



## NTE182 (NPN) & NTE183 (PNP) Silicon Complementary Transistors General Purpose Amplifier, Switch

### **Description:**

The NTE182 (NPN) and NTE183 (PNP) are silicon transistors in a TO127 type case designed for use in general purpose amplifier and switching applications.

### **Features:**

- DC Current Gain Specified to 10A
- High Current Gain–Bandwidth Product:  $f_T = 2\text{MHz (Min) @ } I_C = 500\text{mA}$

### **Absolute Maximum Ratings:**

Collector–Emitter Voltage, $V_{CEO}$ .....	60V
Collector–Base Voltage, $V_{CB}$ .....	70V
Emitter–Base Voltage, $V_{EB}$ .....	5V
Collector Current, $I_C$ .....	10A
Base Current, $I_B$ .....	6A
Total Device Dissipation ( $T_C = +25^\circ\text{C}$ ), $P_D$ .....	90W
Derate Above $25^\circ\text{C}$ .....	0.72W/ $^\circ\text{C}$
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, $R_{thJC}$ .....	1.39 $^\circ\text{C/W}$

### **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 Sustaining Voltage	$V_{CEO(sus)}$	$I_C = 200\text{mA}, I_B = 0$ , Note 1	60	–	–	V
Collector Cutoff Current	$I_{CEO}$	$V_{CE} = 30\text{V}, I_B = 0$	–	–	700	$\mu\text{A}$
		$V_{CE} = 70\text{V}, V_{BE(off)} = 1.5\text{V}$	–	–	1.0	mA
	$I_{CBO}$	$V_{CE} = 70\text{V}, V_{BE(off)} = 1.5\text{V}, T_C = +150^\circ\text{C}$	–	–	5.0	mA
		$V_{CB} = 70\text{V}, I_E = 0$	–	–	1.0	mA
		$V_{CB} = 70\text{V}, I_E = 0, T_C = +150^\circ\text{C}$	–	–	10	mA
Emitter Cutoff Current	$I_{EBO}$	$V_{BE} = 5\text{V}, I_C = 0$	–	–	5.0	mA

Note 1. Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ . 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>ON Characteristics (Note 1)</b>						
DC Current Gain	$h_{FE}$	$I_C = 4\text{A}, V_{CE} = 4\text{V}$	20	–	100	
		$I_C = 10\text{A}, V_{CE} = 4\text{V}$	5.0	–	–	
Base–Emitter ON Voltage	$V_{BE(on)}$	$I_C = 4\text{A}, V_{CE} = 4\text{V}$	–	–	1.8	V
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 4\text{A}, I_B = 400\text{mA}$	–	–	1.1	V
		$I_C = 10\text{A}, I_B = 3.3\text{A}$	–	–	8.0	V
<b>Dynamic Characteristics</b>						
Current Gain–Bandwidth Product	$f_T$	$I_C = 500\text{mA}, V_{CE} = 10\text{V}, f = 1\text{MHz}$	2.0	–	–	MHz

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

