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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 ₂ | | 0 | 6 | V |
| | V ₁₁ | | 0 | 24 | V |
| | V ₁₂ | | 0 | 6 | V |
| | V ₁₃ | | 0 | 50 | V |
| Supply Voltages (V _P) | V ₁₀ | | 0 | 50 | V |
| | V ₉ | | 0 | 50 | V |
| | V ₇ | | 0 | 60 | V |
| | V ₆ | | 0 | 60 | V |
| | V ₅ | | 0 | 6 | V |
| | V ₄ | | 0 | 24 | V |
| | V ₃ | | -0.7 | 6 | V |
| Currents | I ₁ | | 0 | -1 | mA |
| | I ₃ | | +3 | -10 | mA |
| | I ₄ | | 0 | -5 | mA |
| | I _{6, I7, I8} | Note 1 | | | |
| | I ₉ | | -1.5 | +1.5 | A |
| | I ₁₁ | | -0.1 | +3.0 | mA |

Note 1. I₆, I₇, and I₈ 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 Ω , 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 | | - | - | ± 1.3 | A |
| Output Current | I_8 | | - | - | ± 1.3 | A |
| Preamplifier Input Current | I_5 | | - | -0.1 | - | μA |
| 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 | - | Ω |
| 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 | μs |
| Output Voltage Ramp Generator | V_{11} | | 0.3 | - | 20 | V |
| Output Current Ramp Generator | I_{11} | | -2 | - | 15×10^3 | μA |
| 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 | μA |
| 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} | - | K^{-1} |
| Oscillator Voltage Dependency | $\Delta f/f / \Delta V_P$ | $V_P = 10\text{V}$ to 30V | - | 4×10^4 | - | K^{-1} |
| Synchronizing Ratio | f_O / f_{sync} | | 1:2.9 | 1:3 | - | |

Pin Connection Diagram
(Front View)

