

## NTE105 Germanium PNP Transistor Audio Power Amp

**Description:**

The NTE105 is a germanium PNP power transistor in a TO36 type package designed for use in power switching and amplifier applications.

**Absolute Maximum Ratings:**

Collector–Emitter Voltage, $V_{CES}$ .....	40V
Collector–Base Voltage, $V_{CB}$ .....	40V
Emitter–Base Voltage, $V_{EB}$ .....	20V
Continuous Base Current, $I_B$ .....	4A
Continuous Emitter Current, $I_E$ .....	15A
Total Device Dissipation ( $T_C = +25^\circ\text{C}$ ), $P_D$ .....	150W
Operating Junction Temperature Range, $T_J$ .....	$-65^\circ$ to $+100^\circ\text{C}$
Thermal Resistance, Junction–to–Case, $R_{thJC}$ .....	$0.5^\circ\text{C/W}$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>OFF Characteristics</b>						
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 1A, I_B = 0$ , Note 1	25	–	–	V
	$V_{(BR)CES}$	$I_C = 300\text{mA}, V_{BE} = 0$ , Note 1	40	–	–	V
Floating Potential	$V_{EBF}$	$V_{CB} = 40V, I_E = 0$	–	–	1.0	V
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = 2V, I_E = 0$	–	0.1	–	mA
		$V_{CB} = 40V, I_E = 0$	–	2.0	8.0	mA
		$V_{CB} = 40V, I_E = 0, T_B = +71^\circ\text{C}$	–	–	15	mA
Emitter Cutoff Current	$I_{EBO}$	$V_{BE} = 20V, I_C = 0$	–	1.0	8.0	mA
<b>ON Characteristics</b>						
DC Current Gain	$h_{FE}$	$V_{CE} = 2V, I_C = 5A$	20	–	40	
		$V_{CE} = 2V, I_C = 12A$	–	20	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 12A, I_B = 2A$	–	0.3	–	V
Base–Emitter Voltage	$V_{BE}$	$V_{CE} = 2V, I_C = 5A$	–	0.65	–	V

Note 1. Pulse test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Dynamic Characteristics</b>						
Common-Emitter Cutoff Frequency	$f_{\alpha e}$	$V_{CE} = 6V, I_C = 5A$	–	10	–	kHz
<b>Switching Characteristics</b>						
Rise Time	$t_r$	$V_{CE} = 12V, I_C = 12A, I_B = 2A$	–	15	–	$\mu\text{s}$
Fall Time	$t_f$	$V_{BE} = 6V, I_C = 0, R_{BE} = 10\Omega$	–	15	–	$\mu\text{s}$

