

## NTE331 (NPN) & NTE332 (PNP) Silicon Complementary Transistors Audio Power Amp, Switch

### **Description:**

The NTE331 (NPN) and NTE332 (PNP) are silicon epitaxial-base complementary power transistors in a TO-220 plastic package intended for use in power linear and switching applications.

### **Absolute Maximum Ratings:**

Collector-Base Voltage ( $I_E = 0$ ), $V_{CBO}$ .....	100V
Collector-Emitter Voltage ( $I_B = 0$ ), $V_{CEO}$ .....	100V
Emitter-Base Voltage ( $I_C = 0$ ), $V_{EBO}$ .....	5V
Emitter Current, $I_E$ .....	15A
Collector Current, $I_C$ .....	15A
Base Current, $I_B$ .....	5A
Total Power Dissipation ( $T_C \leq +25^\circ\text{C}$ ), $P_D$ .....	90W
Operating Junction Temperature, $T_J$ .....	+150°C
Storage Temperature Range, $T_{stg}$ .....	-65° to +150°C
Thermal Resistance Junction-to-Case, $R_{thJC}$ .....	1.4°C/W Max

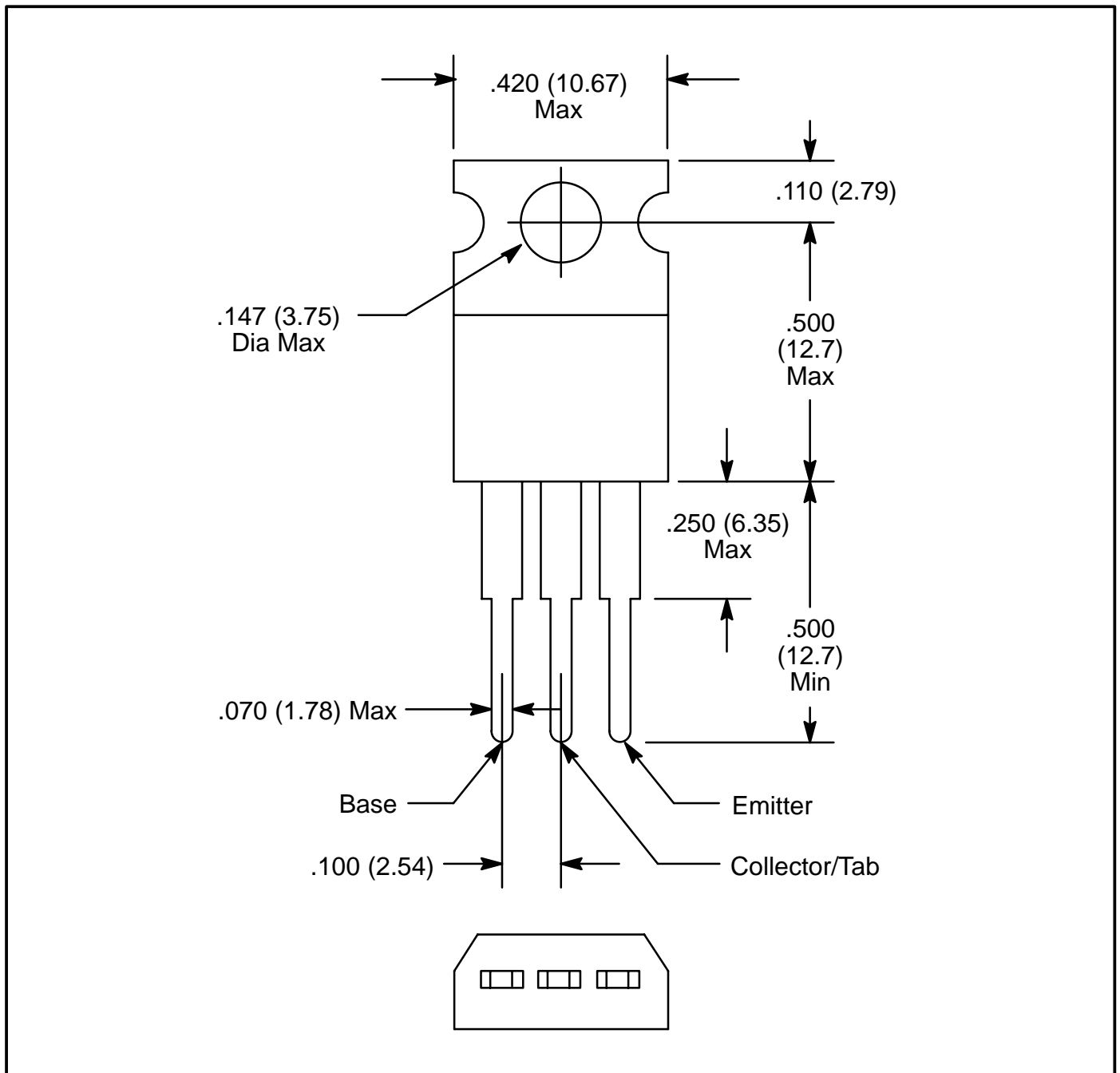
### **Electrical Characteristics:** ( $T_C = +25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector Cutoff Current	$I_{CBO}$	$I_E = 0, V_{CB} = 100V$	-	-	500	$\mu\text{A}$
		$I_E = 0, V_{CB} = 100V, T_C = +150^\circ\text{C}$	-	-	5	mA
Collector Cutoff Current	$I_{CEO}$	$I_B = 0, V_{CE} = 50V$	-	-	1	mA
Emitter Cutoff Current	$I_{EBO}$	$I_C = 0, V_{EB} = 5V$	-	-	1	mA
Collector-Emitter Sustaining Voltage	$V_{CEO(sus)}$	$I_B = 0, I_C = 100\text{mA}$ , Note 1	100	-	-	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 5A, I_B = 0.5A$ , Note 1	-	-	1	V
		$I_C = 10A, I_B = 2.5A$ , Note 1	-	-	3	V

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 10\text{A}, I_B = 2.5\text{A}$ , Note 1	–	–	2.5	V
Base-Emitter Voltage	$V_{BE}$	$I_C = 5\text{A}, V_{CE} = 4\text{V}$ , Note 1	–	–	1.5	V
DC Current Gain	$h_{FE}$	$I_C = 0.5\text{A}, V_{CE} = 4\text{V}$ , Note 1	40	–	250	
		$I_C = 5\text{A}, V_{CE} = 4\text{V}$ , Note 1	15	–	150	
		$I_C = 10\text{A}, V_{CE} = 4\text{V}$ , Note 1	5	–	–	
Transistion Frequency	$f_T$	$I_C = 0.5\text{A}, V_{CE} = 4\text{V}$	3	–	–	MHz

Note 1. Pulsed; Pulse Duration =  $300\mu\text{s}$ , Duty Cycle = 1.5%.



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