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NTE388 (NPN) & NTE68 (PNP) Silicon Complementary Transistors General Purpose High Power Audio, Disk Head Positioner for Linear Applications

Description:

The NTE388 (NPN) and NTE68 (PNP) are complementary silicon power transistors in a TO3 type package designed for high power audio, disk head positioners, and other linear applications.

Features:

- High Safe Operating Area: 2A @ 80V
- High DC Current Gain: $h_{FE} = 15 \text{ Min @ } I_C = 8A$

Absolute Maximum Ratings:

| | |
|--|-------------------------------------|
| Collector–Emitter Voltage, V_{CEO} | 250V |
| Collector–Emitter Voltage, V_{CEX} | 400V |
| Collector–Base Voltage, V_{CBO} | 400V |
| Emitter–Base Voltage, V_{EBO} | 5V |
| Collector Current, I_C | |
| Continuous | 16A |
| Peak (Note 2) | 30A |
| Continuous Base Current, I_B | 5A |
| Total Power 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 $^\circ\text{C/W}$ |

Note 1. Matched complementary pairs are available upon request (NTE68MCP). Matched complementary pairs have their gain specification (h_{FE}) matched to within 10% of each other.

Note 2. Pulse Test: Pulse Width = 5ms, Duty Cycle $\leq 10\%$.

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 | $V_{CE(sus)}$ | $I_C = 100\text{mA}, I_B = 0$, Note 3 | 250 | – | – | V |
| Collector Cutoff Current | I_{CEX} | $V_{CE} = 250\text{V}, V_{BE(off)} = 1.5\text{V}$ | – | – | 250 | μA |
| | I_{CEO} | $V_{CE} = 200\text{V}, I_B = 0$ | – | – | 500 | μA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB} = 5\text{V}, I_C = 0$ | – | – | 500 | μA |
| Second Breakdown | | | | | | |
| Second Breakdown Collector Current with Base Forward Bias | $I_{S/b}$ | $V_{CE} = 50\text{V}, t = 0.5\text{s}$ (non-repetitive) | 5 | – | – | μA |
| | | $V_{CE} = 80\text{V}, t = 0.5\text{s}$ (non-repetitive) | 2 | – | – | μA |
| ON Characteristics | | | | | | |
| DC Current Gain | h_{FE} | $V_{CE} = 4\text{V}, I_C = 8\text{A}$ | 15 | – | 60 | |
| | | $V_{CE} = 4\text{V}, I_C = 16\text{A}$ | 5 | – | – | |
| Collector–Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 8\text{A}, I_B = 800\text{mA}$ | – | – | 1.4 | V |
| | | $I_C = 16\text{A}, I_B = 3.2\text{A}$ | – | – | 4.0 | V |
| Base–Emitter On Voltage | $V_{BE(on)}$ | $V_{CE} = 4\text{V}, I_C = 8\text{A}$ | – | – | 2.2 | V |
| Dynamic Characteristics | | | | | | |
| Current Gain–Bandwidth Product | f_T | $V_{CE} = 10\text{V}, I_C = 1\text{A}, f_{test} = 1\text{MHz}$ | 4 | – | – | MHz |
| Output Capacitance | C_{ob} | $V_{CB} = 10\text{V}, I_E = 0, f_{test} = 1\text{MHz}$ | – | – | 500 | pF |

Note 3. Pulse Test: Pulse Width = $300\mu\text{s}$, Duty Cycle $\leq 2\%$.

