

BC212, BC212B, BC213, BC214

Amplifier Transistors

PNP Silicon



ON Semiconductor™

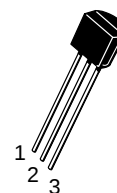
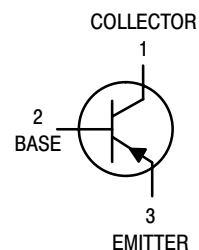
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MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage BC212 BC213 BC214	V_{CEO}	-50 -30 -30	Vdc
Collector-Base Voltage BC212 BC213 BC214	V_{CBO}	-60 -45 -45	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°C	P_D	350 2.8	mW mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°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	$^\circ\text{C}$

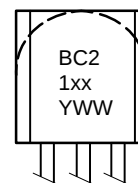
THERMAL CHARACTERISTICS

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



TO-92
CASE 29
STYLE 17

MARKING DIAGRAMS



BC21xx = Specific Device Code
xx = 2, 2B, 3 or 4
Y = Year
WW = Work Week

ORDERING INFORMATION

Device	Package	Shipping
BC212	TO-92	5000 Units/Box
BC212B	TO-92	5000 Units/Box
BC212BRL1	TO-92	2000/Tape & Reel
BC212BZL1	TO-92	2000/Ammo Pack
BC213	TO-92	5000 Units/Box
BC214	TO-92	5000 Units/Box
BC214RL1	TO-92	2000/Tape & Reel

BC212, BC212B, BC213, BC214

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Typ	Max	Unit
Collector–Emitter Breakdown Voltage (I _C = –2.0 mA, I _B = 0)	BC212 BC213 BC214	V _{(BR)CEO}	–50 –30 –30	– – –	– – –	Vdc
Collector–Base Breakdown Voltage (I _C = –10 µA, I _E = 0)	BC212 BC213 BC214	V _{(BR)CBO}	–60 –45 –45	– – –	– – –	Vdc
Emitter–Base Breakdown Voltage (I _E = –10 µA, I _C = 0)	BC212 BC213 BC214	V _{(BR)EBO}	–5 –5 –5	– – –	– – –	Vdc
Collector–Emitter Leakage Current (V _{CB} = –30 V)	BC212 BC213 BC214	I _{CBO}	– – –	– – –	–15 –15 –15	nAdc
Emitter–Base Leakage Current (V _{EB} = –4.0 V, I _C = 0)	BC212 BC213 BC214	I _{EBO}	– – –	– – –	–15 –15 –15	nAdc

ON CHARACTERISTICS

DC Current Gain (I _C = –10 µA, V _{CE} = –5.0 Vdc)	BC212 BC213 BC214	h _{FE}	40 40 100	– – –	– – –	–
(I _C = –2.0 mA, V _{CE} = –5.0 Vdc)	BC212 BC213 BC214		60 80 140	– – –	– – 600	
(I _C = –100 mA, V _{CE} = –5.0 Vdc) (Note 1.)	BC212, BC214 BC213		– –	120 140	– –	
Collector–Emitter Saturation Voltage (I _C = –10 mA, I _B = –0.5 mA) (I _C = –100 mA, I _B = –5.0 mA) (Note 1.)		V _{CE(sat)}	– –	–0.10 –0.25	– –0.6	Vdc
Base–Emitter Saturation Voltage (I _C = –100 mA, I _B = –5.0 mA)		V _{BE(sat)}	–	–1.0	–1.4	Vdc
Base–Emitter On Voltage (I _C = –2.0 mA, V _{CE} = –5.0 Vdc)		V _{BE(on)}	–0.6	–0.62	–0.72	Vdc

DYNAMIC CHARACTERISTICS

Current–Gain – Bandwidth Product (I _C = –10 mA, V _{CE} = –5.0 Vdc, f = 100 MHz)	BC212 BC214 BC213	f _T	– – –	280 320 360	– – –	MHz
Common–Base Output Capacitance (V _{CB} = –10 Vdc, I _C = 0, f = 1.0 MHz)		C _{ob}	–	–	6.0	pF
Noise Figure (I _C = –0.2 mA, V _{CE} = –5.0 Vdc, R _S = 2.0 kΩ, f = 1.0 kHz)	BC214	NF	–	–	2	dB
(I _C = –0.2 mA, V _{CE} = –5.0 Vdc, R _S = 2.0 kΩ, f = 1.0 kHz, f = 200 Hz)	BC212, BC213		–	–	10	
Small–Signal Current Gain (I _C = –2.0 mA, V _{CE} = –5.0 Vdc, f = 1.0 kHz)	BC212 BC213 BC214 BC212B	h _{fe}	60 80 140 200	– – – –	– – – 400	–

