

# BC636, BC636-16, BC638, BC640, BC640-16

## High Current Transistors

PNP Silicon

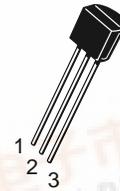
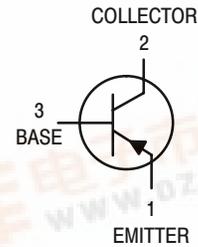


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### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	BC636	-45	Vdc
	BC638	-60	
	BC640	-80	
Collector-Base Voltage	BC636	-45	Vdc
	BC638	-60	
	BC640	-80	
Emitter-Base Voltage	$V_{EBO}$	-5.0	Vdc
Collector Current — Continuous	$I_C$	-0.5	Adc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	625	mW
		5.0	mW/°C
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	1.5	Watts
		12	mW/°C
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-55 to +150	°C



CASE 29  
TO-92  
STYLE 14

### 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

### ORDERING INFORMATION

Device	Package	Shipping
BC636	TO-92	5000 Units/Box
BC636ZL1	TO-92	2000/Ammo Pack
BC636-16ZL1	TO-92	2000/Ammo Pack
BC638	TO-92	5000 Units/Box
BC638ZL1	TO-92	2000/Ammo Pack
BC640	TO-92	5000 Units/Box
BC640ZL1	TO-92	2000/Ammo Pack
BC640-16	TO-92	5000 Units/Box



## BC636, BC636–16, BC638, BC640, BC640–16

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

Characteristic	Symbol	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>					
Collector–Emitter Breakdown Voltage ( $I_C = -10\text{ mA}$ , $I_B = 0$ )	$V_{(BR)CEO}$	-45 -60 -80	—	—	Vdc
	BC636				
	BC638				
	BC640				
Collector–Base Breakdown Voltage ( $I_C = -100\ \mu\text{A}$ , $I_E = 0$ )	$V_{(BR)CBO}$	-45 -60 -80	—	—	Vdc
	BC636				
	BC638				
	BC640				
Emitter–Base Breakdown Voltage ( $I_E = -10\ \mu\text{A}$ , $I_C = 0$ )	$V_{(BR)EBO}$	-5.0	—	—	Vdc
Collector Cutoff Current ( $V_{CB} = -30\text{ Vdc}$ , $I_E = 0$ ) ( $V_{CB} = -30\text{ Vdc}$ , $I_E = 0$ , $T_A = 125^\circ\text{C}$ )	$I_{CBO}$	— —	— —	-100 -10	nAdc $\mu\text{Adc}$
<b>ON CHARACTERISTICS (1)</b>					
DC Current Gain ( $I_C = -5.0\text{ mA}$ , $V_{CE} = -2.0\text{ Vdc}$ ) ( $I_C = -150\text{ mA}$ , $V_{CE} = -2.0\text{ Vdc}$ )	$h_{FE}$	25 40 100 40 40 100 25	— — — — — — —	— 250 250 160 160 250 —	—
	BC636				
	BC636–16				
	BC638				
	BC640				
	BC640–16				
( $I_C = -500\text{ mA}$ , $V_{CE} = -2.0\text{ V}$ )					
Collector–Emitter Saturation Voltage ( $I_C = -500\text{ mA}$ , $I_B = -50\text{ mA}$ )	$V_{CE(sat)}$	— —	-0.25 -0.5	-0.5 —	Vdc
Base–Emitter On Voltage ( $I_C = -500\text{ mA}$ , $V_{CE} = -2.0\text{ Vdc}$ )	$V_{BE(on)}$	—	—	-1.0	Vdc
<b>DYNAMIC CHARACTERISTICS</b>					
Current–Gain — Bandwidth Product ( $I_C = -50\text{ mA}$ , $V_{CE} = -2.0\text{ Vdc}$ , $f = 100\text{ MHz}$ )	$f_T$	—	150	—	MHz
Output Capacitance ( $V_{CB} = -10\text{ Vdc}$ , $I_E = 0$ , $f = 1.0\text{ MHz}$ )	$C_{ob}$	—	9.0	—	pF
Input Capacitance ( $V_{EB} = -0.5\text{ Vdc}$ , $I_C = 0$ , $f = 1.0\text{ MHz}$ )	$C_{ib}$	—	110	—	pF

1. Pulse Test: Pulse Width  $\leq 300\ \mu\text{s}$ , Duty Cycle 2.0%.

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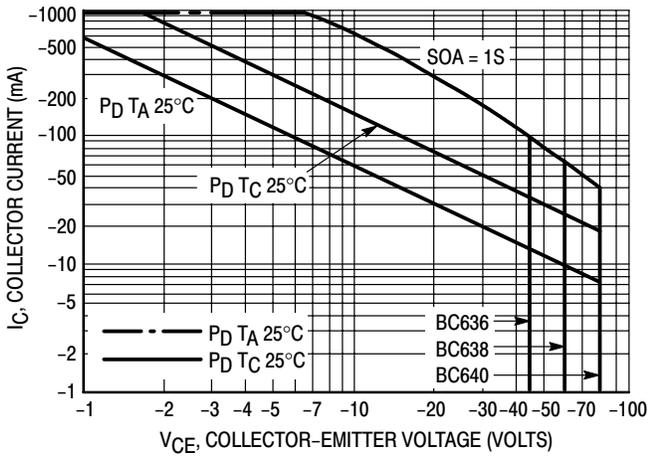


