

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	θ_{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		$^\circ\text{C}$
θ_{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	μA
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	μA
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

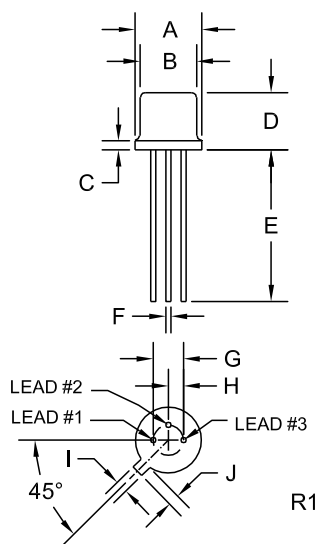
NPN SILICON TRANSISTOR



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)

OUTSTANDING SUPPORT AND SUPERIOR SERVICES



PRODUCT SUPPORT

Central's operations team provides the highest level of support to insure product is delivered on-time.

- Supply management (Customer portals)
- Inventory bonding
- Consolidated shipping options
- Custom bar coding for shipments
- Custom product packing

DESIGNER SUPPORT/SERVICES

Central's applications engineering team is ready to discuss your design challenges. Just ask.

- Free quick ship samples (2nd day air)
- Online technical data and parametric search
- SPICE models
- Custom electrical curves
- Environmental regulation compliance
- Customer specific screening
- Up-screening capabilities
- Special wafer diffusions
- PbSn plating options
- Package details
- Application notes
- Application and design sample kits
- Custom product and package development

REQUESTING PRODUCT PLATING

1. If requesting Tin/Lead plated devices, add the suffix "TIN/LEAD" to the part number when ordering (example: 2N2222A TIN/LEAD).
2. If requesting Lead (Pb) Free plated devices, add the suffix "PBFREE" to the part number when ordering (example: 2N2222A PBFREE).

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