

BC109 Series

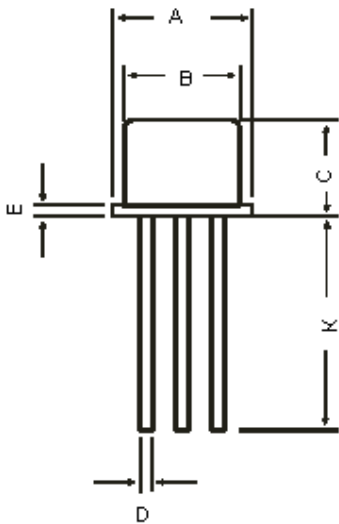
Low Power Bipolar Transistors



Feature:

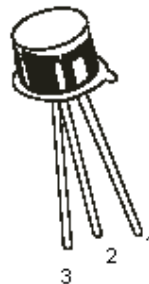
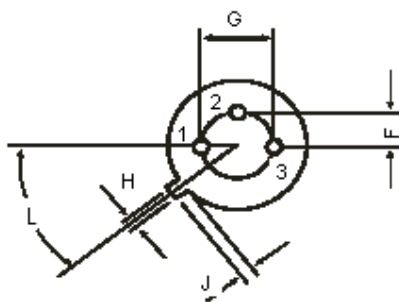
- NPN Silicon Planar Epitaxial Transistors.

TO-18 Metal Can Package



Dimensions	Minimum	Maximum
A	5.24	5.84
B	4.52	4.97
C	4.31	5.33
D	0.40	0.53
E	-	0.76
F	-	1.27
G	-	2.97
H	0.91	1.17
J	0.71	1.21
K	12.70	-
L	45°	

Dimensions : Millimetres



Pin Configuration:

1. Emitter
2. Base
3. Collector



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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}	5.0	
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 mW/ $^\circ\text{C}$
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	$^\circ\text{C/W}$

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
Emitter Base Voltage	V_{EBO}	$I_E = 10\mu\text{A}, I_C = 0$	5.0	-	
Collector Cut off Current	I_{CBO}	$V_{CB} = 25\text{V}, I_E = 0$ $T_{amb} = 125^\circ\text{C}$	-	15	nA
		$V_{CB} = 25\text{V}, I_E = 0$	-	4.0	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	200 200 420	800 450 800	
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 0.60	
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 -	0.70 0.77	



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

Description	Symbol	Test Condition	Minimum	Maximum	Unit
Collector Knee Voltage	$V_{CE(K)}$	$I_C = 10\text{mA}$, $I_B =$ The value for which $I_C = 11\text{mA}$ at $V_{CE} = 1\text{V}$	-	0.60	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 15kHz $F = 1\text{kHz}$, $B = 200\text{Hz}$	-	4.0 4.0	dB dB
Output Capacitance	C_{obo}	$V_{CB} = 10\text{V}$, $f = 1\text{MHz}$	-	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 6.0	8.5 15	$\text{K}\Omega$ $\text{K}\Omega$
Output Admittance	h_{oe}	$I_C = 2\text{mA}$, $V_{CE} = 5\text{V}$ B Group C Group	-	60 110	$\mu\Omega$

Part Number Table

Package	Part Number
TO-18	BC109
	BC109B
	BC109C



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Notes:

International Sales Offices:

 AUSTRALIA – Farnell InOne Tel No: ++ 61 2 9645 8888 Fax No: ++ 61 2 9644 7898	 FINLAND – Farnell InOne Tel No: ++ 358 9 560 7780 Fax No: ++ 358 9 345 5411	 NETHERLANDS – Farnell InOne Tel No: ++ 31 30 241 7373 Fax No: ++ 31 30 241 7333	 SWITZERLAND – Farnell InOne Tel No: ++ 41 1 204 64 64 Fax No: ++ 41 1 204 64 54
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