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

BC212, BC212B, BC213, BC214

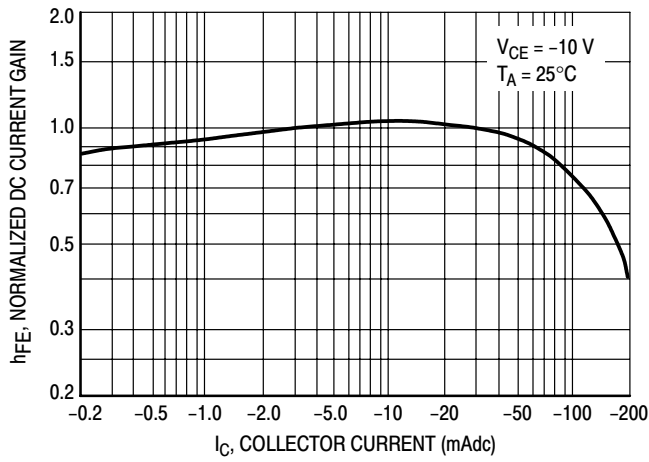


Figure 1. Normalized DC Current Gain

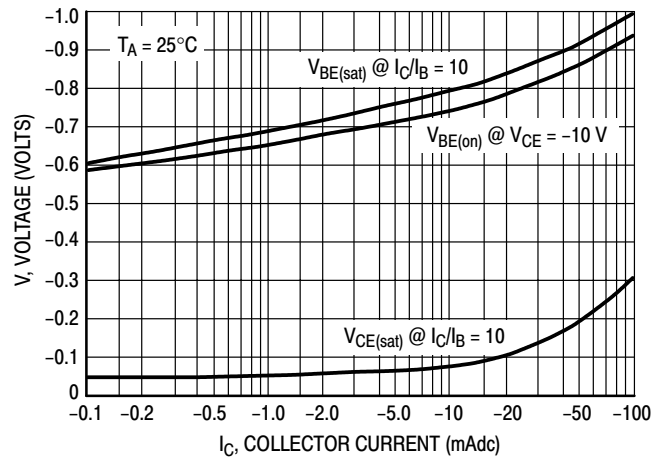


Figure 2. "Saturation" and "On" Voltages

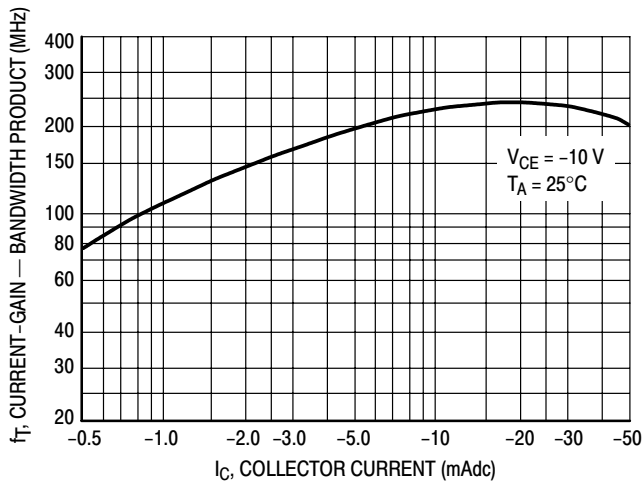


Figure 3. Current-Gain — Bandwidth Product

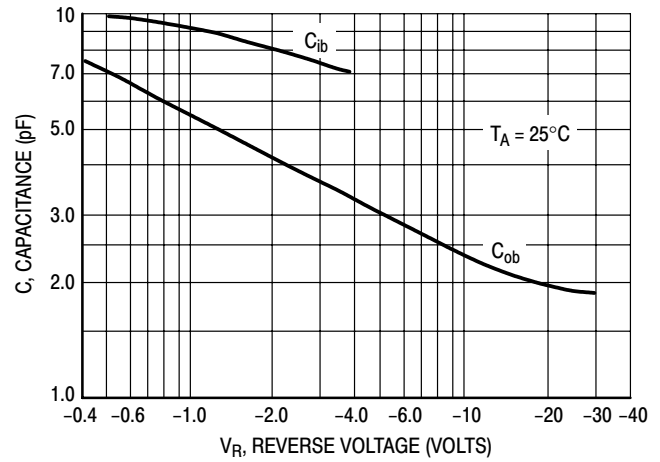


Figure 4. Capacitances

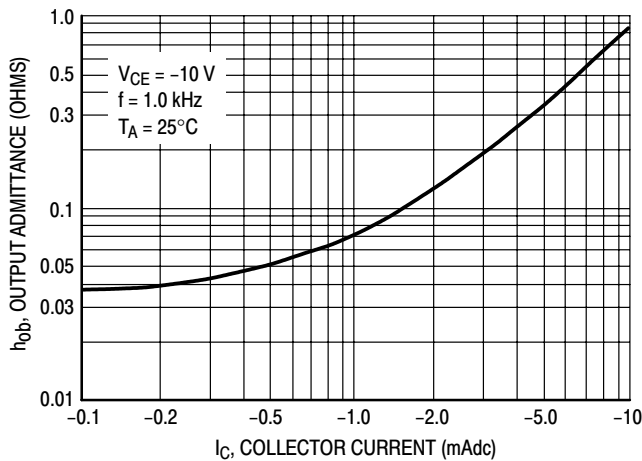


Figure 5. Output Admittance

