NTE1539
Integrated Circuit
Color TV Sync Deflection Circuit

Description:
The NTE1539 is a multifunctional integrated circuit which is based on the internal circuit of the NTE1538. It incorporates various functions required for synchronization and deflection circuits of color television sets and especially aims at increasing the detections accuracy of the X–ray protection circuit. The ground pins for horizontal and vertical are provided separately to enable the easy layout of the printed circuit board.

The NTE1539 differs from the NTE1538 in the following points:
- The output circuit of synchronizing separation is emitter follower type
- The X–ray protection circuit is differential dual inouts thyristor system
- The ground pins for horizontal and vertical are provided separately.

Functions:
- Synchro Separator
- Horizontal AFC
- Vertical Driver
- Vertical Blanking Pulse Making
- Horizontal Oscillator
- Vertical Oscillator
- X–Ray Protector

Features:
- Multifunctional and Small–Size
- Minimum Number of Parts Required
- Horizontal and Vertical Oscillators being Stable to Variation of Ambient Temperature and Supply Voltage Owing to Small Warming–Up Drift.
- Small Variation of Horizontal Oscillation Frequency
- Good Linearity and Interface Owing to DC Bias at Vertical Output Stage being Sampling Controlled within Retrace Time.
- Vertical Blanking Pulse Width being Freely Set Up According to Peripheral Parts.
**Absolute Maximum Ratings:**  
(T\(_A\) = +25°C unless otherwise specified)
- Maximum Supply Voltage, V\(_{14}\) ................................. 14V
- Maximum Supply Current, I\(_{17}\) ...................................... 16mA
- Allowable Power Dissipation (T\(_A\) = +60°C), P\(_{D\text{max}}\) ................................. 450mW
- Operating Temperature Range, T\(_{\text{opg}}\) ......................................... –20° to +85°C
- Storage Temperature Range, T\(_{\text{stg}}\) ......................................... –55° to +125°C

**Recommended Operating Condition:**  
(T\(_A\) = +25°C unless otherwise specified)
- Recommended Supply Voltage, V\(_{14}\) ................................. 12V

**Electrical Characteristics:**  
(T\(_A\) = +25°C, V\(_{14}\) = 12V, I\(_{\text{CC17}}\) = 13mA 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>V(_{\text{CC14}}) Current Dissipation</td>
<td>I(_{\text{CC14}})</td>
<td>9.0 – 15.0 mA</td>
<td></td>
<td></td>
<td></td>
<td>mA</td>
</tr>
<tr>
<td>V(_{\text{CC17}}) Supply Voltage</td>
<td>V(_{\text{CC17}})</td>
<td>11.8 – 13.2 V</td>
<td></td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Vertical Frequency Pull–In Range</td>
<td>f(_v)</td>
<td>f(_v) center 55Hz</td>
<td>50</td>
<td></td>
<td>60</td>
<td>Hz</td>
</tr>
<tr>
<td>Vertical Driver Amplification Factor</td>
<td>f(_H)</td>
<td>4.0 – 7.0 times</td>
<td></td>
<td></td>
<td></td>
<td>times</td>
</tr>
<tr>
<td>Horizontal Free Running Frequency</td>
<td>f(_H)</td>
<td>f(_H) center 15.734kHz</td>
<td>–750</td>
<td>750</td>
<td></td>
<td>Hz</td>
</tr>
<tr>
<td>Supply Voltage Dependence of Vertical Frequency</td>
<td>V(_14) = 12 ±1V, 55Hz at 12V</td>
<td>–0.5 – 0.5 Hz</td>
<td></td>
<td></td>
<td></td>
<td>Hz</td>
</tr>
<tr>
<td>Temperature Characteristic of Vertical Frequency</td>
<td>T(_A) = –10° to +60°C</td>
<td>–0.028 – 0.028 Hz/°C</td>
<td></td>
<td></td>
<td></td>
<td>Hz/°C</td>
</tr>
<tr>
<td>Supply Voltage Dependence of Horizontal Frequency</td>
<td>V(_Z) – V(_Z) x 90%</td>
<td>–50 – 50 Hz</td>
<td></td>
<td></td>
<td></td>
<td>Hz</td>
</tr>
<tr>
<td>Temperature Characteristic of Horizontal Frequency</td>
<td>T(_A) = –10° to +60°C (I(_C) only)</td>
<td>–3.4 – 3.4 Hz/°C</td>
<td></td>
<td></td>
<td></td>
<td>Hz/°C</td>
</tr>
<tr>
<td>Horizontal Output Pulse Width</td>
<td>f(_H) = 15.734kHz</td>
<td>21.5 – 26.5 µs</td>
<td></td>
<td></td>
<td></td>
<td>µs</td>
</tr>
<tr>
<td>Horizontal Output Drive Current</td>
<td></td>
<td>4.9 – 8.3 mA</td>
<td></td>
<td></td>
<td></td>
<td>mA</td>
</tr>
</tbody>
</table>
Pin Connection Diagram

AFC Output 1 18 Flyback Input
Horiz Hold 2 17 VCC (115V)
Horiz OSC Output 3 16 Video Input
GND 4 15 Sync Separator Output
X-Ray Protect 5 14 VCC
X-Ray Protect 6 13 Vert Blank Output
GND 7 12 Vert Sync Input
Vert Drive Output 8 11 Vert Hold
Vert Height 9 10 Vert Feedback

Dimensions:
- .870 (22.1) Max
- .250 (6.35)
- .150 (3.8)
- .100 (2.54)
- .800 (20.3)
- .125 (3.17) Min