



ELECTRONICS, INC.
44 FARRAND STREET
BLOOMFIELD, NJ 07003
(973) 748-5089
<http://www.nteinc.com>

NTE730 Integrated Circuit TV Video IF System

Description:

The NTE730 is a monolithic integrated circuit in a 20-Lead Quad-In-Line package that incorporates an entire video TV-IF subsystem on a single chip. Innovations in integrated circuit design, in addition to the many active devices and closely matched components utilized in the circuit, make the NTE730 ideally suited for use in color and black and white TV receivers.

The primary functions performed by the IF subsystem are video IF amplification, linear detection, video output amplification, AGC from a keyed supply, AGC delay for tuner, sound carrier detection, sound carrier amplification, and a buffered AFT output. The advanced circuit design of the NTE730 also includes secondary functions for improved noise immunity and minimal airplane flutter. An isolated zener reference diode, incorporated in the IC, provides a convenient and economical means for controlling the regulated voltage supply. The inherent wide bandwidth capability (10-70MHz) and high overall gain (87dB) make the NTE730 suitable for other AM IF applications whose frequencies range within this bandwidth.

Features:

- High Gain Wide Band IF Amplifier: 75dB typ at 45MHz
- Gain Reduction with Excellent Stability: 50dB typ at 45MHz
- Video Detector with Linear Characteristics
- Video Amplifier: 12dB gain
- Impulse Noise Limiter
- Keyed AGC With Noise Immunity Circuits
- Delayed AGC for Tuner
- Buffered AFT Output
- Separate Sound IF Intercarrier Amplification
- Sound Carrier Detector
- 4.5MHz Sound Carrier Amplifier
- Isolated Zener Reference Diode For Regulated Voltage Supply

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

DC Supply Voltage:

Between Pin15 and Pin5 (Note 1)	11.3V
Pin7 (Collector to GND)	20V
Pin9 (Collector to GND)	20V

DC Current (into Pin18) 2mA

Device Dissipation ($T_A \leq +60^\circ\text{C}$) 600mW

Derate Linearly Above $T_A = +60^\circ\text{C}$ 6.7mW/ $^\circ\text{C}$

Operating Ambient Temperature Range -40° to $+85^\circ\text{C}$

Storage Temperature Range -65° to $+150^\circ\text{C}$

Lead Temperature (During Soldering 1/32" (0.79mm) from case, 10sec max.) $+265^\circ\text{C}$

Note 1. This rating does not apply when using the internal zener reference in conjunction with the pass transistor.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static (DC) Characteristics						
Quiescent Circuit Current	I_{15}		15	-	45	mA
DC Voltages						
Sound (Pin2)	V_2		-	6	-	V
Keying Input (Pin3)	V_3		6.4	-	10	V
AGC 1 (Pin7)	V_7		16	-	21	V
AGC 2 (Pin7)	V_7		-	1	-	V
AGC Delay (Pin8)	V_8		-	4	-	V
Cascode Collector (Pin9)	V_9		-	8.5	-	V
Bias (Pin16)	V_{16}		1.1	-	2.3	V
Zener (Pin18)	V_{18}	$V_5 = V_{17} = 0\text{V}$, $I_{18} = 1\text{mA}$	10.6	11.9	13.2	V
White Level (Pin19)	V_{19}		6	-	10	V
Dynamic Characteristics						
Video Sensitivity	e_1	$f_O = 45.75\text{MHz}$, MOD (AM) = 85% at 400Hz; Adjust e_1 for $4V_{P-P}$ at Pin19	40	100	200	μV
Sync. Tip Level Voltage	V_{19}	$f_O = 45.75\text{MHz}$, e_1 (CW) = 10mV	0.4	0.8	1.6	V
AFT Drive Level Voltage	V_{14}		-	15	-	mV
Delay Bias Voltage	V_7	$f_O = 45.75\text{MHz}$, e_1 (CW) = 20mV; Adjust R_1 for $V_7 = 14\text{V}$	16	-	-	V
At $e_1 = 10\text{mV}$			0.5	-	2.0	V
At $e_1 = 30\text{mV}$						
3.58MHz Chroma Output Voltage	V_{19}	$f_O = 45.75\text{MHz}$, e_1 (step mod.) = 10mV; $f_1 = 42.17\text{MHz}$, e_1 (step mod.) = 3.33mV	0.5	0.8	-	V
4.5MHz Sound Output Voltage	V_2	$f_O = 45.75\text{MHz}$, e_1 (step mod.) = 10mV; $f_2 = 41.25\text{MHz}$, e_1 (step mod.) = 2.5mV	50	200	-	mV
Parallel Input Impedance		$f_O = 45.75\text{MHz}$				
Resistance at Pin6	R_{I-6}		4	-	-	k Ω
Capacitance at Pin6	C_{I-6}		-	2	-	pF
Resistance at Pin12	R_{I-12}		-	4.5	-	k Ω
Capacitance at Pin12	C_{I-12}		-	4	-	pF
Resistance at Pin13	R_{I-13}		-	5	-	k Ω
Capacitance at Pin13	C_{I-13}	-	4	-	pF	

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Parallel Output Impedance Resistance at Pin9	R_{O-9}	$f_O = 45.75\text{MHz}$	30	-	-	$k\Omega$
Capacitance at Pin9	C_{O-9}		-	3	-	pF
Cascode Transfer Characteristics Magnitude of Forward Transadmittance	$ y_f $		-	50	-	mmho
Reverse Transfer Capacitance	C_r		-	0.001	-	pF

Pin Connection Diagram

