



**ELECTRONICS, INC.**  
 44 FARRAND STREET  
 BLOOMFIELD, NJ 07003  
 (973) 748-5089

## 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, $T_{opr}$ .....	$-20^\circ$ to $+70^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-55^\circ$ 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
<b>IF Amplifier • Detection • AGC • AFC Circuit</b>						
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	$\mu$	$R_L = 68\Omega/82k\Omega$	30	40	60	$mV/kHz$
AFC Center Voltage	$V_{10}$	$R_L = 68k\Omega/82k\Omega$	4.2	6.5	8.2	V
<b>VCO APC Circuit</b>						
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	$\beta$		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
<b>SIF Circuit</b>						
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	$dB\mu$
<b>DC Characteristics</b>						
Circuit Current	$I_4+I_{12}$		50	70	90	mA

**Pin Connection Diagram**

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

