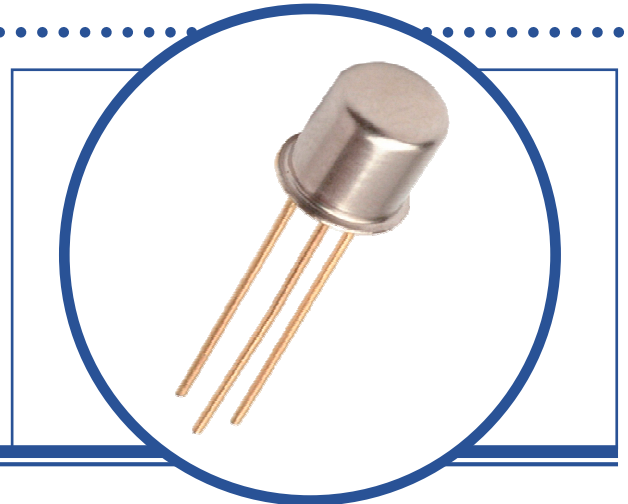


# GENERAL PURPOSE NPN SMALL SIGNAL TRANSISTOR

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 $25^\circ\text{C}$		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			$\mu\text{A}$
					<4	<4	
$h_{FE}$	DC Current Gain	$I_C = 10\mu\text{A}$ $V_{CE} = 5\text{V}$				-	
		<b>B Group</b>		>40			
		<b>C Group</b>		>100			
		$I_C = 2\text{mA}$ $V_{CE} = 5\text{V}$					-
		<b>BC107</b>		110-450			
		<b>BC108</b>		110-800			
<b>BC109</b>		200-800					
<b>A Group</b>		110-220					
<b>B Group</b>		200-450					
<b>C Group</b>		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	$I_C = 2\text{mA}$ $f = 1\text{KHz}$ $V_{CE} = 5\text{V}$				-
			<b>BC107</b>	125	500	
			<b>BC108</b>	125	900	
			<b>BC109</b>	240	900	
			<b>A Group</b>	125	260	
			<b>B Group</b>	240	500	
		<b>C Group</b>	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	$I_C = 0.2\text{mA}$ $V_{CE} = 5\text{V}$ $R_G = 2\text{K}\Omega$ $f = 30\text{Hz}-15.0\text{KHz}$ <b>BC109</b> $f = 1\text{KHz}, \Delta f = 200\text{Hz}$ <b>BC109</b> <b>BC107/108</b>			4.0 4.0 10	dB

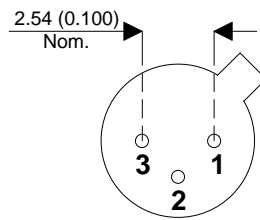
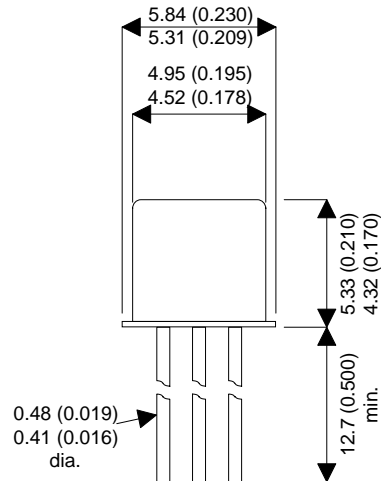
### Notes

- (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