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NTE188 (NPN) & NTE189 (PNP)
Silicon Complementary Transistors
High Voltage Amplifier & Driver

Description:

The NTE188 (NPN) and NTE189 (PNP) are complementary silicon transistors in a TO202N type package designed for general purpose, high voltage amplifier and driver applications.

Features:

- High Collector–Emitter Breakdown Voltage: $V_{(BR)CEO}$ = 80V @ I_C = 1mA
- High Power Dissipation: P_D = 10W @ T_C = +25°C

Absolute Maximum Ratings:

Collector–Emitter Voltage, V_{CEO} 80V
Collector–Base Voiltage, V_{CB} 80V
Emitter–Base Voltage, V_{EB} 4V
Continuous Collector Current, I_C 2A
Total Power Dissipation (T_A = +25°C), P_D 1W
Derate Above 25°C . . . . . 8mW/°C
Total Power Dissipation (T_C = +25°C), P_D 10W
Derate Above 25°C . . . . . 80mW/°C
Operating Junction Temperature Range, T_J . . . . . –55° to +150°C
Storage Temperature Range, T_{stg} . . . . . –55° to +150°C
Thermal Resistance, Junction–to–Ambient (Note 1), R_{thJA} . . . . . 125°C/W
Thermal Resistance, Junction–to–Case, R_{thJC} . . . . . 12.5°C/W

Note 1. R_{thJA} is measured with the device soldered into a typical printed circuit board.

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

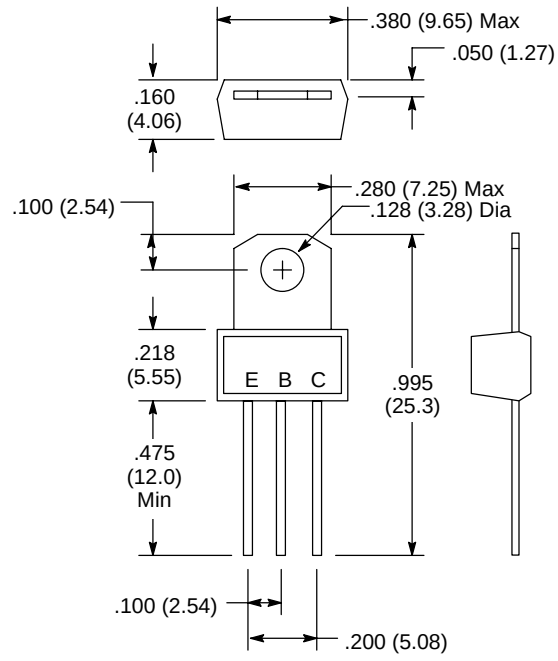
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 1mA, I_B = 0, Note 2	80	–	–	V
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 100μA, I_C = 0	4	–	–	V
Collector Cutoff Current NTE188	I_{CBO}	V_{CB} = 80V, I_E = 0	–	–	100	nA
NTE189		V_{CB} = 60V, I_E = 0	–	–	100	nA

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

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics (Note 3)						
DC Current Gain NTE188	h_{FE}	I_C = 50mA, V_{CE} = 1V	60	110	–	
		I_C = 250mA, V_{CE} = 1V	30	65	–	
NTE189		I_C = 50mA, V_{CE} = 1V	–	33	–	
		I_C = 50mA, V_{CE} = 1V	80	160	–	
		I_C = 50mA, V_{CE} = 1V	50	130	–	
		I_C = 50mA, V_{CE} = 1V	–	8	–	
Collector–Emitter Saturation Voltage NTE188	$V_{CE(sat)}$	I_C = 250mA, I_B = 10mA	–	0.18	0.4	V
		I_C = 250mA, I_B = 25mA	–	0.1	–	V
NTE189		I_C = 250mA, I_B = 10mA	–	0.22	0.5	V
		I_C = 250mA, I_B = 25mA	–	0.15	–	V
Base–Emitter ON Voltage NTE188	$V_{BE(on)}$	I_C = 250mA, V_{CE} = 5V	–	0.76	1.2	V
NTE189			–	0.78	1.2	V
Small–Signal Characteristics						
Current Gain–Bandwidth Product NTE188	f_T	I_C = 250mA, V_{CE} = 5V, f = 100MHz, Note 2	50	150	–	MHz
NTE189			50	100	–	MHz
Output Capacitance NTE188	C_{ob}	V_{CB} = 10V, I_E = 0, f = 100MHz	–	6	12	pF
NTE189			–	10	15	pF

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



Collector Connected to Tab