



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 | $\angle R$ | Demodulator input 0.5V _{P-P} , f = 3.59MHz, LB = 0dg | 86.5 | 90.0 | 94.5 | deg. |
| Demodulation Angle | $\angle G$ | 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 |

