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NTE190 Silicon NPN Transistor High Voltage Amplifier

Description:

The NTE190 is an NPN silicon transistor in a TO202N type case designed for horizontal drive applications, high voltage linear amplifiers, and high voltage transistor regulators.

Features:

- High Collector–Emitter Breakdown Voltage: $V_{(BR)CEO} = 180V$ (Min) @ $I_C = 1mA$
- Low Collector–Emitter Saturation Voltage: $V_{CE(sat)} = 0.5V$ (Max) @ $I_C = 200mA$
- High Power Dissipation: $P_D = 10W$ @ $T_C = +25^\circ C$

Absolute Maximum Ratings:

Collector–Emitter Voltage, V_{CEO}	180V
Collector–Base Voltage, V_{CB}	180V
Emitter–Base Voltage, V_{EB}	5V
Collector Current, I_C	1A
Total Device Dissipation ($T_A = +25^\circ C$), P_D	1W
Derate Above $25^\circ C$	8mW/ $^\circ C$
Total Device Dissipation ($T_C = +25^\circ C$), P_D	10W
Derate Above $25^\circ C$	80mW/ $^\circ C$
Operating Junction Temperature Range, T_J	-55° to $+150^\circ C$
Storage Temperature Range, T_{stg}	-55° to $+150^\circ C$
Lead Temperature (During Soldering, 1/16" from case for 10sec), T_L	$+260^\circ C$
Thermal Resistance, Junction–to–Ambient, R_{thJA}	125 $^\circ C/W$
Thermal Resistance, Junction–to–Case, R_{thJC}	12.5 $^\circ C/W$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 1mA, I_B = 0$	180	–	–	V
Collector–Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 100\mu A, I_E = 0$	180	–	–	V
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 100\mu A, I_C = 0$	5	–	–	V
Collector Cutoff Current	I_{CBO}	$V_{CB} = 150V, I_E = 0$	–	–	0.1	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}	$I_C = 10\text{mA}$, $V_{CE} = 10\text{V}$	40	–	–	
Base–Emitter ON Voltage	$V_{BE(on)}$	$I_C = 200\text{mA}$, $V_{CE} = 1\text{V}$	–	–	1.0	V
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 200\text{mA}$, $I_B = 20\text{mA}$	–	–	0.5	V
Dynamic Characteristics						
Current Gain–Bandwidth Product	f_T	$I_C = 50\text{mA}$, $V_{CE} = 20\text{V}$, $f = 20\text{MHz}$	35	–	–	MHz
Output Capacitance	C_{ob}	$V_{CB} = 10\text{V}$, $I_E = 0$, $f = 100\text{kHz}$	–	–	12	pF
Input Capacitance	C_{ib}	$V_{BE} = 0.5\text{V}$, $I_C = 0$, $f = 100\text{kHz}$	–	–	110	pF

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

