

CentralTM Semiconductor Corp.

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Manufacturers of World Class Discrete Semiconductors

BC107,A,B
BC108,A,B,C
BC109,B,C

NPN SILICON TRANSISTOR

JEDEC TO-18 CASE

DESCRIPTION

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

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

	SYMBOL	BC107	BC108	BC109	UNIT
Collector-Base Voltage	V_{CB0}	50	30	30	V
Collector-Emitter Voltage	V_{CES}	50	30	30	V
Collector-Emitter Voltage	V_{CE0}	45	20	20	V
Emitter-Base Voltage	V_{EB0}	6.0	5.0	5.0	V
Collector Current	I_C		100		mA
Collector Current (PEAK)	I_{CM}		200		mA
Base Current (PEAK)	I_{BM}		200		mA
Emitter Current (PEAK)	I_{EM}		200		mA
Power Dissipation	P_D		300		mW
Operating and Storage					
Junction Temperature	T_J, T_{STG}	-65 to +200			$^\circ\text{C}$
Thermal Resistance	θ_{JA}		500		$^\circ\text{C}/\text{W}$
Thermal Resistance	θ_{JC}		200		$^\circ\text{C}/\text{W}$

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

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
I_{CB0}	$V_{CB}=30\text{V}$ (BC107)			15	nA
I_{CB0}	$V_{CB}=30\text{V}, T_A=150^\circ\text{C}$ (BC107)			15	μA
I_{CB0}	$V_{CB}=20\text{V}$, (BC108, BC109)			15	nA
I_{CB0}	$V_{CB}=20\text{V}, T_A=150^\circ\text{C}$ (BC108, BC109)			15	μA
BV_{CB0}	$I_C=10\mu\text{A}$ (BC107)	50			V
BV_{CB0}	$I_C=10\mu\text{A}$ (BC108, BC109)	30			V
BV_{CE0}	$I_C=10\text{mA}$ (BC107)	45			V
BV_{CE0}	$I_C=10\text{mA}$ (BC108, BC109)	20			V
BV_{EB0}	$I_E=10\mu\text{A}$ (BC107)	6.0			V
BV_{EB0}	$I_E=10\mu\text{A}$ (BC108, BC109)	5.0			V
$V_{CE}(\text{SAT})$	$I_C=10\text{mA}, I_B=0.5\text{mA}$			.250	V
$V_{CE}(\text{SAT})$	$I_C=100\text{mA}, I_B=5.0\text{mA}$			.600	V
$V_{BE}(\text{ON})$	$V_{CE}=5.0\text{V}, I_C=2.0\text{mA}$	.550		.700	V
h_{FE}	$V_{CE}=5.0\text{V}, I_C=10\mu\text{A}$ (BC107,A, BC108,A)		90		
h_{FE}	$V_{CE}=5.0\text{V}, I_C=10\mu\text{A}$ (BC107B, BC108B, BC109B)	40	150		
h_{FE}	$V_{CE}=5.0\text{V}, I_C=10\mu\text{A}$ (BC109)	40	210		
h_{FE}	$V_{CE}=5.0\text{V}, I_C=10\mu\text{A}$ (BC108C, BC109C)	100	270		
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, BC108A)	110		220	
h_{FE}	$V_{CE}=5.0\text{V}, I_C=2.0\text{mA}$ (BC107B, BC108B, BC109B)	200		450	
h_{FE}	$V_{CE}=5.0\text{V}, I_C=2.0\text{mA}$ (BC108)	110		800	
h_{FE}	$V_{CE}=5.0\text{V}, I_C=2.0\text{mA}$ (BC109)	200		800	
h_{FE}	$V_{CE}=5.0\text{V}, I_C=2.0\text{mA}$ (BC108C, BC109C)	420		800	

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

<u>SYMBOL</u>	<u>TEST CONDITIONS</u>	<u>MIN</u>	<u>TYP</u>	<u>MAX</u>	<u>UNIT</u>
h_{fe}	$V_{CE}=5.0\text{V}$, $I_C=2.0\text{mA}$, $f=1.0\text{kHz}$ (BC107)		250		
h_{fe}	$V_{CE}=5.0\text{V}$, $I_C=2.0\text{mA}$, $f=1.0\text{kHz}$ (BC107A, BC108A)		190		
h_{fe}	$V_{CE}=5.0\text{V}$, $I_C=2.0\text{mA}$, $f=1.0\text{kHz}$ (BC107B, BC108B, BC109B)		300		
h_{fe}	$V_{CE}=5.0\text{V}$, $I_C=2.0\text{mA}$, $f=1.0\text{kHz}$ (BC108, BC109)		370		
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)		550		
f_T	$V_{CE}=10\text{V}$, $I_C=10\text{mA}$, $f=100\text{MHz}$		200		MHz
C_{ob}	$V_{CB}=10\text{V}$, $I_E=0$, $f=1.0\text{MHz}$		4.0	6.0	pF
C_{ib}	$V_{EB}=0.5\text{V}$, $I_C=0$, $f=1.0\text{MHz}$		12		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
NF	$V_{CE}=5.0\text{V}$, $I_C=0.2\text{mA}$, $R_g=2.0\text{k}\Omega$, $f=30\text{Hz}$ to 15kHz (BC109)			4.0	dB

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