Figure 1. Active Region Safe Operating Area

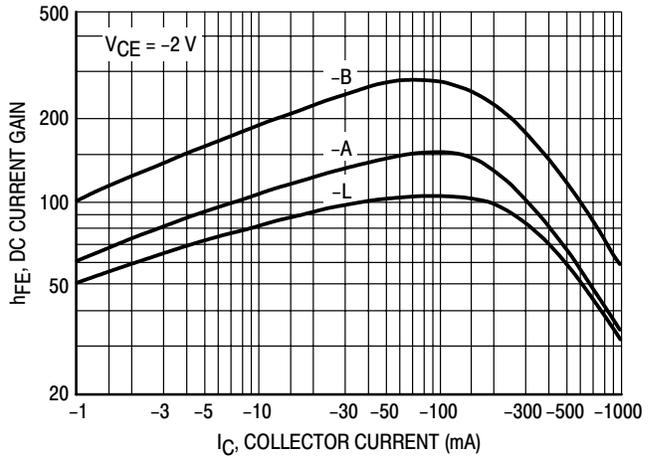


Figure 2. DC Current Gain

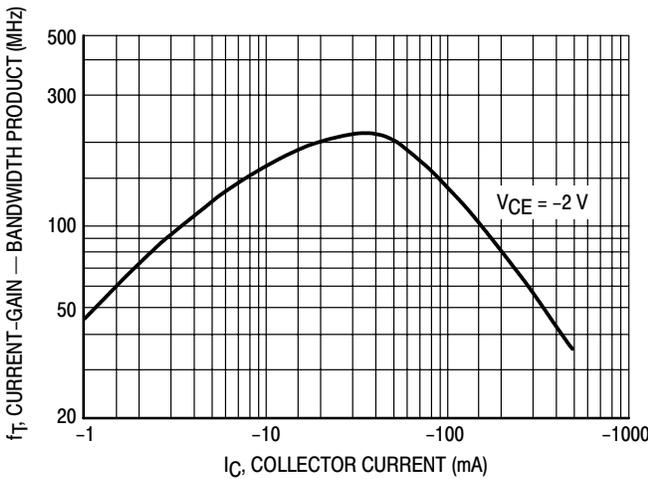


Figure 3. Current Gain Bandwidth Product

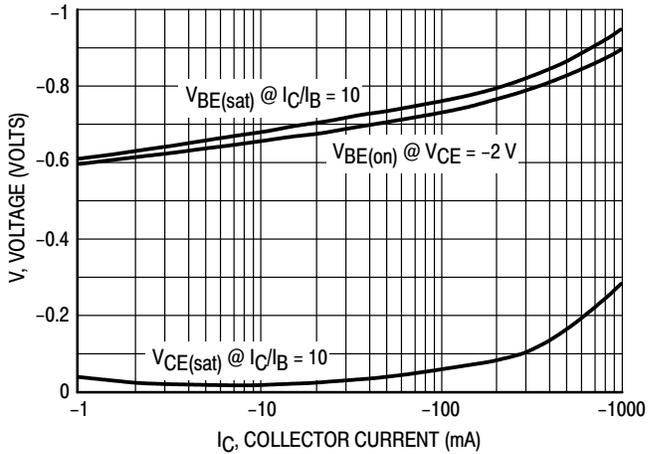


Figure 4. "Saturation" and "On" Voltages

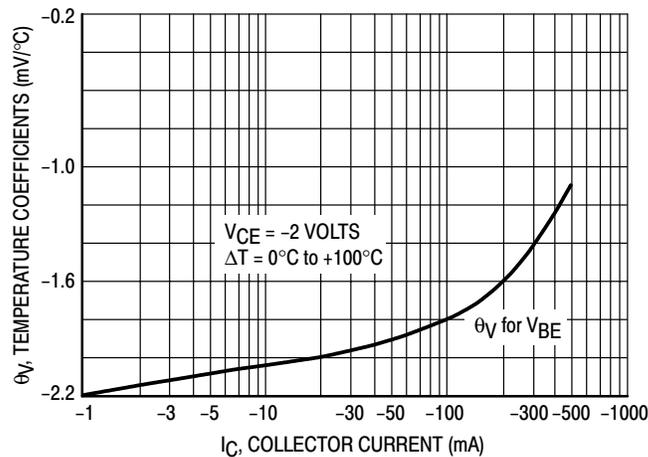
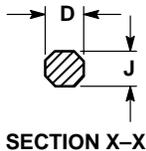
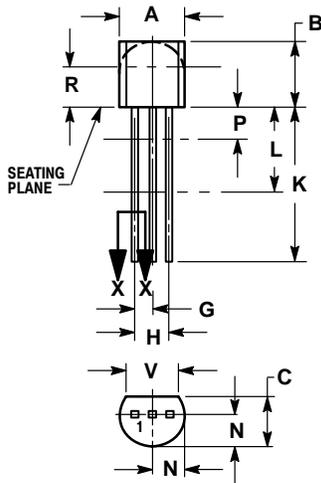


Figure 5. Temperature Coefficients

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## 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 14:

1. EMITTER
2. COLLECTOR
3. BASE

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