



NTE392 (NPN) & NTE393 (PNP) Silicon Complementary Transistors General Purpose

Description:

The NTE392 (NPN) and NTE393 (PNP) are silicon complementary transistors in a TO218 type package designed for general purpose power amplifier and switching applications.

Features:

- 25A Collector Current
- Low Leakage Current: $I_{CEO} = 1\text{mA}$ @ $V_{CE} = 60\text{V}$
- Excellent DC Gain: $h_{FE} = 40$ Typ @ 15A
- High Current Gain Bandwidth Product: $h_{fe} = 3$ Min @ $I_C = 1\text{A}$, $f = 1\text{MHz}$

Absolute Maximum Ratings:

Collector–Emitter Voltage, V_{CEO}	100V
Collector–Base Voltage, V_{CB}	100V
Emitter–Base Voltage, V_{EB}	5V
Collector Current, I_C	
Continuous	25A
Peak (Note 1)	40A
Continuous Base Current, I_B	5A
Total Power Dissipation ($T_C = +25^\circ\text{C}$), P_D	125W
Derate Above 25°C	1W/ $^\circ\text{C}$
Operating Junction Temperature Range, T_J	-65° to $+150^\circ\text{C}$
Storage Temperature Range, T_{stg}	-65° to $+150^\circ\text{C}$
Unclamped Inductive Load, E_{SB}	90mJ
Thermal Resistance, Junction–to–Case, R_{thJC}	1.0 $^\circ\text{C/W}$
Thermal Resistance, Junction–to–Ambient, R_{thJA}	35.7 $^\circ\text{C/W}$

Note 1. Pulse Test: Pulse Width = 10ms, 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	$V_{\text{CEO(sus)}}$	$I_{\text{C}} = 30\text{mA}$, $I_{\text{B}} = 0$, Note 2	100	–	–	V
Collector–Emitter Cutoff Current	I_{CEO}	$V_{\text{CE}} = 60\text{V}$, $I_{\text{B}} = 0$	–	–	1	mA
	I_{CES}	$V_{\text{CE}} = 100\text{V}$, $V_{\text{EB}} = 0$	–	–	0.7	mA
Emitter–Base Cutoff Current	I_{EBO}	$V_{\text{EB}} = 5\text{V}$, $I_{\text{C}} = 0$	–	–	1	mA
ON Characteristics (Note 2)						
DC Current Gain	h_{FE}	$I_{\text{C}} = 1.5\text{A}$, $V_{\text{CE}} = 4\text{V}$	25	–	–	
		$I_{\text{C}} = 15\text{A}$, $V_{\text{CE}} = 4\text{V}$	15	–	75	
Collector–Emitter Saturation Voltage	$V_{\text{CE(sat)}}$	$I_{\text{C}} = 15\text{A}$, $I_{\text{B}} = 1.5\text{A}$	–	–	1.8	V
		$I_{\text{C}} = 25\text{A}$, $I_{\text{B}} = 5\text{A}$	–	–	4	V
Base–Emitter ON Voltage	$V_{\text{BE(on)}}$	$I_{\text{C}} = 15\text{A}$, $V_{\text{CE}} = 4\text{V}$	–	–	2.0	V
		$I_{\text{C}} = 25\text{A}$, $V_{\text{CE}} = 4\text{V}$	–	–	4.0	V
Dynamic Characteristics						
Small–Signal Current Gain	h_{fe}	$I_{\text{C}} = 1\text{A}$, $V_{\text{CE}} = 10\text{V}$, $f = 1\text{kHz}$	25	–	–	
Current–Gain Bandwidth Product	f_{T}	$I_{\text{C}} = 1\text{A}$, $V_{\text{CE}} = 10\text{V}$, $f = 1\text{MHz}$, Note 3	3	–	–	MHz

Note 2. Pulse Test: Pulse Width = 300μs, Duty Cycle ≤ 2%.

Note 3. $f_T = |h_{fe}| \bullet f_{test}$

