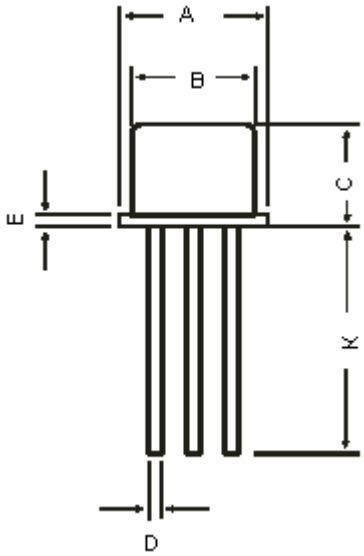
Low Power Bipolar Transistors

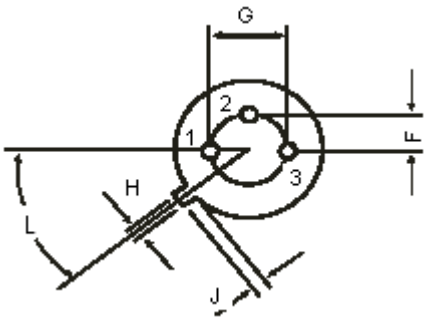
BC109 Series

Feature:

- NPN Silicon Planar Epitaxial Transistors

TO-18 Metal Can Package





Specification Table

Dimensions	Minimum	Maximum
A	5.24	5.84
B	4.52	4.97
C	4.31	5.33
D	0.4	0.53
E	-	0.76
F	-	1.27
G	-	2.97
H	0.91	1.17
J	0.71	1.21
K	12.7	-
L	45°	

Dimensions : Millimetres

Pin Configuration:

- Emitter
- Base
- Collector

Absolute Maximum Ratings

Description	Symbol	BC109	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

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Absolute Maximum Ratings

Description	Symbol	BC109	Unit
Power Dissipation at T_a = 25°C Derate above 25°C	P_D	0.6 2.28	W mW / °C
Power Dissipation at T_C = 25°C Derate above 25°C		1 6.67	
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200	°C
Thermal Resistance			
Junction to Case	$R_{th\ (j-c)}$	175	°C / W

Electrical Characteristics (T_a = 25°C unless otherwise specified)

Description	Symbol	Test Condition	Minimum	Maximum	Unit
Collector - Emitter Voltage	V_{CEO}	I_C = 2 mA, I_B = 0	25	-	V
Emitter Base Voltage	V_{EBO}	I_E = 10 µA, I_C = 0	5	-	
Collector Cut off Current	I_{CBO}	V_{CB} = 25 V, I_E = 0 T_{amb} = 125°C V_{CB} = 25 V, I_E = 0	- -	15 4	nA µA
DC Current	h_{FE}	I_C = 10 µA, V_{CE} = 5 V B Group C Group I_C = 2 mA, V_{CE} = 5 V B Group C Group	 40 100 200 200 420	- 800 450 800	-
Base Emitter Saturation Voltage	$V_{BE\ (Sat)}$	I_C = 10 mA, I_B = 0.5 mA I_C = 100 mA, I_B = 5 mA	-	0.83 1.05	V
Collector Emitter Saturation Voltage	$V_{CE\ (Sat)}$		-	0.25 0.6	
Base Emitter On Voltage	$V_{BE\ (on)}$	I_C = 2 mA, V_{CE} = 5 V I_C = 10 mA, V_{CE} = 5 V	0.55 -	0.7 0.77	
Collector Knee Voltage	$V_{CE\ (K)}$	I_C = 10 mA, I_B = The value for which I_C = 11 mA at V_{CE} = 1 V	-	0.6	
Transition Frequency	f_t	V_{CE} = 5 V, I_C = 10 mA, f = 100 MHz	150	-	MHz
Noise Figure	NF	V_{CE} = 5 V, I_C = 0.2 mA R_g = 2 kΩ F = 30 Hz to 15 KHz F = 1 kHz, B = 200 Hz	-	 4 4	 dB dB
Output Capacitance	C_{obo}	V_{CB} = 10 V, f = 1MHz	-	4.5	pF
Small Signal Current Gain	h_{fe}	ALL f = 1 kHz I_C = 2 mA, V_{CE} = 5V B Group C Group	 240 240 450	 900 500 900	-

Electrical Characteristics (T_a = 25°C unless otherwise specified)

Description	Symbol	Test Condition	Minimum	Maximum	Unit
Input Impedance	h_{ie}	I_C = 2 mA, V_{CE} = 5V B Group C Group	 3.2 6	 8.5 15	 KΩ KΩ
Output Admittance	h_{oe}	I_C = 2 mA, V_{CE} = 5 V B Group C Group	 -	 60 110	 µΩ

Part Number Table

Package	Part Number
Transistor, NPN, TO-18	BC109
Transistor, NPN, TO-18	BC109B
Transistor, NPN, TO-18	BC109C