

## Excellent Integrated System Limited

Stocking Distributor

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[ON Semiconductor](#)

[BC212BRL1](#)

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# BC212B

## Amplifier Transistors

### PNP Silicon

#### Features

- Pb-Free Packages are Available\*

#### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CEO}$	-50	Vdc
Collector-Base Voltage	$V_{CBO}$	-60	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	W mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-55 to +150	$^\circ\text{C}$

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

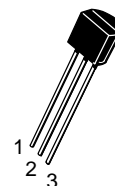
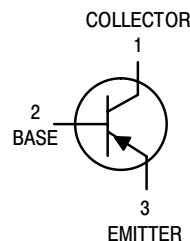
#### THERMAL CHARACTERISTICS

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	$^\circ\text{C}/\text{W}$



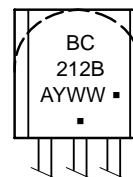
ON Semiconductor®

<http://onsemi.com>



TO-92  
CASE 29  
STYLE 17

#### MARKING DIAGRAM



BC212B = Device Code

A = Assembly

Y = Year

WW = Work Week

▪ = Pb-Free Package

(Note: Microdot may be in either location)

#### ORDERING INFORMATION

Device	Package	Shipping†
BC212B	TO-92	5000 Units / Box
BC212BG	TO-92 (Pb-Free)	5000 Units / Box
BC212BRL1	TO-92	2000 / Tape & Reel
BC212BRL1G	TO-92 (Pb-Free)	2000 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

## BC212B

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

Characteristic	Symbol	Min	Typ	Max	Unit
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	-50	-	-	Vdc
Collector–Base Breakdown Voltage	$V_{(BR)CBO}$	-60	-	-	Vdc
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	-5	-	-	Vdc
Collector–Emitter Leakage Current	$I_{CBO}$	-	-	-15	nAdc
Emitter–Base Leakage Current	$I_{EBO}$	-	-	-15	nAdc

**ON CHARACTERISTICS**

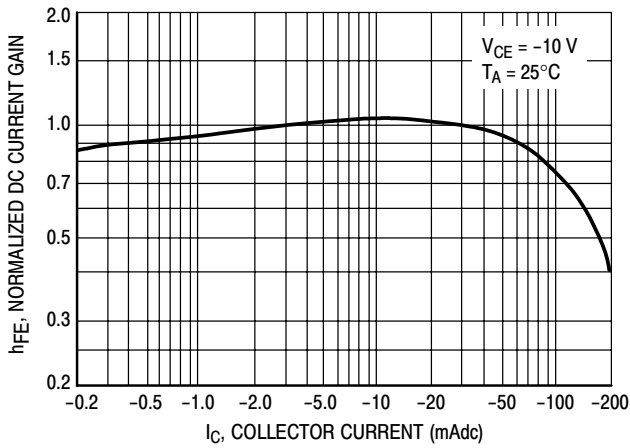
DC Current Gain ( $I_C = -10 \mu\text{Adc}$ , $V_{CE} = -5.0 \text{Vdc}$ )  ( $I_C = -2.0 \text{mAdc}$ , $V_{CE} = -5.0 \text{Vdc}$ )  ( $I_C = -100 \text{mAdc}$ , $V_{CE} = -5.0 \text{Vdc}$ ) (Note 1)	$h_{FE}$	40  60  -	-  -  120	-  -  -	-
Collector–Emitter Saturation Voltage ( $I_C = -10 \text{mAdc}$ , $I_B = -0.5 \text{mAdc}$ ) ( $I_C = -100 \text{mAdc}$ , $I_B = -5.0 \text{mAdc}$ ) (Note 1)	$V_{CE(sat)}$	-  -	-0.10  -0.25	-  -0.6	Vdc
Base–Emitter Saturation Voltage ( $I_C = -100 \text{mAdc}$ , $I_B = -5.0 \text{mAdc}$ )	$V_{BE(sat)}$	-	-1.0	-1.4	Vdc
Base–Emitter On Voltage ( $I_C = -2.0 \text{mAdc}$ , $V_{CE} = -5.0 \text{Vdc}$ )	$V_{BE(on)}$	-0.6	-0.62	-0.72	Vdc

**DYNAMIC CHARACTERISTICS**

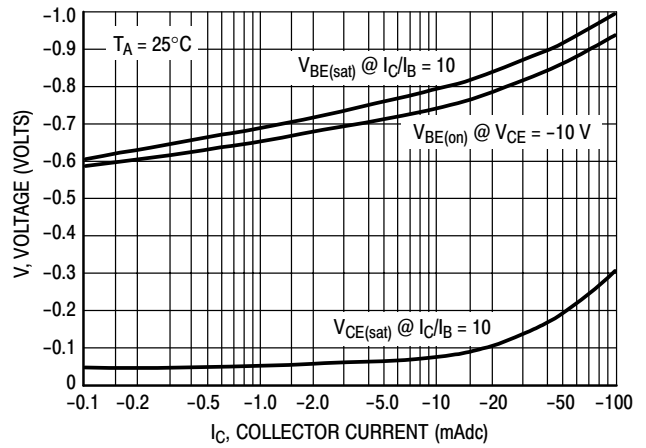
Current–Gain – Bandwidth Product ( $I_C = -10 \text{mAdc}$ , $V_{CE} = -5.0 \text{Vdc}$ , $f = 100 \text{mHz}$ )	$f_T$	-	280	-	MHz
Common–Base Output Capacitance ( $V_{CB} = -10 \text{Vdc}$ , $I_C = 0$ , $f = 1.0 \text{mHz}$ )	$C_{ob}$	-	-	6.0	pF
Noise Figure ( $I_C = -0.2 \text{mAdc}$ , $V_{CE} = -5.0 \text{Vdc}$ , $R_S = 2.0 \text{k}\Omega$ , $f = 1.0 \text{kHz}$ , $f = 200 \text{Hz}$ )	NF	-	-	10	dB
Small–Signal Current Gain ( $I_C = -2.0 \text{mAdc}$ , $V_{CE} = -5.0 \text{Vdc}$ , $f = 1.0 \text{kHz}$ )	$h_{fe}$	200	-	400	-