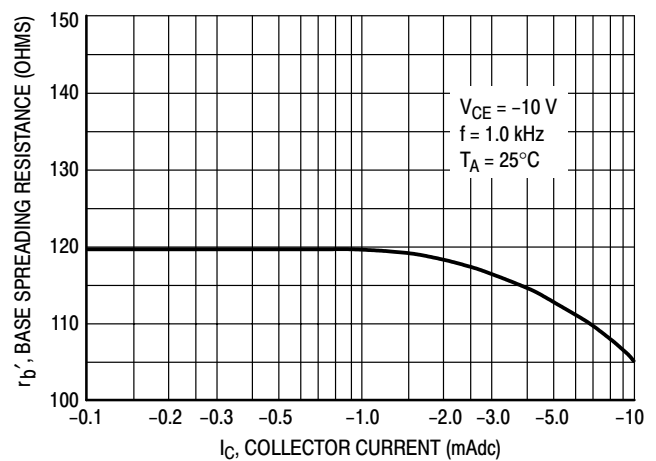
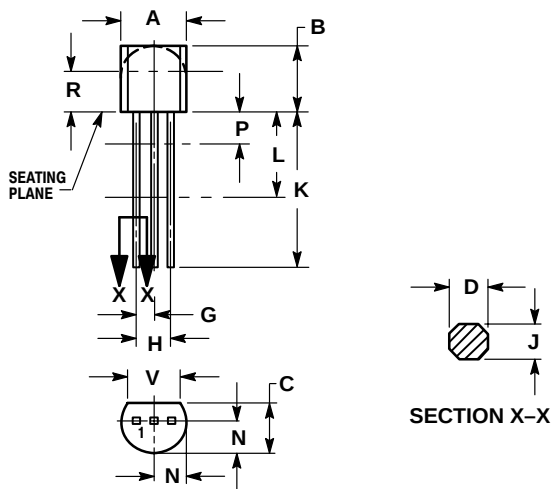


Figure 6. Base Spreading Resistance

BC212, BC212B, BC213, BC214

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
E	0.045	0.055	1.15	1.39
F	0.095	0.105	2.42	2.66
G	0.015	0.020	0.39	0.50
H	0.500	---	12.70	---
J	0.250	---	6.35	---
K	0.080	0.105	2.04	2.66
L	---	0.100	---	2.54
M	0.115	---	2.93	---
N	0.135	---	3.43	---

STYLE 17:

1. COLLECTOR
2. BASE
3. EMITTER

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