

**NTE192 (NPN) & NTE193 (PNP)  
 NTE192A (NPN) & NTE193A (PNP)  
 Silicon Complementary Transistors  
 Audio Power Output**

**Description:**

NTE192 (NPN)/NTE193 (PNP) and NTE192A (NPN)/NTE193A (PNP) are silicon complementary transistors in a TO92HS type package designed for use in general purpose industrial circuits. These devices are especially suited for high level linear amplifiers or medium speed switching circuits in industrial control applications.

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

Collector–Emitter Voltage, $V_{CEO}$ .....	50V
Collector–Base Voltage, $V_{CBO}$ .....	50V
Emitter–Base Voltage, $V_{EBO}$ .....	5V
Continuous Collector Current (Note 1), $I_C$ .....	500mA
Total Power Dissipation ( $T_C = +25^\circ\text{C}$ , Note 1), $P_T$ .....	900mW
Derate Above $25^\circ\text{C}$ .....	7.2mW/ $^\circ\text{C}$
Total Power Dissipation ( $T_A = +25^\circ\text{C}$ ), $P_T$ .....	560mW
Derate Above $25^\circ\text{C}$ .....	4.47mW/ $^\circ\text{C}$
Operating Junction Temperature, $T_J$ .....	+150 $^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	-55 $^\circ$ to +150 $^\circ\text{C}$
Lead Temperature (During Soldering, 1/16" $\pm$ 1/32" from case for 10sec max), $T_L$ .....	+260 $^\circ\text{C}$

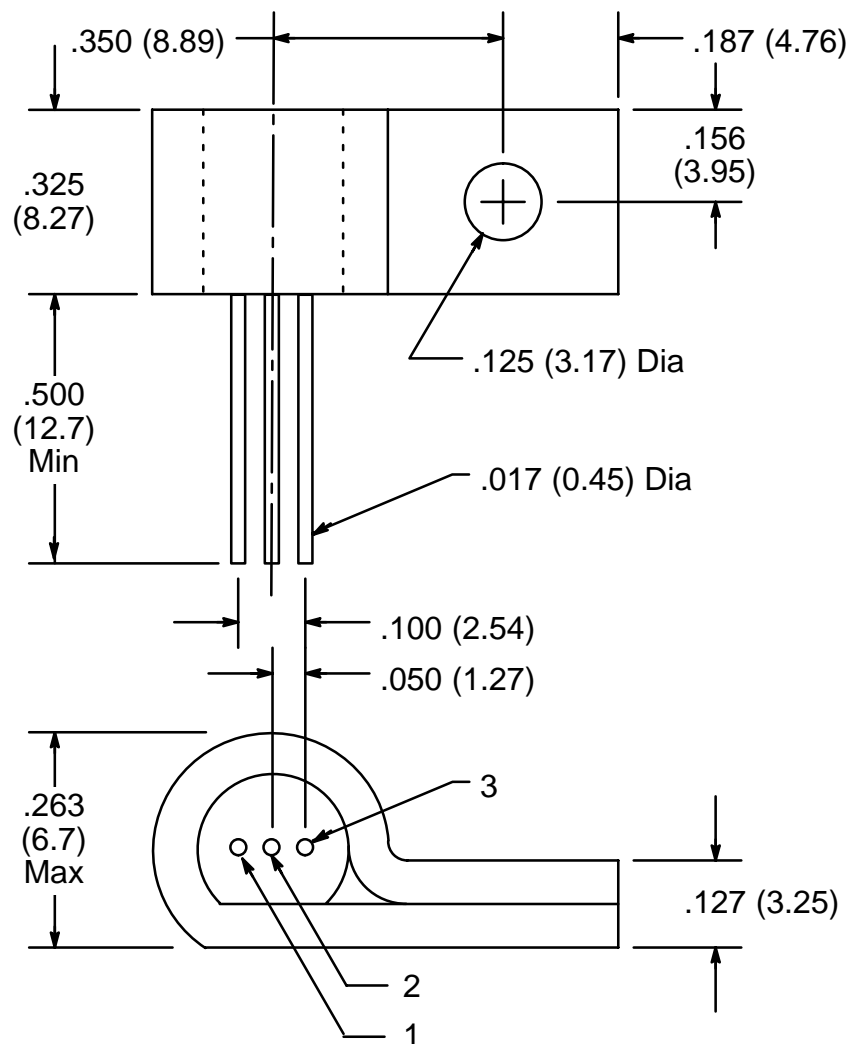
Note 1. Determined from power limitations due to saturation voltage at this current.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>DC Characteristics</b>						
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = 50\text{V}$	-	-	0.1	$\mu\text{A}$
		$V_{CB} = 50\text{V}, T_A = +100^\circ\text{C}$	-	-	15	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 5\text{V}$	-	-	0.1	$\mu\text{A}$
Collector Saturation Voltage	$V_{CE(sat)}$	$I_B = 3\text{mA}, I_C = 50\text{mA}$	-	-	0.30	V
Base Saturation Voltage	$V_{BE(sat)}$	$I_B = 3\text{mA}, I_C = 50\text{mA}$	-	-	0.85	V
DC Current Gain	$h_{FE}$	$V_{CE} = 4.5\text{V}, I_C = 2\text{mA}$	180	-	540	

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Small-Signal Characteristics</b>						
Small-Signal Current Gain	$h_{fe}$	$V_C = 4.5\text{V}$ , Frequency of Measurement = 1000cps	180	—	—	
		$V_{CE} = 10\text{V}$ , $I_C = 1\text{mA}$ , $f = 1\text{kc}$	150	—	300	
Input Impedance	$h_{ie}$	$V_{CE} = 10\text{V}$ , $I_C = 1\text{mA}$ , $f = 1\text{kc}$	4200	—	8300	$\Omega$
Output Admittance	$h_{oe}$	$V_{CE} = 10\text{V}$ , $I_C = 1\text{mA}$ , $f = 1\text{kc}$	10	—	20	$\mu\text{mhos}$
Voltage Feedback Ratio	$h_{re}$	$V_{CE} = 10\text{V}$ , $I_C = 1\text{mA}$ , $f = 1\text{kc}$	0.2	—	0.4	$\times 10^{-3}$



Pin Number	1	2	3
NTE192/193	C	B	E
NTE192A/193A	B	C	E