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NTE328
Silicon NPN Transistor
Power Amp, Switch

Description:
The NTE328 i a silicon NPN transistor in a TO3 type package designed for use in industrial power amplifier and switching circuit applications.

Features:
- High Collector–Emitter Sustaining Voltage
- High DC Current Gain
- Low Collector–Emitter Saturation Voltage
- Fast Switching Times

Absolute Maximum Ratings:
Collector–Emitter Voltage, V_{CEO} 120V
Collector–Base Voltage, V_{CB} 140V
Emitter–Base Voltage, V_{EB} 6V
Collector Current, I_C
  Continuous 25A
  Peak 50A
Base Current, I_B 10A
Total Device Dissipation (T_C = +25°C), P_D 200W
  Derate Above 25°C . . . . . 1.14W/°C
Operating Junction Temperature Range, T_J . . . . . –65° to +200°C
Storage Temperature Range, T_{stg} . . . . . –65° to +200°C
Thermal Resistance, Junction–to–Case, R_{thJC} . . . . . 0.875°C/W

Electrical Characteristics: (T_C = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector–Emitter Sustaining Voltage	$V_{CEO(sus)}$	I_C = 50mA, I_B = 0, Note 1	120	–	–	V
Collector Cutoff Current	I_{CEX}	V_{CE} = 120V, $V_{BE(off)}$ = 1.5V	–	–	10	mA
		V_{CE} = 120V, $V_{BE(off)}$ = 1.5V, T_C = +150°C	–	–	1.0	mA
	I_{CEO}	V_{CE} = 60V, I_B = 0	–	–	50	μA
	I_{CBO}	V_{CB} = 180V, I_E = 0	–	–	10	μA
Emitter Cutoff Current	I_{EBO}	V_{BE} = 6V, I_C = 0	–	–	100	μA

Note 1. Pulse test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

Electrical Characteristics (Cont'd): (T_C = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
ON Characteristics (Note 1)						
DC Current Gain	h_{FE}	V_{CE} = 2V, I_C = 0.5A	50	–	–	
		V_{CE} = 2V, I_C = 10A	30	–	120	
		V_{CE} = 2V, I_C = 25A	12	–	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 10A, I_B = 1.0A	–	–	1.0	V
		I_C = 25A, I_B = 2.5A	–	–	1.8	V
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 10A, I_B = 1.0A	–	–	1.8	V
		I_C = 25A, I_B = 2.5A	–	–	2.5	V
Base–Emitter ON Voltage	$V_{BE(on)}$	V_{CE} = 2V, I_C = 10A	–	–	1.8	V
Dymanic Characteristics						
Current Gain–Bandwidth Product	f_T	V_{CE} = 10V, I_C = 1A, f = 10MHz, Note 2	40	–	–	MHz
Output Capacitance	C_{ob}	V_{CB} = 10V, I_E = 0, f = 0.1MHz	–	–	300	pF
Switching Characteristics						
Rise Time	t_r	V_{CC} = 80V, I_C = 10A, I_{B1} = 1A, $V_{BE(off)}$ = 6v	–	–	0.3	µs
Storage Time	t_s	V_{CC} = 80V, I_C = 10A, I_{B1} = I_{B2} = 1A	–	–	1.0	µs
Fall Time	t_f		–	–	0.25	µs

Note 1. Pulse test: Pulse Width ≤ 300µs, Duty Cycle ≤ 2%.

Note 2. $f_T = |h_{fe}| \bullet f_{test}$.

