

NTE396
Silicon NPN Transistor
Power Amplifier & High Speed Switch
(Compl to NTE397)

Absolute Maximum Ratings:

| | |
|---|-------------------------------------|
| Collector–Emitter Voltage, V_{CEO} | 350V |
| Collector–Base Voltage, V_{CBO} | 450V |
| Emitter–Base Voltage, V_{EBO} | 7V |
| Continuous Collector Current, I_C | 1A |
| Base Current, I_B | 500mA |
| Total Device Dissipation ($T_A = +25^\circ\text{C}$), P_D | 1W |
| Derate Above 25°C | 5.7mW/ $^\circ\text{C}$ |
| Total Device Dissipation ($T_C = +25^\circ\text{C}$), P_D | 5W |
| Derate Above 25°C | 28.6mW/ $^\circ\text{C}$ |
| Operating Junction Temperature Range, T_J | -65° to $+200^\circ\text{C}$ |
| Storage Temperature Range, T_{stg} | -65° to $+200^\circ\text{C}$ |
| Thermal Resistance, Junction–to–Case, R_{thJC} | 35°C/W |
| Thermal Resistance, Junction–to–Ambient, R_{thJA} | 175°C/W |

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

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|--------------------------------------|----------------|---|-----|-----|-----|---------------|
| OFF Characteristics | | | | | | |
| Collector–Emitter Sustaining Voltage | $V_{CEO(sus)}$ | $I_C = 50\text{mA}$, $I_B = 0$, Note 1 | 350 | – | – | V |
| Collector Cutoff Current | I_{CEO} | $V_{CE} = 300\text{V}$, $I_B = 0$ | – | – | 20 | μA |
| | I_{CEX} | $V_{CE} = 450\text{V}$, $V_{BE} = 1.5\text{V}$ | – | – | 500 | μA |
| | I_{CBO} | $V_{CB} = 360\text{V}$, $I_E = 0$ | – | – | 20 | μA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB} = 6\text{V}$, $I_C = 0$ | – | – | 20 | μA |
| ON Characteristics (Note 1) | | | | | | |
| DC Current Gain | h_{FE} | $I_C = 2\text{mA}$, $V_{CE} = 10\text{V}$ | 30 | – | – | |
| | | $I_C = 20\text{mA}$, $V_{CE} = 10\text{V}$ | 40 | – | 160 | |
| Collector–Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 50\text{mA}$, $I_B = 4\text{mA}$ | – | – | 0.5 | V |
| Base–Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C = 50\text{mA}$, $I_B = 4\text{mA}$ | – | – | 1.3 | V |

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

CAUTION: The sustaining voltage ***must not*** be measured on a curve tracer.

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

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|-------------------------------------|---------------------|--|-----|-----|-----|----------|
| Small-Signal Characteristics | | | | | | |
| Current Gain-Bandwidth Product | f_T | $I_C = 10\text{mA}, V_{CE} = 10\text{V}, f = 50\text{MHz}$ | 15 | – | – | MHz |
| Output Capacitance | C_{obo} | $V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$ | – | – | 10 | pF |
| Input Capacitance | C_{ibo} | $V_{CB} = 5\text{V}, I_C = 0, f = 1\text{MHz}$ | – | – | 75 | pF |
| Small-Signal Current Gain | h_{fe} | $I_C = 5\text{mA}, V_{CE} = 10\text{V}, f = 1\text{MHz}$ | 25 | – | – | |
| Real Part of Input Impedance | $\text{Re}(h_{ie})$ | $V_{CE} = 10\text{V}, I_C = 5\text{mA}, f = 1\text{MHz}$ | – | – | 300 | Ω |

