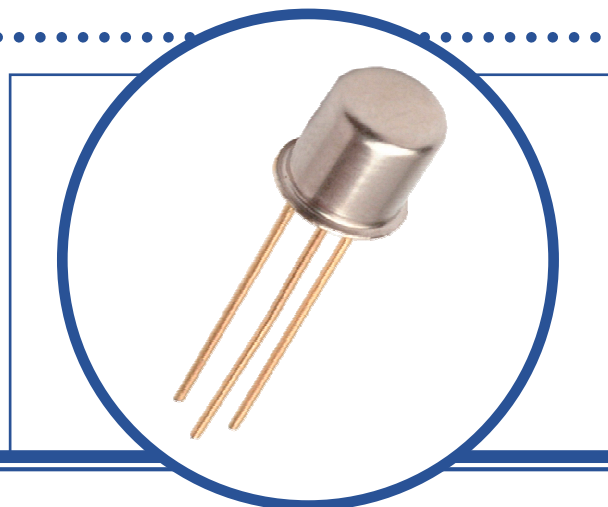


GENERAL PURPOSE NPN SMALL SIGNAL TRANSISTOR

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

- Hermetic TO-18 Metal package.
- Designed For Low Noise General Purpose Amplifiers, Driver Stages and Signal Processing Applications
- Screening Options Available



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

		BC107	BC108	BC109
V_{CEO}	Collector – Emitter Voltage	45V	25V	25V
V_{CBO}	Collector – Base Voltage	50V	30V	30V
V_{EBO}	Emitter – Base Voltage	6V	5V	5V
I_C	Continuous Collector Current		100mA	
P_D	Total Power Dissipation at $T_A = 25^\circ\text{C}$ Derate Above 25°C		300mW 2mW/ $^\circ\text{C}$	
T_J	Junction Temperature Range		-55 to $+175^\circ\text{C}$	
T_{stg}	Storage Temperature Range		-55 to $+175^\circ\text{C}$	

THERMAL PROPERTIES

Symbols	Parameters	Max.	Units
$R_{\theta JA}$	Thermal Resistance, Junction To Ambient	500	$^\circ\text{C/W}$

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



GENERAL PURPOSE NPN SMALL SIGNAL TRANSISTOR BC107



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

Symbols	Parameters	Test Conditions	BC107	BC108	BC109	Units	
V_{CE0}	Collector Emitter	$I_C = 2\text{mA}$ $I_B = 0$	>45	>25	>25	V	
V_{EBO}	Emitter Base	$I_E = 10\mu\text{A}$ $I_C = 0$	>6	>5	5		
I_{CBO}	Collector-Cut-Off Current	$V_{CB} = 45\text{V}$ $I_E = 0$	<15			nA	
		$V_{CB} = 25\text{V}$ $I_E = 0$		<15	<15		
		$V_{CB} = 45\text{V}$ $I_E = 0$ $V_{CB} = 25\text{V}$ $I_E = 0$	$T_A = 125^\circ\text{C}$	<4			μA
					<4	<4	
h_{FE}	DC Current Gain	$I_C = 10\mu\text{A}$ $V_{CE} = 5\text{V}$				-	
		B Group		>40			
		C Group		>100			
		$I_C = 2\text{mA}$ $V_{CE} = 5\text{V}$				-	
		BC107		110-450			
		BC108		110-800			
BC109		200-800					
A Group		110-220					
B Group		200-450					
C Group		420-800					

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

Symbols	Parameters	Test Conditions	MIN.	TYP.	Max	Units
$V_{CE(sat)}^{(1)}$	Collector-Emitter Saturation Voltage	$I_C = 10\text{mA}$ $I_B = 0.5\text{mA}$			0.25	V
		$I_C = 100\text{mA}$ $I_B = 5\text{mA}$			0.60	
$V_{BE(sat)}^{(1)}$	Base-Emitter Saturation Voltage	$I_C = 10\text{mA}$ $I_B = 0.5\text{mA}$			0.83	
		$I_C = 100\text{mA}$ $I_B = 5\text{mA}$			1.05	
$V_{BE(on)}^{(1)}$	Base Emitter On Voltage	$I_C = 2\text{mA}$ $V_{CE} = 5\text{V}$	0.55		0.70	
		$I_C = 10\text{mA}$ $V_{CE} = 5\text{V}$			0.77	

GENERAL PURPOSE NPN SMALL SIGNAL TRANSISTOR BC107

DYNAMIC CHARACTERISTICS

h_{fe}	Small-Signal Current Gain	$I_C = 2\text{mA}$ $f = 1\text{KHz}$ $V_{CE} = 5\text{V}$				-
			BC107	125	500	
			BC108	125	900	
			BC109	240	900	
			A Group	125	260	
			B Group	240	500	
		C Group	450	900		
f_T	Transition Frequency	$I_C = 10\text{mA}$ $V_{CE} = 5\text{V}$ $f = 100\text{MHz}$	150			MHz
C_{obo}	Output Capacitance	$V_{CB} = 10\text{V}$ $I_E = 0$ $f = 1.0\text{MHz}$			6	pF
$N_F^{(2)}$	Noise Figure	$I_C = 0.2\text{mA}$ $V_{CE} = 5\text{V}$ $R_G = 2\text{K}\Omega$ $f = 30\text{Hz}-15.0\text{KHz}$ BC109 $f = 1\text{KHz}, \Delta f = 200\text{Hz}$ BC109 BC107/108			4.0 4.0 10	dB

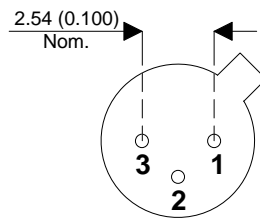
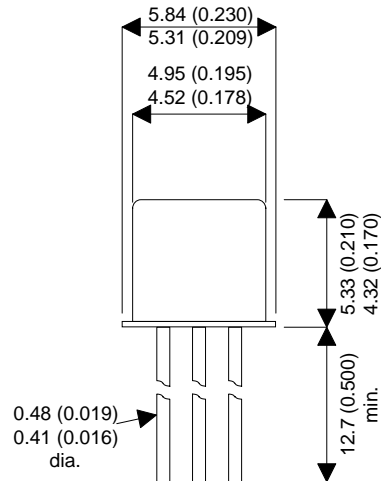
Notes

- (1) Pulse Width $\leq 300\mu\text{s}$, $\delta \leq 2\%$
(2) By design only, not a production test.

GENERAL PURPOSE NPN SMALL SIGNAL TRANSISTOR BC107

MECHANICAL DATA

Dimensions in mm (inches)



TO-18 (TO-206AA) METAL PACKAGE Underside View

Pin 1 - Emitter

Pin 2 - Base

Pin 3 - Collector