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## NTE2070 Integrated Circuit 7-Unit 150mA Transistor Array with Clamp Diode and Strobe

**Description:**

The NTE2070, 7-channel sink driver, consists of 14NPN transistors connected to form high current gain driver pairs.

**Features:**

- Output sink current to 150mA
- Strobe input control
- TTL Compatible Input
- Wide Operating Temperature Range ( $T_A = -20$  to  $+75^\circ\text{C}$ )

**Application:**

Relay and printer driver, LED or incandescent display digit driver, Interfacing for standard MOS/BI-POLAR logics.

**Function:**

The NTE2070 uses a predriver stage. Each input has a diode and 20kΩ resistor in series to allow a negative voltage input. All inputs can be controlled simultaneously by a strobe input at pin 18. Each output has an integral diode for inductive load transient suppression.

The cathodes of the diodes and the power supply of the predrivers are connected to pin 10. All emitters and the substrate are connected together to pin 9. The outputs are capable of sinking 150mA and will withstand 10V in the OFF state.

**Absolute Maximum Ratings:** ( $T_A = -25$  to  $+75^\circ\text{C}$ , unless otherwise specified)

Supply Voltage, $V_{CC}$ .....	10V
Output Voltage, $V_O$ (Transistor OFF) .....	-0.5 to $V_{CC}$ V
Collector Current, $I_O$ (Transistor ON) .....	150mA
Input Voltage, $V_I$ .....	-25 to +10V
Strobe Input Voltage, $V_{I(STB)}$ .....	20V
Clamp diode reverse voltage, $V_{R(D)}$ .....	10V
Clamp diode forward current, $I_{F(D)}$ .....	150mA
Power Dissipation, $P_d$ ( $T_A = 25^\circ\text{C}$ ) .....	1.47W
Operating ambient temperature range, $T_{opr}$ .....	-20 to $+75^\circ\text{C}$
Storage temperature range, $T_{stg}$ .....	-55 to $+125^\circ\text{C}$

**Recommended Operational Conditions:** ( $T_A = -25 \sim +75^\circ\text{C}$ , unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Voltage	$V_{CC}$		3	-	8	V
Output Voltage	$V_O$	$V_{CC} = 10\text{V}$	0	-	10	V
Collector Current Per Channel	$I_O$	Percent duty cycle less than 65%	0	-	150	mA
"H" Input Voltage	$V_{IH}$	$I_C = 100\text{mA}$	3.2	-	5	V
"L" Input Voltage	$V_{IL}$		0	-	0.8	V
"H" Input Voltage (Strobe Input)	$V_{I(STB)}$	$V_I = 3.5\text{V}$	1.3	-	6	V
		$V_I = 10\text{V}$	2.4	-	5	
"L" Input Voltage (Strobe Input)	$V_{IL(STB)}$		0	-	0.2	V

**Electrical Characteristics:** ( $T_A = -25$  to  $+75^\circ\text{C}$ , unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Output saturation voltage	$V_{CE(sat)}$	$V_{I(STB)} = 0.2\text{V}$ $V_{CC} = 6\text{V}$ , $I_I = 300\mu\text{A}$ , $I_C = 100\text{mA}$	-	0.1	0.3	V
		$V_I = 3.2\text{V}$ $V_{CC} = 3\text{V}$ $I_C = 100\text{mA}$	-	0.1	0.3	
		$V_{I(STB)} = 0.2\text{V}$ $V_{CC} = 8\text{V}$ $I_C = 150\text{mA}$	-	0.16	0.5	
Output Leak Current	$I_{OLeak}$	$V_{CC} = 8\text{V}$ , $V_I = 0.8\text{V}$ , $V_O = 8\text{V}$ $V_{I(STB)} = 0.2\text{V}$	-	-	50	$\mu\text{A}$
Input Current	$I_I$	$V_{CC} = 8\text{V}$ , $V_I = 3.5\text{V}$ $V_{I(STB)} = 0.2\text{V}$	-	0.6	1.2	mA
Input Leakage Current	$I_R$	$V_{CC} = 8\text{V}$ , $V_I = -25\text{V}$	-	-	-20	$\mu\text{A}$
Strobe Input Current	$I_{I(STB)}$	$V_I = 3.5\text{V}$ , $V_{I(STB)} = 2.4\text{V}$	-	0.9	3	mA
Clamp diode forward voltage	$V_{F(D)}$	$I_{F(D)} = 150\text{mA}$	-	1.1	2.1	V
Clamp diode reverse voltage	$V_{R(D)}$	$I_{R(D)} = 100\mu\text{A}$	10	-	-	V
Supply Current	$I_{CC}$	$V_{CC} = 8\text{V}$ , $V_I = 3.5\text{V}$ (all input) $V_{I(STB)} = 0.2\text{V}$	-	120	200	mA
DC Forward Current	$h_{FE}$	$V_{CE} = 4\text{V}$ , $V_{CC} = 6\text{V}$ , $I_C = 150\text{mA}$ , $T_A = 25^\circ\text{C}$	700	3000	-	-

### Pin Connection Diagram

