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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°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°C
Storage Temperature Range, T_{stg} . . . . . –55° to +150°C

Electrical Characteristics: (T_A = +25°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 150m$V_{P–P}$, Contrast Max., Color Max.	4.6	5.3	6.0	$V_{p–p}$
Demodulation Color Difference Output Voltage	$e_{o(typ)}$	Rainbow 150m$V_{P–P}$, Contrast Max., Color Typ.	1.35	1.75	2.15	$V_{p–p}$
ACC Characteristics	ACC	Rainbow 15m$V_{P–P}$, ACC–eo Typ	0.65	0.88	1.05	times
Oscillation Frequency	f_{osc}	Difference between Pin8 input invalid signal & standard sample	–	–	±150	H_z
f_{osc} Change with Supply Voltage	$\Delta f_{osc}/V_{CC}$	V_{CC} = 12V ±20%, for V_{CC} = 12V	–	–	120	Hz
f_{osc} Change with Ambient Temperature	$\Delta f_{osc}/T_A$	T_A = –20° to +70°C, for T_A = +25°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°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Phase Detector	μ	Apply Δ0–changed frequency for burst phase to Pin18.	27	46	64	mV/deg
Phase Hold Characteristics	$\Delta\phi$	$\Delta\phi = 1\ (\mu.\beta)$ x 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	$\Delta E_{X-Y}/V_{CC}$	V_{CC} = 12V ± 20%, for V_{CC} = 12V	–	0	±60	mV
ΔE_O Change with Ambient Temperature	$\Delta E_{X-Y}/T_A$	T_A = –20 ~ +70°C. for T_A = +25°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