NTE1589
Integrated Circuit
Color TV Luminance Chroma System

Description:
The NTE1589 is a multi-operational integrated circuit in a 28-Lead DIP type package which has all
the necessary functions for video-chroma: such as second differential video tone control circuit (DC
controlling available), contrast control, pedestal clamp, brightness adjustment circuit, video blanking
circuit, BPA amplifier (peak detection shaped ACC detector), color synchronizer (APC type), and color
recovery (color difference output).

Characteristics:
- Because of its second differential video tone control method of current amplifying type, amplitude
  of pre-shoot and over-shoot can be restrained, and sharp outline correction is available.
- ‘fo’ adjustment of VCO is available by variable resister
- Because of its color difference output, frequency response of video amplifier is very good.
- Because its control is all D.C. controlling, remote control is available.

Absolute Maximum Ratings:  \( T_A = +25°C \) unless otherwise specified
Power Supply Voltage, \( V_{CC} \) .......................................................... 15V
Power Consumption, \( P_D \) .............................................................. 850mW
Operating Temperature Range, \( T_{opr} \) .......................................... –15°C to +65°C
Storage Temperature Range, \( T_{stg} \) ................................................... –55°C to +125°C

Electrical Characteristics:

<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>BPA Chroma Output</td>
<td>( E_e )</td>
<td>burst: chroma = 1.1, burst = 100mV( V_{p-p} )</td>
<td>0.54</td>
<td>0.67</td>
<td>0.85</td>
<td>( V_{p-p} )</td>
</tr>
<tr>
<td>ACC Range</td>
<td>( E_a )</td>
<td>burst: chroma = 1.1, burst = 10mV</td>
<td>0.30</td>
<td>0.55</td>
<td>0.74</td>
<td>( V_{p-p} )</td>
</tr>
<tr>
<td>Killer Sensitivity</td>
<td>( E_k )</td>
<td>burst 100mV( V_{p-p} ) = 0dB</td>
<td>–</td>
<td>–44</td>
<td>–</td>
<td>dB</td>
</tr>
<tr>
<td>Color Recovery Conversion Benefit</td>
<td>( G_{R-Y} )</td>
<td>R–Y output</td>
<td>6.4</td>
<td>7.0</td>
<td>7.6</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td>( E_{B-Y} )</td>
<td>B–Y output/R–Y output</td>
<td>1.05</td>
<td>1.20</td>
<td>1.35</td>
<td>times</td>
</tr>
<tr>
<td></td>
<td>( E_{r-y} )</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>( E_{g-y} )</td>
<td>G–Y output/R–Y output Angle (R–Y) – Angle (B–Y) = 105°</td>
<td>0.30</td>
<td>0.40</td>
<td>0.50</td>
<td>times</td>
</tr>
<tr>
<td>Color Recovery Output Voltage</td>
<td>( E_{O(DC)} )</td>
<td>Non–signal input, ( V_{CO} ) free–run</td>
<td>6.4</td>
<td>7.0</td>
<td>7.6</td>
<td>V</td>
</tr>
</tbody>
</table>
### Electrical Characteristics (Cont’d):

<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>Color Recovery Output</td>
<td>( E_{O(DC)} )</td>
<td>Non–signal input, VCO free–run ( (B–Y) – (R–Y) ) ( (R–Y) – (G–Y) ) ( (G–Y) – (B–Y) )</td>
<td>-0.3</td>
<td>0</td>
<td>+0.3</td>
<td>V</td>
</tr>
<tr>
<td>Video Amplifier Benefit</td>
<td>( G_V )</td>
<td>At terminal 22, ( V = 0.3V_{p-p} ), ( f = 100kHz ) examined Pin19</td>
<td>10.5</td>
<td>12.0</td>
<td>13.5</td>
<td>times</td>
</tr>
<tr>
<td>Video Amplifier Frequency Response</td>
<td>( f_e )</td>
<td>Measured with –3dB, 0dB when ( f = 100kHz )</td>
<td>–</td>
<td>6.5</td>
<td>–</td>
<td>MHz</td>
</tr>
<tr>
<td>Direct Current Reproduction Rate</td>
<td>–</td>
<td>–</td>
<td>75</td>
<td>–</td>
<td>–</td>
<td>%</td>
</tr>
<tr>
<td>Blanking Output Voltage</td>
<td>–</td>
<td>–</td>
<td>11</td>
<td>–</td>
<td>–</td>
<td>V</td>
</tr>
</tbody>
</table>

#### Pin Connection Diagram

- GND
- Video Input
- 1st BPA
- Color/Contrast Control
- Color Control Output
- Killer Filter
- Gate Pulse
- VCO
- Tint Control
- VCO Output
- APC Filter
- Color Demod
- ABL
- Pedestal Clamp
- Video Output
- Blanking Pulse
- B–Y Output
- G–Y Output

- Dimensions:
  - 1.469 (37.32) Max
  - .540 (13.7)
  - .250 (6.35)
  - .100 (2.54)
  - 1.300 (33.02)
  - .122 (3.1)
  - .600 (15.24)