

**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**

