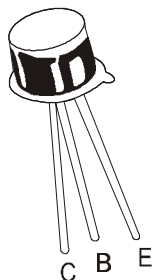


## NPN SILICON PLANAR TRANSISTORS



**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 @ $T_a=25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	300 1.72			mW mW/ $^\circ\text{C}$
Power Dissipation @ $T_c=25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	750 4.29			mW mW/ $^\circ\text{C}$
Operating And Storage Junction Temperature Range	$T_j, T_{stg}$	- 65 to +200			$^\circ\text{C}$

#### THERMAL CHARACTERISTICS

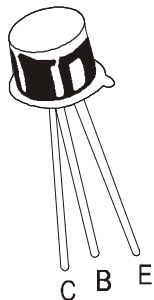
Junction to Ambient in free air	$R_{th(j-a)}$	583	$^\circ\text{C/W}$
Junction to Case	$R_{th(j-c)}$	233	$^\circ\text{C/W}$

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

DESCRIPTION	SYMBOL	TEST CONDITION	BC107	BC108	BC109	UNIT
Collector Emitter Voltage	V <sub>CEO</sub>	I <sub>C</sub> =2mA, I <sub>B</sub> =0	>45	>25	>25	V
Emitter Base Voltage	V <sub>EBO</sub>	I <sub>E</sub> =10μA, I <sub>C</sub> =0	>6	>5	>5	V
Collector Cut Off Current	I <sub>CBO</sub>	V <sub>CB</sub> =45V, I <sub>E</sub> =0	<15			nA
		V <sub>CB</sub> =25V, I <sub>E</sub> =0		<15	<15	nA
		V <sub>CB</sub> =45V, I <sub>E</sub> =0, T <sub>a</sub> =125°C	<4			μA
		V <sub>CB</sub> =25V, I <sub>E</sub> =0, T <sub>a</sub> =125°C		<4	<4	μA
DC Current Gain	h <sub>FE</sub>	I <sub>C</sub> =10μA, V <sub>CE</sub> =5V B Group C Group	>40 >100			
		I <sub>C</sub> =2mA, V <sub>CE</sub> =5V BC107 BC108 BC109 A Group B Group C Group	110-450 110-800 200-800 110-220 200-450 420-800			

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# 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	$V_{CE(K)}$	$I_C=10\text{mA}$ , $I_B=\text{the value for which}$ $I_C=11\text{mA}$ @ $V_{CE}=1\text{V}$			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

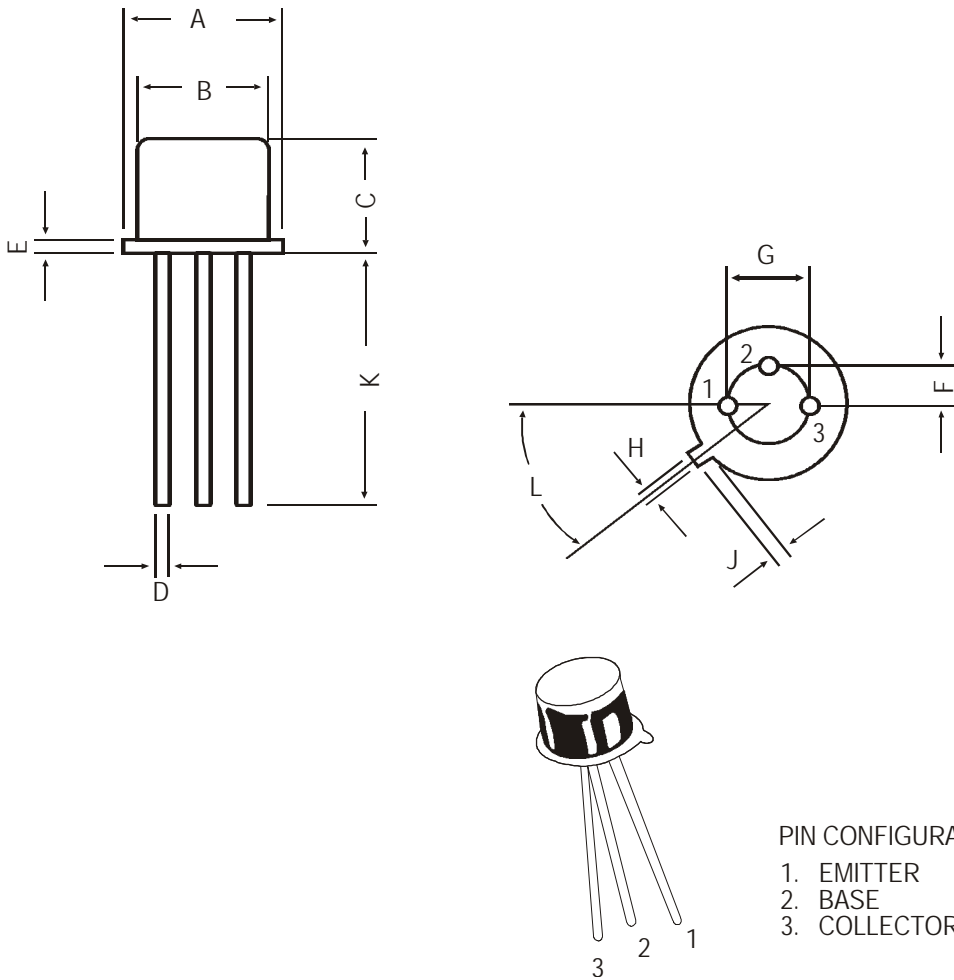
DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Small Signal Current Gain	$h_{fe}$	$I_C=2\text{mA}$ , $V_{CE}=5\text{V}$ , $f=1\text{KHz}$				
		<b>BC107</b>	125		500	
		<b>BC108</b>	125		900	
		<b>BC109</b>	240		900	
		<b>A Group</b>	125		260	
		<b>B Group</b>	240		500	
Input Impedance	$h_{ie}$	$I_C=2\text{mA}$ , $V_{CE}=5\text{V}$ , $f=1\text{KHz}$				
		<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	$\mu\text{mhos}$

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BC107/A/B/C  
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TO-18  
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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

### **Disclaimer**

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