

## NTE1664 Integrated Circuit TV Horizontal/Vertical Sync Signal Processor

**Description:**

The NTE1664 is a silicon monolithic integrated circuit in a 22-Lead DIP type package designed for use as a horizontal deflection circuit and vertical deflection circuit for color TV sets. This device contains two synchronization signal separators, a vertical oscillator, vertical sawtooth shaper, vertical pre-driver, vertical retrace blanking pulse generator, horizontal AFC, horizontal oscillator, horizontal pre-driver, and an abnormal high voltage prevention circuit.

**Features:**

- Two Synchronous Signal Separators for Very Stable Synchronization (Horizontal and Vertical Signals are Independent of Each Other)
- Remarkably Improved Interlace Tracking due to Separate Wiring of Horizontal and Vertical Sections
- Wide Range of Vertical Retrace Blanking Time due to Adjust Pin
- Very Low Oscillation Frequency Drift of Vertical and Horizontal Oscillator Against Ambient Temperature

**Absolute Maximum Ratings:** ( $T_A = +25^\circ\text{C} \pm 3^\circ\text{C}$  unless otherwise specified)

Vertical Power Supply Voltage, $V_{21}$ .....	15V
Horizontal Power Supply Current Drain, $I_{11}$ .....	30mA
Vertical Output Current, $I_{14}$ .....	-30mA to +0mA
Horizontal Output Current, $I_{10}$ .....	-10mA to +10mA
Power Dissipation ( $T_A = +75^\circ\text{C}$ ), $P_D$ .....	600mW
Operating Temperature Range, $T_{opr}$ .....	$-20^\circ$ to $+75^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-40^\circ$ to $+125^\circ\text{C}$

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

Vertical Power Supply Voltage, $V_{21}$ .....	12V
Horizontal Power Supply Drain Current, $I_{11}$ .....	15mA

**Electrical Characteristics:** ( $T_A = +25^\circ\text{C}$ ,  $V_{21} = 12\text{V}$ ,  $I_{11} = 15\text{mA}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Vertical Power Supply Current	$I_{21}$	$V_{21} = 12\text{V}$	10.5	14.0	17.5	mA
Horizontal Power Supply Voltage	$V_{11}$	$I_{11} = 15\text{mA}$	12.0	13.0	14.5	V
Vertical Free-Running Frequency	$f_{vo}$	$C_{18} = 1\mu\text{F}$ , $R_{17} = 33\text{k}\Omega$	48	50	53	Hz
Vertical Free-Running Frequency Drift	$\Delta f_{vo}(V_{CC})$	$\Delta f_{vo}(V_{CC}) =  f_{vo}(9.6\text{V}) - f_{vo}(14.4\text{V}) $	0	0.8	1.0	Hz
	$\Delta f_{vo}(T_A)$	$\Delta f_{vo}(T_A) =  f_{vo}(-20^\circ\text{C}) - f_{vo}(+75^\circ\text{C}) $	0	0.6	1.0	Hz
Vertical Synchronizing Capture Frequency	$f_{pv}$		46	48	50	Hz
Output Middle Voltage	$V_{MID}$	Output Power: NTE1676	12	13	14	V
Output Middle Voltage Drift	$\Delta V_{MID}(T_A)$	$\Delta V_{MID}(T_A) =  V_{MID}(-20^\circ\text{C}) - V_{MID}(+75^\circ\text{C}) $	0	–	1.0	V
Retrace Pulse Width	RPW (1)	$C_{13} = 0.047\mu\text{F}$ , $R_{13} = 30.75\text{k}\Omega$	0.95	1.0	1.05	ms
	RPW (2)	$C_{13} = 0.1\mu\text{F}$ , $R_{13} = 28.5\text{k}\Omega$	1.9	2.0	2.1	ms
Retrace Pulse Voltage	RPV		10	11	–	$V_{P-P}$
Horizontal Power Supply Voltage Drift	$\Delta V_{11}(T_A)$	$\Delta V_{11}(T_A) =  \Delta V_{11}(-20^\circ\text{C}) - \Delta V_{11}(+75^\circ\text{C}) $	–	–	130	mV
Horizontal Synchronizing Capture Frequency	$f_{PH}$	$C_5 = 5600\text{pF}$	$\pm 500$	$\pm 700$	$\pm 900$	Hz
Efficiency of Horizontal Oscillation Control	$\beta$		38	40	45	Hz/ $\mu\text{A}$
AFC Detector Gain	$\mu$		190	300	420	$\mu\text{A}/\text{rad}$
Horizontal Free-Running Frequency	$f_{HO}$	$C_5 = 5600\text{pF}$ , $R_5 = 14.5\text{k}\Omega$	15.00	15.75	16.50	kHz
Horizontal Free-Running Frequency Drift	$\Delta f_{HO}(I_{11})$	$\Delta f_{HO}(I_{11}) =  f_{HO}(15\text{mA}) - f_{HO}(9\text{mA}) $	0	–	50	Hz
	$\Delta f_{HO}(T_A)$	$\Delta f_{HO}(T_A) =  f_{HO}(-20^\circ\text{C}) - f_{HO}(+75^\circ\text{C}) $	0	40	100	Hz
Horizontal Output Pulse Width	PWH		24.5	26.0	27.5	$\mu$
Horizontal Output Pulse Voltage	PWV		10	11	–	$V_{P-P}$
Horizontal Output Current	$I_{10}$		–3.5	–4.5	–6.0	mA
X-Ray Protector Input Voltage	$V_6$	$V_7 = 6.2\text{V}$	–0.1	–	+0.1	V

**Pin Connection Diagram**



