

# BC307B, BC307C

## Amplifier Transistors

PNP Silicon



ON Semiconductor

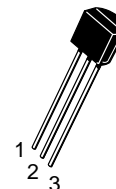
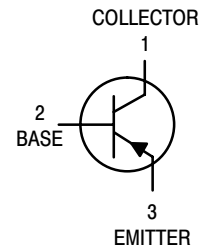
<http://onsemi.com>

### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CEO}$	-45	Vdc
Collector-Base Voltage	$V_{CBO}$	-50	Vdc
Emitter-Base Voltage	$V_{EBO}$	-5.0	Vdc
Collector Current — Continuous	$I_C$	-100	mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	350 2.8	mW mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	1.0 8.0	Watts mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-55 to +150	$^\circ\text{C}$

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	357	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	125	$^\circ\text{C}/\text{W}$



CASE 29  
TO-92  
STYLE 17

### ORDERING INFORMATION

Device	Package	Shipping
BC307B	TO-92	5000 Units/Box
BC307BRL1	TO-92	2000/Tape & Reel
BC307BZL1	TO-92	2000/Ammo Pack
BC307C	TO-92	5000 Units/Box

# BC307B, BC307C

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
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### OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage (I <sub>C</sub> = –2.0 mA <sub>dc</sub> , I <sub>B</sub> = 0)	V <sub>(BR)CEO</sub>	–45	—	—	V <sub>dc</sub>
Emitter–Base Breakdown Voltage (I <sub>E</sub> = –100 μA <sub>dc</sub> , I <sub>C</sub> = 0)	V <sub>(BR)EBO</sub>	–5.0	—	—	V <sub>dc</sub>
Collector–Emitter Leakage Current (V <sub>CES</sub> = –50 V, V <sub>BE</sub> = 0) (V <sub>CES</sub> = –50 V, V <sub>BE</sub> = 0) T <sub>A</sub> = 125°C	I <sub>CES</sub>	—	–0.2	–15	nA <sub>dc</sub> μA

### ON CHARACTERISTICS

DC Current Gain (I <sub>C</sub> = –10 μA <sub>dc</sub> , V <sub>CE</sub> = –5.0 V <sub>dc</sub> )	h <sub>FE</sub>	—	150	—	—
BC307B		—	270	—	
BC307C		—	—	—	
(I <sub>C</sub> = –2.0 mA <sub>dc</sub> , V <sub>CE</sub> = –5.0 V <sub>dc</sub> )		120	—	800	
BC307		200	290	460	
BC307B		420	500	800	
BC307C					
(I <sub>C</sub> = –100 mA <sub>dc</sub> , V <sub>CE</sub> = –5.0 V <sub>dc</sub> )		—	180	—	
BC307B		—	300	—	
BC307C					
Collector–Emitter Saturation Voltage (I <sub>C</sub> = –10 mA <sub>dc</sub> , I <sub>B</sub> = –0.5 mA <sub>dc</sub> ) (I <sub>C</sub> = –10 mA <sub>dc</sub> , I <sub>B</sub> = see Note 1) (I <sub>C</sub> = –100 mA <sub>dc</sub> , I <sub>B</sub> = –5.0 mA <sub>dc</sub> )	V <sub>CE(sat)</sub>	—	–0.10	–0.3	V <sub>dc</sub>
		—	–0.30	–0.6	
		—	–0.25	—	
Base–Emitter Saturation Voltage (I <sub>C</sub> = –10 mA <sub>dc</sub> , I <sub>B</sub> = –0.5 mA <sub>dc</sub> ) (I <sub>C</sub> = –100 mA <sub>dc</sub> , I <sub>B</sub> = –5.0 mA <sub>dc</sub> )	V <sub>BE(sat)</sub>	—	–0.7	—	V <sub>dc</sub>
		—	–1.0	—	
Base–Emitter On Voltage (I <sub>C</sub> = –2.0 mA <sub>dc</sub> , V <sub>CE</sub> = –5.0 V <sub>dc</sub> )	V <sub>BE(on)</sub>	–0.55	–0.62	–0.7	V <sub>dc</sub>

