ELECTRONICS, INC.
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NTE194
Silicon NPN Transistor
Audio Power Amplifier

Description:

The NTE194 is a silicon NPN amplifier transistor packaged in a standard TO92 case.

Absolute Maximum Ratings:

Collector–Emitter Voltage, V_{CEO} 160V
Collector–Base Voltage, V_{CBO} 180V
Emitter–Base Voltage, V_{EBO} 6V
Continuous Collector Current, I_C 600mA
Total Device Dissipation (T_A = +25°C), P_D 350mW
Derate above 25°C . . . . . 2.8mW/°C
Total Device Dissipation (T_C = +25°C), P_D 1.0W
Derate above 25°C . . . . . 8.0mW/°C
Operating Junction Temperature Range, T_J . . . . . –55° to +150°C
Storage Temperature Range, T_{stg} . . . . . –55° to +150°C
Thermal Resistance, Junction–to–Case, R_{thJC} . . . . . 125°C/W
Thermal Resistance, Junction–to–Ambient (Note 1), R_{thJA} . . . . . 357°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	180	–	–	V
Collctor–Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 100µA, I_E = 0	180	–	–	V
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 10µA, I_C = 0	6	–	–	V
Collector Cutoff Current	I_{CBO}	V_{CB} = 120V, I_E = 0	–	–	50	nA
		V_{CB} = 120V, I_E = 0, T_A = +100°C	–	–	50	nA
Emitter Cutoff Current	I_{EBO}	V_{EB} = 4V, I_C = 0	–	–	50	nA

Note 2 Pulse Test: Pulse Width = 300µs, Duty Cycle = 2.0%.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
ON Characteristics (Note 2)						
DC Current Gain	h_{FE}	V_{CE} = 5V, I_C = 1mA	80	–	–	
		V_{CE} = 5V, I_C = 10mA	80	–	250	
		V_{CE} = 5V, I_C = 50mA	30	–	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 10mA, I_B = 1mA	–	–	0.15	V
		I_C = 50mA, I_B = 5mA	–	–	0.20	V
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 10mA, I_B = 1mA	–	–	1.0	V
		I_C = 50mA, I_B = 5mA	–	–	1.0	V
Small–Signal Characteristics						
Current Gain–Bandwidth Product	f_T	V_{CE} = 10V, I_C = 10mA, f = 100MHz	100	–	300	MHz
Output Capacitance	C_{obo}	V_{CB} = 10V, I_E = 0, f = 1MHz	–	–	6	pF
Input Capacitance	C_{ibo}	V_{BE} = 0.5V, I_C = 0, f = 1MHz	–	–	20	pF
Small–Signal Current Gain	h_{fe}	V_{CE} = 10V, I_C = 1mA, f = 1kHz	50	–	200	
Noise Figure	NF	V_{CE} = 5V, I_C = 250μA, R_S = 1kΩ, f = 10Hz to 15.7kHz	–	–	8.0	dB

Note 2 Pulse Test: Pulse Width = 300μs, Duty Cycle = 2.0%.