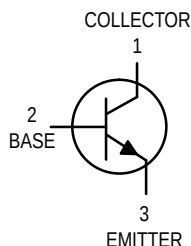


Amplifier Transistors

NPN Silicon

BC546, B
BC547, A, B, C
BC548, A, B, C



MAXIMUM RATINGS

Rating	Symbol	BC 546	BC 547	BC 548	Unit
Collector–Emitter Voltage	V_{CEO}	65	45	30	Vdc
Collector–Base Voltage	V_{CBO}	80	50	30	Vdc
Emitter–Base Voltage	V_{EBO}	6.0			Vdc
Collector Current — Continuous	I_C	100			mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	625 5.0			mW mW/°C
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	1.5 12			Watt mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	–55 to +150			°C

THERMAL CHARACTERISTICS

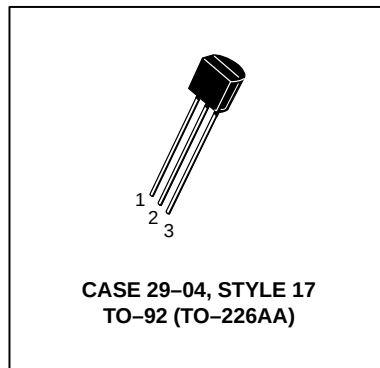
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	200	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	83.3	°C/W

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

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage ($I_C = 1.0\text{ mA}$, $I_B = 0$)	BC546 BC547 BC548	$V_{(BR)CEO}$	65 45 30	— — —	— — —	V
Collector–Base Breakdown Voltage ($I_C = 100\text{ }\mu\text{Adc}$)	BC546 BC547 BC548	$V_{(BR)CBO}$	80 50 30	— — —	— — —	V
Emitter–Base Breakdown Voltage ($I_E = 10\text{ }\mu\text{A}$, $I_C = 0$)	BC546 BC547 BC548	$V_{(BR)EBO}$	6.0 6.0 6.0	— — —	— — —	V
Collector Cutoff Current ($V_{CE} = 70\text{ V}$, $V_{BE} = 0$) ($V_{CE} = 50\text{ V}$, $V_{BE} = 0$) ($V_{CE} = 35\text{ V}$, $V_{BE} = 0$) ($V_{CE} = 30\text{ V}$, $T_A = 125^\circ\text{C}$)	BC546 BC547 BC548 BC546/547/548	I_{CES}	— — — —	0.2 0.2 0.2 —	15 15 15 4.0	nA μA



BC546, B BC547, A, B, C BC548, A, B, C**ELECTRICAL CHARACTERISTICS** ($T_A = 25^\circ\text{C}$ unless otherwise noted) (Continued)

Characteristic	Symbol	Min	Typ	Max	Unit
ON CHARACTERISTICS					
DC Current Gain (I _C = 10 μA, V _{CE} = 5.0 V)	h _{FE}	BC547A/548A	—	90	—
		BC546B/547B/548B	—	150	—
		BC548C	—	270	—
(I _C = 2.0 mA, V _{CE} = 5.0 V)		BC546	110	—	450
		BC547	110	—	800
		BC548	110	—	800
		BC547A/548A	110	180	220
		BC546B/547B/548B	200	290	450
		BC547C/BC548C	420	520	800
(I _C = 100 mA, V _{CE} = 5.0 V)		BC547A/548A	—	120	—
		BC546B/547B/548B	—	180	—
		BC548C	—	300	—
Collector–Emitter Saturation Voltage (I _C = 10 mA, I _B = 0.5 mA)	V _{CE(sat)}	—	0.09	0.25	V
(I _C = 100 mA, I _B = 5.0 mA)		—	0.2	0.6	
(I _C = 10 mA, I _B = See Note 1)		—	0.3	0.6	
Base–Emitter Saturation Voltage (I _C = 10 mA, I _B = 0.5 mA)	V _{BE(sat)}	—	0.7	—	V
Base–Emitter On Voltage (I _C = 2.0 mA, V _{CE} = 5.0 V)	V _{BE(on)}	0.55	—	0.7	V
(I _C = 10 mA, V _{CE} = 5.0 V)		—	—	0.77	

