

New Jersey Semi-Conductor Products, Inc.

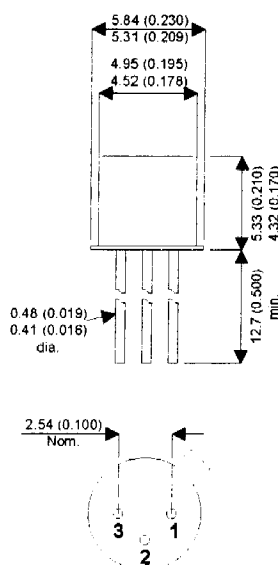
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BC107
BC108
BC109

MECHANICAL DATA

Dimensions in mm (inches)



TO-18 METAL PACKAGE

Underside View

PIN 1 – Emitter PIN 2 – Base PIN 3 – Collector

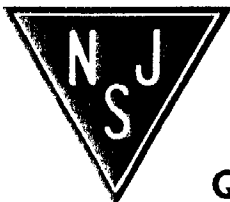
GENERAL PURPOSE SMALL SIGNAL NPN BIPOLAR TRANSISTOR

FEATURES

- SILICON NPN
- HERMETICALLY SEALED TO18
- SCREENING OPTIONS AVAILABLE

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise stated)

V_{CBO}	Collector – Base Continuous Voltage	BC017	50V
		BC108, BC109	30V
V_{CEO}	Collector – Emitter Continuous Voltage With Zero Base Current	BC107	45V
		BC108, BC109	20V
V_{CES}	Collector – Emitter Continuous Voltage With Base Shortcircuited to Emitter	BC107	50V
		BC108, BC109	30V
V_{EBO}	Emitter – Base Continuous Voltage Reverse Voltage	BC107	6V
		BC108, BC109	5V
I_C	Continuous Collector Current		100mA
I_{CM}	Peak Collector Current		200mA
P_{tot}	Power Dissipation @ $T_{amb} = 25^\circ\text{C}$		300mW
T_{amb}	Ambient Operating Temperature Range		-65 to +175°C
T_{stg}	Storage Temperature Range		-65 to +175°C



NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

Quality Semi-Conductors

BC107
BC108
BC109

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CBO(1)}$ Collector-Base Leakage Current	$V_{CB} = 45\text{V}$ BC107 $V_{CB} = 25\text{V}$ BC108, BC109			15 15	nA
$I_{CBO(1)}$ Collector-Emitter Leakage Current @ $T_{amb} = 125^\circ\text{C}$	$V_{CB} = 45\text{V}$ BC107 $V_{CB} = 25\text{V}$ BC108, BC109			4 4	μA
I_{EBO} Emitter Cut-off Current	$V_{EB} = 4\text{V}$ $I_C = 0$			1	μA
h_{21E} Static Forward Current Transfer Ratio	$V_{CE} = 5\text{V}$ $I_C = 2\text{mA}$				
	Group A BC107, BC108	110		220	
	Group B All Types	180		460	
	Group C BC108, BC109	380		800	
	BC107	110		460	
	BC108	110		800	
	BC109	180		800	
V_{BE} Base – Emitter Breakdown	$V_{CE} = 5\text{V}$ $I_C = 2\text{mA}$			0.7	V
$V_{BE(sat)(1)}$ Base – Emitter Saturation Voltage	$I_B = 0.5\text{mA}$ $I_C = 10\text{mA}$			0.83	V
$V_{CE(sat)(1)}$ Collector – Emitter Saturation Voltage	$I_B = 0.5\text{mA}$ $I_C = 10\text{mA}$			0.25	V
f_T Transition Frequency	$V_{CE} = 5\text{V}$ $I_C = 10\text{mA}$ $f = 100\text{MHz}$	150			MHz
F Noise Factor	$V_{CE} = 5\text{V}$ $I_C = 0.2\text{mA}$ $R = 2\text{k}\Omega$ $f = 1\text{kHz}$ $\Delta F = 200\text{Hz}$				
	BC109			4	dB
	BC107, BC108			10	
h_{21e} Small Signal Forward Current Transfer Ratio	$V_{CE} = 5\text{V}$ $I_C = 2\text{mA}$ $f = 100\text{kHz}$				
	Group A BC107, BC108	125		260	
	Group B All Types	240		500	
	Group C BC108, BC109	450		900	
	BC107	125		500	
	BC108	125		900	
	BC109	240		900	
h_{11e} Common Emitter Input Impedance	$V_{CE} = 5\text{V}$ $I_C = 2\text{mA}$ $f = 1\text{kHz}$				
	Group A BC107, BC108	1.6		4.5	$\text{k}\Omega$
	Group B All Types	3.2		8.5	
	Group C BC108, BC109	6.0		15	
h_{22e} Common Emitter Output Admittance	$V_{CE} = 5\text{V}$ $I_C = 2\text{mA}$ $f = 1\text{kHz}$				
	Group A BC107, BC108			30	μS
	Group B All Types			60	
	Group C BC108, BC109			110	
C_{22b} Common Base Output Capacitance	$V_{CB} = 10\text{V}$ $f = 1\text{MHz}$			6	pF
$R_{th(j-amb)}$ Thermal Resistance: Junction to Ambient				500	$^\circ\text{C/W}$