ELECTRONICS, INC.
44 FARRAND STREET
BLOOMFIELD, NJ 07003
(973) 748–5089

# NTE283
# Silicon NPN Transistor
# Horizontal Output, Switch

**Description:**

The NTE283 is a silicon NPN transistor in a TO3 type package designed for high–voltage, high–speed, power switching in inductive circuits where fall time is critical. Typical applications include switching regulators, PWM inverters, solenoid and relay drivers.

**Absolute Maximum Ratings:**

Collector–Emitter Voltage ($I_B$ = 0), $V_{CEO}$ . . . . . 325V
Collector–Emitter Voltage ($V_{BE}$ = 0), $V_{CES}$ . . . . . 800V
Emitter–Base Voltage, $V_{EBO}$ . . . . . 8V
Collector Current, $I_C$
  Continuous . . . . . 10A
  Peak ($t_p \le 10$ms) . . . . . 15A
Base Current, $I_B$ . . . . . 3A
Total Power Dissipation ($T_C \le +25°C$), $P_{tot}$ . . . . . 100W
Operating Junction Temperature, $T_J$ . . . . . +200°C
Storage Temperature Range, $T_{stg}$ . . . . . –65° to +200°C
Thermal Resistance, Junction–to–Case, $R_{thJC}$ . . . . . 1.75°C/W

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

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Collector Cutoff Current | $I_{CES}$ | $V_{CEV}$ = 800V, $V_{BE}$ = 0 | – | – | 1 | mA |
| Emitter Cutoff Current | $I_{EBO}$ | $V_{EB}$ = 8V, $I_C$ = 0 | – | – | 1 | mA |
| Collector–Base Voltage | $V_{CBO}$ | $I_C$ = 1mA, $I_E$ = 0 | 800 | – | – | V |
| Collector–Emitter Sustaining Voltage | $V_{CEO(sus)}$ | $I_C$ = 100mA, $I_B$ = 0, Note 1 | 325 | – | – | V |
| Collector–Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C$ = 8A, $I_B$ = 2.5A, Note 1 | – | – | 3.3 | V |
| Base–Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C$ = 8A, $I_B$ = 2.5A, Note 1 | – | – | 2.2 | V |
| DC Current Gain | $h_{FE}$ | $V_{CE}$ = 10V, $I_C$ = 2.5A, Note 1 | 15 | – | – | |
| Current Gain–Bandwidth Product | $f_T$ | $V_{CE}$ = 10V, $I_C$ = 500mA | – | 10 | – | MHz |
| Second Breakdown Collector Current | $I_{S/b}$ | $V_{CE}$ = 25V, Note 2 | 4 | – | – | A |

Note 1. Pulse test: Pulse Width = 300μs, Duty Cycle = 1.5%.
Note 2. Pulsed: 1sec, non–repetitive pulse.

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

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Turn–On Time | $t_{on}$ | $V_{CC}$ = 250V, $I_C$ = 5A, $I_{B1}$ = 1A | – | 0.2 | – | µs |
| Storage Time | $t_s$ | $V_{CC}$ = 250V, $I_C$ = 5A, $I_{B1}$ = $-I_{B2}$ = 1A | – | 1.7 | – | µs |
| Fall Time | $t_f$ | | – | 0.3 | – | µs |
| Fall Time | $t_f$ | $V_{CC}$ = 40V, $I_C$ = 8A, $I_{B1}$ = $-I_{B2}$ = 2.5A | – | – | 1.0 | µs |