SMALL–SIGNAL CHARACTERISTICS

Current–Gain — Bandwidth Product ($I_C = 10\ \text{mA}$, $V_{CE} = 5.0\ \text{V}$, $f = 100\ \text{MHz}$)	f_T	BC546	150	300	—	MHz
		BC547	150	300	—	
		BC548	150	300	—	
Output Capacitance ($V_{CB} = 10\ \text{V}$, $I_C = 0$, $f = 1.0\ \text{MHz}$)	C_{obo}		—	1.7	4.5	pF
Input Capacitance ($V_{EB} = 0.5\ \text{V}$, $I_C = 0$, $f = 1.0\ \text{MHz}$)	C_{ibo}		—	10	—	pF
Small–Signal Current Gain ($I_C = 2.0\ \text{mA}$, $V_{CE} = 5.0\ \text{V}$, $f = 1.0\ \text{kHz}$)	h_{fe}	BC546	125	—	500	—
		BC547/548	125	—	900	
		BC547A/548A	125	220	260	
		BC546B/547B/548B	240	330	500	
		BC547C/548C	450	600	900	
Noise Figure ($I_C = 0.2\ \text{mA}$, $V_{CE} = 5.0\ \text{V}$, $R_S = 2\ \text{k}\Omega$, $f = 1.0\ \text{kHz}$, $\Delta f = 200\ \text{Hz}$)	NF	BC546	—	2.0	10	dB
		BC547	—	2.0	10	
		BC548	—	2.0	10	

Note 1: I_B is value for which $I_C = 11\ \text{mA}$ at $V_{CE} = 1.0\ \text{V}$.

