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# NTE1130
# Integrated Circuit
# Color TV Demodulator

**Features:**
- Color TV Demodulator (Function)
- Color Difference Signal Amplifier
- Chroma Demodulator
- Color Matrix Circuit
- DC Hue Control
- High Sensitivity:
  Output $V_B$ –Y = $2.5V_{p–p}$
  Input $0.2V_{p–p}$
- Including MOS Capacitance for Filter
- Hue is controlled by DC Voltage

**Absolute Maximum Ratings:** ($T_A$ = +25°C unless otherwise specified)

Supply Voltage ($V_{13}$), $V_{CC}$ . . . . . 18V
Hue Output terminal Voltage, $V_{12}$ . . . . . 18V
Hue Control Terminal Voltage, $V_9$ . . . . . 0 to $V_{CC}$
Chroma Signal Input, $e_C$ . . . . . $4V_{P–P}$
Reference Signal Input Voltage, $e_R$ . . . . . $4V_{P–P}$
Sub–Carrier Input Voltage, $V_{10}$, $V_{11}$ . . . . . $4V_{P–P}$
Minimum Load Resistance, $R_L$ . . . . . 3kΩ
Power Dissipation, $P_D$ . . . . . 750mW
Derate Above 25°C . . . . . 6.0mW/°C
Operating Temprature Range, $T_{opr}$ . . . . . –20° to +65°C
Storage Temperature Range, $T_{stg}$ . . . . . –55° to +150°C

**Electrical Characteristics:** ($T_A$ = +25°C, $V_{CC}$ = 15V, $R_L$ = 5.6kΩ unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **Static Characteristics** | | | | | | |
| Operating Supply Voltage | $V_{CC}$ | | 13.5 | 15.0 | 16.5 | V |
| Output Terminal Voltage | $V_{14, 15, 16}$ | $R_L$ = 5.6kΩ | 8.8 | 9.8 | 10.8 | V |
| Supply Current | $I_{CC}$ | $R_L$ = ∞ | 6.0 | 10.4 | 15.0 | mA |
| | | $R_L$ = 5.6kΩ | 11.0 | 16.8 | 23.0 | mA |
| Reference Signal Input Terminal Voltage | $V_3$ | $R_L$ = 5.6kΩ | – | 5.9 | – | V |

**Electrical Characteristics (Cont'd):** ($T_A$ = +25°C, $V_{CC}$ = 15V, $R_L$ = 5.6kΩ unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Chroma Signal Input Terminal Voltage | $V_4$ | $R_L$ = 5.6kΩ | – | 3.8 | – | V |
| Sub–Carrier Signal Input Terminal Voltage | $V_{10}$ | $R_L$ = 5.6kΩ | – | 1.35 | – | V |
| Difference Voltage Between Terminals | | $R_L$ = 5.6kΩ | – | – | 0.4 | V |
| Output Voltage Temperature Coefficient | | $R_L$ = 5.6kΩ | –3.0 | – | +3.0 | mV/°C |
| Output Difference Voltage Temperature Coefficient | | $R_L$ = 5.6kΩ | –2.0 | – | +2.0 | mV/°C |
| Hue Circuit Output Current | $I_{12}$ | Pin9: Open | – | 2.1 | – | mA |
| **Dynamic Characteristics** (f = 3.58MHz) | | | | | | |
| R–Y Output Voltage | $V_{R-Y}$ | $V_{B-Y}$ = 2.5$V_{P-P}$, $e_r$ = 0.5$V_{P-P}$ | 1.9 | 2.1 | 2.3 | $V_{P-P}$ |
| G–Y Output Voltage | $V_{G-Y}$ | | 0.5 | 0.6 | 0.7 | $V_{P-P}$ |
| Relative Output Phase R–Y to B–Y Output | $\theta_R$ | | 110 | 115 | 120 | deg. |
| G–Y to B–Y Output | $\theta_G$ | | 247 | 255 | 263 | deg. |
| B–Y Output Voltage | $V_{B-Y}$ | $e_R$ = 0.5$V_{P-P}$, $e_C$ = 1.0$V_{P-P}$ | 4.5 | 6.0 | – | $V_{P-P}$ |
| Chroma Signal Input Voltage | $e_C$ | $V_{B-Y}$ = 2.5$V_{P-P}$, $e_R$ = 0.5$V_{P-P}$ | – | 200 | 300 | $V_{P-P}$ |
| Harmonic Output Voltage | | $V_{B-Y}$ = 2.5$V_{P-P}$ | – | – | 0.6 | $V_{P-P}$ |
| Residual Carrier Level | | $e_C$ = 0, $e_R$ = 0.5$V_{P-P}$ | – | 50 | 300 | $V_{P-P}$ |
| Hue Output Regulation | | Max/Min | – | – | 1.7 | |
| Hue Max. Output Swing | | $e_i$ = 1.0$V_{P-P}$ | 2.0 | – | – | $V_{P-P}$ |
| Hue Phase Shift | | Pin9: 0 to 15V | 70 | 100 | – | deg. |
| Sub–Carrier Terminal Input Impedance Parallel Input Resistance | $r_{ip}$ | | – | 2.1 | – | kΩ |
| Parallel Input Capacitance | $c_{ip}$ | | – | 4.0 | – | pF |
| Reference Signal Terminal Input Impedance Parallel Input Resistance | $r_{ip}$ | Pin1, Pin2 | – | 2.0 | – | kΩ |
| Parallel Input Capacitance | $c_{ip}$ | | – | 4.0 | – | pF |
| Chroma Signal Terminal Input Impedance Parallel Input Resistance | $r_{ip}$ | Pin5, Pin6 | – | 2.0 | – | kΩ |
| Parallel Input Capacitance | $c_{ip}$ | | – | 4.0 | – | pF |
| Hue Circuit Terminal Input Impedance Parallel Input Resistance | $r_{ip}$ | Pin12 | – | 100 | – | kΩ |
| Parallel Input Capacitance | $c_{ip}$ | | – | 6 | – | pF |
| Hue Circuit Voltage Gain | $G_{VH}$ | $R_L$ = 1kΩ | 5 | 9 | 13 | dB |

**Pin Connection Diagram**