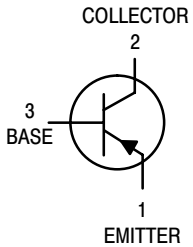
BC636, BC636-16, BC638, BC640, BC640-16

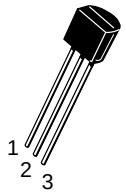
High Current Transistors

PNP Silicon

ON Semiconductor

http://onsemi.com





CASE 29
TO–92
STYLE 14

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage BC636 BC638 BC640	V_{CEO}	 –45 –60 –80	Vdc
Collector-Base Voltage BC636 BC638 BC640	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	 Watts 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

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

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June, 2000 – Rev. 1
Publication Order Number:
BC636/D

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

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector–Emitter Breakdown Voltage (I_C = –10 mAdc, I_B = 0)		$V_{(BR)CEO}$				Vdc
	BC636		–45	—	—	
	BC638		–60	—	—	
	BC640		–80	—	—	
Collector–Base Breakdown Voltage (I_C = –100 μAdc, I_E = 0)		$V_{(BR)CBO}$				Vdc
	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
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	
	BC636–16		100	—	250	
	BC638		40	—	160	
	BC640		40	—	160	
	BC640–16		100	—	250	
(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 (I_C = –500 mAdc, V_{CE} = –2.0 Vdc)		$V_{BE(on)}$	—	—	–1.0	Vdc
DYNAMIC CHARACTERISTICS						
Current–Gain — Bandwidth Product (I_C = –50 mAdc, V_{CE} = –2.0 Vdc, f = 100 MHz)		f_T	—	150	—	MHz
Output Capacitance (V_{CB} = –10 Vdc, I_E = 0, f = 1.0 MHz)		C_{ob}	—	9.0	—	pF
Input Capacitance (V_{EB} = –0.5 Vdc, I_C = 0, f = 1.0 MHz)		C_{ib}	—	110	—	pF

