



ELECTRONICS, INC.  
44 FARRAND STREET  
BLOOMFIELD, NJ 07003  
(973) 748-5089  
<http://www.nteinc.com>

## NTE85

### Silicon NPN Transistor

### General Purpose Amplifier

### TO-92 Type Package

#### **Applications:**

- Medium Power Amplifiers
- Class B Audio Outputs
- Hi-Fi Drivers

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

|                                                               |                                     |
|---------------------------------------------------------------|-------------------------------------|
| Collector-Emitter Voltage, $V_{CEO}$                          | 30V                                 |
| Collector-Base Voltage, $V_{CBO}$                             | 50V                                 |
| Emitter-Base Voltage, $V_{EBO}$                               | 5V                                  |
| Continuous Collector Current, $I_C$                           | 500mA                               |
| Total Device Dissipation ( $T_A = +25^\circ\text{C}$ ), $P_D$ | 625mW                               |
| Derate Above $25^\circ\text{C}$                               | 5.0mW/ $^\circ\text{C}$             |
| Operating Junction Temperature Range, $T_J$                   | $-55^\circ$ to $+150^\circ\text{C}$ |
| Storage Temperature Range, $T_{stg}$                          | $-55^\circ$ to $+150^\circ\text{C}$ |
| Thermal Resistance, Junction-to-Case, $R_{thJC}$              | 83.3 $^\circ\text{C/W}$             |
| Thermal Resistance, Junction-to-Ambient, $R_{thJA}$           | 200 $^\circ\text{C/W}$              |

Note 1. These ratings are limiting values above which the serviceability of any semiconductor may be impaired.

Note 2. These ratings are based on a maximum junction temperature of  $150^\circ\text{C}$ .

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

| Parameter                           | Symbol        | Test Conditions                          | Min | Typ | Max | Unit |
|-------------------------------------|---------------|------------------------------------------|-----|-----|-----|------|
| Collector-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C = 10\text{mA}$ , $I_B = 0$ , Note 3 | 30  | –   | –   | V    |
| Collector-Base Breakdown Voltage    | $V_{(BR)CBO}$ | $I_C = 100\mu\text{A}$ , $I_E = 0$       | 50  | –   | –   | V    |
| Emitter-Base Breakdown Voltage      | $V_{(BR)EBO}$ | $I_E = 100\mu\text{A}$ , $I_C = 0$       | 5.0 | –   | –   | V    |
| Collector Cutoff Current            | $I_{CBO}$     | $V_{CB} = 20\text{V}$ , $I_E = 0$        | –   | –   | 100 | nA   |
| Emitter Cutoff Current              | $I_{EBO}$     | $V_{BE} = 3\text{V}$ , $I_C = 0$         | –   | –   | 100 | nA   |

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

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

| Parameter                            | Symbol        | Test Conditions                                       | Min | Typ | Max | Unit |
|--------------------------------------|---------------|-------------------------------------------------------|-----|-----|-----|------|
| DC Current Gain                      | $h_{FE}$      | $V_{CE} = 2\text{V}$ , $I_C = 50\text{mA}$ , Note 3   | 100 | –   | 300 |      |
| Base–Emitter ON Voltage              | $V_{BE(on)}$  | $I_C = 100\text{mA}$ , $V_{CE} = 2\text{V}$ , Note 3  | 0.5 | –   | 1.0 | V    |
| Collector–Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 100\text{mA}$ , $I_B = 5\text{mA}$ , Note 3    | –   | –   | 0.6 | V    |
| Current Gain–Bandwidth Product       | $f_T$         | $I_C = 50\text{mA}$ , $V_{CE} = 2\text{V}$            | 100 | –   | –   | MHz  |
| Collector–Base Capacitance           | $C_{cb}$      | $V_{CB} = 10\text{V}$ , $I_E = 0$ , $f = 1\text{MHz}$ | –   | –   | 12  | pF   |

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

