

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			

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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							
			BC108B					40	150	-
			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							
F	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				
C_C	Collector capacitance	$I_E = 0$ $V_{CB} = 10 \text{ V}$ $f = 1 \text{ MHz}$	BC177	-	4	6	pF			
			BC178							
			BC179							

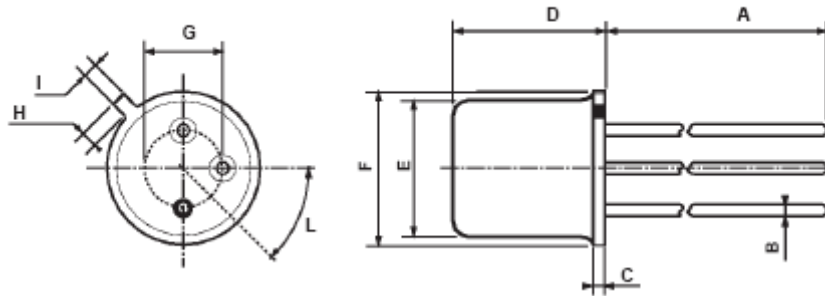
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THERMAL CHARACTERISTICS

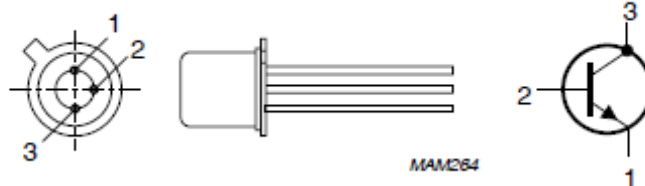
Symbol	Ratings	Value	Unit
R_{thJ-a}	Thermal Resistance, Junction to mounting base	500	°C/W
R_{thJ-c}	Thermal Resistance, Junction to ambient in free air	200	°C/W

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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