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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 . . . . . $1V_{rms}$
Device Dissipation (Up to T_A = +45°C), P_D 1.4W
Derate Above T_A = +45°C . . . . . 13.3mW/°C
Thermal Resistance, Junction–to–Ambient, R_{thJA} . . . . . 75°C/W
Operating Ambient Temperature Range, T_{opr} . . . . . –40° to +85°C
Storage Temperature Range, T_{stg} . . . . . –65° to +150°C
Lead Temperature (During Soldering, 1/16” from case, 10sec max), T_L . . . . . +265°C

Electrical Characteristics: (V+ = 12Vdc, f_c = 45MHz, T_A = +25°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} = 7V	–	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 = 45MHz	–	30	–	dB
		$2f_c$ = 90MHz	–	40	–	dB
Video IF Parallel Input Impedance Resistance (Pin4)	R_P		–	4	–	kΩ
Video IF Parallel Input Impedance Capacitance (Pin4)	C_P		–	5	–	pF
Sound Take–Off Output Resistance (Pin9)	R_O	1MHz	–	50	–	Ω
Video Output Resistance (Pin10)	R_O	1MHz	–	50	–	Ω

Pin Connection Diagram