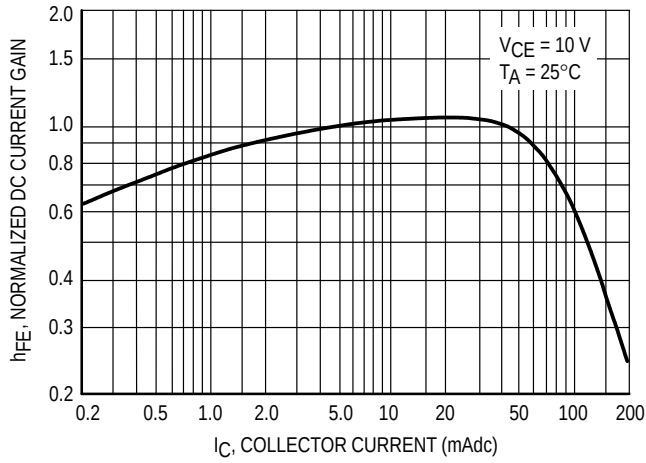


Figure 1. Normalized DC Current Gain

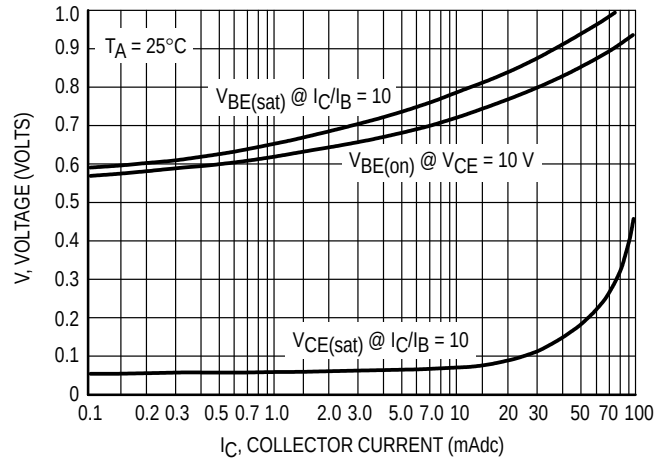


Figure 2. "Saturation" and "On" Voltages

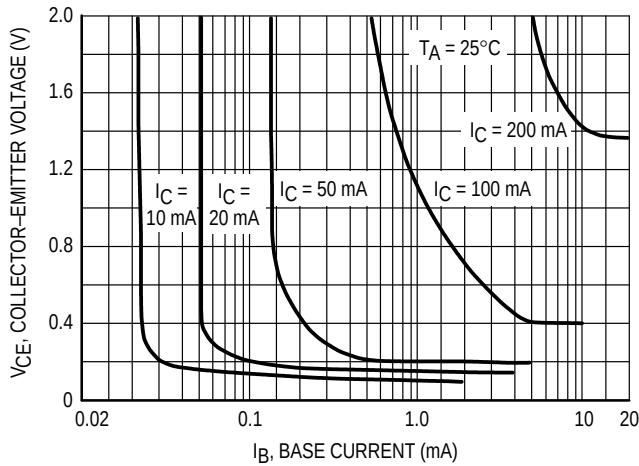


Figure 3. Collector Saturation Region

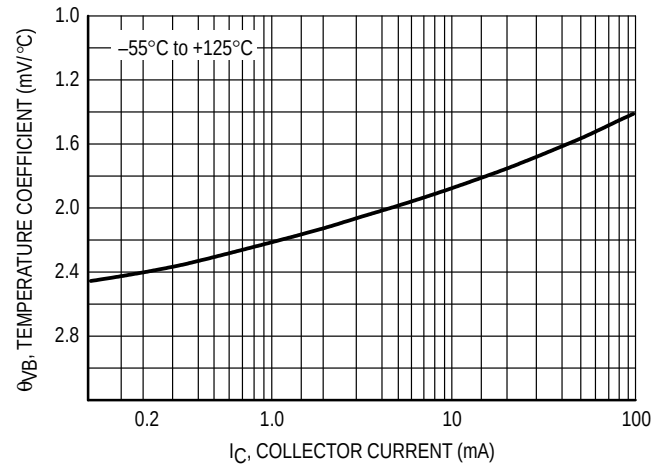


Figure 4. Base-Emitter Temperature Coefficient

BC547/BC548

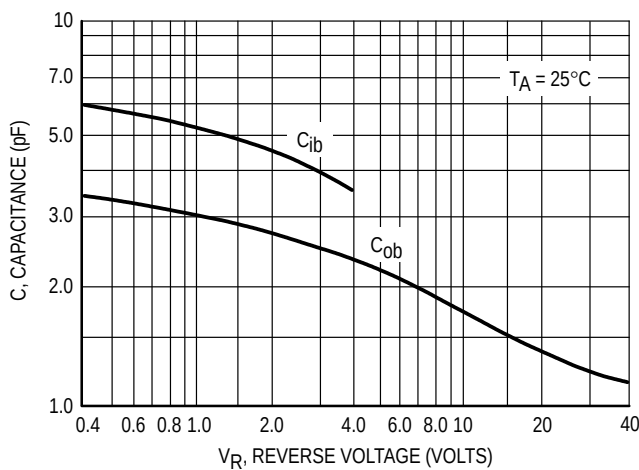


Figure 5. Capacitances

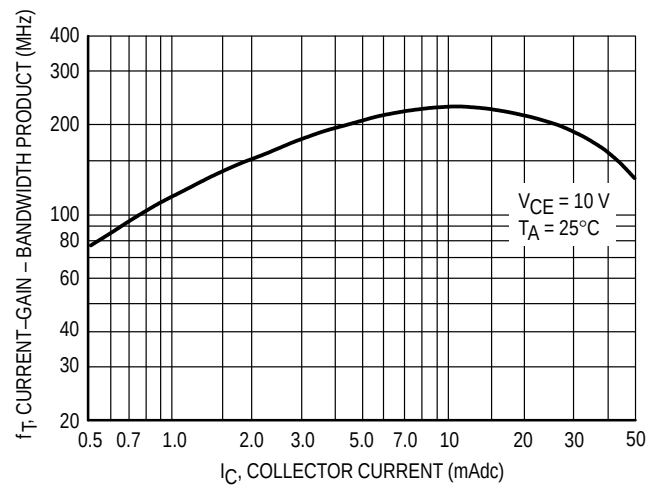


Figure 6. Current-Gain - Bandwidth Product

