



ELECTRONICS, INC.
 44 FARRAND STREET
 BLOOMFIELD, NJ 07003
 (973) 748-5089

NTE1747 Integrated Circuit TV Video Processing Circuit

Description:

The NTE1747 is an integrated circuit in a 28-Lead DIP type package designed for color TV video and chrominance signal processing circuit.

Features:

- Including Video and Chrominance Signal Processing Circuit on a Single Chip, for Compact Set Design
- Including Circuit For Compensating Skin Color

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

Supply Voltage, V_{CC} +14.4V
 Circuit Voltage, $V_{2,3,10,11-12,19,20,28-9}$ 0V to +14.4V
 Circuit Current, $I_{25,26,27,28,29}$ -40mA to 0mA
 Power Dissipation, P_D 1200mW
 Operating Ambient Temperature Range, T_{opr} -20° to $+70^\circ\text{C}$
 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
Total Circuit Current	I_{tot}	$V_{CC} = 12V$	40	54	67	mA
Demodulation Color Difference Output Voltage	$e_{o(max)}$	Rainbow 150mV _{P-P} , Contrast Max., Color Max.	4.6	5.3	6.0	V _{p-p}
Demodulation Color Difference Output Voltage	$e_{o(typ)}$	Rainbow 150mV _{P-P} , Contrast Max., Color Typ.	1.35	1.75	2.15	V _{p-p}
ACC Characteristics	ACC	Rainbow 15mV _{P-P} , ACC-eo Typ	0.65	0.88	1.05	times
Oscillation Frequency	f_{osc}	Difference between Pin8 input invalid signal & standard sample	-	-	± 150	Hz
f_{osc} Change with Supply Voltage	$\Delta f_{osc}/V_{CC}$	$V_{CC} = 12V \pm 20\%$, for $V_{CC} = 12V$	-	-	120	Hz
f_{osc} Change with Ambient Temperature	$\Delta f_{osc}/T_A$	$T_A = -20^\circ$ to $+70^\circ\text{C}$, for $T_A = +25^\circ\text{C}$	0	1.5	2.5	Hz/deg.
Control Sensitivity	β	Change to Pin18 Δf when V_1 (8.6V) and V_2 (8.2V) are applied to Pin15.	1.9	2.5	3.2	Hz.mV

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Phase Detector	μ	Apply $\Delta 0$ -changed frequency for burst phase to Pin18.	27	46	64	mV/deg
Phase Hold Characteristics	$\Delta\phi$	$\Delta\phi = 1 (\mu, \beta) \times 100$	–	1.0	1.6	deg/ 100Hz
APC Pull-in Range	f_{APC}	Rainbow 150mV _{P-P} measured by changing burst frequency	± 550	± 800	–	Hz
Demodulation Output Ratio	R/B	Demodulator input 0.5V _{P-P} , f = 3.59MHz	0.84	0.93	1.02	times
Demodulation Output Ratio	G/B	Demodulator input 0.5V _{P-P} , f = 3.59MHz	0.25	0.29	0.33	times
Demodulation Angle	<R	Demodulator input 0.5V _{P-P} , f = 3.59MHz, LB = 0dg	86.5	90.0	94.5	deg.
Demodulation Angle	<G	Demodulator input 0.5V _{P-P} , f = 3.59MHz, LB = 0dg	229	236	243	deg.
Color Killer Level	e_k	Attenuation from rainbow 150mV _{P-P} (=0dB) to killer operation	–35	–40	–45	dB
Video Voltage Amplification	A_{V1}	Sine wave input 0.3V _{P-P} at 20kHz, contrast max., picture min.	7.0	7.7	8.4	times
	A_{V2}	Sine wave input 0.3V _{P-P} at 20kHz, contrast 75%	6.3	7.0	7.6	times
DC Transfer Rate	T_{DC}	Video input 0.5V _{P-P} (stair step), APL10 % to 90%. Contrast max. Picture min.	86.0	90.5	95.0	%
Differential Gain	DG	Video input 0.5V _{P-P} (stair step), APL10 ~ 90%. Contrast max. picture min.	–	–	5	%
Demodulation DC Output Voltage	$E_{O(DC)}$	Input invalid signal, V_{CO} oscillation, demodulator outputs	7.20	7.60	8.05	V
DC Voltage Difference Between Demodulation Outputs	ΔE_{X-Y}	Differential voltage of demodulator outputs	–	–	300	mV
ΔE_O Change with Supply Voltage	$\Delta E_{X-Y}/V_C$	$V_{CC} = 12V \pm 20\%$, for $V_{CC} = 12V$	–	0	± 60	mV
ΔE_O Change with Ambient Temperature	$\Delta E_{X-Y}/T_A$	$T_A = -20 \sim +70^\circ\text{C}$. for $T_A = +25^\circ\text{C}$	–	0	± 60	mV
AIC Switching Level	V_{SW}	f = 3.58MHz, Pin21 level when Pin 0 = 10V	160	260	340	mV _{P-P}
Chroma Voltage Gain	$G_{Vchroma}$	Chroma/Burst 350/150mV _{P-P} , Phase 123	1.6	2.2	2.7	V _{P-P}
AIC Voltage Gain	G_{VAIC}	Chroma/Burst 200/150mV _{P-P} , Phase 123' color killer OFF	14.5	19.0	23.5	dB
AIC Sensitivity	S_{AIC}	Chroma/Burst 300/100mV _{P-P} , Phase 0 tint center	0.7	1.15	1.5	V _{P-P}
Phase Compensation Center	θ_0		115	123	134	deg.
Phase Compensation Range	θ_{c1}		100	112	124	deg.
Phase Compensation Range	θ_{c2}	Chroma/Burst 150mV _{P-P}	–108	–120	–132	deg.
Phase Compensations Quantity	θ_{Q1}	Color Compensation ON	17	21.5	26	deg.
Phase Compensations Quantity	θ_{Q2}		–18	–22.5	–28	deg.
Max. Phase Compensation Quantity	θ_{Qmax1}		51	59	67	deg.
	θ_{Qmax2}		–55	–63	–71	deg.

Pin Connection Diagram

Pedestal Clamp Filter	1	28	Picture Control
Brightness Control	2	27	B – Y Demod Output
Contrast Control	3	26	G – Y Demod Output
Blank Level Filter	4	25	R – Y Demod Output
Video Signal Input (1)	5	24	VCO Filter
Video Signal Input (2)	6	23	Video Signal Output
Chrominance Signal Bypass	7	22	VCO Filter
Chrominance Signal Input	8	21	AIC Input
GND	9	20	Blanking Pulse Input
Color Control	10	19	AIC Color Compensation Switch
Tint Control	11	18	VCO Input
Burst Gate Pulse Input	12	17	VCO Output
V _{CC}	13	16	Color Killer Filter
ACC Filter	14	15	APC Filter

