

BC107,A,B  
BC108B,C  
BC109B,C

**NPN SILICON TRANSISTOR**



**TO-18 CASE**



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**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR BC107, BC108, BC109 series types are small signal NPN silicon transistors, manufactured by the epitaxial planar process, designed for general purpose amplifier applications.

**MARKING: FULL PART NUMBER**

**MAXIMUM RATINGS:** ( $T_A=25^\circ\text{C}$ )

Collector-Base Voltage	$V_{CB0}$	50	30	30	V
Collector-Emitter Voltage	$V_{CEO}$	45	25	25	V
Emitter-Base Voltage	$V_{EBO}$	6.0	5.0	5.0	V
Continuous Collector Current	$I_C$		200		mA
Power Dissipation	$P_D$		600		mW
Operating and Storage Junction Temperature	$T_J, T_{stg}$		-65 to +200		$^\circ\text{C}$
Thermal Resistance	$\theta_{JC}$		175		$^\circ\text{C/W}$

SYMBOL	BC107	BC108	BC109	UNITS
$V_{CB0}$	50	30	30	V
$V_{CEO}$	45	25	25	V
$V_{EBO}$	6.0	5.0	5.0	V
$I_C$		200		mA
$P_D$		600		mW
$T_J, T_{stg}$		-65 to +200		$^\circ\text{C}$
$\theta_{JC}$		175		$^\circ\text{C/W}$

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

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
$I_{CBO}$	$V_{CB}=45\text{V}$ (BC107)			15	nA
$I_{CBO}$	$V_{CB}=45\text{V}, T_A=125^\circ\text{C}$ (BC107)			4.0	$\mu\text{A}$
$I_{CBO}$	$V_{CB}=25\text{V}$ (BC108, BC109)			15	nA
$I_{CBO}$	$V_{CB}=25\text{V}, T_A=125^\circ\text{C}$ (BC108, BC109)			4.0	$\mu\text{A}$
$BV_{CEO}$	$I_C=2.0\text{mA}$ (BC107)	45			V
$BV_{CEO}$	$I_C=2.0\text{mA}$ (BC108, BC109)	25			V
$BV_{EBO}$	$I_E=10\mu\text{A}$ (BC107)	6.0			V
$BV_{EBO}$	$I_E=10\mu\text{A}$ (BC108, BC109)	5.0			V
$V_{CE(SAT)}$	$I_C=10\text{mA}, I_B=0.5\text{mA}$			0.25	V
$V_{CE(SAT)}$	$I_C=100\text{mA}, I_B=5.0\text{mA}$			0.6	V
$V_{BE(SAT)}$	$I_C=10\text{mA}, I_B=0.5\text{mA}$		0.7	0.83	V
$V_{BE(SAT)}$	$I_C=100\text{mA}, I_B=5.0\text{mA}$		1.0	1.05	V
$V_{BE(ON)}$	$V_{CE}=5.0\text{V}, I_C=2.0\text{mA}$	0.55		0.7	V
$V_{BE(ON)}$	$V_{CE}=5.0\text{V}, I_C=10\text{mA}$			0.77	V
$h_{FE}$	$V_{CE}=5.0\text{V}, I_C=10\mu\text{A}$ (BC107B, BC108B, BC109B)	40			
$h_{FE}$	$V_{CE}=5.0\text{V}, I_C=10\mu\text{A}$ (BC108C, BC109C)	100			
$h_{FE}$	$V_{CE}=5.0\text{V}, I_C=2.0\text{mA}$ (BC107)	110		450	
$h_{FE}$	$V_{CE}=5.0\text{V}, I_C=2.0\text{mA}$ (BC107A)	110		220	
$h_{FE}$	$V_{CE}=5.0\text{V}, I_C=2.0\text{mA}$ (BC107B, BC108B, BC109B)	200		450	
$h_{FE}$	$V_{CE}=5.0\text{V}, I_C=2.0\text{mA}$ (BC108C, BC109C)	420		800	

R1 (16-August 2012)

BC107,A,B  
BC108B,C  
BC109B,C

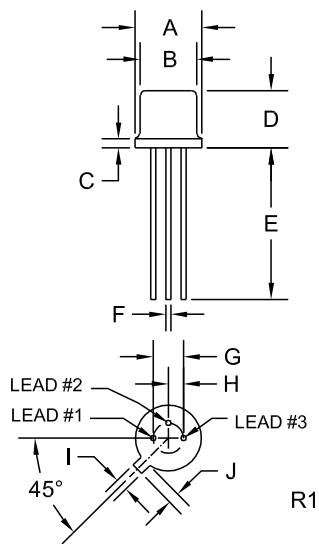
NPN SILICON TRANSISTOR



**ELECTRICAL CHARACTERISTICS - Continued:** ( $T_A=25^\circ\text{C}$  unless otherwise noted)

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
$h_{fe}$	$V_{CE}=5.0\text{V}$ , $I_C=2.0\text{mA}$ , $f=1.0\text{kHz}$ (BC107)	125		500	
$h_{fe}$	$V_{CE}=5.0\text{V}$ , $I_C=2.0\text{mA}$ , $f=1.0\text{kHz}$ (BC107A)	125		260	
$h_{fe}$	$V_{CE}=5.0\text{V}$ , $I_C=2.0\text{mA}$ , $f=1.0\text{kHz}$ (BC107B, BC108B, BC109B)	240		500	
$h_{fe}$	$V_{CE}=5.0\text{V}$ , $I_C=2.0\text{mA}$ , $f=1.0\text{kHz}$ (BC108C)		500		
$h_{fe}$	$V_{CE}=5.0\text{V}$ , $I_C=2.0\text{mA}$ , $f=1.0\text{kHz}$ (BC109C)	450		900	
$f_T$	$V_{CE}=5.0\text{V}$ , $I_C=10\text{mA}$ , $f=100\text{MHz}$	150			MHz
$C_{ob}$	$V_{CB}=10\text{V}$ , $I_E=0$ , $f=1.0\text{MHz}$			4.5	pF
NF	$V_{CE}=5.0\text{V}$ , $I_C=0.2\text{mA}$ , $R_g=2.0\text{k}\Omega$ , $B=200\text{Hz}$ , $f=1.0\text{kHz}$ (BC107, BC108)			10	dB
NF	$V_{CE}=5.0\text{V}$ , $I_C=0.2\text{mA}$ , $R_g=2.0\text{k}\Omega$ , $B=200\text{Hz}$ , $f=1.0\text{kHz}$ (BC109)			4.0	dB

**TO-18 CASE - MECHANICAL OUTLINE**



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A (DIA)	0.209	0.230	5.31	5.84
B (DIA)	0.178	0.195	4.52	4.95
C	-	0.030	-	0.76
D	0.170	0.210	4.32	5.33
E	0.500	-	12.70	-
F (DIA)	0.016	0.019	0.41	0.48
G (DIA)	0.100		2.54	
H	0.050		1.27	
I	0.036	0.046	0.91	1.17
J	0.028	0.048	0.71	1.22

TO-18 (REV: R1)

**LEAD CODE:**

- 1) Emitter
- 2) Base
- 3) Collector

**MARKING:**  
FULL PART NUMBER

R1 (16-August 2012)