

## 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:** ( $T_A = +25^\circ C$  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, $R_L$ .....	$3k\Omega$
Power Dissipation, $P_D$ .....	750mW
Derate Above $25^\circ C$ .....	$6.0mW/^\circ C$
Operating Temperature Range, $T_{opr}$ .....	$-20^\circ$ to $+65^\circ C$
Storage Temperature Range, $T_{stg}$ .....	$-55^\circ$ to $+150^\circ C$

**Electrical Characteristics:** ( $T_A = +25^\circ C$ ,  $V_{CC} = 15V$ ,  $R_L = 5.6k\Omega$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Operating Supply Voltage	$V_{CC}$		13.5	15.0	16.5	V
Output Terminal Voltage	$V_{14, 15, 16}$	$R_L = 5.6k\Omega$	8.8	9.8	10.8	V
Supply Current	$I_{CC}$	$R_L = \infty$	6.0	10.4	15.0	mA
		$R_L = 5.6k\Omega$	11.0	16.8	23.0	mA
Reference Signal Input Terminal Voltage	$V_3$	$R_L = 5.6k\Omega$	-	5.9	-	V

**Electrical Characteristics (Cont'd):** ( $T_A = +25^\circ\text{C}$ ,  $V_{CC} = 15\text{V}$ ,  $R_L = 5.6\text{k}\Omega$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Chroma Signal Input Terminal Voltage	$V_4$	$R_L = 5.6\text{k}\Omega$	–	3.8	–	V
Sub-Carrier Signal Input Terminal Voltage	$V_{10}$	$R_L = 5.6\text{k}\Omega$	–	1.35	–	V
Difference Voltage Between Terminals		$R_L = 5.6\text{k}\Omega$	–	–	0.4	V
Output Voltage Temperature Coefficient		$R_L = 5.6\text{k}\Omega$	–3.0	–	+3.0	mV/°C
Output Difference Voltage Temperature Coefficient		$R_L = 5.6\text{k}\Omega$	–2.0	–	+2.0	mV/°C
Hue Circuit Output Current	$I_{12}$	Pin9: Open	–	2.1	–	mA
<b>Dynamic Characteristics</b> ( $f = 3.58\text{MHz}$ )						
R–Y Output Voltage	$V_{R-Y}$	$V_{B-Y} = 2.5V_{P-P}$ , $e_r = 0.5V_{P-P}$	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	$V_{B-Y}$	$e_R = 0.5V_{P-P}$ , $e_C = 1.0V_{P-P}$	4.5	6.0	–	$V_{P-P}$
Chroma Signal Input Voltage	$e_C$	$V_{B-Y} = 2.5V_{P-P}$ , $e_R = 0.5V_{P-P}$	–	200	300	$V_{P-P}$
Harmonic Output Voltage		$V_{B-Y} = 2.5V_{P-P}$	–	–	0.6	$V_{P-P}$
Residual Carrier Level		$e_C = 0$ , $e_R = 0.5V_{P-P}$	–	50	300	$V_{P-P}$
Hue Output Regulation		Max/Min	–	–	1.7	
Hue Max. Output Swing		$e_i = 1.0V_{P-P}$	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	–	k $\Omega$
Parallel Input Capacitance	$C_{ip}$		–	4.0	–	pF
Reference Signal Terminal Input Impedance Parallel Input Resistance	$r_{ip}$	Pin1, Pin2	–	2.0	–	k $\Omega$
Parallel Input Capacitance	$C_{ip}$		–	4.0	–	pF
Chroma Signal Terminal Input Impedance Parallel Input Resistance	$r_{ip}$	Pin5, Pin6	–	2.0	–	k $\Omega$
Parallel Input Capacitance	$C_{ip}$		–	4.0	–	pF
Hue Circuit Terminal Input Impedance Parallel Input Resistance	$r_{ip}$	Pin12	–	100	–	k $\Omega$
Parallel Input Capacitance	$C_{ip}$		–	6	–	pF
Hue Circuit Voltage Gain	$G_{VH}$	$R_L = 1\text{k}\Omega$	5	9	13	dB

### Pin Connection Diagram

