



## NTE85 Silicon NPN Transistor General Purpose Amplifier

**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 $^\circ\text{C}/\text{W}$
Thermal Resistance, Junction–to–Ambient, $R_{thJA}$ .....	200 $^\circ\text{C}/\text{W}$

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 Voltage	$I_{CBO}$	$V_{CB} = 20\text{V}$ , $I_E = 0$	–	–	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  $\leq 2\%$

