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# 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 @ $I_C$ = 100mA
- Current–Gain – Bandwidth Product: $f_T$ = 10MHz (Min) @ $I_C$ = 50mA

**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°C), $P_D$ . . . . . 20W
  Derate Above 25°C . . . . . 0.16W/°C
Operating Junction Temperature Range, $T_J$ . . . . . –65° to +150°C
Storage Temperature Range, $T_{stg}$ . . . . . –65° to +150°C
Thermal Resistance, Junction to case, $R_{\Theta JC}$ . . . . . 6.25°C/W

**Electrical Characteristics:** ($T_C$ = +25°C unless otherwise specified)

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

**Electrical Characteristics (Cont'd):** ($T_C$ = +25°C unless otherwise specified)

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

Note 1. Pulse Test: Pulse Width ≤ 300µs, Duty Cycle ≤ 2%.

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