

NTE1810 Integrated Circuit Color TV Video System

Description:

The NTE1810 is an integrated circuit in a 28-Lead DIP ype package designed for color TV and VCR IF and audio IF processing circuits.

Features:

- PLL True Synchronous Detector Incorporates VCO
- Quadrature Sound FM Detector
- Frequency Characteristics Compensation Terminal (Pin20), VCR Switch Terminal (Pin5)
- Sound Output Level Adjustment Terminal (Pin25)

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

Supply Voltage, V_{CC}	13.8V
Circuit Voltage	
$V_{5-1,14,21}$	$V_{4,12-1,14,21}$ to 0V
$V_{6-1,14,21}$	$V_{4,12-1,14,21}$ to 0V
$V_{7-1, 14,21}$	$V_{4,12-1,14,21}$ to 0V
$V_{10-1,14,21}$	$V_{4,12-1,14,21}$ to 0V
$V_{18-1,14,21}$	$V_{4,12-1,14,21}$ to 0V
$V_{25-1,14,21}$	8.0V to 0V
Circuit Current	
I_{17}	-7mA to +0.5mA
I_{19}	-7mA to +0.5mA
I_{26}	-5mA to +0.5mA
Power Dissipation ($T_A = +70^{\circ}\text{C}$), P_D	1300mW
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: ($V_{CC} = 12V$, $T_A = +25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
IF Amplifier • Detection • AGC • AFC Circuit						
Video Detector Output	V_O	$f = 58.75MHz$, $V_i = 80dB\mu$, $m = 87.5\%$	1.9	2.2	2.5	V_{p-p}
Input Sensitivity	$S_{(IN)}$	$V_O = -3dB$	49	53	57	$dB\mu$
Max. Allowable Input	$V_{I(max)}$		103	108	—	$dB\mu$
Differential Gain	DG	$f = 58.75MHz$, $V_i = 80dB\mu$, $m = 87.5\%$	—	2	6	%
Differential Phase	DP	$f = 58.75MHz$, $V_i = 80dB\mu$, $m = 87.5\%$	—	2	5	deg
Frequency Characteristics	f_c	$V_O = -3dB$	4.5	5	6	MHz
RF AGC Gain	G_{RFAGC}	$f = 10kHz$, $V_i = 10mV$	40	44	48	dB
AFC Phase Det. Sensitivity	μ	$R_L = 68\Omega/82k\Omega$	30	40	60	mV/kHz
AFC Center Voltage	V_{10}	$R_L = 68k\Omega/82k\Omega$	4.2	6.5	8.2	V
VCO APC Circuit						
VCO Max. Variable Range	$\Delta f_{V(1)}$	$V_{13} = 2V$	+0.85	+1.5	+2.5	MHz
	$\Delta f_{V(2)}$	$V_{13} = 3V$	−4.0	−2.4	−1.4	MHz
VCO Control Sensitivity	β		3	4.5	6	kHz/mV
APC Pull-In Range	$f_{APC(1)}$		+0.85	+1.5	+2.5	MHz
	$f_{APC(2)}$		−3.5	−2.5	−1.6	MHz
SIF Circuit						
Total Detector Output	V_O	$f_o = 4.5MHz$, $f_m = 400Hz$, $\Delta f = \pm 25kHz$, $V_i = 100V_{ms}$	400	500	650	mV_{rms}
Input Limiting Voltage	$V_{i(lim)}$	$f_o = 4.5MHz$, $f_m = 400Hz$	—	36	40	$dB\mu$
DC Characteristics						
Circuit Current	$I_4 + I_{12}$		50	70	90	mA

Pin Connection Diagram

GND	1	28	SIF Coil
IF Input	2	27	SIF Coil
IF Input	3	26	Sound Output
V_{CC}	4	25	Sound Output Level Adjust
IF AGC Filter	5	24	SIF Input Bias
RF AGC Delay Adjust	6	23	SIF Input
RF AGC Output	7	22	SIF Input Bias
Lock Detect Filter	8	21	GND
AFC Coil	9	20	Video f Character Compensation
AFC Output	10	19	Video Output
APC Filter Switch	11	18	Video Input
V_{CC} (VCO)	12	17	Detector Output
APC Filter	13	16	VCO Coil
GND (VCO)	14	15	VCO Coil

