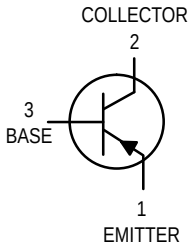
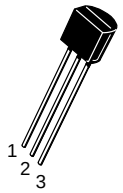
High Current Transistors
PNP Silicon

BC636
BC638
BC640





CASE 29–04, STYLE 14
TO–92 (TO–226AA)

MAXIMUM RATINGS

Rating	Symbol	BC 636	BC 638	BC 640	Unit
Collector–Emitter Voltage	V_{CEO}	–45	–60	–80	Vdc
Collector–Base Voltage	V_{CBO}	–45	–60	–80	Vdc
Emitter–Base Voltage	V_{EBO}		–5.0		Vdc
Collector Current — Continuous	I_C		–0.5		Adc
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D		625 5.0		mW mW/°C
Total Device Dissipation @ T_C = 25°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°C unless otherwise noted)

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector–Emitter Breakdown Voltage*		$V_{(BR)CEO}$				Vdc
(I_C = –10 mAdc, I_B = 0)	BC636		–45	—	—	
	BC638		–60	—	—	
	BC640		–80	—	—	
Collector–Base Breakdown Voltage		$V_{(BR)CBO}$				Vdc
(I_C = –100 μAdc, I_E = 0)	BC636		–45	—	—	
	BC638		–60	—	—	
	BC640		–80	—	—	
Emitter–Base Breakdown Voltage (I_E = –10 μAdc, I_C = 0)		$V_{(BR)EBO}$	–5.0	—	—	Vdc
Collector Cutoff Current		I_{CBO}				
(V_{CB} = –30 Vdc, I_E = 0)			—	—	–100	nAdc
(V_{CB} = –30 Vdc, I_E = 0, T_A = 125°C)			—	—	–10	μAdc

1. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle 2.0%.

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

Characteristic		Symbol	Min	Typ	Max	Unit
ON CHARACTERISTICS(1)						
DC Current Gain		h_{FE}				—
(I_C = –5.0 mAdc, V_{CE} = –2.0 Vdc)			25	—	—	
(I_C = –150 mAdc, V_{CE} = –2.0 Vdc)	BC636		40	—	250	
	BC638		40	—	160	
	BC640		40	—	160	
(I_C = –500 mA, V_{CE} = –2.0 V)			25	—	—	
Collector–Emitter Saturation Voltage		$V_{CE(sat)}$	—	–0.25	–0.5	Vdc
(I_C = –500 mAdc, I_B = –50 mAdc)			—	–0.5	—	
Base–Emitter On Voltage		$V_{BE(on)}$	—	—	–1.0	Vdc
(I_C = –500 mAdc, V_{CE} = –2.0 Vdc)						
DYNAMIC CHARACTERISTICS						
Current–Gain — Bandwidth Product		f_T	—	150	—	MHz
(I_C = –50 mAdc, V_{CE} = –2.0 Vdc, f = 100 MHz)						
Output Capacitance		C_{ob}	—	9.0	—	pF
(V_{CB} = –10 Vdc, I_E = 0, f = 1.0 MHz)						
Input Capacitance		C_{ib}	—	110	—	pF
(V_{EB} = –0.5 Vdc, I_C = 0, f = 1.0 MHz)						

1. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle 2.0%.

