

## NTE70 Silicon NPN Transistor High Voltage Power Amp, Switch

**Description:**

The NTE70 is a silicon NPN transistor in a TO63 type case utilizing C2R processing which describes a manufacturing technology that provides surface stabilization for high voltage operation and enhances long term reliability.

**Absolute Maximum Ratings:**

Collector–Base Voltage, $V_{CBO}$ .....	180V
Collector–Emitter Voltage, $V_{CEO}$ .....	150V
Emitter–Base Voltage, $V_{EBO}$ .....	6V
Continuous Collector Current, $I_C$ .....	20A
Continuous Base Current, $I_B$ .....	20A
Total Power Dissipation ( $T_C = +25^\circ\text{C}$ ), $P_D$ .....	250W
Operating Junction Temperature Range, $T_J$ .....	$-65^\circ$ to $+200^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-65^\circ$ to $+200^\circ\text{C}$
Thermal Resistance, Junction–to–Case, $R_{thJC}$ .....	$0.7^\circ\text{C/W}$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>OFF Characteristics</b>						
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 50\text{mA}$	150	–	–	V
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 6\text{V}$	–	–	100	$\mu\text{A}$
Collector Cutoff Current	$I_{CEX}$	$V_{CE} = \text{Rated } V_{CB}, V_{EB} = 1.5\text{V}$	–	–	10	$\mu\text{A}$
		$V_{CE} = \text{Rated } V_{CB}, V_{EB} = 1.5\text{V}, T_C = +150^\circ\text{C}$	–	–	1.0	$\text{mA}$
<b>ON Characteristics (Note 1)</b>						
DC Current Gain	$h_{FE}$	$V_{CE} = 4\text{V}, I_C = 20\text{A}$	50	–	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 50\text{A}, I_B = 10\text{A}$	–	–	3.0	V
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 20\text{A}, I_B = 2\text{A}$	–	–	1.8	V
		$I_C = 50\text{A}, I_B = 10\text{A}$	–	–	3.5	V

Note 1. Pulse Test: Pulse Width =  $300\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Dynamic Characteristics</b>						
Small-Signal Current Gain	$h_{fe}$	$V_{CE} = 10\text{V}, I_C = 1\text{A}, f = 1\text{MHz}$	3.0	—	—	
Collector-Base Capacitance	$C_{ob}$	$V_{CB} = 10\text{V}, I_E = 0, f = 0.1\text{MHz}$	—	—	600	pF
Rise Time	$t_r$	$V_{CC} = 80\text{V}, I_C = 20\text{A}, I_{B1} = 2\text{A}, I_{B2} = 2\text{A}$	—	—	0.35	$\mu\text{s}$
Storage Time	$t_s$		—	—	0.80	$\mu\text{s}$
Fall Time	$t_f$		—	—	0.25	$\mu\text{s}$

