NTE1295
Integrated Circuit
TV Signal Processor

Description:
The NTE1295 is an integrated circuit in an 18–Lead DIP type package designed for color TV deflection signal processing circuit. It can be operated with 12V power supply and is suitable for compact and medium–sized color TV sets.

Features:
- Built–In Vertical Deflection Driver Circuit
- Incorporating Vertical and Horizontal Oscillator Circuit, Operations Highly Stable Against Changes in Supply Voltage and Temperature.
- Highly Stable Synchronous Separation Circuit Against Noise
- Built–In High Tension Protector Circuit (X–Ray Protection)
- 12V Supply Voltage Operation.

Absolute Maximum Ratings: \( (T_A = +25^\circ C, \text{ Note 1 unless otherwise specified}) \)
Supply Voltage
- \( V_{7-8} \) .......................... \( 10.5V \)
- \( V_{15-8} \) .......................... \( 14.4V \)
Circuit Voltage
- \( V_{1-8} \) .......................... \( 0 \) to \( 10V \)
- \( V_{10-8} \) .......................... \( 0 \) to \( V_{15-8} \)
- \( V_{12-8} \) .......................... \( 0 \) to \( V_{15-8} \)
- \( V_{17-8} \) .......................... \( -0.6 \) to \( 6.0V \)
- \( V_{18-8} \) .......................... \( -3 \) to \( +2V \)
Supply Current
- \( I_7 \) ........................................ \( 15mA \)
- \( I_{15} \) ........................................ \( 20mA \)
Circuit Current
- \( I_2 \) ........................................ \( -3 \) to \( +3mA \)
- \( I_3 \) ........................................ \( -5 \) to \( 0mA \)
- \( I_4 \) ........................................ \( -5 \) to \( +5mA \)
- \( I_5 \) ........................................ \( -1 \) to \( +1mA \)
- \( I_6 \) ........................................ \( -20 \) to \( 0mA \)
- \( I_9 \) ........................................ \( -15 \) to \( 0mA \)
- \( I_{12} \) ....................................... \( -1 \) to \( +150mA \)
- \( I_{13} \) ....................................... \( 0 \) to \( 40mA \)
Power Dissipation, \( P_D \) ........................................ \( 450mW \)
Operating Ambient Temperature Range, \( T_{opr} \) ........................................ \( -20^\circ \) to \( +70^\circ C \)
Storage Temperature Range, \( T_{stg} \) ........................................ \( -55^\circ \) to \( +150^\circ C \)

