

## 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
			BC108			
			BC109			
		$V_{CB} = 20\text{ V}$ $I_E = 0\text{ V}$ $T_j = 150^\circ\text{C}$	BC107	-	-	15
			BC108			
			BC109			
$I_{EBO}$	Emitter Cutoff Current	$V_{EB} = 5\text{ V}$ $I_C = 0$	BC107	-	-	50
			BC108			
			BC109			
$V_{CEO}$	Collector-Emitter Breakdown Voltage	$I_C = 10\text{ mA}$ $I_B = 0$	BC107	45	-	-
			BC108	20	-	-
			BC109	20	-	-
$V_{CBO}$	Collector-Base Breakdown Voltage	$I_C = 10\text{ }\mu\text{A}$ $V_{BE} = 0$	BC107	50	-	-
			BC108	30	-	-
			BC109	30	-	-
$V_{EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10\text{ }\mu\text{A}$ $I_C = 0$	BC107	5	-	-
			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 (*)	$I_C = 10\text{ }\mu\text{A}$ $V_{CE} = 5\text{ V}$	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	$I_C = 200\text{ }\mu\text{A}$ $V_{CE} = 5\text{ V}$ $f = 1\text{ kHz}$ $R_g = 2\text{ k}\Omega$ $B = 200\text{ Hz}$	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				

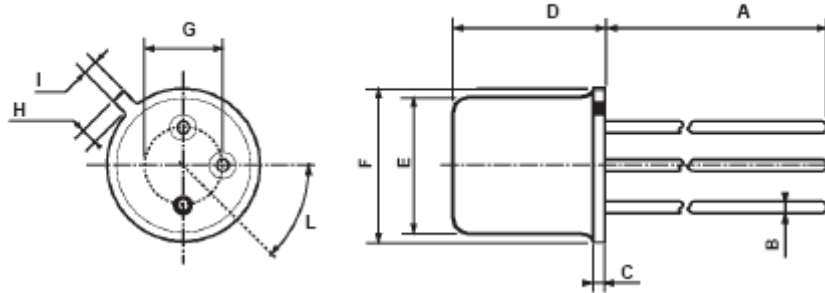
## NPN BC107 – BC108 – BC109

### THERMAL CHARACTERISTICS

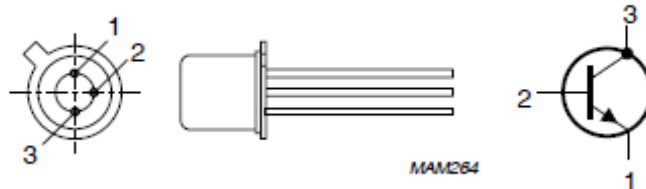
Symbol	Ratings	Value	Unit
$R_{thJ-a}$	Thermal Resistance, Junction to mounting base	500	°C/W
$R_{thJ-c}$	Thermal Resistance, Junction to ambient in free air	200	°C/W

### 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



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