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NTE29 (NPN) & NTE30 (PNP) Silicon Complementary Transistors High Power, High Current Switch

Description:

The NTE29 (NPN) and NTE30 (PNP) are complementary power transistors in a TO3 type case designed for use in high power amplifier and switching circuit applications.

Features:

- High Current Capability: $I_C = 50A$ (Continuous)
- DC Current Gain: $h_{FE} = 15$ to 60 @ $I_C = 25A$
- Low Collector–Emitter Saturation Voltage: $V_{CE(sat)} = 1V$ Max @ $I_C = 25A$

Absolute Maximum Ratings:

Collector–Emitter Voltage, V_{CEO}	80V
Collector–Base Voltage, V_{CB}	80V
Emitter–Base Voltage, V_{EB}	5V
Continuous Collector Current, I_C	50A
Base Current, I_B	15A
Total Device Dissipation ($T_C = +25^\circ C$), P_D	300W
Derate Above $25^\circ C$	1.715W/ $^\circ C$
Operating Junction Temperature Range, T_J	-65° to $+200^\circ C$
Storage Temperature Range, T_{stg}	-65° to $+200^\circ C$
Thermal Resistance, Junction–to–Case, R_{thJC}	0.584 $^\circ C/W$

Electrical Characteristics: ($T_C = +25^\circ C$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector–Emitter Sustaining Voltage	$V_{CEO(sus)}$	$I_C = 0.2A, I_B = 0$, Note 1	80	–	–	V
Collector Cutoff Current	I_{CEO}	$V_{CE} = 40V, I_B = 0$	–	–	1	mA
		$V_{CE} = 80V, V_{EB(off)} = 1.5V$	–	–	2	mA
	$V_{CE} = 80V, V_{EB(off)} = 1.5V,$ $T_C = +150^\circ C$	–	–	10	mA	
	I_{CBO}	$V_{CB} = 80V, I_E = 0$	–	–	2	mA
Emitter Cutoff Current	I_{EBO}	$V_{BE} = 5V, I_C = 0$	–	–	5	mA

Electrical Characteristics (Cont'd): ($T_C = +25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
ON Characteristics (Note 1)						
DC Current Gain	h_{FE}	$I_C = 25\text{A}, V_{CE} = 2\text{V}$	15	–	60	
		$I_C = 50\text{A}, V_{CE} = 5\text{V}$	5	–	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 25\text{A}, I_B = 2.5\text{A}$	–	–	1	V
		$I_C = 50\text{A}, I_B = 10\text{A}$	–	–	5	V
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 25\text{A}, I_B = 2.5\text{A}$	–	–	2	V
Base–Emitter ON Voltage	$V_{BE(on)}$	$I_C = 25\text{A}, V_{CE} = 2\text{V}$	–	–	2	V
Dynamic Characteristics						
Current Gain–Bandwidth Product	f_T	$I_C = 5\text{A}, V_{CE} = 10\text{V}, f = 1\text{MHz}$	2	–	–	MHz
Output Capacitance	C_{ob}	$V_{CB} = 10\text{V}, I_E = 0, f = 0.1\text{MHz}$	–	–	1200	pF
Small–Signal Current Gain	h_{fe}	$I_C = 10\text{A}, V_{CE} = 5\text{V}, f = 1\text{kHz}$	15	–	–	

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

