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## **NTE843**

### **Integrated Circuit**

### **TV Video IF Phase Locked Loop (PLL)**

### **Synchronous Detector**

**Description:**

The NTE843 is a linear IC synchronous detector employing a phase-locked oscillator to demodulate the 45.75MHz video IF signals in color-TV receivers. The NTE843 features AFT voltage for DC control of the tuner; an adjustment for the zero-carrier DC level at the video output terminal; an amplifier arrangement for inverting noise impulses toward the black level; and a separate output terminal (non-inverting) for the sound IF.

The NTE843 is supplied in a 16-lead plastic "power-slab" dual-in-line package.

The "power-slab" package has an inherently low junction-to-case (slab) thermal resistance and lends itself to a wide variety of heat-sink methods, depending on the application requirements.

**Features:**

- PLL Carrier Oscillator with Wide Pull-In and Hold-In Range
- Excellent Low-Level Detector Linearity
- Noise Inversion at Video Output
- Wide Range, Variable Zero-Carrier Level Adjustment
- Automatic Fine Tuning (AFT) Detector
- Separate Output for Sound Take-Off
- 12V Power Supply

**Absolute Maximum Ratings:**

|   |                   |
|---|-------------------|
| Power Supply Voltage .....  | 15V               |
| Power Supply Current .....  | 100mA             |
| Input Signal Voltage .....  | 1V <sub>rms</sub> |
| Device Dissipation (Up to T <sub>A</sub> = +45°C), P <sub>D</sub> .....               | 1.4W              |
| Derate Above T <sub>A</sub> = +45°C .....   | 13.3mW/°C         |
| Thermal Resistance, Junction-to-Ambient, R <sub>thJA</sub> .....                      | 75°C/W            |
| Operating Ambient Temperature Range, T <sub>opr</sub> .....                           | -40° to +85°C     |
| Storage Temperature Range, T <sub>stg</sub> .....                                     | -65° to +150°C    |
| Lead Temperature (During Soldering, 1/16" from case, 10sec max), T <sub>L</sub> ..... | +265°C            |

**Electrical Characteristics:** ( $V_+ = 12\text{Vdc}$ ,  $f_c = 45\text{MHz}$ ,  $T_A = +25^\circ\text{C}$  unless otherwise specified)

| Parameter  | Symbol         | Test Conditions                  | Min  | Typ | Max  | Unit       |
|--|----------------|----------------------------------|------|-----|------|------------|
| Supply Current                                       | $I_8 + I_{10}$ |                                  | –    | 60  | 80   | mA         |
| Video–Output Voltage                                 | $V_{10}$       | Zero Carrier Bias Adjust         | –    | –   | 7    | V          |
| Noise–Inversion Offset Voltage                       | $V_{10}$       | Referenced to Zero Carrier Level | –0.2 | 0.3 | +0.8 | V          |
| Sound IF Take–Off Output                             | $V_9$          | $V_{10} = 7\text{V}$             | –    | 7.7 | –    | V          |
| AFT Output Voltage                                   | $V_{12}$       | AFT Defeat Switch Closed         | 2.4  | 3.0 | 3.6  | V          |
| Oscillator Pull–In Range                             |                |                                  | –    | 3   | –    | MHz        |
| Oscillator Hold–In Range                             |                |                                  | –    | 6   | –    | MHz        |
| Detector Conversion Gain                             |                |                                  | 26   | 30  | –    | dB         |
| Video Bandwidth                                      |                |                                  | –    | 9   | –    | MHz        |
| Carrier Rejection at Video                           |                | $f_c = 45\text{MHz}$             | –    | 30  | –    | dB         |
|  |                | $2f_c = 90\text{MHz}$            | –    | 40  | –    | dB         |
| Video IF Parallel Input Impedance Resistance (Pin4)  | $R_P$          |                                  | –    | 4   | –    | k $\Omega$ |
| Video IF Parallel Input Impedance Capacitance (Pin4) | $C_P$          |                                  | –    | 5   | –    | pF         |
| Sound Take–Off Output Resistance (Pin9)              | $R_O$          | 1MHz                             | –    | 50  | –    | $\Omega$   |
| Video Output Resistance (Pin10)                      | $R_O$          | 1MHz                             | –    | 50  | –    | $\Omega$   |

**Pin Connection Diagram**

