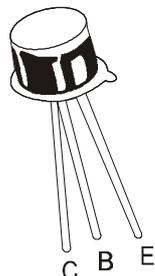


## NPN SILICON PLANAR TRANSISTORS

**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	$^\circ\text{C/W}$

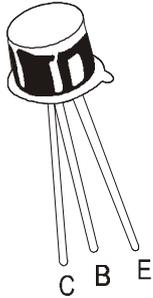
#### ELECTRICAL CHARACTERISTICS ( $T_a=25^\circ\text{C}$ unless specified otherwise )

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			

BC107\_109Rev\_3 231202E

# NPN SILICON PLANAR TRANSISTORS

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



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

## ELECTRICAL CHARACTERISTICS (T<sub>a</sub>=25°C unless specified otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Collector Emitter Saturation Voltage	V <sub>CE (sat)</sub>	I <sub>C</sub> =10mA, I <sub>B</sub> =0.5mA			0.25	V
		I <sub>C</sub> =100mA, I <sub>B</sub> =5mA			0.60	V
Base Emitter Saturation Voltage	V <sub>BE (sat)</sub>	I <sub>C</sub> =10mA, I <sub>B</sub> =0.5mA			0.83	V
		I <sub>C</sub> =100mA, I <sub>B</sub> =5mA			1.05	V
Base Emitter On Voltage	V <sub>BE (on)</sub>	I <sub>C</sub> =2mA, V <sub>CE</sub> =5V	0.55		0.70	V
		I <sub>C</sub> =10mA, V <sub>CE</sub> =5V			0.77	V
Collector Knee Voltage	V <sub>CE (K)</sub>	I <sub>C</sub> =10mA, I <sub>B</sub> =the value for which I <sub>C</sub> =11mA at V <sub>CE</sub> =1V			0.60	V
Transition frequency	f <sub>T</sub>	I <sub>C</sub> =10mA, V <sub>CE</sub> =5V, f=100MHz	150			MHz
Output Capacitance	C <sub>obo</sub>	V <sub>CB</sub> =10V, I <sub>E</sub> =0, f=1MHz			4.5	pF
Noise Figure	NF	I <sub>C</sub> =0.2mA, V <sub>CE</sub> =5V, R <sub>g</sub> =2KΩ, f=30Hz to 15KHz <b>BC109</b>			4.0	dB
		f=1KHz, ΔF=200Hz, <b>BC109</b>			4.0	dB
		<b>BC107/108</b>			10	dB

## SMALL SIGNAL CHARACTERISTICS

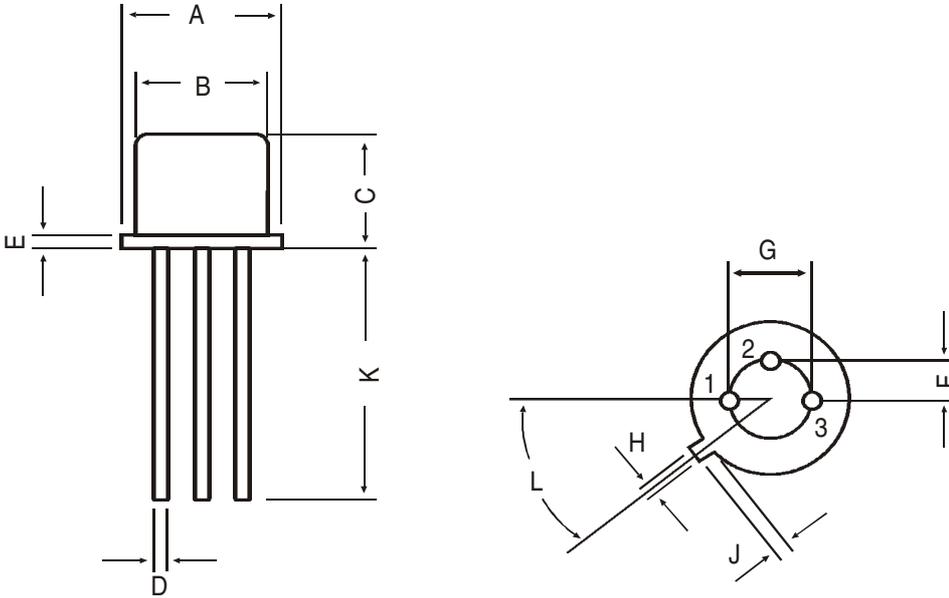
DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Small Signal Current Gain	h <sub>fe</sub>	I <sub>C</sub> =2mA, V <sub>CE</sub> =5V, f=1KHz				
		<b>BC107</b>	125		500	
		<b>BC108</b>	125		900	
		<b>BC109</b>	240		900	
		<b>A Group</b>	125		260	
		<b>B Group</b>	240		500	
Input Impedance	h <sub>ie</sub>	I <sub>C</sub> =2mA, V <sub>CE</sub> =5V, f=1KHz				
		<b>A Group</b>	1.6		4.5	KΩ
		<b>B Group</b>	3.2		8.5	KΩ
Output Admittance	h <sub>oe</sub>	I <sub>C</sub> =2mA, V <sub>CE</sub> =5V, f=1KHz				
		<b>A Group</b>			30	μmhos
		<b>B Group</b>			60	μmhos
		<b>C Group</b>			110	μmhos

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

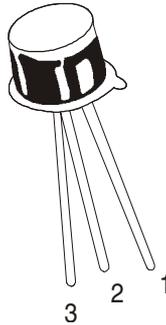
TO-18  
 Metal Can Package

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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