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NTE387 Silicon NPN Transistor Power Amp, Switch

Features:

- High Collector–Emitter Sustaining Voltage
- High DC Current Gain
- Low Collector–Emitter Saturation Voltage
- Fast Switching Times

Absolute Maximum Ratings:

| | |
|---|-------------------------------------|
| Collector–Emitter Voltage, V_{CEO} | 150V |
| Collector–Base Voltage, V_{CB} | 180V |
| Emitter–Base Voltage, V_{EB} | 6V |
| Collector Current, I_C | |
| Continuous | 50A |
| Peak | 100A |
| Continuous Base Current, I_B | 20A |
| Total Device Dissipation ($T_C = +25^\circ\text{C}$), P_D | 250W |
| Derate Above 25°C | 1.43W/ $^\circ\text{C}$ |
| 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} | 0.70°C/W |

Note 1. Matched pairs are available upon request (NTE387MP). Matched pairs have their gain specification (h_{FE}) matched to within 10% of each other.

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 | $V_{CEO(sus)}$ | $I_C = 50\text{mA}$, $I_B = 0$, Note 2 | 150 | – | – | V |
| Collector Cutoff Current | I_{CEO} | $V_{CE} = 75\text{V}$, $I_B = 0$ | – | – | 50 | μA |
| | | $V_{CE} = 180\text{V}$, $V_{EB(off)} = 1.5\text{V}$ | – | – | 10 | μA |
| | $V_{CE} = 180\text{V}$, $V_{EB(off)} = 1.5\text{V}$, $T_C = +150^\circ\text{C}$ | – | – | 1.0 | μA | |
| Emitter Cutoff Current | I_{EBO} | $V_{BE} = 6\text{V}$, $I_C = 0$ | – | – | 100 | μA |

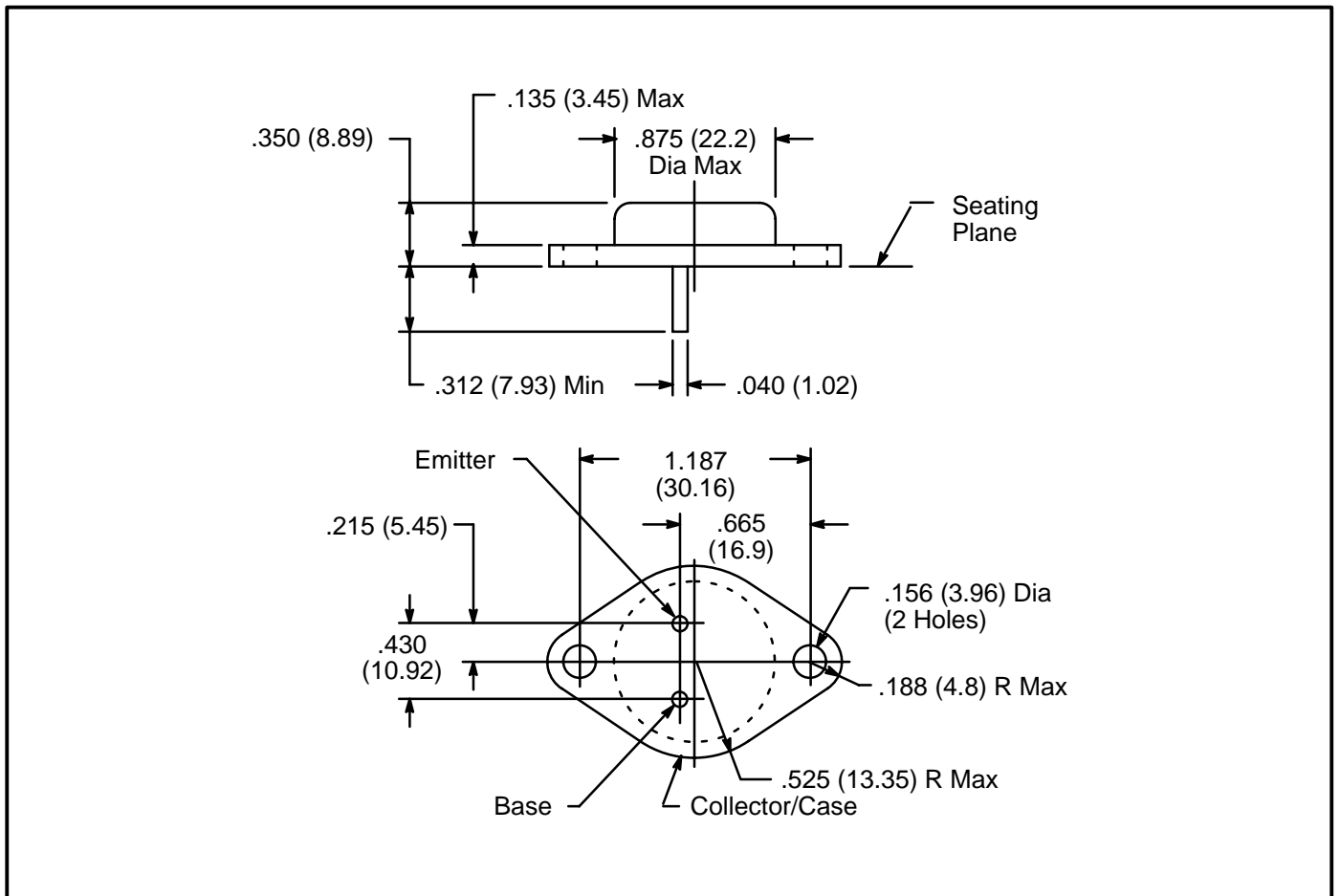
Note 2. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

