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## NTE388 (NPN) & NTE68 (PNP) Silicon Complementary Transistors General Purpose High Power Audio, Disk Head Positioner for Linear Applications

### Description:

The NTE388 (NPN) and NTE68 (PNP) are complementary silicon power transistors in a TO3 type package designed for high power audio, disk head positioners, and other linear applications.

### Features:

- High Safe Operating Area: 2A @ 80V
- High DC Current Gain:  $h_{FE} = 15 \text{ Min @ } I_C = 8A$

### Absolute Maximum Ratings:

Collector–Emitter Voltage, $V_{CEO}$ .....	250V
Collector–Emitter Voltage, $V_{CEX}$ .....	400V
Collector–Base Voltage, $V_{CBO}$ .....	400V
Emitter–Base Voltage, $V_{EBO}$ .....	5V
Collector Current, $I_C$	
Continuous .....	16A
Peak (Note 2) .....	30A
Continuous Base Current, $I_B$ .....	5A
Total Power Dissipation ( $T_C = +25^\circ\text{C}$ ), $P_D$ .....	250W
Derate Above $25^\circ\text{C}$ .....	1.43W/ $^\circ\text{C}$
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, $R_{thJC}$ .....	0.70 $^\circ\text{C}/\text{W}$

Note 1. Matched complementary pairs are available upon request (NTE68MCP). Matched complementary pairs have their gain specification ( $h_{FE}$ ) matched to within 10% of each other.

Note 2. Pulse Test: Pulse Width = 5ms, Duty Cycle  $\leq 10\%$ .



**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	$V_{CEO(sus)}$	$I_C = 100\text{mA}, I_B = 0$ , Note 3	250	–	–	V
Collector Cutoff Current	$I_{CEX}$	$V_{CE} = 250\text{V}, V_{BE(off)} = 1.5\text{V}$	–	–	250	$\mu\text{A}$
	$I_{CEO}$	$V_{CE} = 200\text{V}, I_B = 0$	–	–	500	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 5\text{V}, I_C = 0$	–	–	500	$\mu\text{A}$
<b>Second Breakdown</b>						
Second Breakdown Collector Current with Base Forward Bias	$I_{S/b}$	$V_{CE} = 50\text{V}, t = 0.5\text{s}$ (non–repetitive)	5	–	–	$\mu\text{A}$
		$V_{CE} = 80\text{V}, t = 0.5\text{s}$ (non–repetitive)	2	–	–	$\mu\text{A}$
<b>ON Characteristics</b>						
DC Current Gain	$h_{FE}$	$V_{CE} = 4\text{V}, I_C = 8\text{A}$	15	–	60	
		$V_{CE} = 4\text{V}, I_C = 16\text{A}$	5	–	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 8\text{A}, I_B = 800\text{mA}$	–	–	1.4	V
		$I_C = 16\text{A}, I_B = 3.2\text{A}$	–	–	4.0	V
Base–Emitter On Voltage	$V_{BE(on)}$	$V_{CE} = 4\text{V}, I_C = 8\text{A}$	–	–	2.2	V
<b>Dynamic Characteristics</b>						
Current Gain–Bandwidth Product	$f_T$	$V_{CE} = 10\text{V}, I_C = 1\text{A}, f_{test} = 1\text{MHz}$	4	–	–	MHz
Output Capacitance	$C_{ob}$	$V_{CB} = 10\text{V}, I_E = 0, f_{test} = 1\text{MHz}$	–	–	500	pF

Note 3. Pulse Test: Pulse Width =  $300\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

