with the voltage applied to the control pin, the FM stereo noise in the weak electric field is reduced by this function.  
- **High–Cut Control Function (HCC Pin):**  
  The FM noise in weak electric field is reduced through the attenuation of high frequency thereof. Such attenuation can be changed smoothly from “Normal” to “High–Cut” by controlling the voltage applied to the control pin. The volume of “High–Cut” can be selected by using a capacitor installed at the outside of he unit.  
- **Stereo/Monaural Automatic Conversion:**  
  This conversion operates in priority to the stereo noise control. Preference on the pilot input.  
- **Stoppage of VCO Oscillation:**  
  When a voltage higher than 6V is applied on the HCC pin, the oscillation of VCO can be discontinued. An erroneous operation of stereo lamp does not happen even at this stage.  
- **With spearation control terminal**

**Features:**  
- Low Distortion Factor: 0.05% Typ, 300mV Input Mono  
- The Ripple of Power Source can Effectively be Rejected  
- Wide Supply Voltage Range: $V_{CC} = 6.5$V to 14V

**Absolute Maximum Ratings:**  
$(T_A = +25^\circ\text{C}$ unless otherwise specified)  
- Maximum Supply Voltage, $V_{CC\text{max}}$  
- Lamp Driving Current, $I_L$  
- Allowable Power Dissipation $(T_A \leq +45^\circ\text{C}), P_{D\text{max}}$  
- Operating Temperature Range, $T_{opr}$  
- Storage Temperature Range, $T_{stg}$

**Recommended Operating Conditions:**  
$(T_A = +25^\circ\text{C}$ unless otherwise specified)  
- Recommended Supply Voltage, $V_{CC}$  
- Input Signal Voltage, $V_i$
**Electrical Characteristics:**  
(Tₘ = +25°C, Vₜₐₜₚ = 10V, Vᵢ = 300mV, f = 1kHz, L + R = 90%, Pilot = 10% 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>
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<tbody>
<tr>
<td>Quiescent Current</td>
<td>Iₐₜₚ</td>
<td></td>
<td>–</td>
<td>21</td>
<td>27</td>
<td>mA</td>
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<tr>
<td>Channel Separation</td>
<td>Sep</td>
<td></td>
<td>40</td>
<td>50</td>
<td>–</td>
<td>dB</td>
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<tr>
<td>Monaural Distortion</td>
<td>THDMono</td>
<td>Mono = 300mV</td>
<td>–</td>
<td>0.05</td>
<td>0.2</td>
<td>%</td>
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<tr>
<td>Stereo Distortion</td>
<td>THDST</td>
<td>Main</td>
<td>–</td>
<td>0.05</td>
<td>0.2</td>
<td>%</td>
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<tr>
<td>Lamp Turn–On Level</td>
<td>V₁ₐₜₚ</td>
<td>L = R = 90%, Pilot = 10%</td>
<td>60</td>
<td>85</td>
<td>120</td>
<td>mV</td>
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<tr>
<td>Hysteresis</td>
<td>hy</td>
<td></td>
<td>–</td>
<td>3</td>
<td>6</td>
<td>dB</td>
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<tr>
<td>Capture Range</td>
<td>CR</td>
<td>Pilot = 30mV</td>
<td>–</td>
<td>±3</td>
<td>–</td>
<td>%</td>
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<tr>
<td>Output Signal Level</td>
<td>Vₛ</td>
<td>Sub</td>
<td>140</td>
<td>200</td>
<td>280</td>
<td>mV</td>
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<td>Signal–to–Noise Ratio</td>
<td>S/N</td>
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<td>70</td>
<td>78</td>
<td>–</td>
<td>dB</td>
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<tr>
<td>Input Resistance</td>
<td>rᵢ</td>
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<td>–</td>
<td>20</td>
<td>–</td>
<td>kΩ</td>
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<tr>
<td>SCA Rejection</td>
<td>SCAₐₜₚ</td>
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<td>–</td>
<td>80</td>
<td>–</td>
<td>dB</td>
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<tr>
<td>Allowable Input Voltage</td>
<td>Vᵢₜₚ</td>
<td>THD = 1%</td>
<td>700</td>
<td>800</td>
<td>–</td>
<td>mV</td>
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<tr>
<td>SNC Output Attenuation</td>
<td>SNCₐₜₚ</td>
<td>V₈ = 0.6V, L – R = 90%, Pilot = 10%</td>
<td>–8.5</td>
<td>–3.0</td>
<td>–0.3</td>
<td>dB</td>
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<tr>
<td>SNC Output Voltage</td>
<td>Vₛₜₚ</td>
<td>V₈ = 0.1V, L – R = 90%, Pilot = 10%</td>
<td>–</td>
<td>–</td>
<td>5</td>
<td>mV</td>
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<td>HCC Output Attenuation</td>
<td>HCCₐₜₚ</td>
<td>V₇ = 0.6V, L + R = 90%, Pilot = 10%</td>
<td>–15</td>
<td>–6</td>
<td>–0.5</td>
<td>dB</td>
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<tr>
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<td>V₇ = 1V, L + R = 90%, Pilot = 10%</td>
<td>–2</td>
<td>–</td>
<td>0</td>
<td>dB</td>
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<tr>
<td>Power Ripple Rejection</td>
<td>RR</td>
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<td>–</td>
<td>35</td>
<td>–</td>
<td>dB</td>
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<td>VCO Stopping Voltage</td>
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<td>–</td>
<td>6.8</td>
<td>–</td>
<td>V</td>
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<td>Channel Balance</td>
<td>CHₐₜₚ</td>
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<td>–</td>
<td>0.5</td>
<td>1.5</td>
<td>dB</td>
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</table>

**Pin Connection Diagram**  
(Front View)

- OSC Constants
- Ripple Filter
- Ripple Filter
- 19kHz
- Pilot Detector
- Pilot Detector
- Stereo Lamp
- GND
- Stereo Noise Control
- High Cut Control
- Rt Ch Output
- Lt Ch Output
- High Cut Constant
- Separation Adjust
- Composite Signal Input
- Vₜₚ