

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° to $+100^\circ\text{C}$
Thermal Resistance, Junction–to–Case, R_{thJC}	0.5°C/W

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 1\text{A}, I_B = 0$, Note 1	25	–	–	V
	$V_{(BR)CES}$	$I_C = 300\text{mA}, V_{BE} = 0$, Note 1	40	–	–	V
Floating Potential	V_{EBF}	$V_{CB} = 40\text{V}, I_E = 0$	–	–	1.0	V
Collector Cutoff Current	I_{CBO}	$V_{CB} = 2\text{V}, I_E = 0$	–	0.1	–	mA
		$V_{CB} = 40\text{V}, I_E = 0$	–	2.0	8.0	mA
		$V_{CB} = 40\text{V}, I_E = 0, T_B = +71^\circ\text{C}$	–	–	15	mA
Emitter Cutoff Current	I_{EBO}	$V_{BE} = 20\text{V}, I_C = 0$	–	1.0	8.0	mA
ON Characteristics						
DC Current Gain	h_{FE}	$V_{CE} = 2\text{V}, I_C = 5\text{A}$	20	–	40	
		$V_{CE} = 2\text{V}, I_C = 12\text{A}$	–	20	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 12\text{A}, I_B = 2\text{A}$	–	0.3	–	V
Base–Emitter Voltage	V_{BE}	$V_{CE} = 2\text{V}, I_C = 5\text{A}$	–	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
Dynamic Characteristics						
Common–Emitter Cutoff Frequency	$f_{\alpha e}$	$V_{CE} = 6\text{V}, I_C = 5\text{A}$	–	10	–	kHz
Switching Characteristics						
Rise Time	t_r	$V_{CE} = 12\text{V}, I_C = 12\text{A}, I_B = 2\text{A}$	–	15	–	μs
Fall Time	t_f	$V_{BE} = 6\text{V}, I_C = 0, R_{BE} = 10\Omega$	–	15	–	μs

