NTE1673
Integrated Circuit
Video Chroma Processor

Description:
The NTE1673 is a multifunctional integrated circuit in a 28–Lead DIP type package where an APC
chroma circuit is formed so compactly as to use only 16 pins with the characteristic requirements re-
maining fulfilled and the rest of pins are used for video circuits. It contains a double doeffential circuit
enabling soft video tone, a color temperature control circuit enabling reproduction of beautiful bright
white color and true color, and a high level contrast circuit eliminating brightness drop at the time of
contrast adjustment, thereby allowing a wider design margin for television set design engineers.

Functions:
- Band–Pass Amp
- Voltage Controlled Oscillation
- Peak Clip
- Color Saturation Control
- Double Differential
- Killer
- Contrast Amp
- Color Temperature Control
- Tint Control
- DC Restoration
- Automatic Saturation Control
- Automatic Phase Control
- Blanking
- Chroma Demodulation
- Bright Control

Functions:
- High level contrast system eliminating brightness drop at the time of contrast adjustment.
- Double differential circuit enabling soft video tone.
- Color temperature control function enabling reproduction of beautiful bright white color and
  true color
- Capable of being connected to IC for VIR.
- Only one adjustment: APC adjustment
- Minimum number of external parts required.

Absolute Maximum Ratings: \( T_A = +25^\circ \text{C} \) unless otherwise specified

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Supply Voltage, ( V_{CC\text{max}} )</td>
<td>14.5V</td>
</tr>
<tr>
<td>Allowable Power Dissipation ( T_A \leq +65^\circ \text{C} ), ( P_{D\text{max}} )</td>
<td>875mW</td>
</tr>
<tr>
<td>Operating Temperature Range, ( T_{opr} )</td>
<td>( -20^\circ \text{ to } +70^\circ \text{C} )</td>
</tr>
<tr>
<td>Storage Temperature Range, ( T_{stg} )</td>
<td>( -40^\circ \text{ to } +125^\circ \text{C} )</td>
</tr>
</tbody>
</table>
### Electrical Characteristics:

\( T_A = +25^\circ C, V_{CC} = 12V, 0dB \) input: burst 100mV\( p-p \), chroma 200mV\( p-p \) 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><strong>Chroma Characteristics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACC Amplitude Characteristic</td>
<td>( G_A )</td>
<td>+6dB</td>
<td>-7</td>
<td>0</td>
<td>±3</td>
<td>dB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-20dB</td>
<td>-</td>
<td>-3</td>
<td>+2</td>
<td>dB</td>
</tr>
<tr>
<td>ACC Phase Characteristic</td>
<td>( \phi A )</td>
<td>+6dB</td>
<td>-</td>
<td>0</td>
<td>±3</td>
<td>deg</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-20dB</td>
<td>-</td>
<td>±3</td>
<td>±7</td>
<td>deg</td>
</tr>
<tr>
<td>Killer Operating Point</td>
<td>( V_{i(K)} )</td>
<td></td>
<td>-55</td>
<td>-47</td>
<td>-40</td>
<td>dB</td>
</tr>
<tr>
<td>Maximum B–Y Demodulation</td>
<td>( \Theta_{OBM} )</td>
<td></td>
<td>4.5</td>
<td>5.5</td>
<td>-</td>
<td>( V_{p-p} )</td>
</tr>
<tr>
<td>Tint Change Range</td>
<td>( \Delta T(T_{max} - T_{min}) )</td>
<td></td>
<td>-</td>
<td>120</td>
<td>-</td>
<td>deg</td>
</tr>
<tr>
<td>Static Phase Error</td>
<td>( \phi \Theta )</td>
<td>( \Delta f = \pm 100Hz )</td>
<td>±1.5</td>
<td>±5</td>
<td>-</td>
<td>deg</td>
</tr>
<tr>
<td>APC Pull–in Range</td>
<td>( f_p )</td>
<td></td>
<td>±350</td>
<td>±500</td>
<td>-</td>
<td>Hz</td>
</tr>
<tr>
<td>Demodulation Output DC Voltage</td>
<td>( V_{12}, V_{13}, V_{14} )</td>
<td></td>
<td>6.7</td>
<td>7.2</td>
<td>7.7</td>
<td>V</td>
</tr>
<tr>
<td>Demodulation Output DC</td>
<td>( V_{12} - V_{13} )</td>
<td></td>
<td>-</td>
<td>300</td>
<td>-</td>
<td>mV</td>
</tr>
<tr>
<td><strong>Video Characteristics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Video Tone Control</td>
<td>( G_{p, max} )</td>
<td></td>
<td>7.0</td>
<td>9.5</td>
<td>12.0</td>
<td>dB</td>
</tr>
<tr>
<td></td>
<td>( G_{p, min} )</td>
<td></td>
<td>-5.0</td>
<td>-2.5</td>
<td>-1.0</td>
<td>dB</td>
</tr>
<tr>
<td>Video Gain</td>
<td>( G_v )</td>
<td></td>
<td>10</td>
<td>12.5</td>
<td>15.0</td>
<td>dB</td>
</tr>
<tr>
<td>Contrast Variable Range</td>
<td>( \Delta G_C )</td>
<td></td>
<td>8</td>
<td>10</td>
<td>15</td>
<td>dB</td>
</tr>
<tr>
<td>Frequency Characteristic</td>
<td>( \Delta G_V )</td>
<td>( f = 5MHz )</td>
<td>-3</td>
<td>-</td>
<td>-</td>
<td>dB</td>
</tr>
</tbody>
</table>

### Pin Connection Diagram

1. Video Input
2. Color Control
3. ACC Detector
4. \( V_{CC} \)
5. Killer RC Network
6. GND
7. Tint Control
8. X’tal
9. Tint Network
10. Demod Network
11. APC Control
12. R – Y Demodulation
13. G – Y Matrix
14. B – Y Demodulation
15. Video Output Driver
16. Horiz Sync Input
17. Color Temp Control
18. Horiz Blank Pulse
19. Brightness Sample
20. Horiz Sync Output
21. Brightness Control
22. DC Restorer Network
23. Contrast Control
24. High Level Contrast Control
25. Soft Video Tone Network
26. Sharp Video Tone Network
27. Sharp Video Tone Network
28. Video Tone Control