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## NTE7060 Integrated Circuit NTSC Single Chip Color TV Signal Processor

**Description:**

The NTE7060 is an integrated circuit in a 52-Lead DIP type package that combines all of the signal (VIF, SIF, Video, Color and Synchronous Signal) processing circuits in NTSC color TV onto one chip.

**Features:**

- VIF Circuit using PLL Complete Synchronous Detection
- Audio External Input Pin and Volume Adjusting Circuit Built-In
- Y Delay Line Built-In and Y Delay Line Switchable
- Block Level Compensation Circuit Built-In
- 3.58MHz BPF Built-In
- APC Killer Filter Built-In (No Adjustment of ACP)
- On-Screen Pin Attached (Only for Green and Other Output Blanking)
- Compatible with S-VHS System (3.58MHz ON/OFF Switching)
- No Adjustment of Horizontal/Vertical Oscillation Frequency
- Horizontal Synchronous Lock Detecting Pin Attached
- Service Switch Circuit Built-In (Vertical Out Stop, Y Out Blanking)
- Y Output is Black Level when No Synchronous Signal is Input

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

Supply Voltage, $V_{CC1}$ .....	12V
Supply Current ( $I_{43}$ ), $I_{CC}$ .....	82mA
Supply Current ( $I_9$ ), $I_{CC}$ .....	30mA
Supply Current ( $I_{32-19}$ ), $I_{CC}$ .....	61mA
Power Dissipation ( $T_A = +70^\circ\text{C}$ ), $P_D$ .....	1.3mW
Operating Ambient Temperature Range, $T_{opr}$ .....	$-20^\circ$ to $+70^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-55^\circ$ to $+150^\circ\text{C}$

**Recommended Operating Range:** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Operating Supply Voltage Range, $V_{CC1}$ .....	8.1V to 9.9V
Operating Supply Voltage Range, $V_{CC3,4}$ .....	4.5V to 5.5V

**Electrical Characteristics:** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>VIF Section</b>						
Video Detection Output	$V_{O21}$	$M = 87.5\%$ , $V_{in} = 80\text{dB}\mu$	1.75	2.0	2.25	$V_{P-P}$
Video Frequency Characteristics	$f_C$	-3dB Frequency for 1MHz Detection Output	4.0	5.5	-	MHz
VCO Oscillator Sensitivity	$\beta$	$\Delta V_{20} = 0.2\text{V}$ (DC: About 2V)	3.0	4.3	6.5	kHz/mV
RF AGC Sensitivity	$G_{RF}$	Difference in Input Level of $V_{33} = 1\text{V} \rightarrow 7\text{V}$	-	1.5	3.0	dB
AFC Phase Detector Sensitivity	$\mu_{AFC}$	$R_L = 100\text{k}\Omega/100\text{k}\Omega$	25	40	55	mV/kHz
<b>SIF Section</b>						
Audio Detection Output	$V_{O27}$	$f_O = 4.5\text{MHz}$ , $V_{in} = 100\text{dB}\mu$ , $\Delta f = \pm 25\text{kHz}$ , $f_m = 1\text{kHz}$	125	155	185	$\text{mV}_{\text{rms}}$
Audio Output	$V_{O28}$		410	530	650	$\text{mV}_{\text{rms}}$
<b>Video Signal Processing Section</b>						
Video Voltage Gain	$A_V$	Input: $f = 1\text{MHz}$ , $0.2V_{P-P}$ , Contrast VR: Max	7.6	9.3	12.2	Times
Video Frequency Characteristics	$f_{YC}$	Picture Quality VR: Min., 3dB Down from $f = 1\text{MHz}$	4.5	5.5	-	MHz
Brightness Oscillator Sensitivity	BR	Bright VR = 7.5V to 8V	-4.5	-3.6	-2.7	Times
<b>Chroma Signal Processing Section</b>						
Color Difference Output (Typ.)	$e_{O1B}$	B-Y Color Bar Signal Color VR: 3.3V, Contrast VR: 5V	2.3	3.0	3.7	$V_{P-P}$
Color Difference Output (Max.)	$e_{O2B}$	B-Y Color Bar Signal Color VR: 5V, Contrast VR: 5V	3.7	4.7	5.7	$V_{P-P}$
ACC Characteristics	ACC	Burst 200 $\rightarrow$ 400mV $_{P-P}$	0.9	1.0	1.1	Times
		Burst 200 $\rightarrow$ 20mV $_{P-P}$	0.5	0.7	1.0	Times
Demodulator Output Ratio	R/B	Color Bar Signal (Burst 200mV $_{P-P}$ )	0.72	0.96	1.2	Times
	G/B		0.22	0.31	0.39	Times
Demodulator Angle R	$\angle R$		89	104	119	Deg.
Demodulator Angle G	$\angle G$		225	240	255	Deg.
Color Killer Tolerance	$e_K$		Color Bar Signal Burst 200mV $_{P-P} = 0\text{dB}$	-55	-42	-30
<b>Synchronous Signal Processing Section</b>						
Horizontal Natural Oscillation Frequency	$f_{HO}$	Output frequency of Pin4	15.45	15.75	16.05	kHz
Horizontal Pull-In Range	$f_{PH}$		15.25	-	16.25	kHz

### Pin Connection Diagram

GND	<b>1</b>		<b>52</b>	Sharpness
Vertical Output	<b>2</b>		<b>51</b>	Pedestal Blank
X-Ray Protect	<b>3</b>		<b>50</b>	Brightness Adjustment
Horizontal Output	<b>4</b>		<b>49</b>	Black Level Compensation
GND	<b>5</b>		<b>48</b>	Y Output
Horizontal Oscillation (VCO)	<b>6</b>		<b>47</b>	On-Screen Input (G-Y)
Horizontal AFC Output	<b>7</b>		<b>46</b>	B-Y Output
FBP Sawtooth Input	<b>8</b>		<b>45</b>	G-Y Output
V <sub>CC2</sub> (6.1V)	<b>9</b>		<b>44</b>	R-Y Output
Flyback Pulse Input	<b>10</b>		<b>43</b>	V <sub>CC1</sub> (9V)
Sync Separator Input	<b>11</b>		<b>42</b>	Tint Adjustment
Vertical Sync Input	<b>12</b>		<b>41</b>	Color Saturation Adjustment
Y Input	<b>13</b>		<b>40</b>	Contrast Adjustment/Service SW
Vertical Sync Output	<b>14</b>		<b>39</b>	3.58MHz Oscillation
Chroma Input	<b>15</b>		<b>38</b>	ACC Detection Filter
Horizontal AFC Lock Detect	<b>16</b>		<b>37</b>	GND
VCO Coil Pin	<b>17</b>		<b>36</b>	VIF Input
VCO Coil Pin	<b>18</b>		<b>35</b>	VIF Input
V <sub>CC4</sub> (5V)	<b>19</b>		<b>34</b>	V <sub>CC3</sub> (5V)
APC Filter	<b>20</b>		<b>33</b>	RF AGC Output
Video Detection Output	<b>21</b>		<b>32</b>	IF AGC Output/AV Switching
AFC Tank Circuit	<b>22</b>		<b>31</b>	RF AGC Delay Adjustment
AFC Tank Circuit	<b>23</b>		<b>30</b>	SIF Coil
AFC Output	<b>24</b>		<b>29</b>	SIF Coil
SIF Input/Volume Adjustment	<b>25</b>		<b>28</b>	Audio Output
Audio Feedback	<b>26</b>		<b>27</b>	Audio Detection Output/External Audio Input

