

NTE157
Silicon NPN Transistor
Audio Power Amp, High Voltage Converter
(Compl to NTE39)

Description:

The NTE157 is a silicon NPN transistor in a TO126 type package designed for use in line-operated equipment such as audio output amplifiers, low-current, high-voltage converters, and AC line relays.

Features:

- Excellent DC Current Gain: $h_{FE} = 30$ to 250 @ $I_C = 100\text{mA}$
- Current-Gain – Bandwidth Product: $f_T = 10\text{MHz}$ (Min) @ $I_C = 50\text{mA}$

Absolute Maximum Ratings:

Collector–Emitter Voltage, V_{CEO}	300V
Collector–Base Voltage, V_{CB}	325V
Emitter–Base Voltage, V_{EB}	6V
Collector Current, I_C	
Continuous	500mA
Peak	1A
Base Current, I_B	250mA
Total Power Dissipation ($T_C = +25^\circ\text{C}$), P_D	20W
Derate Above 25°C	0.16W/ $^\circ\text{C}$
Operating Junction Temperature Range, T_J	-65° to $+150^\circ\text{C}$
Storage Temperature Range, T_{stg}	-65° to $+150^\circ\text{C}$
Thermal Resistance, Junction to case, $R_{\theta JC}$	6.25 $^\circ\text{C}/\text{W}$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector–Emitter Sustaining Voltage	$V_{CEO(sus)}$	$I_C = 100\text{mA}$ (Inductive), $L = 50\text{mH}$	300	–	–	V
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 1\text{mA}$, $I_B = 0$	300	–	–	V
Collector Cutoff Current	I_{CEO}	$V_{CE} = 200\text{V}$, $I_B = 0$	–	–	0.1	mA
		$V_{CE} = 300\text{V}$, $V_{EB(off)} = 1.5\text{V}$	–	–	0.1	mA
	I_{CEX}	$V_{CE} = 300\text{V}$, $V_{EB(off)} = 1.5\text{V}$, $T_C = +100^\circ\text{C}$	–	–	1.0	mA
		$V_{CB} = 325\text{V}$, $I_E = 0$	–	–	10	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 6\text{V}$, $I_C = 0$	–	–	10	μA

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
ON Characteristics (Note 1)						
DC Current Gain	h_{FE}	$I_C = 50\text{mA}, V_{CE} = 10\text{V}$	25	–	–	
		$I_C = 100\text{mA}, V_{CE} = 10\text{V}$	30	–	250	
		$I_C = 250\text{mA}, V_{CE} = 10\text{V}$	15	–	–	
		$I_C = 500\text{mA}, V_{CE} = 10\text{V}$	5	–	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 100\text{mA}, I_B = 10\text{mA}$	–	–	1	V
		$I_C = 250\text{mA}, I_B = 25\text{mA}$	–	–	2.5	
		$I_C = 500\text{mA}, I_B = 100\text{mA}$	–	–	10	
Base–Emitter Voltage	V_{BE}	$I_C = 100\text{mA}, V_{CE} = 10\text{V}$	–	–	1	V
Dynamic Characteristics						
Current–Gain–Bandwidth Product	f_T	$I_C = 50\text{mA}, V_{CE} = 10\text{V}, f = 10\text{MHz}$, Note 2	10	–	–	MHz
Output Capacitance	C_{ob}	$V_{CB} = 10\text{V}, I_E = 0, f = 100\text{kHz}$	–	–	25	pF
Small–Signal Current Gain	h_{fe}	$I_C = 100\text{mA}, V_{CE} = 10\text{V}, f = 1\text{kHz}$	20	–	–	

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

Note 2. f_T is defined as the frequency at which $|h_{fe}|$ extrapolates to unity.

