

Low Power Bipolar Transistors

BC109 Series

multicomp PRO

General Purpose Amplifier / Switches

**RoHS
Compliant**



Feature

- NPN Silicon Planar Epitaxial Transistors



Pin Configuration

1. Emitter
2. Base
3. Collector

Absolute Maximum Ratings

Description	Symbol	Values	Unit
Collector-Emitter Voltage	V_{CEO}	25	V
Collector-Base Voltage	V_{CBO}	30	
Emitter-Base Voltage	V_{EBO}	5	
Collector Current Continuous	I_C	0.2	A
Power Dissipation at $T_A = 25^\circ\text{C}$ Derate Above 25°C	P_D	0.6	W
Power Dissipation at $T_c = 25^\circ\text{C}$ Derate Above 25°C		2.28	
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-65 to +200	$^\circ\text{C}$
Thermal Resistance			
Junction to Case	$R_{th(j-c)}$	175	$^\circ\text{C} / \text{W}$

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

Description	Symbol	Test Condition	Minimum	Maximum	Unit
Collector-Emitter Voltage	V_{CEO}	$I_C = 2 \text{ mA}, I_B = 0$	25	-	V
Collector-Base Voltage	V_{EBO}	$I_E = 10 \mu\text{A}, I_C = 0$	5	-	
Collector-Cut off Current	I_{CBO}	$V_{CB} = 25 \text{ V}, I_E = 0$ $T_{amb} = 125^\circ\text{C}$ $V_{CB} = 25 \text{ V}, I_E = 0$	-	15	nA
			-	4	μA
DC Current	h_{FE}	$I_C = 10 \mu\text{A}, V_{CE} = 5 \text{ V}$ B Group C Group	40	-	-
			100	-	
		$I_C = 2 \text{ mA}, V_{CE} = 5 \text{ V}$ B Group C Group	200	800	
			420	800	
Base Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 10 \text{ mA}, I_B = 0.5 \text{ mA}$ $I_C = 100 \text{ mA}, I_B = 5 \text{ mA}$	-	0.83 1.05	V
Collector Emitter Saturation Voltage	$V_{CE(sat)}$		-	0.25 0.6	

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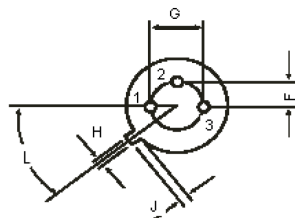
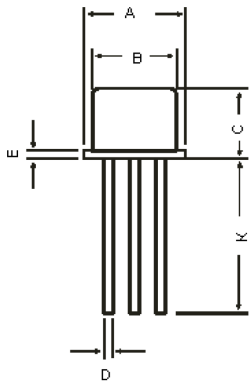
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Description	Symbol	Test Condition	Minimum	Maximum	Unit
Base Emitter on Voltage	$V_{BE(ON)}$	$I_C = 2\text{ mA}, V_{CE} = 5\text{ V}$ $I_C = 10\text{ mA}, V_{CE} = 5\text{ V}$	0.55 -	0.7 0.77	V
Collector Knee Voltage	$V_{CE(K)}$	$I_C = 10\text{ mA}, I_B = \text{The Value for Which } I_C = 11\text{ mA at } V_{CE} = 1\text{ V}$	-	0.6	V
Transition Frequency	f_t	$V_{CE} = 5\text{ V}, I_C = 10\text{ mA}$ $f = 100\text{ MHz}$	150	-	MHz
Noise Figure	nF	$V_{CE} = 5\text{ V}, I_C = 0.2\text{ mA}$ $R_g = 2\text{ k}\Omega$ $F = 30\text{ Hz to } 15\text{ kHz}$ $F = 1\text{ kHz}, B = 200\text{ Hz}$	-	4 4	dB
Output Capacitance	Cobo	$V_{CB} = 10\text{ V}, f = 1\text{ MHz}$	-	4.5	pF
Small Signal Current Gain	h_{fe}	All $f = 1\text{ kHz}$ $I_C = 2\text{ mA}, V_{CE} = 5\text{ V}$ B Group C Group	240 240 450	900 500 900	-
Input Impedance	h_{ie}	$I_C = 2\text{ mA}, V_{CE} = 5\text{ V}$ B Group C Group	3.2 6	8.5 15	k Ω
Output Admittance	hoe	$I_C = 2\text{ mA}, V_{CE} = 5\text{ V}$ B Group C Group	-	60 110	$\mu\Omega$

TO-18 Metal Can Package



Dim.	Min.	Max.
A	5.24	5.84
B	4.52	4.97
C	4.31	5.33
D	0.4	0.53
E	-	0.76

Dim.	Min.	Max.
F	-	1.27
G	-	2.97
H	0.91	1.17
J	0.71	1.21
K	12.7	-
L	45°	

Part Number Table

Description	Part Number
Low Power Bipolar Transistor, NPN, 25V, 150MHz, 600mW	BC109
	BC109B
	BC109C

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