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## NTE790 Integrated Circuit Dual Chroma Demodulator

**Description:**

The NTE790 has two sets of synchronous detectors with matrix circuits to achieve the R-Y, G-Y and B-Y color difference output signals. The chroma input signal is applied to Pin3 and Pin4 while the oscillator injection signal is applied to Pin6 and Pin7. The color difference signals, after matrix, have a fixed relationship of amplitude and phase nominally equal DC voltage levels. The outputs of the NTE790 are suitable for driving high level color difference or R, G, B output amplifiers. Emitter-follower output stages used to drive the high level color amplifiers have short-circuit protection.

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

|   |                                     |
|---|-------------------------------------|
| DC Supply Voltage (Pin8 to Pin14) .....   | 27V                                 |
| Reference Input Voltage .....   | $5V_{p-p}$                          |
| Chroma Input Voltage .....  | $5V_{p-p}$                          |
| Total Device Dissipation (Up to $T_A = +70^\circ\text{C}$ ), $P_D$ .....              | 530mW                               |
| Derate Above $T_A = +70^\circ\text{C}$ .....  | 6.7mW/ $^\circ\text{C}$             |
| Operating Ambient Temperature Range, $T_{opr}$ .....                                  | $-40^\circ$ to $+85^\circ\text{C}$  |
| Storage Temperature range, $T_{stg}$ .....  | $-65^\circ$ to $+150^\circ\text{C}$ |
| Lead Temperature (During Soldering, 1/32" from seating plane, 10sec max), $T_L$ ..... | $+265^\circ\text{C}$                |

**Electrical Characteristics:** ( $T_A = +25^\circ\text{C}$  and  $V_+ = 24\text{V}$  unless otherwise specified)

| Parameter                               | Symbol                | Test Conditions          | Min  | Typ  | Max  | Unit      |
|---|-----------------------|--------------------------|------|------|------|-----------|
| <b>Static Characteristics</b>           |                       |                          |      |      |      |           |
| Supply Current<br>With Output Loads     | $I_T$                 | $S_1$ Closed             | 16.5 | –    | 26.5 | mA        |
|   |                       | $S_1$ Open               | –    | 9    | –    | mA        |
| With No Output Loads                    |                       |                          |      |      |      |           |
| G-Y, R-Y, B-Y Outputs                   | $V_9, V_{11}, V_{13}$ | $S_1$ Closed             | 13.2 | 14.7 | 15.8 | V         |
| Chroma Inputs                           | $V_3, V_4$            | $S_1$ Open               | –    | 3.3  | –    | V         |
| Reference Subcarrier                    | $V_6, V_7$            | $S_1$ Open               | –    | 6.2  | –    | V         |
| Demodulator Unbalance                   | $V_9, V_{11}, V_{13}$ | $V_3 = V_4 = 0$          | –    | –    | 0.8  | $V_{p-p}$ |
| Maximum Color Difference Output Voltage | $V_{13}$              | $V_3 = v_4 = 0.6V_{p-p}$ | 8.0  | –    | –    | $V_{p-p}$ |
|   | $V_{11}$              |                          | 5.5  | –    | –    | $V_{p-p}$ |
|   | $V_9$                 |                          | 1.2  | –    | –    | $V_{p-p}$ |

**Electrical Characteristics (Cont'd):** ( $T_A = +25^\circ\text{C}$  and  $V_+ = 24\text{V}$  unless otherwise specified)

| Parameter                                       | Symbol             | Test Conditions                   | Min  | Typ  | Max  | Unit      |
|---|--------------------|-----------------------------------|------|------|------|-----------|
| Chroma Input Sensitivity                        | $V_3$              | Adjust $e_c$ for 5V @ Pin13 (B-Y) | -    | 0.2  | 0.35 | $V_{p-p}$ |
| Relative R-Y Output                             | $V_{11}$           |                                   | 3.5  | -    | 4.2  | $V_{p-p}$ |
| Relative G-Y Output                             | $V_9$              |                                   | 0.75 | -    | 1.25 | $V_{p-p}$ |
| $V_{DC}$ Difference Between any two Output Pins | $ V_9  -  V_{13} $ | $e_c = 0$                         | -    | -    | 0.6  | V         |
| Input Impedance Reference Subcarrier            | $r_{i6,7}$         |                                   | -    | 1.7  | -    | $k\Omega$ |
| Input Capacitance Reference Subcarrier          | $C_{i6,7}$         |                                   | -    | 6    | -    | pF        |
| Input Impedance at Chroma Inputs                | $r_{i3,4}$         |                                   | -    | 0.95 | -    | $k\Omega$ |
| Input Capacitance at Chroma Inputs              | $C_{i3,4}$         |                                   | -    | 6    | -    | pF        |
| Output Resistance                               | $r_o$              |                                   | -    | 180  | -    | $\Omega$  |

**Pin Connection Diagram**