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

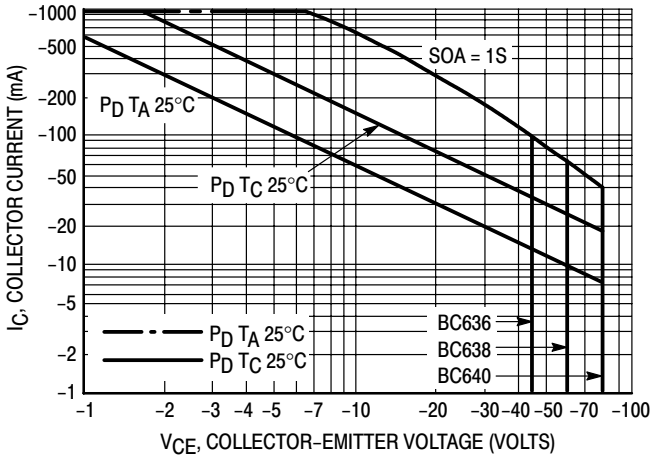


Figure 1. Active Region Safe Operating Area

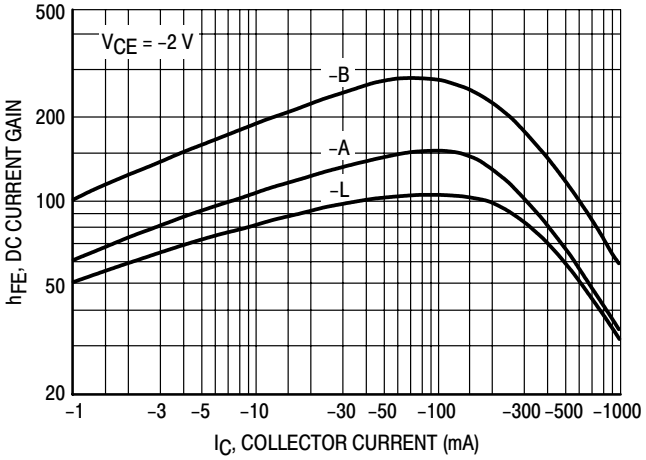


Figure 2. DC Current Gain

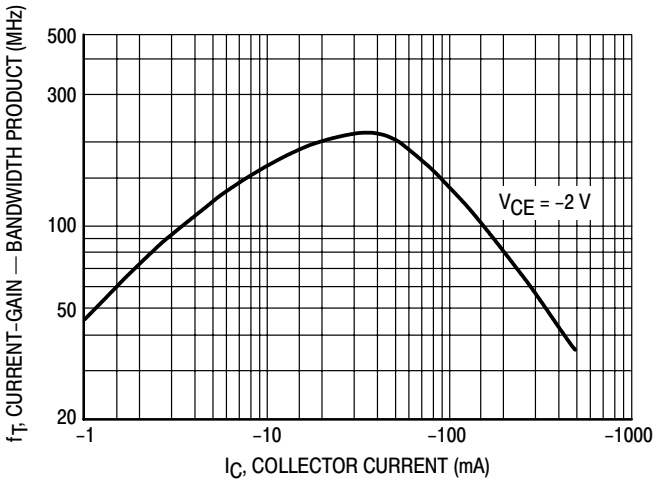


Figure 3. Current Gain Bandwidth Product

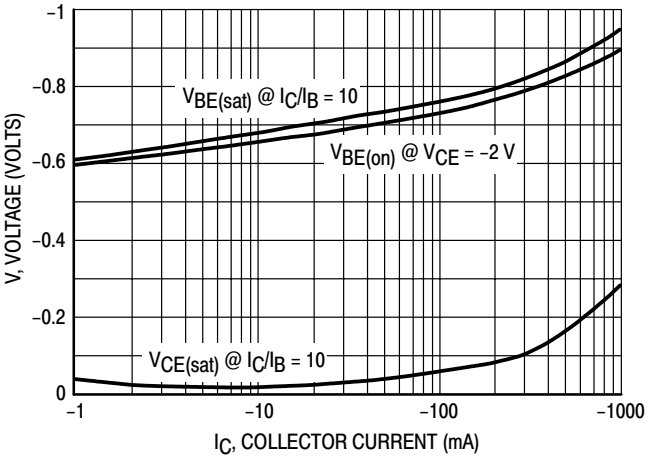


Figure 4. “Saturation” and “On” Voltages

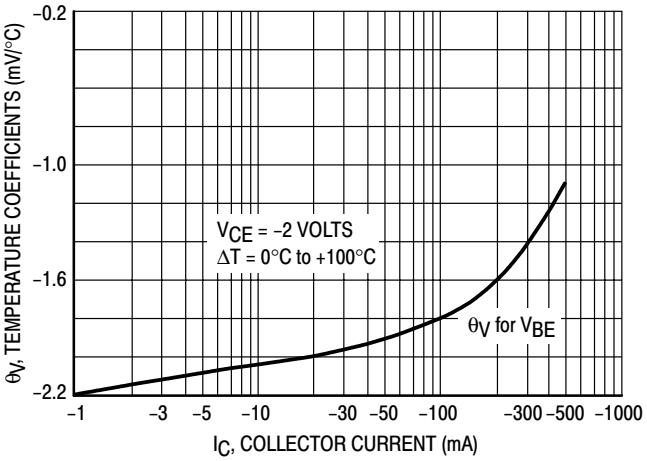
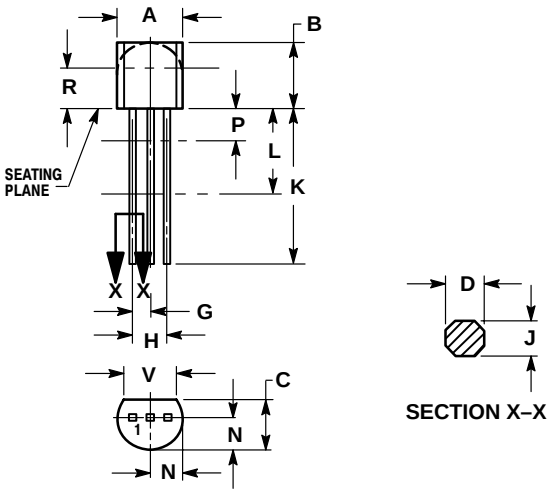


Figure 5. Temperature Coefficients

PACKAGE DIMENSIONS

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.

	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	0.021	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:
PIN 1. EMITTER
2. COLLECTOR
3. BASE

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