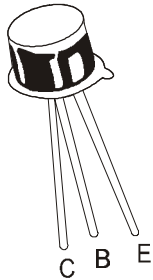


## NPN SILICON PLANAR TRANSISTORS



**BC107/A/B/C**  
**BC108/A/B/C**  
**BC109/A/B/C**

**TO-18**  
**Metal Can Package**

### Low Noise General Purpose Audio Amplifiers

#### ABSOLUTE MAXIMUM RATINGS

DESCRIPTION	SYMBOL	BC107	BC108	BC109	UNIT
Collector Emitter Voltage	$V_{CEO}$	45	25	25	V
Collector Base Voltage	$V_{CBO}$	50	30	30	V
Emitter Base Voltage	$V_{EBO}$	6.0	5.0	5.0	V
Collector Current Continuous	$I_C$	200			mA
Power Dissipation at $T_a=25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	300			mW
		1.72			mW/ $^\circ\text{C}$
Power Dissipation at $T_c=25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	750			mW
		4.29			mW/ $^\circ\text{C}$
Operating And Storage Junction Temperature Range	$T_j, T_{stg}$	- 65 to +200			$^\circ\text{C}$

#### THERMAL CHARACTERISTICS

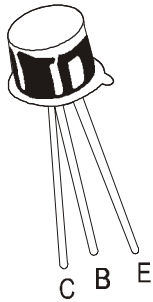
Junction to Ambient in free air	$R_{th(j-a)}$	583	$^\circ\text{C/W}$
Junction to Case	$R_{th(j-c)}$	233	$^\circ\text{C/W}$

#### ELECTRICAL CHARACTERISTICS ( $T_a=25^\circ\text{C}$ unless specified otherwise )

DESCRIPTION	SYMBOL	TEST CONDITION	BC107	BC108	BC109	UNIT
Collector Emitter Voltage	$V_{CEO}$	$I_C=2\text{mA}, I_B=0$	>45	>25	>25	V
Emitter Base Voltage	$V_{EBO}$	$I_E=10\mu\text{A}, I_C=0$	>6	>5	>5	V
Collector Cut Off Current	$I_{CBO}$	$V_{CB}=45\text{V}, I_E=0$	<15			nA
		$V_{CB}=25\text{V}, I_E=0$		<15	<15	nA
		$V_{CB}=45\text{V}, I_E=0, T_a=125^\circ\text{C}$	<4			$\mu\text{A}$
		$V_{CB}=25\text{V}, I_E=0, T_a=125^\circ\text{C}$		<4	<4	$\mu\text{A}$
DC Current Gain	$h_{FE}$	$I_C=10\mu\text{A}, V_{CE}=5\text{V}$ <b>B Group</b> <b>C Group</b>	>40 >100			
		$I_C=2\text{mA}, V_{CE}=5\text{V}$ <b>BC107</b> <b>BC108</b> <b>BC109</b> <b>A Group</b> <b>B Group</b> <b>C Group</b>	110-450 110-800 200-800 110-220 200-450 420-800			

