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## NTE7083 Integrated Circuit Vertical Deflection Circuit for Monitor Applications

**Description:**

The NTE7083 is an integrated circuit in a 13-Lead Staggered SIP type package designed for vertical deflection primarily in monitors and TV receivers.

**Features:**

- Fully Integrated, Few External Components
- RC Oscillator with Wide Sync Range
- Guard Circuit for Screen Protection
- Synchronization by Positive or Negative Going Sync Pulse
- Preamplifier
- Flyback Generator
- Internal Voltage Stabilizer
- Dual Frequency Criterion for Automatic Amplitude Switch-Over

**Absolute Maximum Ratings:**

Parameter	Symbol	Test Conditions	Min	Max	Unit
Voltages	V <sub>2</sub>		0	6	V
	V <sub>11</sub>		0	24	V
	V <sub>12</sub>		0	6	V
	V <sub>13</sub>		0	50	V
Supply Voltages (V <sub>P</sub> )	V <sub>10</sub>		0	50	V
	V <sub>9</sub>		0	50	V
	V <sub>7</sub>		0	60	V
	V <sub>6</sub>		0	60	V
	V <sub>5</sub>		0	6	V
	V <sub>4</sub>		0	24	V
	V <sub>3</sub>		-0.7	6	V
Currents	I <sub>1</sub>		0	-1	mA
	I <sub>3</sub>		+3	-10	mA
	I <sub>4</sub>		0	-5	mA
	I <sub>6, I7, I8</sub>	Note 1			
	I <sub>9</sub>		-1.5	+1.5	A
	I <sub>11</sub>		-0.1	+3.0	mA

Note 1. I<sub>6</sub>, I<sub>7</sub>, and I<sub>8</sub> are limited by SOAR protection circuit that ensures that a short-circuit between the output Pin7 and supply voltage or GND does not destroy the output stage. A short circuit may be soldered into the printed circuit board or may sometimes (non-periodically) occur in the applied circuit.

**Absolute Maximum Ratings (Cont'd):**

Parameter	Symbol	Test Conditions	Min	Max	Unit
Storage Temperature Range	$T_{stg}$		-25	+150	°C
Operating Ambient Temperature Range	$T_A$	Note 2	-20	+70	°C
Maximum Junction Temperature	$T_{Jmax}$	Note 3	-	+150	°C
Total Power Dissipation	$P_{tot}$	Note 2	-	-	W
ESO Stability	$V_{ESO}$	Note 4	-2000	+2000	V
Thermal Resistance, Junction-to-Ambient	$R_{thJA}$		-	20	K/W
Thermal Resistance, Junction-to-Mounting Base	$R_{thJMB}$		-	5	K/W

Note 2. The maximum value to the operating ambient temperature range and the power dissipation depends on the heatsink.

Note 3. Internally limited by thermal protection: switching temperature point at  $T_J = +150^\circ\text{C} \pm 8^\circ\text{C}$ .

Note 4. Human body model: 1.5k $\Omega$ , 100pF, 5 pulses.

**Electrical Characteristics:** (All voltages are measured to  $V_{GND}$  (Pin8),  $T_A = +25^\circ\text{C}$ ,  $V_P = +23\text{V}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Voltage Range (Pin10)	$V_P$		10	-	45	V
Supply Voltage Range (Pin6)	$V_P$		10	-	30	V
Supply Current	$I_{10}$	$V_{10} = 25\text{V}$ , $V_5 = 3\text{V}$ without load	-	12	-	mA
Supply Current	$I_6$	$V_6 = 25\text{V}$ , $V_5 = 1\text{V}$ without load	-	20	-	mA
Supply Current	$I_6$	$V_6 = 25\text{V}$ , $V_5 = 3\text{V}$ withput load	-	5	-	mA
Minimum Output Voltage	$V_7$	$I_7 = 1\text{A}$	-	1.40	1.65	V
Maximum Output Voltage	$V_7$	$I_7 = 1\text{A}$	$V_6 - 2.3$	$V_6 - 2.0$	-	V
Output Voltage During Flyback	$V_9$	$I_9 = -1\text{A}$	-	$V_{10} - 2.2$	-	V
Output Current	$I_7$		-	-	$\pm 1.3$	A
Output Current	$I_8$		-	-	$\pm 1.3$	A
Preamplifier Input Current	$I_5$		-	-0.1	-	$\mu\text{A}$
Stabilized Voltage	$V_1$		6.1	6.8	7.3	V
Blanking Pulse Output Voltage	$V_3$		-	5.7	-	V
Blanking Pulse Output Resistance	$R_3$		-	300	-	$\Omega$
Blanking Pulse Output Current	$I_3$		0	-	-3	mA
Blanking Pulse Duration	$t_{bl}$	$R = 100\Omega$ , $C = 10\text{pF}$ (Pin12)	640	680	730	$\mu\text{s}$
Output Voltage Ramp Generator	$V_{11}$		0.3	-	20	V
Output Current Ramp Generator	$I_{11}$		-2	-	$15 \times 10^3$	$\mu\text{A}$
Output Voltage Frequency Detector	$V_{13}$	Lower Frequency $I_{13} = 1\text{mA}$	-	-	1.0	V
Leakage Current Frequency Detector	$I_{13}$	Higher Frequency $V_{13} = 50\text{V}$	-	-	1.0	$\mu\text{A}$
Output Voltage Buffer Stage	$V_4$		0	-	20	V
Output Current Buffer Stage	$I_4$		-	-	-4.0	mA
Synchronizing Input Voltage	$V_3$	Positive Sync	1.0	-	6.0	V
Synchronizing Input Voltage	$V_3$	Negative Sync	-0.5	-	-0.7	V

**Electrical Characteristics (Cont'd):** (All voltages are measured to  $V_{GND}$  (Pin8),  $T_A = +25^\circ\text{C}$ ,  $V_P = +23\text{V}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Tolerance of Free Running Oscillator		Without Sync	-3.0	-	+3.0	%
Oscillator Temperature Dependency	$\Delta f/f / \Delta T_C$	$T_A = +20^\circ$ to $+100^\circ\text{C}$	-	$10^{-4}$	-	$\text{K}^{-1}$
Oscillator Voltage Dependency	$\Delta f/f / \Delta V_P$	$V_P = 10\text{V}$ to $30\text{V}$	-	$4 \times 10^4$	-	$\text{K}^{-1}$
Synchronizing Ratio	$f_O / f_{\text{sync}}$		1:2.9	1:3	-	

**Pin Connection Diagram**  
(Front View)

