

## NTE16004 (PNP) & NTE16005 (NPN) Silicon Complementary Transistors High Current, General Purpose

**Absolute Maximum Ratings:**

Collector–Emitter Voltage, $V_{CEO}$ .....	75V
Collector–Base Voltage, $V_{CBO}$ .....	100V
Emitter–Base Voltage, $V_{EBO}$ .....	7V
Continuous Collector Current, $I_C$ .....	2A
Base Current, $I_B$ .....	1A
Total Device Dissipation ( $T_C = +25^\circ\text{C}$ ), $P_D$ .....	10W
Derate Above $25^\circ\text{C}$ .....	0.057mW/ $^\circ\text{C}$
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, $R_{thJC}$ .....	17.5 $^\circ\text{C}/\text{W}$

**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	$V_{(BR)CEO}$	$I_C = 100\text{mA}, I_B = 0$	75	–	–	V
Collector Cutoff Current	$I_{CEX}$	$V_{CE} = 100\text{V}, V_{BE} = 1.5\text{V}$	–	–	0.1	mA
		$V_{CE} = 70\text{V}, V_{BE} = 1.5\text{V}, T_C = +150^\circ\text{C}$	–	–	5.0	mA
Emitter Cutoff Current	$I_{EBO}$	$V_{BE} = 7\text{V}, I_C = 0$	–	–	0.1	mA
<b>ON Characteristics (Note 1)</b>						
DC Current Gain	$h_{FE}$	$I_C = 500\text{mA}, V_{CE} = 4\text{V}$	30	–	130	
		$I_C = 1\text{A}, V_{CE} = 2\text{V}$	10	–	–	
Collector–Emitter Saturation Voltage NTE16004	$V_{CE(sat)}$	$I_C = 500\text{mA}, I_B = 50\text{mA}$	–	–	0.7	V
NTE16005			–	–	0.5	V
Base–Emitter ON Voltage	$V_{BE(on)}$	$I_C = 500\text{mA}, V_{CE} = 4\text{V}$	–	–	1.1	V
<b>Small–Signal Characteristics</b>						
Small–Signal Current Gain	$h_{fe}$	$I_C = 50\text{mA}, V_{CE} = 4\text{V}, f = 10\text{MHz}$	5	–	–	

Note 1. 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
<b>Switching Characteristics</b>						
Turn-On Time NTE16004	$t_{on}$	$V_{CC} = 30\text{V}, I_C = 500\text{mA}, I_{B1} = 50\text{mA}$	-	-	100	ns
NTE16005			-	-	80	ns
Turn-Off Time NTE16004	$t_{off}$	$V_{CC} = 30\text{V}, I_C = 500\text{mA}, I_{B1} = I_{B2} = 50\text{mA}$	-	-	1000	ns
NTE16005			-	-	800	ns