# NPN SILICON PLANAR TRANSISTORS

BC107/A/B/C  
BC108/A/B/C  
BC109/A/B/C



TO-18  
Metal Can Package

## ELECTRICAL CHARACTERISTICS ( $T_a=25^\circ\text{C}$ unless specified otherwise)

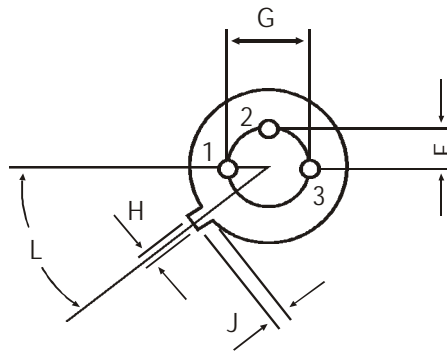
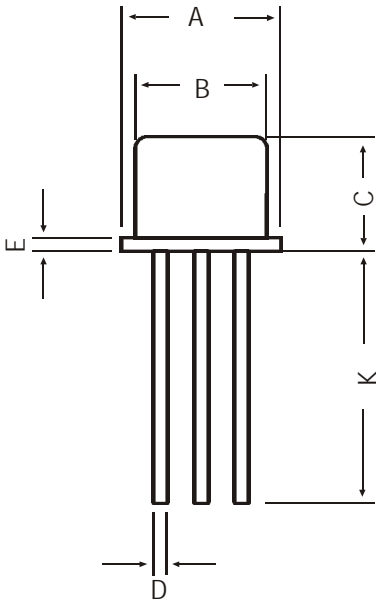
DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Collector Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=10\text{mA}, I_B=0.5\text{mA}$			0.25	V
		$I_C=100\text{mA}, I_B=5\text{mA}$			0.60	V
Base Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=10\text{mA}, I_B=0.5\text{mA}$			0.83	V
		$I_C=100\text{mA}, I_B=5\text{mA}$			1.05	V
Base Emitter On Voltage	$V_{BE(on)}$	$I_C=2\text{mA}, V_{CE}=5\text{V}$	0.55		0.70	V
		$I_C=10\text{mA}, V_{CE}=5\text{V}$			0.77	V
Collector Knee Voltage	$V_{CE(K)}$	$I_C=10\text{mA}, I_B=\text{the value for which } I_C=11\text{mA at } V_{CE}=1\text{V}$			0.60	V
Transition frequency	$f_T$	$I_C=10\text{mA}, V_{CE}=5\text{V}, f=100\text{MHz}$	150			MHZ
Output Capacitance	$C_{obo}$	$V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$			4.5	pF
Noise Figure	NF	$I_C=0.2\text{mA}, V_{CE}=5\text{V}, R_g=2\text{K}\Omega, f=30\text{Hz to } 15\text{KHz}$ <b>BC109</b>			4.0	dB
		$f=1\text{KHz}, \Delta F=200\text{Hz}$ , <b>BC109</b>			4.0	dB
		<b>BC107/108</b>			10	dB

## SMALL SIGNAL CHARACTERISTICS

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT	
Small Signal Current Gain	$h_{fe}$	$I_C=2\text{mA}, V_{CE}=5\text{V}, f=1\text{KHz}$					
			<b>BC107</b>	125		500	
			<b>BC108</b>	125		900	
			<b>BC109</b>	240		900	
			<b>A Group</b>	125		260	
			<b>B Group</b>	240		500	
<b>C Group</b>	450		900				
Input Impedance	$h_{ie}$	$I_C=2\text{mA}, V_{CE}=5\text{V}, f=1\text{KHz}$					
			<b>A Group</b>	1.6		4.5	$\text{K}\Omega$
			<b>B Group</b>	3.2		8.5	$\text{K}\Omega$
<b>C Group</b>	6.0		15	$\text{K}\Omega$			
Output Admittance	$h_{oe}$	$I_C=2\text{mA}, V_{CE}=5\text{V}, f=1\text{KHz}$					
			<b>A Group</b>			30	$\mu\text{mhos}$
			<b>B Group</b>			60	$\mu\text{mhos}$
<b>C Group</b>			110	$\mu\text{mhos}$			

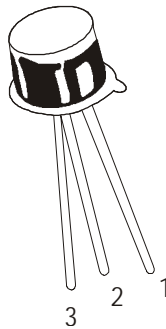
BC107\_109Rev\_3 231202E

**TO-18 Metal Can Package**



All dimensions in mm.

DIM	MIN	MAX
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 DEG	



**PIN CONFIGURATION**

1. EMITTER
2. BASE
3. COLLECTOR

**Packing Detail**

PACKAGE	STANDARD PACK		INNER CARTON BOX		OUTER CARTON BOX		
	Details	Net Weight/Qty	Size	Qty	Size	Qty	Gr Wt
TO-18	1K/polybag	350 gm/1K pcs	3" x 7.5" x 7.5"	5K	17" x 15" x 13.5"	80K	34 kgs

**Component Disposal Instructions**

1. CDIL Semiconductor Devices are RoHS compliant, customers are requested to please dispose as per prevailing Environmental Legislation of their Country.
2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

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**Disclaimer**

The product information and the selection guides facilitate selection of the CDIL's Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is recommended that you completely review our Data Sheet(s) so as to confirm that the Device(s) meet functionality parameters for your application. The information furnished in the Data Sheet and on the CDIL Web Site/CD are believed to be accurate and reliable. CDIL however, does not assume responsibility for inaccuracies or incomplete information. Furthermore, CDIL does not assume liability whatsoever, arising out of the application or use of any CDIL product; neither does it convey any license under its patent rights nor rights of others. These products are not designed for use in life saving/support appliances or systems. CDIL customers selling these products (either as individual Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems applications do so at their own risk and CDIL will not be responsible for any damages resulting from such sale(s).

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