NTE836
Linear Integrated Circuit
TV Horizontal Processor

Description:
The NTE836 is a TV Horizontal Processor in an 8–Lead DIP type package that includes a phase detector, oscillator and pre–driver. This device is designed for use in all types of television receivers that have negative flyback inputs.

Features:
- Internal Shunt Regulator
- Preset Hold Control Capability
- ±300Hz Typical Pull–In
- Linear Balanced Phase Detector
- Variable Output Duty Cycle for Driving Tube or Transistor
- Low Thermal Frequency Drift
- Small Static Phase Error
- Adjustable DC Loop Gain
- Negative Flyback Inputs

Absolute Maximum Ratings: \( T_A = +25°C \), unless otherwise specified
- Supply Current: 40mA
- Output Voltage: 40V
- Output Current: 30mA
- Sync Input Voltage (Pin3): 5.0V_{p–p}
- Flyback Input Voltage (Pin4): 5.0V_{p–p}
- Power Dissipation, \( P_D \): 625mW
- Derate above \( T_A \): 5.0mW/°C
- Operating Ambient Temperature Range, \( T_{opr} \): 0° to +75°C
- Storage Temperature Range, \( T_{stg} \): –65° to +150°C
**Electrical Characteristics:** \((T_A = +25^\circ C\) unless otherwise specified)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Test Conditions</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulated Voltage (Pin6)</td>
<td></td>
<td>8.0</td>
<td>8.6</td>
<td>9.0</td>
<td>V</td>
</tr>
<tr>
<td>Supply Current (Pin6)</td>
<td></td>
<td>–</td>
<td>20</td>
<td>–</td>
<td>mA</td>
</tr>
<tr>
<td>Collector–Emitter Saturation Voltage</td>
<td>(I_C = 20\text{mA}, ) Pin1</td>
<td>–</td>
<td>0.15</td>
<td>0.25</td>
<td>V</td>
</tr>
<tr>
<td>Voltage (Pin4)</td>
<td></td>
<td>–</td>
<td>2.0</td>
<td>–</td>
<td>V</td>
</tr>
<tr>
<td>Oscillator Pull–In Range</td>
<td></td>
<td>–</td>
<td>±300</td>
<td>–</td>
<td>Hz</td>
</tr>
<tr>
<td>Oscillator Hold–In Range</td>
<td></td>
<td>–</td>
<td>±900</td>
<td>–</td>
<td>Hz</td>
</tr>
<tr>
<td>Static Phase Error</td>
<td>(\Delta f = 300\text{Hz} )</td>
<td>–</td>
<td>0.5</td>
<td>–</td>
<td>(\mu\text{s})</td>
</tr>
<tr>
<td>Free–Running Frequency Supply Dependence</td>
<td>S1 in Position 2</td>
<td>–</td>
<td>±3.0</td>
<td>–</td>
<td>Hz/V</td>
</tr>
<tr>
<td>Phase Detector Leakage (Pin5)</td>
<td>All Switches in Position 2</td>
<td>–</td>
<td>–</td>
<td>±1.0</td>
<td>(\mu\text{A})</td>
</tr>
<tr>
<td>Sync Input Voltage (Pin3)</td>
<td></td>
<td>2.0</td>
<td>–</td>
<td>5.0</td>
<td>V_{P-P}</td>
</tr>
<tr>
<td>Sawtooth Input Voltage (Pin4)</td>
<td></td>
<td>1.0</td>
<td>–</td>
<td>3.0</td>
<td>V_{P-P}</td>
</tr>
</tbody>
</table>

**Pin Connection Diagram**

```
Output 1  8  Mark Space Ratio
  GND 2  7  OSC Timing
Sync Input 3  6  V_{CC}
    Sawtooth Input 4  5  Phase Detector Output
```

```
.256 (6.52) Max
.393 (10.0) Max
.150 (3.81)
.070 (1.77) Min
.300 (7.62)
.300 (7.62)
.100 (2.54)
```