

NTE2538 Silicon NPN Transistor High Voltage, High Current Switch

Features:

- High Breakdown Voltage and Reliability
- Fast Switching Speed
- Wide ASO

Absolute Maximum Ratings: ($T_A = +25^\circ\text{C}$ unless otherwise specified)

| | |
|---|----------------|
| Collector–Base Voltage, V_{CBO} | 500V |
| Collector–Emitter Voltage, V_{CEO} | 400V |
| Emitter–Base Voltage, V_{EBO} | 7V |
| Collector Current, I_C | |
| Continuous | 16A |
| Peak (Note 1) | 32A |
| Base Current, I_B | 6A |
| Collector Dissipation, P_D | |
| $T_A = +25^\circ\text{C}$ | 3W |
| $T_C = +25^\circ\text{C}$ | 60W |
| Operating Junction Temperature, T_J | +150°C |
| Storage Temperature range, T_{stg} | –55° to +150°C |

Note 1. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 10\%$.

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

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|--------------------------------------|---------------|---|-----|-----|-----|---------------|
| Collector Cutoff Current | I_{CBO} | $V_{CB} = 400\text{V}, I_E = 0$ | – | – | 10 | μA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB} = 5\text{V}, I_C = 0$ | – | – | 10 | μA |
| DC Current Gain | h_{FE} | $V_{CE} = 5\text{V}, I_C = 3.2\text{A}$ | 15 | – | 50 | |
| | | $V_{CE} = 5\text{V}, I_C = 16\text{A}$ | 10 | – | – | |
| | | $V_{CE} = 5\text{V}, I_C = 10\text{mA}$ | 10 | – | – | |
| Collector–Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 10\text{A}, I_B = 2\text{A}$ | – | – | 0.8 | V |
| Base–Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C = 10\text{A}, I_B = 2\text{A}$ | – | – | 1.5 | V |

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

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|--------------------------------------|----------------|---|-----|-----|-----|---------------|
| Gain–Bandwidth Product | f_T | $V_{CE} = 10\text{V}, I_C = 2\text{A}$ | – | 20 | – | MHz |
| Output Capacitance | C_{ob} | $V_{CB} = 10\text{V}, f = 1\text{MHz}$ | – | 230 | – | pF |
| Collector–Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C = 1\text{mA}, I_E = 0$ | 500 | – | – | V |
| Collector–Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C = 10\text{mA}, R_{BE} = \infty$ | 400 | – | – | V |
| Emitter–Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E = 1\text{mA}, I_C = 0$ | 7 | – | – | V |
| Collector–Emitter Sustaining Voltage | $V_{CEX(sus)}$ | $I_C = 8\text{A}, I_{B1} = 0.8\text{A}, I_{B2} = -3.2\text{A}, L = 200\mu\text{H}$ Clamped | 400 | – | – | V |
| Turn–On Time | t_{on} | $I_C = 12\text{A}, I_{B1} = 2.4\text{A}, I_{B2} = -4.8\text{A}, R_L = 10\Omega, V_{CC} = 200\text{V}$ | – | – | 0.5 | μs |
| Storage Time | t_{stg} | | – | – | 2.5 | μs |
| Fall Time | t_f | | – | – | 0.3 | μs |

