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2N3704

Silicon NPN Transistor General Purpose Amplifier TO-92 Type Package

Applications:

- Medium Power Amplifiers
- Class B Audio Outputs
- Hi-Fi Drivers

Absolute Maximum Ratings: ($T_A = +25^\circ\text{C}$ unless otherwise specified)

Collector-Emitter Voltage, V_{CEO}	30V
Collector-Base Voltage, V_{CBO}	50V
Emitter-Base Voltage, V_{EBO}	5V
Continuous Collector Current, I_C	500mA
Total Device Dissipation ($T_A = +25^\circ\text{C}$), P_D	625mW
Derate Above 25°C	5.0mW/ $^\circ\text{C}$
Operating Junction Temperature Range, T_J	-55° to $+150^\circ\text{C}$
Storage Temperature Range, T_{stg}	-55° to $+150^\circ\text{C}$
Thermal Resistance, Junction-to-Case, R_{thJC}	83.3 $^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Ambient, R_{thJA}	200 $^\circ\text{C}/\text{W}$

Note 1. These ratings are limiting values above which the serviceability of any semiconductor may be impaired.

Note 2. These ratings are based on a maximum junction temperature of 150°C .

Electrical Characteristics: ($T_A = +25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 10\text{mA}$, $I_B = 0$, Note 3	30	-	-	V
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 100\mu\text{A}$, $I_E = 0$	50	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 100\mu\text{A}$, $I_C = 0$	5.0	-	-	V
Collector Cutoff Current	I_{CBO}	$V_{CB} = 20\text{V}$, $I_E = 0$	-	-	100	nA
Emitter Cutoff Current	I_{EBO}	$V_{BE} = 3\text{V}$, $I_C = 0$	-	-	100	nA

Note 3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
DC Current Gain	h_{FE}	$V_{CE} = 2\text{V}$, $I_C = 50\text{mA}$, Note 3	100	-	300	
Base-Emitter ON Voltage	$V_{BE(on)}$	$I_C = 100\text{mA}$, $V_{CE} = 2\text{V}$, Note 3	0.5	-	1.0	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 100\text{mA}$, $I_B = 5\text{mA}$, Note 3	-	-	0.6	V
Current Gain-Bandwidth Product	f_T	$I_C = 50\text{mA}$, $V_{CE} = 2\text{V}$	100	-	-	MHz
Collector-Base Capacitance	C_{cb}	$V_{CB} = 10\text{V}$, $I_E = 0$, $f = 1\text{MHz}$	-	-	12	pF

Note 3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

