

NTE1413 & NTE1545 Integrated Circuit Video IF Amplifier

Description:

The NTE1413 and NTE1545 are integrated circuits in a 16-Lead DIP type package designed for use as video IF amplifiers for color and monochrome television receivers

Features:

- Available for Two Types of Tuners:
 NPN Tuner (NTE1413)
 FET Tuner (NTE1545)
- High Gain, Wide Band IF Amplifier: 50dB Typ. at 58MHz
- Gain Reduction with Excellent Stability: 55dB Typ. at 58MHz
- Excellent DG/DP Characteristics:
 DG = 7% Typ.
 DP = 3.5 deg Typ.
- Excellent S/N Characteristics due to Delayed 3 Stages AGC Action
- Negative video output signal
- Fast AGC Action due to Noise Inverter and Peak AGC
- Switch Off the Video Part with VTR SW
- Dual Differential AFT Output

Functions:

- Three Controlled IF Amplifier Stages
- Video Demodulator Controlled by Picture Carrier
- Black Noise and White Noise Inverter
- Peak AGC
- DC Amplifier for RF AGC Out
- Quadrature Detector for AFT
- DC Amplifier for AFT

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

Supply Voltage, V_{CC}	15V
Open Loop Voltage, V_4	15V
Video DC Output Current, I_{12}	6mA
Power Dissipation, P_D	1.4W
Derate Above 25°C	11.2mW/ $^\circ\text{C}$
Operating Temperature Range, T_{opr}	-20° to $+65^\circ\text{C}$
Storage Temperature Range, T_{stg}	-55° to $+150^\circ\text{C}$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Recommended Supply Voltage	$V_{CC}(V_{11})$		10.8	12.0	13.2	V
Supply Current	$I_{CC}(I_{11})$	$V_{CC} = 12\text{V}$	42	51	63	mA
Video DC Output Voltage	V_{12}	$V_{CC} = 12\text{V}$	5.2	5.5	5.8	V
AFT DC Output Voltage	V_5	$V_{CC} = 12\text{V}$, SW_1 : ON, SW_2 : ON	5.3	6.8	8.3	V
	V_6	$V_{CC} = 12\text{V}$, SW_1 : ON, SW_2 : ON	5.3	6.8	8.3	V
AFT Output Offset Voltage	$V_5 - V_6$	$V_{CC} = 12\text{V}$, SW_1 : ON, SW_2 : ON	-1.5	0	+1.5	V
RF AGC Residual Output Voltage	V_4 SAT	$V_{CC} = 12\text{V}$, SW_3 : 2, SW_4 : 1 (NTE1545) SW_4 : 2 (NTE1413)	–	–	0.5	V
RF AGC Leakage Current	I_4 LEAK	$V_{CC} = 12\text{V}$, SW_3 : 1, SW_4 : 1 (NTE1413) SW_4 : 2 (NTE1545)	–	–	1	μA
Video Sensitivity	v_i Pin1 – 16	$V_{CC} = 12\text{V}$, $V_{12} = 0.8V_{P-P}$, $f_p = 58.75\text{MHz}$, AM: 30%	100	200	300	μV_{rms}
AGC Range	ΔA (IF)	$V_{CC} = 12\text{V}$, $f_p = 58.75\text{MHz}$, $V_{14} = 11.5\text{V} \rightarrow 4\text{V}$	60	64	–	dB
Sync Tip Level Voltage	V_{SYNC} (V_{12})	$V_{CC} = 12\text{V}$, $f_p = 58.75\text{MHz}$	2.3	2.5	2.7	V
Maximum IF Input Voltage	$v_{\text{IN MAX}}$	$V_{CC} = 12\text{V}$, $f_p = 58.75\text{MHz}$	100	120	–	mV_{rms}
White Noise Threshold	V_{WTH} (V_{12})	$V_{CC} = 12\text{V}$, $f_p = 58.75\text{MHz}$	5.8	6.2	6.6	V
White Noise Clamp Level	V_{WCL} (V_{12})	$V_{CC} = 12\text{V}$, $f_p = 58.75\text{MHz}$	3.7	4.1	4.5	V
Black Noise Threshold	V_{BTH} (V_{12})	$V_{CC} = 12\text{V}$, $f_p = 58.75\text{MHz}$	1.4	1.6	1.8	V
Black Noise Clamp Level	V_{BCL} (V_{12})	$V_{CC} = 12\text{V}$, $f_p = 58.75\text{MHz}$	2.9	3.3	3.7	V
Video Frequency Response	f_{BW}	Input 58.75MHz, +Sweep Generator	4.5	5.5	–	MHz
Suppression of Carrier		$SG_1 = 100\text{mV}_{\text{rms}}$, SG_2 , SG_3 : OFF	40	50	–	dB
Suppression of 2 nd Carrier	$I_{2\text{nd}}$	$SG_1 = 100\text{mV}_{\text{rms}}$, SG_2 , SG_3 : OFF	40	50	–	dB
Suppression of Sound Carrier Color Subcarrier	I_{920}	$SG_1 = 100\text{mV}_{\text{rms}}$, $SG_2 = 32\text{mV}_{\text{rms}}$, $SG_3 = 32\text{mV}_{\text{rms}}$	33	38	–	dB
Differential Phase	DP		–	3.5	5.0	deg.
Differential Gain	DG		–	7	10	%
Input Impedance	R_{IN}	$f = 58.75\text{MHz}$ Between Pin16 and Pin1	3.0	4.5	6.0	$\text{k}\Omega$
	C_{IN}		–	2.0	5.0	pF
AFT Sensitivity	$\frac{\Delta F}{\Delta V_{5-6}}$	$f = 58.75\text{MHz}$	–	16	–	kHz/V
AFT Output Upper Voltage	$V_5, V_6 \text{ U}$	$f = 58.75\text{MHz}$	11.7	11.9	12.0	V
AFT Output Lower Voltage	$V_5, V_6 \text{ L}$	$f = 58.75\text{MHz}$	1.8	2.3	2.8	V
Maximum Available Current	$I_4 \text{ MAX}$	NTE1413	7	–	–	mA
		NTE1545	0.3	–	–	mA
RF AGC Delay Point Range	$V_{\text{IN DELAY}}$	$f = 58.75\text{MHz}$	–	–	–	

Pin Connection Diagram

