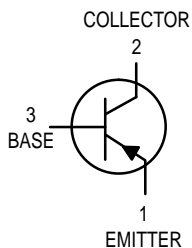


High Current Transistors

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 @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	625 5.0			mW mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	1.5 12			Watt 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	$R_{\theta JA}$	200	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	83.3	$^\circ\text{C}/\text{W}$

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* ($I_C = -10 \text{ mAdc}, I_B = 0$)	BC636 BC638 BC640	$V_{(BR)CEO}$	-45 -60 -80	— — —	— — —	Vdc
Collector–Base Breakdown Voltage ($I_C = -100 \mu\text{Adc}, I_E = 0$)	BC636 BC638 BC640	$V_{(BR)CBO}$	-45 -60 -80	— — —	— — —	Vdc
Emitter–Base Breakdown Voltage ($I_E = -10 \mu\text{Adc}, I_C = 0$)		$V_{(BR)EBO}$	-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 μAdc

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

BC636 BC638 BC640**ELECTRICAL CHARACTERISTICS** ($T_A = 25^\circ\text{C}$ unless otherwise noted) (Continued)

Characteristic	Symbol	Min	Typ	Max	Unit
ON CHARACTERISTICS⁽¹⁾					
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	—	—	—
BC636		40	—	250	
BC638		40	—	160	
BC640		40	—	160	
($I_C = -500\text{ mA}$, $V_{CE} = -2.0\text{ V}$)		25	—	—	
Collector–Emitter Saturation Voltage ($I_C = -500\text{ mA}$, $I_B = -50\text{ mA}$)	$V_{CE(sat)}$	—	-0.25	-0.5	Vdc
		—	-0.5	—	
Base–Emitter On Voltage ($I_C = -500\text{ mA}$, $V_{CE} = -2.0\text{ Vdc}$)	$V_{BE(on)}$	—	—	-1.0	Vdc

DYNAMIC CHARACTERISTICS

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%.

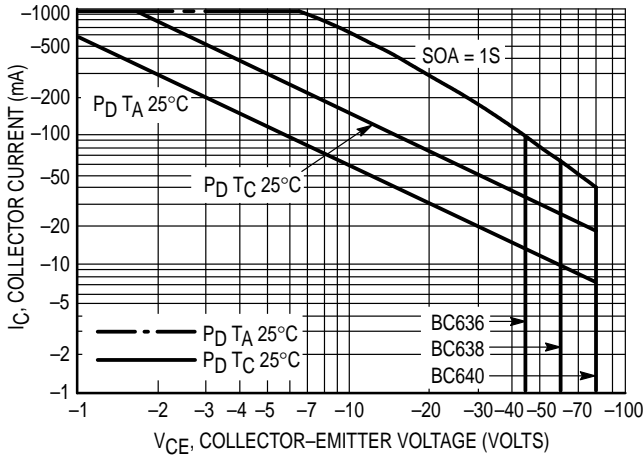


Figure 1. Active Region Safe Operating Area

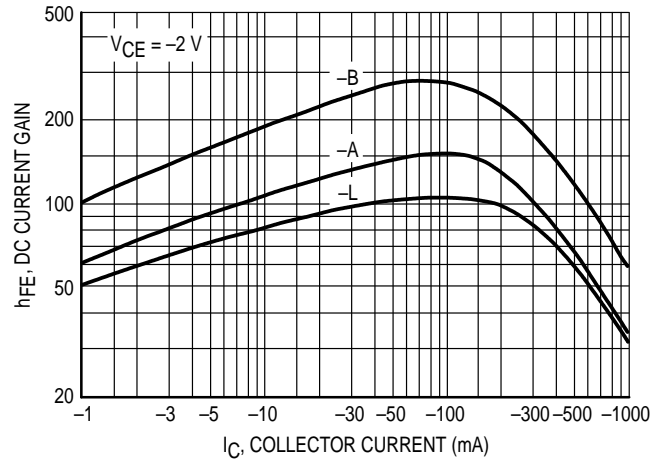


Figure 2. DC Current Gain

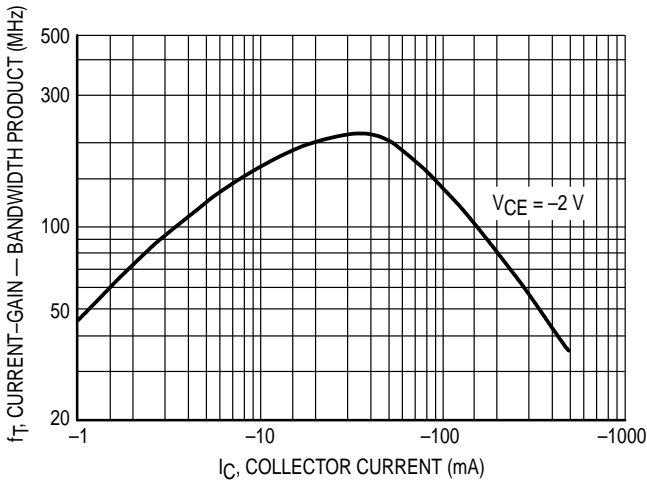


Figure 3. Current Gain Bandwidth Product

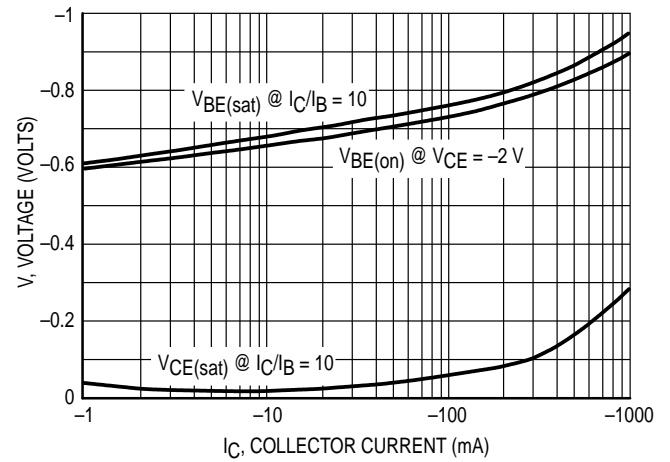


Figure 4. "Saturation" and "On" Voltages

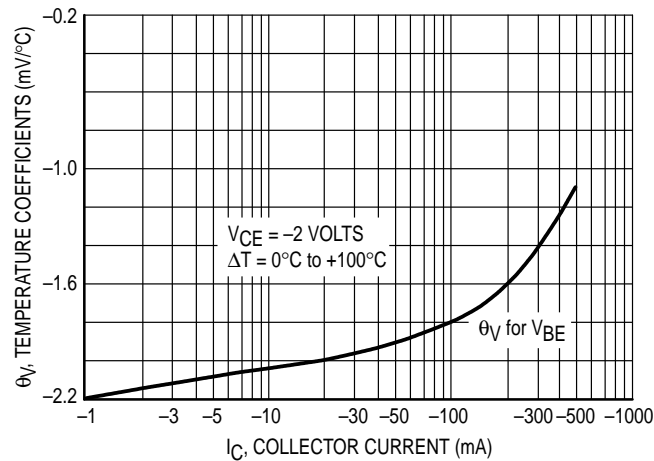


Figure 5. Temperature Coefficients

PACKAGE DIMENSIONS



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 14:
PIN 1. EMITTER
2. COLLECTOR
3. BASE

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