

## NPN BC107 – BC108 – BC109

### LOW NOISE GENERAL PURPOSE AUDIO AMPLIFIERS

The BC107, BC108 and BC109 are silicon planar epitaxial NPN transistors mounted in TO-18 metal package.

They are suitable for use in drive audio stages, low-noise input audio stages and as low power, high gain general purpose transistors.

The complementary PNP are BC177, BC178 and BC179.

Compliance to RoHS.

#### ABSOLUTE MAXIMUM RATINGS

Symbol		BC107	BC108	BC109	Unit
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )	45	20	20	V
$V_{CBO}$	Collector-Base Voltage ( $I_E = 0$ )	50	30	30	V
$V_{EBO}$	Emitter-Base Voltage ( $I_C = 0$ )	6	5	5	V
$I_C$	Collector Current	100			mA
$I_{CM}$	Collector Peak Current	200			mA
$P_D$	Total Power Dissipation @ $T_{amb} = 25^\circ$	300			mW
$T_J$	Junction Temperature	175			$^\circ\text{C}$
$T_{Stg}$	Storage Temperature range	-65 to +150			$^\circ\text{C}$

#### ELECTRICAL CHARACTERISTICS

$T_j = 25^\circ\text{C}$  unless otherwise specified

Symbol	Ratings	Test Condition(s)	Min	Typ	Max	Unit	
$I_{CBO}$	Collector Cutoff Current	$V_{CB} = 20\text{ V}$ $I_E = 0$	BC107	-	-	15	nA
			BC108				
			BC109				
		$V_{CB} = 20\text{ V}$ $I_E = 0\text{ V}$ $T_j = 150^\circ\text{C}$	BC107	-	-	15	$\mu\text{A}$
			BC108				
			BC109				
$I_{EBO}$	Emitter Cutoff Current	$V_{EB} = 5\text{ V}$ $I_C = 0$	BC107	-	-	50	nA
			BC108				
			BC109				
$V_{CEO}$	Collector-Emitter Breakdown Voltage	$I_C = 10\text{ mA}$ $I_B = 0$	BC107	45	-	-	V
			BC108	20	-	-	
			BC109	20	-	-	
$V_{CBO}$	Collector-Base Breakdown Voltage	$I_C = 10\text{ }\mu\text{A}$ $V_{BE} = 0$	BC107	50	-	-	V
			BC108	30	-	-	
			BC109	30	-	-	
$V_{EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10\text{ }\mu\text{A}$ $I_C = 0$	BC107	5	-	-	V
			BC108				
			BC109				

## NPN BC107 – BC108 – BC109

Symbol	Ratings	Test Condition(s)	Min	Typ	Max	Unit	
$V_{CE(SAT)}$	Collector-Emitter saturation Voltage	$I_C = 10 \text{ mA}$ $I_B = 0.5 \text{ mA}$	BC107	-	0.09	0.25	V
			BC108				
			BC109				
		$I_C = 100 \text{ mA}$ $I_B = 5 \text{ mA}$	BC107	-	0.2	0.6	
			BC108				
			BC109				
$V_{BE(SAT)}$	Base-Emitter Saturation Voltage	$I_C = 10 \text{ mA}$ $I_B = 0.5 \text{ mA}$	BC107	-	0.70	-	V
			BC108				
			BC109				
		$I_C = 100 \text{ mA}$ $I_B = 5 \text{ mA}$	BC107	-	0.9	-	
			BC108				
			BC109				
$V_{BE}$	Base-Emitter Voltage	$I_C = 2 \text{ mA}$ $V_{CE} = 5 \text{ V}$	BC107	0.55	0.65	0.7	V
			BC108				
			BC109				
		$I_C = 10 \text{ mA}$ $V_{CE} = 5$	BC107	-	-	0.77	
			BC108				
			BC109				
$h_{FE}$	DC Current Gain (*)	$I_C = 10 \mu\text{A}$ $V_{CE} = 5 \text{ V}$	BC107A	-	90	-	-
			BC108A				
			BC109A				
			BC107B	40	150	-	
			BC108B				
			BC109B				
			BC107C	100	270	-	
			BC108C				
			BC109C				
		$I_C = 2 \text{ mA}$ $V_{CE} = 5 \text{ V}$	BC107A	110	-	220	
			BC108A				
			BC109A				
			BC107B	200	-	450	
			BC108B				
			BC109B				
BC107C	420	-	800				
BC108C							
BC109C							
$f_T$	Transition frequency	$I_C = 10 \text{ mA}$ , $V_{CE} = 5 \text{ V}$ $f = 100 \text{ MHz}$	BC107	100	-	-	MHz
			BC108				
			BC109				
<b>F</b>	Noise figure	$I_C = 200 \mu\text{A}$ $V_{CE} = 5 \text{ V}$ $f = 1 \text{ kHz}$ $R_g = 2 \text{ k}\Omega$ $B = 200 \text{ Hz}$	BC107	-	-	10	db
			BC108			10	
			BC109			4	
<b>C<sub>C</sub></b>	Collector capacitance	$I_E = 0$ $V_{CB} = 10 \text{ V}$ $f = 1 \text{ MHz}$	BC177	-	4	6	pF
			BC178				
			BC179				

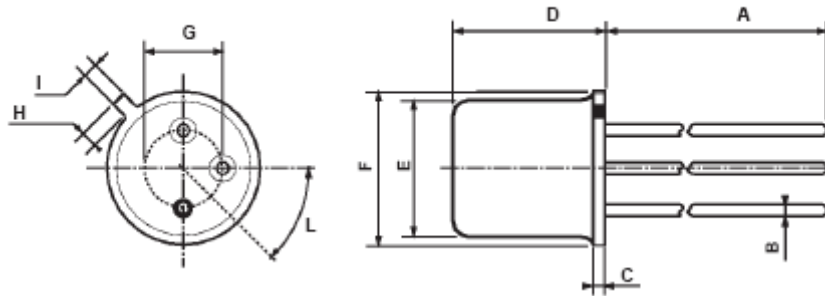
## NPN BC107 – BC108 – BC109

### THERMAL CHARACTERISTICS

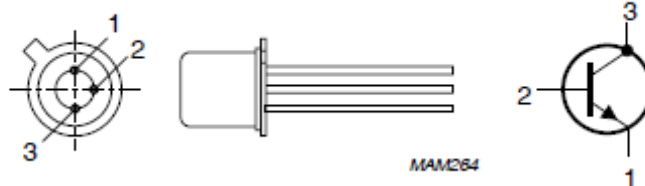
Symbol	Ratings	Value	Unit
$R_{thJ-a}$	Thermal Resistance, Junction to mounting base	500	°C/W
$R_{thJ-c}$	Thermal Resistance, Junction to ambient in free air	200	°C/W

### MECHANICAL DATA CASE TO-18

DIMENSIONS (mm)		
	min	max
A	12.7	-
B	-	0.49
C	0.9	-
D	-	5.3
E	-	4.9
F	-	5.8
G	2.54	-
H	-	1.2
I	-	1.16
L	45°	-



Pin 1 :	emitter
Pin 2 :	base
Pin 3 :	Collector
Case :	Collector



August 2012

Information furnished is believed to be accurate and reliable. However, Comset Semiconductors assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. Data are subject to change without notice. Comset Semiconductors makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Comset Semiconductors assume any liability arising out of the application or use of any product and specifically disclaims any and all liability, including without limitation consequential or incidental damages. Comset Semiconductors' products are not authorized for use as critical components in life support devices or systems.