### DYNAMIC CHARACTERISTICS

Current–Gain — Bandwidth Product (I <sub>C</sub> = –10 mA <sub>dc</sub> , V <sub>CE</sub> = –5.0 V <sub>dc</sub> , f = 100 MHz)	f <sub>T</sub>	—	280	—	MHz
Common Base Capacitance (V <sub>CB</sub> = –10 V <sub>dc</sub> , I <sub>C</sub> = 0, f = 1.0 MHz)	C <sub>cbo</sub>	—	—	6.0	pF
Noise Figure (I <sub>C</sub> = –0.2 mA <sub>dc</sub> , V <sub>CE</sub> = –5.0 V <sub>dc</sub> , R <sub>S</sub> = 2.0 kΩ, f = 1.0 kHz)	NF	—	2.0	10	dB

1. I<sub>C</sub> = –10 mA<sub>dc</sub> on the constant base current characteristic, which yields the point I<sub>C</sub> = –11 mA<sub>dc</sub>, V<sub>CE</sub> = –1.0 V.

# BC307B, BC307C

## TYPICAL CHARACTERISTICS

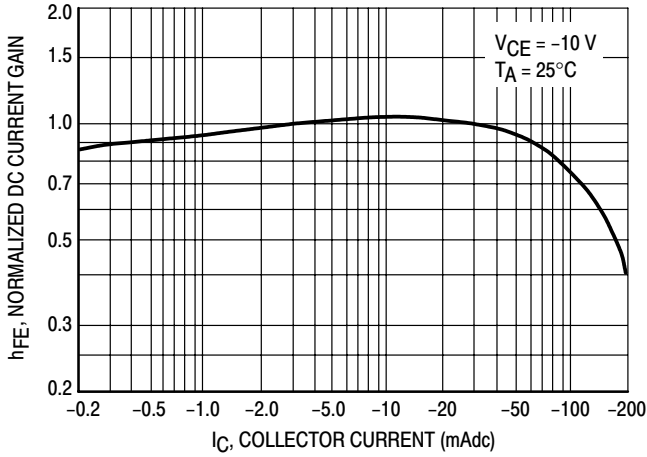


Figure 1. Normalized DC Current Gain

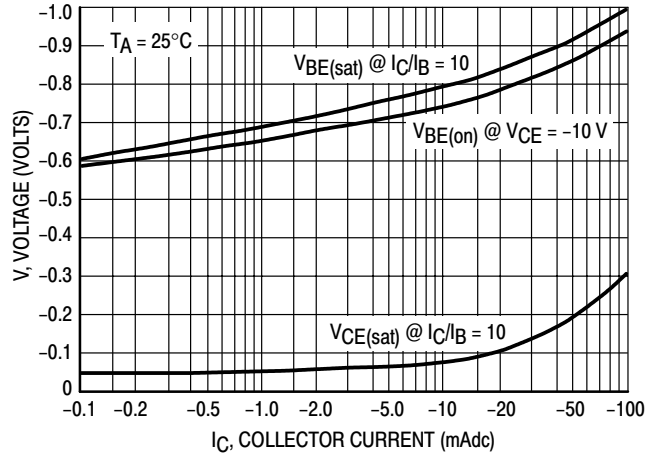


Figure 2. "Saturation" and "On" Voltages

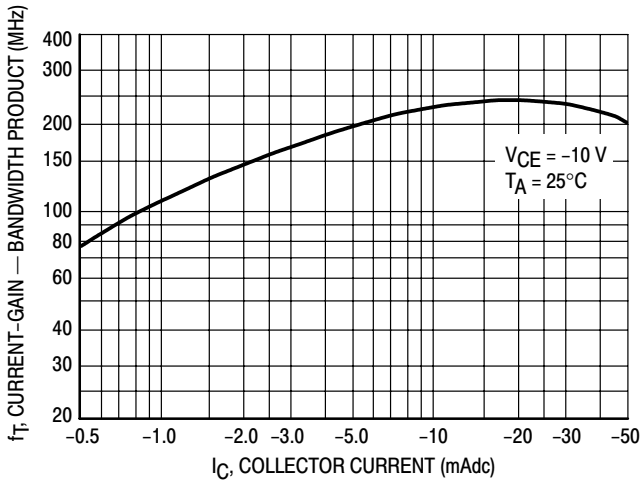