BC547/BC548

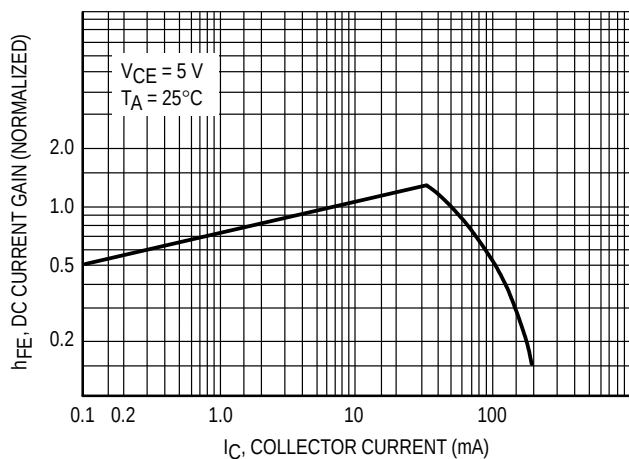


Figure 7. DC Current Gain

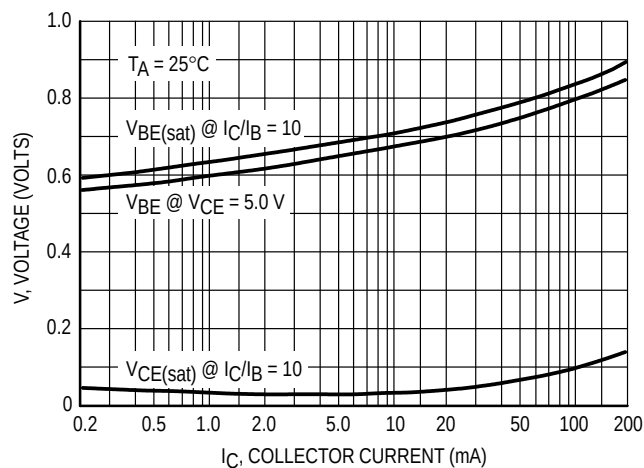


Figure 8. "On" Voltage

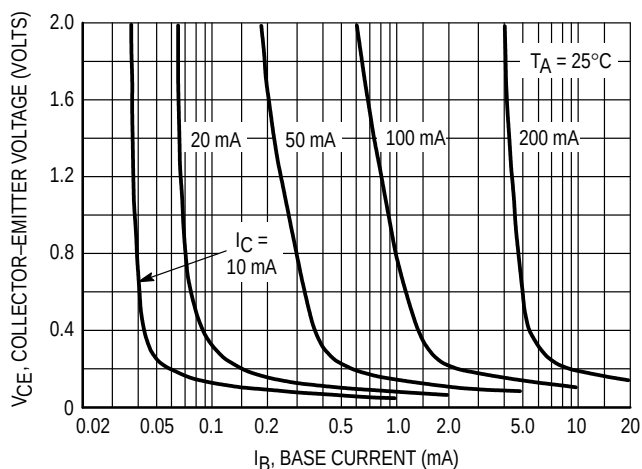


Figure 9. Collector Saturation Region

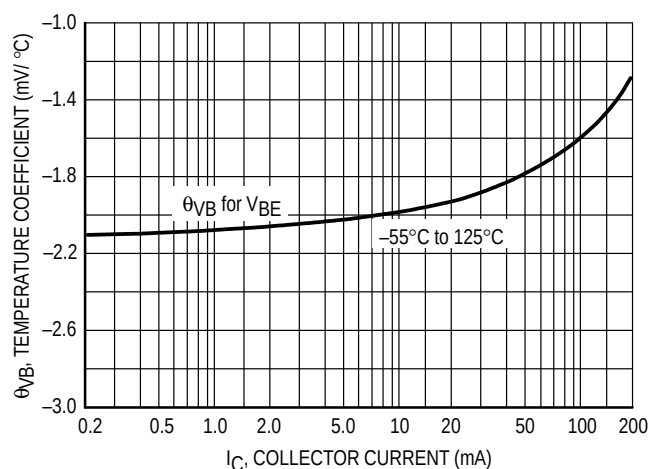


Figure 10. Base-Emitter Temperature Coefficient

BC546

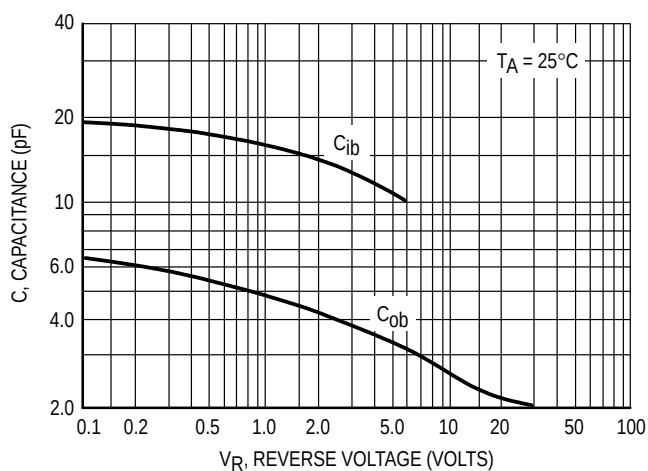


Figure 11. Capacitance

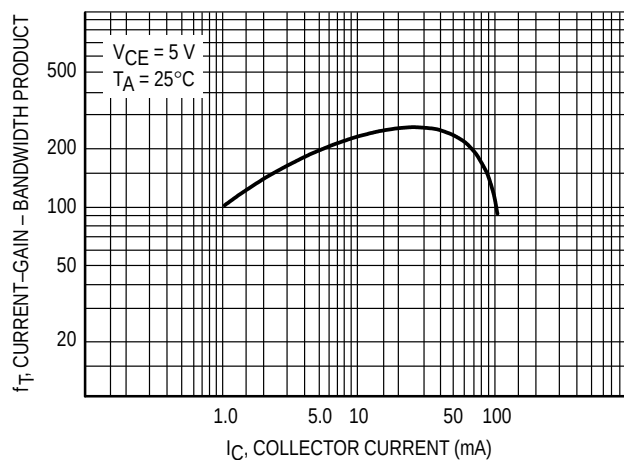
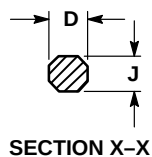
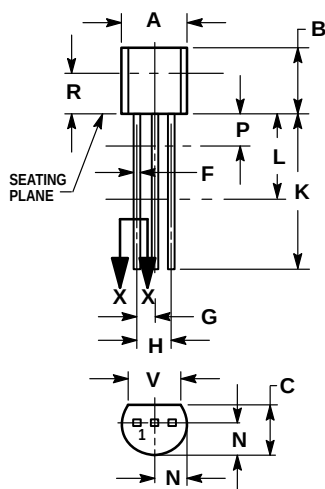


Figure 12. Current-Gain - Bandwidth Product

PACKAGE DIMENSIONS



**CASE 029-04
(TO-226AA)
ISSUE AD**

NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. DIMENSION F APPLIES BETWEEN P AND L. DIMENSION D AND J APPLY BETWEEN L AND K MINIMUM. 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	0.022	0.41	0.55
F	0.016	0.019	0.41	0.48
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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BC546/D

