

## NTE72 Silicon NPN Transistor High Current Amp, Fast Switch

**Features:**

- High Power: 100W @  $T_C = +50^\circ\text{C}$ ,  $V_{CE} = 40\text{V}$
- High Voltage:  $V_{CEO} = 80\text{V Min}$
- High Current Saturation Voltage:  $V_{CE(sat)} = 1.5\text{V @ } 10\text{A}$
- High Frequency:  $f_T = 30\text{MHz Min}$
- Isolated Collector Package, No Isolating hardware Required

**Absolute Maximum Ratings:** (Note 1)

Collector–Emitter Voltage, $V_{CES}$ .....	100V
Collector–Emitter Voltage (Note 2), $V_{CEO}$ .....	80V
Emitter–Base Voltage, $V_{EBO}$ .....	6V
Collector Current, $I_C$ .....	10A
Total Power Dissipation ( $T_C = +50^\circ\text{C}$ , $V_{CE} = 40\text{V}$ ), $P_T$ .....	100W
Operating Junction Temperature Range, $T_{opr}$ .....	$-65^\circ$ to $+200^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-65^\circ$ to $+200^\circ\text{C}$
Lead Temperature (During Soldering, 60sec max), $T_L$ .....	$+300^\circ\text{C}$

Note 1. These ratings are limiting values above which the serviceability of the NTE72 transistor may be impaired.

Note 2. This rating refers to a high current point where collector–emitter voltage is lowest.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector–Emitter Sustaining Voltage	$V_{CEO(sus)}$	$I_C = 200\text{mA}$ , $I_B = 0$ , Notes 2 & 3	80	–	–	V
Collector–Emitter Breakdown Voltage	$V_{(BR)CES}$	$I_C = 1\text{mA}$ , $V_{BE} = 0$	100	–	–	V
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 1\text{mA}$ , $I_C = 0$	6	–	–	V
DC Pulse Current Gain (Note 3)	h <sub>FE</sub>	$I_C = 100\text{mA}$ , $V_{CE} = 5\text{V}$	50	95	–	
		$I_C = 5\text{A}$ , $V_{CE} = 5\text{V}$	70	108	200	
		$I_C = 5\text{A}$ , $V_{CE} = 5\text{V}$ , $T_C = -55^\circ\text{C}$	35	51	–	
		$I_C = 10\text{A}$ , $V_{CE} = 5\text{V}$	45	91	–	

Note 2. This rating refers to a high current point where collector–emitter voltage is lowest.

Note 3. Pulse Conditions: Pulse Width = 300μs, Duty Cycle = 1%.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
High Frequency Current Gain	$h_{fe}$	$I_C = 2\text{A}, V_{CE} = 5\text{V}, f = 20\text{MHz}$	2.0	2.8	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 5\text{A}, I_B = 0.5\text{A}, \text{Note 3}$	–	0.55	0.9	V
		$I_C = 10\text{A}, I_B = 1\text{A}, \text{Note 3}$	–	1.1	1.5	V
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 5\text{A}, I_B = 0.5\text{A}, \text{Note 3}$	–	1.2	1.8	V
		$I_C = 10\text{A}, I_B = 1\text{A}, \text{Note 3}$	–	1.7	2.2	V
Base–Emitter ON Voltage	$V_{BE(on)}$	$I_C = 5\text{A}, V_{CE} = 5\text{V}, \text{Note 3}$	–	–	1.8	V
Collector Cutoff Current	$I_{CES}$	$V_{CE} = 60\text{V}, V_{BE} = 0$	–	0.014	1.0	$\mu\text{A}$
Collector Reverse Current	$I_{CEX}$	$V_{CE} = 60\text{V}, V_{EB} = 2\text{V}, T_C = +150^\circ\text{C}$	–	–	500	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 5\text{V}, I_C = 0$	–	–	1.0	$\mu\text{A}$
Collector–Base Capacitance	$C_{cb}$	$V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$	–	235	275	pF

Note 3. Pulse Conditions: Pulse Width =  $300\mu\text{s}$ , Duty Cycle = 1%.