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

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|--------------------------------------|---------------|--|-----|-----|------|---------------|
| ON Characteristics (Note 2) | | | | | | |
| DC Current Gain | h_{FE} | $V_{CE} = 4\text{V}, I_C = 1\text{A}$ | 50 | – | – | |
| | | $V_{CE} = 4\text{V}, I_C = 20\text{A}$ | 30 | – | 120 | |
| | | $V_{CE} = 4\text{V}, I_C = 50\text{A}$ | 10 | – | – | |
| Collector–Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 20\text{A}, I_B = 2\text{A}$ | – | – | 1 | V |
| | | $I_C = 50\text{A}, I_B = 10\text{A}$ | – | – | 3 | V |
| Base–Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C = 20\text{A}, I_B = 2\text{A}$ | – | – | 1.8 | V |
| | | $I_C = 50\text{A}, I_B = 10\text{A}$ | – | – | 3.5 | V |
| Base–Emitter ON Voltage | $V_{BE(on)}$ | $V_{CE} = 4\text{V}, I_C = 20\text{A}$ | – | – | 1.8 | V |
| Dynamic Characteristics | | | | | | |
| Current Gain–Bandwidth Product | f_T | $V_{CE} = 10\text{V}, I_C = 1\text{A}, f_{test} = 10\text{MHz}$, Note 3 | 30 | – | – | MHz |
| Output Capacitance | C_{ob} | $V_{CB} = 10\text{V}, I_E = 0, f_{test} = 0.1\text{MHz}$ | – | – | 600 | pF |
| Switching Characteristics | | | | | | |
| Rise Time | t_r | $V_{CC} = 80\text{V}, I_C = 20\text{A}, I_{B1} = 2\text{A}, V_{BE(off)} = 5\text{V}$ | – | – | 0.35 | μs |
| Storage Time | t_s | $V_{CC} = 80\text{V}, I_C = 20\text{A}, I_{B1} = I_{B2} = 2\text{A}$ | – | – | 0.80 | μs |
| Fall Time | t_f | | – | – | 0.25 | μs |

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

Note 3. $f_T = (h_{fe}) \cdot \text{test}$



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