Note 1. \( \oplus \) and \( \ominus \) are flow–in and flow–out currents to/from the circuit, respectively.
### Electrical Characteristics: \((T_A = +25°C\) 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>Circuit Current</td>
<td>(I_7)</td>
<td>Apply 12V with 240Ω to Pin7</td>
<td>7.5</td>
<td>11.2</td>
<td>15.0</td>
<td>mA</td>
</tr>
<tr>
<td></td>
<td>(I_{15})</td>
<td>(V_{15-8} = 12) V</td>
<td>15.5</td>
<td>23.0</td>
<td>32.0</td>
<td>mA</td>
</tr>
<tr>
<td>Protector Operating Voltage</td>
<td>(V_{5-8})</td>
<td>Apply 12V with 240Ω to Pin7</td>
<td>0.64</td>
<td>0.70</td>
<td>0.76</td>
<td>V</td>
</tr>
<tr>
<td>Oscillation Starting Voltage ((V \cdot O_{sc}))</td>
<td>(V_{OSC-S})</td>
<td>(f_{VO} = 40) to 70Hz, 1.0(V_{P-P}) or More</td>
<td>–</td>
<td>–</td>
<td>6.2</td>
<td>V</td>
</tr>
<tr>
<td>Vertical Oscillation Frequency</td>
<td>(f_{VO})</td>
<td>(V_{CC1} = 12) V</td>
<td>53</td>
<td>55</td>
<td>58</td>
<td>Hz</td>
</tr>
<tr>
<td></td>
<td>(f_{VO}) Change with Supply Voltage</td>
<td>(\Delta f_{VO}/V_{CC})</td>
<td>(f_{VO}</td>
<td><em>{9.6V} to f</em>{VO}</td>
<td>_{14.4V})</td>
<td>0</td>
</tr>
<tr>
<td>Pulse Width ((V \cdot O_{sc}))</td>
<td>(\tau)</td>
<td>(V_{CC1} = 12) V</td>
<td>500</td>
<td>600</td>
<td>820</td>
<td>µs</td>
</tr>
<tr>
<td>Vertical Pull-In Range</td>
<td>(f_{VP})</td>
<td>(R_{OSC} = 10.93k) Ω, (f_{VO} = 48) ±1.5Hz</td>
<td>–</td>
<td>–</td>
<td>50</td>
<td>Hz</td>
</tr>
<tr>
<td>Vertical Sawtooth Wave Amplification</td>
<td>(v(saw))</td>
<td>(R_{SAW} = 26.4k) Ω</td>
<td>1.8</td>
<td>2.0</td>
<td>2.2</td>
<td>(V_{P-P})</td>
</tr>
<tr>
<td>(f_{VO}) Change with Ambient Temperature</td>
<td>(\Delta f_{VO}/T_A)</td>
<td>(T_A = -20°) to +70°C, Note 2</td>
<td>–220</td>
<td>–170</td>
<td>0</td>
<td>ppm/°C</td>
</tr>
<tr>
<td>(v(saw)) Change with Ambient Temperature</td>
<td>(\Delta v(saw)/T_A)</td>
<td>(T_A = -20°) to +70°C, Note 2</td>
<td>–</td>
<td>–</td>
<td>30</td>
<td>mV_{P-P}/°C</td>
</tr>
<tr>
<td>Vertical Output Tr Drive Current</td>
<td>(I_9)</td>
<td>–</td>
<td>–</td>
<td>7.5</td>
<td>mA</td>
<td></td>
</tr>
<tr>
<td>Oscillation Starting Voltage ((H \cdot O_{sc}))</td>
<td>(V_{OSC-S})</td>
<td>(f_{HO} = 10) to 20kHz, (1.4V_{P-P}) or More ((V_{CC2} = 6.5) V)</td>
<td>–</td>
<td>–</td>
<td>6</td>
<td>V</td>
</tr>
<tr>
<td>Horizontal Oscillation Frequency</td>
<td>(f_{HO})</td>
<td>(V_{CC2} = 12) V</td>
<td>15.0</td>
<td>15.6</td>
<td>16.25</td>
<td>kHz</td>
</tr>
<tr>
<td>(f_{HO}) Change with Supply Voltage</td>
<td>(\Delta f_{HO}/V_{CC})</td>
<td>(f_{HO}</td>
<td><em>{13V} to f</em>{HO}</td>
<td>_{10V})</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>Pulse Width Duty Ratio ((H \cdot O_{sc}))</td>
<td>(\tau)</td>
<td>(V_{CC2} = 12) V</td>
<td>32.0</td>
<td>36.0</td>
<td>39.5</td>
<td>%</td>
</tr>
<tr>
<td>(f_{HO}) Control Sensitivity</td>
<td>(\beta)</td>
<td>(I_O = \pm100mA)</td>
<td>19</td>
<td>21</td>
<td>23</td>
<td>Hz/µA</td>
</tr>
<tr>
<td>(f_{HO}) Change with Ambient Temperature</td>
<td>(\Delta f_{HO}/T_A)</td>
<td>(T_A = -20°) to +70°C, Note 2</td>
<td>–210</td>
<td>–100</td>
<td>0</td>
<td>ppm/°C</td>
</tr>
<tr>
<td>AFC Loop Gain</td>
<td>(f_{AFC})</td>
<td>(\mu \times \beta)</td>
<td>5800</td>
<td>7700</td>
<td>9600</td>
<td>Hz/°C</td>
</tr>
</tbody>
</table>

Note 2. Design reference value.

### Pin Connection Diagram

```
1 Horiz Sawtooth
2 Filter
3 Horiz Hold
4 Bypass
5 Protector Input
6 Horiz Driver
7 Voltage Regulator
8 GND
9 Vert Output
10 Vert Driver Input
11 Vert Ramp Generator
12 Vert Height
13 Horiz Sync Output
14 Bypass
15 VCC
16 Noise Detector
17 Video Input
18 Noise Detector
```

