

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°C	1.43W/ $^\circ\text{C}$
Operating Junction Temperature Range, T_J	-65° to $+200^\circ\text{C}$
Storage Temperature Range, T_{stg}	-65° to $+200^\circ\text{C}$
Thermal Resistance, Junction–to–Case, R_{thJC}	0.70 $^\circ\text{C/W}$

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

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