 1. Pulse Test:  $T_p$  300 s, Duty Cycle 2.0%.

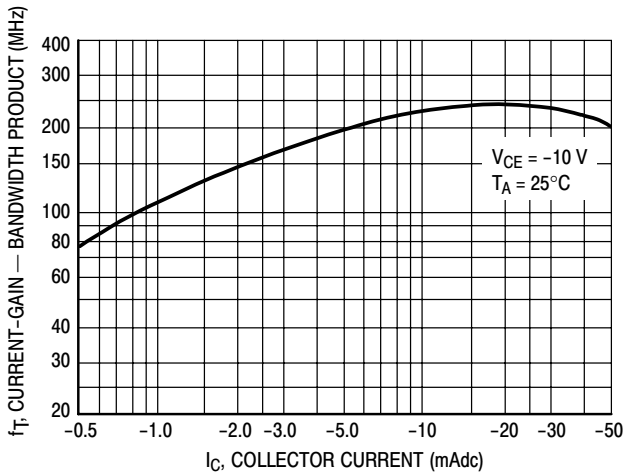
**BC212B**



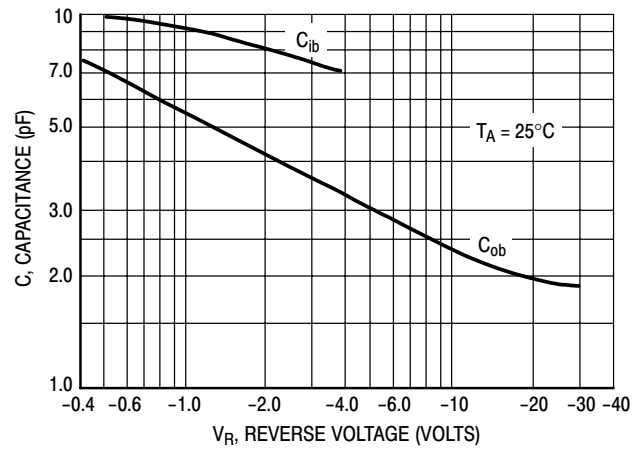
**Figure 1. Normalized DC Current Gain**



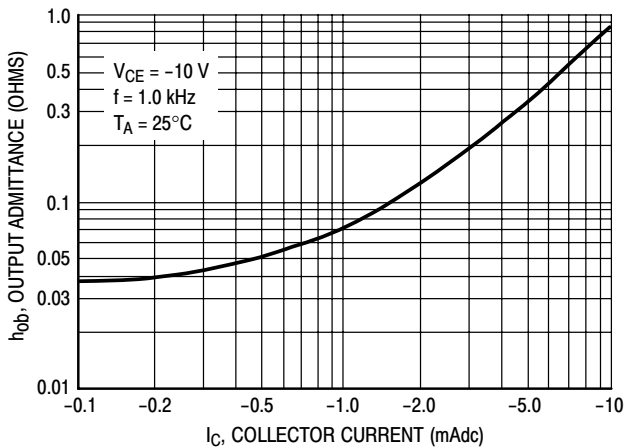
**Figure 2. "Saturation" and "On" Voltages**



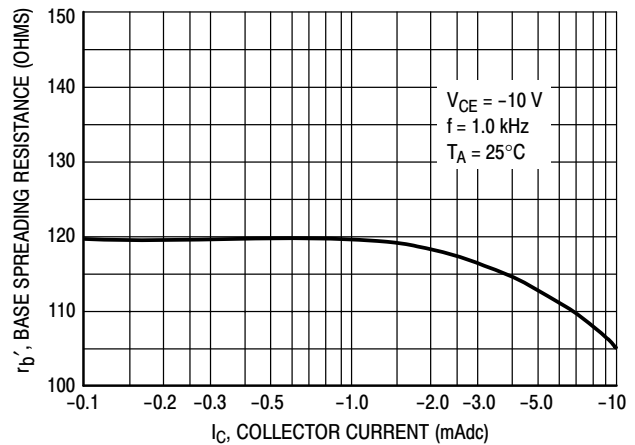
**Figure 3. Current-Gain - Bandwidth Product**



**Figure 4. Capacitances**



**Figure 5. Output Admittance**



**Figure 6. Base Spreading Resistance**

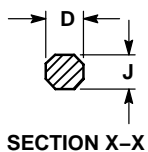
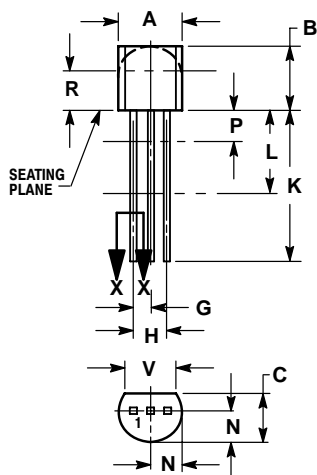
## BC212B

### 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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