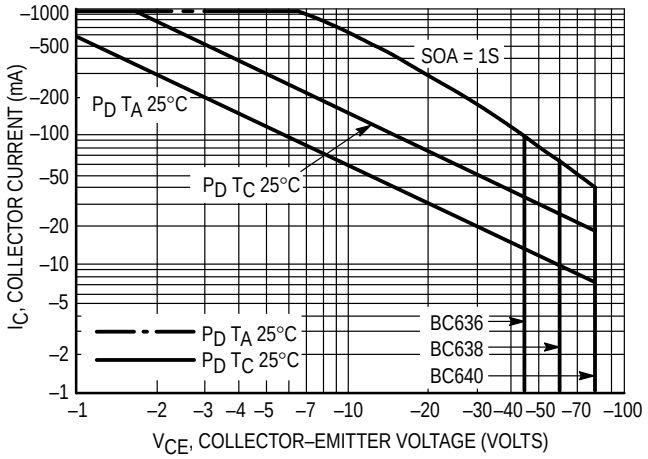


Figure 1. Active Region Safe Operating Area

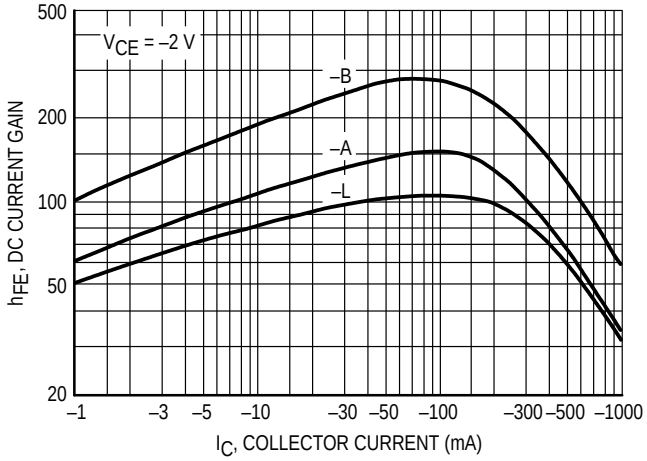


Figure 2. DC Current Gain

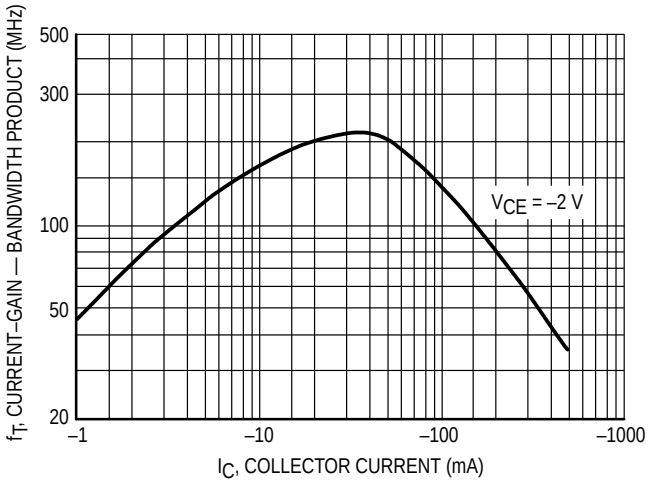


Figure 3. Current Gain Bandwidth Product

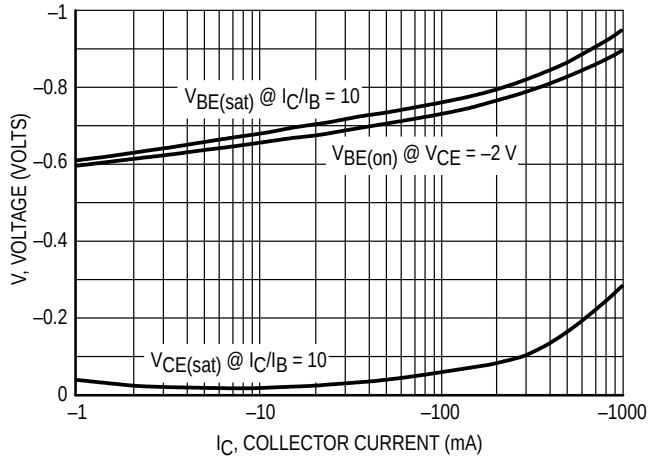


Figure 4. “Saturation” and “On” Voltages

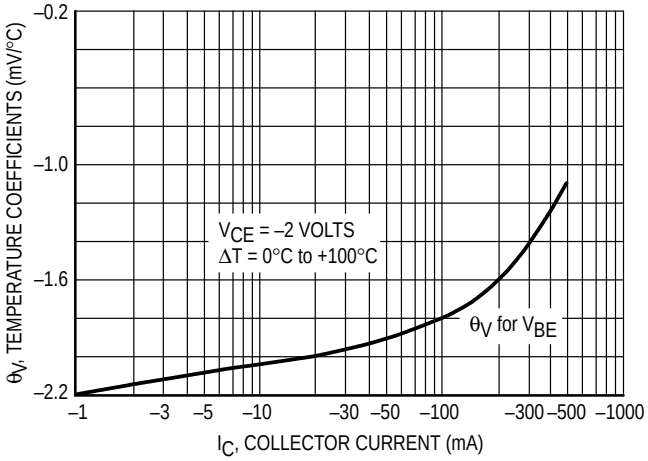
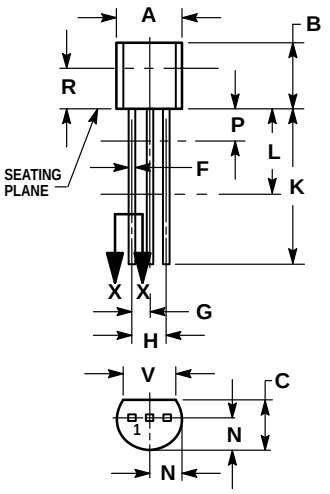
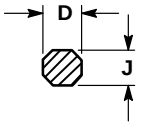


Figure 5. Temperature Coefficients

PACKAGE DIMENSIONS





SECTION X–X

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.

	INCHES		MILLIMETERS	
DIM	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 14:
PIN 1. EMITTER
2. COLLECTOR
3. BASE

CASE 029–04
(TO–226AA)
ISSUE AD

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