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## NTE49 (NPN) & NTE50 (PNP) Silicon Complementary Transistors General Purpose, High Voltage Amp, Driver

### Description:

The NTE49 (NPN) and NTE50 (PNP) are silicon complementary transistors in a TO202 type case designed for general purpose, high voltage amplifier and driver applications.

### Features:

- High Collector Breakdown Voltage:  $V_{(BR)CEO} = 100V \text{ Min @ } I_C = 1mA$
- High Power Dissipation:  $P_D = 10W \text{ @ } T_C = +25^\circ C$

### Absolute Maximum Ratings:

Collector–Emitter Voltage, $V_{CEO}$ .....	100V
Collector–Base Voltage, $V_{CB}$ .....	120V
Emitter–Base Voltage, $V_{EB}$ .....	4V
Continuous Collector Current, $I_C$ .....	2A
Total Power Dissipation ( $T_A = +25^\circ C$ ), $P_D$ .....	1W
Derate Above $25^\circ C$ .....	8mW/ $^\circ C$
Total Power Dissipation ( $T_C = +25^\circ C$ ), $P_D$ .....	10W
Derate Above $25^\circ C$ .....	80mW/ $^\circ C$
Operating Junction Temperature Range, $T_J$ .....	$-55^\circ$ to $+150^\circ C$
Storage Temperature Range, $T_{stg}$ .....	$-55^\circ$ to $+150^\circ C$
Thermal Resistance, Junction–to–Case, $R_{thJC}$ .....	12.5 $^\circ C/W$
Thermal Resistance, Junction–to–Ambient, $R_{thJA}$ .....	125 $^\circ C/W$

Note 1. **NTE49** is a **discontinued** device and **no longer available**.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>OFF Characteristics</b>						
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 1\text{mA}, I_B = 0$	100	–	–	V
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 100\mu\text{A}, I_C = 0$	4	–	–	V
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = 40\text{V}, I_E = 0$	–	–	100	nA
<b>ON Characteristics (Note 2)</b>						
DC Current Gain	$h_{FE}$	$I_C = 50\text{mA}, V_{CE} = 1\text{V}$	80	125	–	
		$I_C = 250\text{mA}, V_{CE} = 1\text{V}$	60	100	–	
		$I_C = 500\text{mA}, V_{CE} = 1\text{V}$	–	55	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 250\text{mA}, I_B = 10\text{mA}$	–	0.18	0.4	V
		$I_C = 250\text{mA}, I_B = 25\text{mA}$	–	0.1	–	V
Base–Emitter ON Voltage	$V_{BE(on)}$	$I_C = 250\text{mA}, V_{CE} = 5\text{V}$	–	0.74	1.2	V
<b>Small–Signal Characteristics</b>						
Current Gain–Bandwidth Product	$f_T$	$I_C = 250\text{mA}, V_{CE} = 5\text{V}, f = 100\text{MHz}, \text{Note 1}$	50	150	–	MHz
Output Capacitance	$C_{ob}$	$V_{CB} = 10\text{V}, I_E = 0, f = 100\text{kHz}$	–	6	12	pF

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

