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2N6109 Silicon PNP Transistor Audio Power Output and Medium Power Switching TO-220 Type Package

Description:

The 2N6109 is a silicon PNP transistor in a TO-220 type package designed for use in general purpose amplifier and switching applications.

Features:

- DC Current Gain Specified to 7 Amps: $h_{FE} = 2.3 \text{ Min @ } I_C = 7A$
- Collector-Emmitter Sustaining Voltage: $V_{CEO(sus)} = 50V \text{ Min}$
- High Current-Gain Bandwidth Product: $f_T = 10MHz \text{ Min @ } I_C = 500mA$

Absolute Maximum Ratings: (Note 1)

Collector-Emmitter Voltage, V_{CEO}	50V
Collector-Base Voltage, V_{CB}	60V
Emitter-Base Voltage, V_{EB}	5V
Collector Current, I_C	
Continuous	7A
Peak	10A
Base Current, I_B	3A
Total Power Dissipation ($T_C = +25^\circ C$), P_D	40W
Derate Above $25^\circ C$	0.32W/ $^\circ C$
Operating Junction Temperature Range, T_J	-65° to $+150^\circ C$
Storage Temperature Range, T_{stg}	-65° to $+150^\circ C$
Thermal Resistance, Junction-to-Case, R_{thJC}	3.125 $^\circ C/W$

Note 1. Stresses exceeding Maximum Ratings may damage the device. maximum ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector-Emmitter Sustaining Voltage	$V_{CEO(sus)}$	$I_C = 100mA, I_B = 0, \text{ Note 2}$	50	-	-	V
Collector Cutoff Current	I_{CEO}	$V_{CE} = 40V, I_B = 0$	-	-	1.0	mA
		$V_{CE} = 60V, V_{EB(off)} = 1.5V$	-	-	100	μA
	$V_{CE} = 50V, V_{EB(off)} = 1.5V, T_C = +150^\circ C$	-	-	2.0	mA	
Emitter Cutoff Current	I_{EBO}	$V_{BE} = 5V, I_C = 0$	-	-	1.0	mA

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

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
ON Characteristics (Note 2)						
DC Current Gain	h_{FE}	$I_C = 2.5\text{A}, V_{CE} = 4\text{V}$	30	-	150	
		$I_C = 7\text{A}, V_{CE} = 4\text{V}$	2.3	-	-	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 7\text{A}, I_B = 3\text{A}$	-	-	3.5	V
Base-Emitter ON Voltage	$V_{BE(on)}$	$I_C = 7\text{A}, V_{CE} = 4\text{V}$	-	-	3.0	V
Dynamic Characteristics						
Current-Gain Bandwidth Product	f_T	$I_C = 500\text{mA}, V_{CE} = 4\text{V}, f_{test} = 1\text{MHz}$, Note 3	10	-	-	MHz
Output Capacitance	C_{ob}	$V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$	-	-	250	pF
Small-Signal Current Gain	h_{fe}	$I_C = 500\text{mA}, V_{CE} = 4\text{V}, f = 50\text{kHz}$	20	-	-	

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

Note 3. $f_T = |h_{fe}| \cdot f_{test}$