Figure 3. Current-Gain — Bandwidth Product

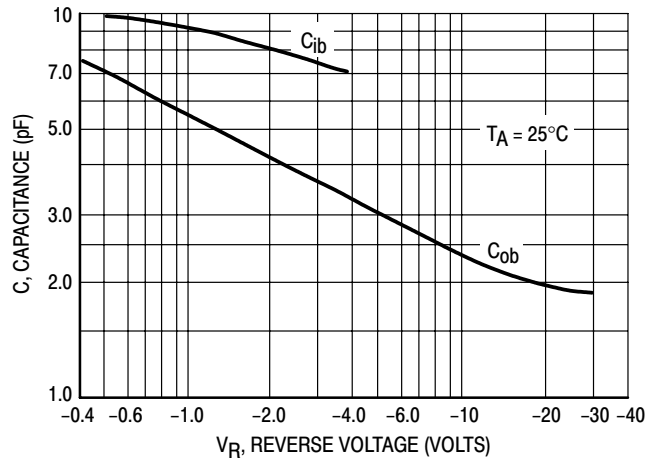


Figure 4. Capacitances

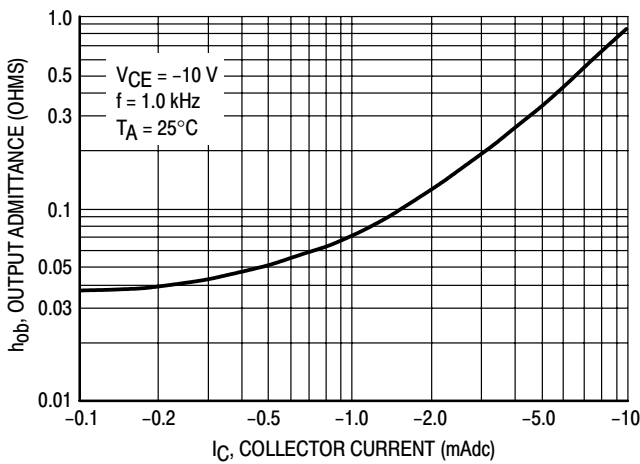


Figure 5. Output Admittance

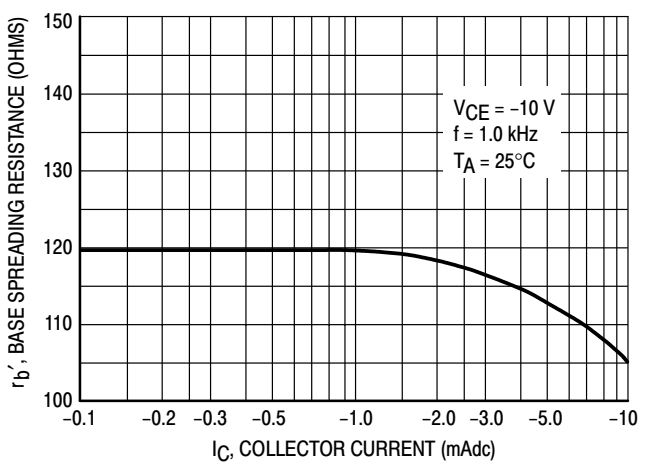
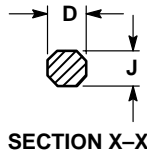
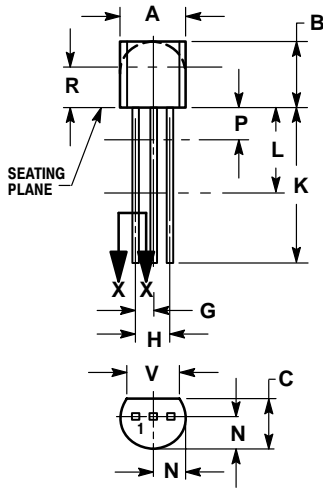


Figure 6. Base Spreading Resistance

# BC307B, BC307C

## PACKAGE DIMENSIONS

TO-92  
(TO-226)  
CASE 29-11  
ISSUE AL




NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.175	0.205	4.45	5.20
B	0.170	0.210	4.32	5.33
C	0.125	0.165	3.18	4.19
D	0.016	0.021	0.407	0.533
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.015	0.020	0.39	0.50
K	0.500	---	12.70	---
L	0.250	---	6.35	---
N	0.080	0.105	2.04	2.66
P	---	0.100	---	2.54
R	0.115	---	2.93	---
V	0.135	---	3.43	---

STYLE 17:

1. COLLECTOR
2. BASE
3. EMITTER

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