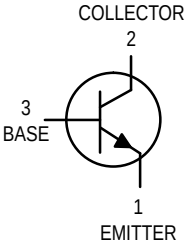
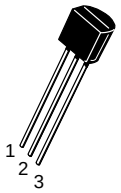
High Current Transistors
NPN Silicon

BC635
BC637
BC639





CASE 29–04, STYLE 14
TO–92 (TO–226AA)

MAXIMUM RATINGS

Rating	Symbol	BC 635	BC 637	BC 639	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(1) (I_C = 10 mAdc, I_B = 0)	 BC635 BC637 BC639	$V_{(BR)CEO}$	 45 60 80	 — — —	 — — —	Vdc
Collector–Base Breakdown Voltage (I_C = 100 μAdc, I_E = 0)	 BC635 BC637 BC639	$V_{(BR)CBO}$	 45 60 80	 — — —	 — — —	Vdc
Emitter–Base Breakdown Voltage (I_E = 10 μAdc, I_C = 0)		$V_{(BR)EBO}$	5.0	—	—	Vdc
Collector Cutoff Current (V_{CB} = 30 Vdc, I_E = 0) (V_{CB} = 30 Vdc, I_E = 0, T_A = 125°C)		I_{CBO}	 — —	 — —	 100 10	 nAdc 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)	BC635		40	—	250	
	BC637		40	—	160	
	BC639		40	—	160	
(I_C = 500 mA, V_{CE} = 2.0 V)			25	—	—	
Collector–Emitter Saturation Voltage (I_C = 500 mAdc, I_B = 50 mAdc)		$V_{CE(sat)}$	—	—	0.5	Vdc
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	—	200	—	MHz
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 1.0 MHz)		C_{ob}	—	7.0	—	pF
Input Capacitance (V_{EB} = 0.5 Vdc, I_C = 0, f = 1.0 MHz)		C_{ib}	—	50	—	pF

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

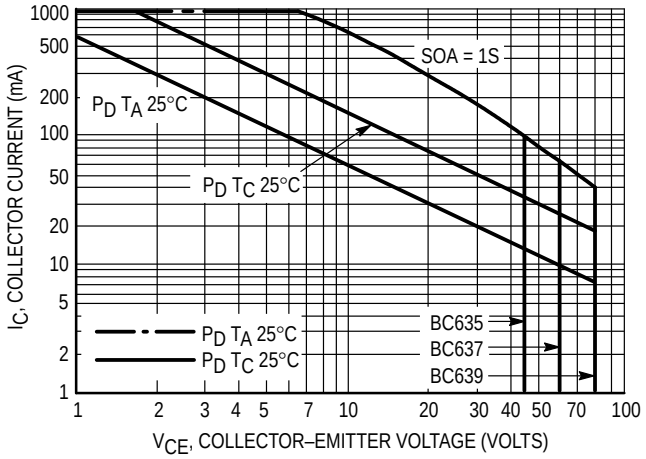


Figure 1. Active Region Safe Operating Area

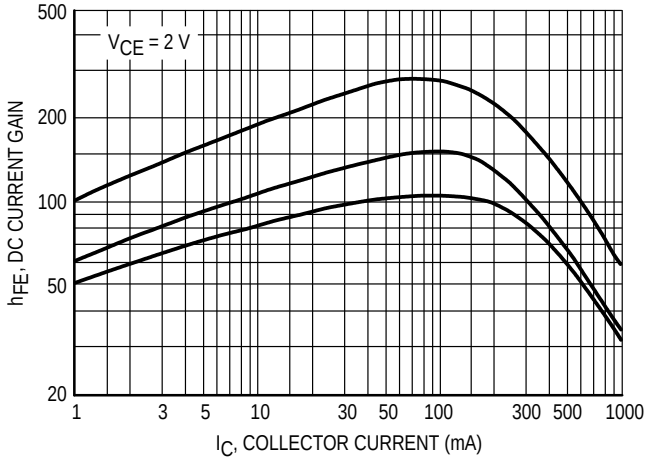


Figure 2. DC Current Gain

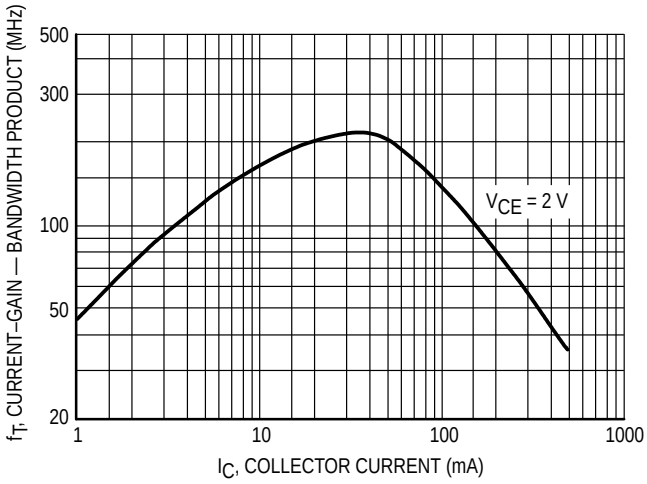


Figure 3. Current–Gain — Bandwidth Product

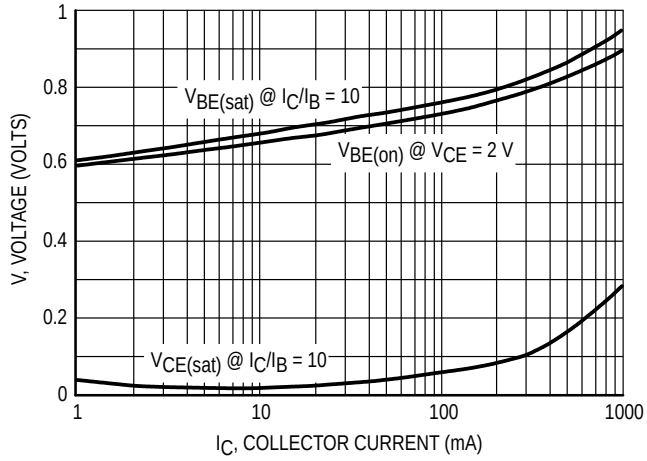


Figure 4. “Saturation” and “On” Voltages

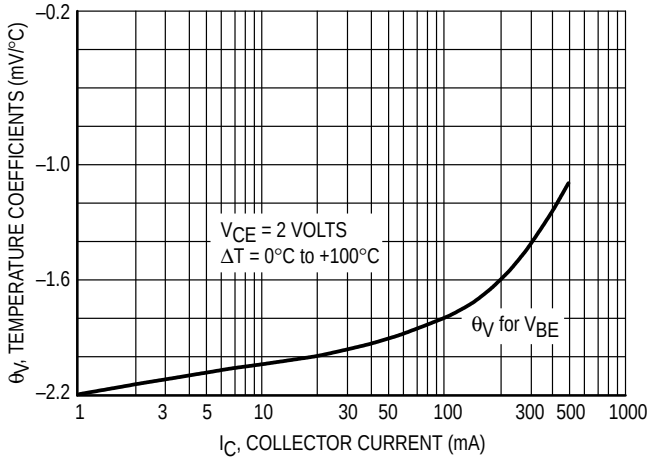
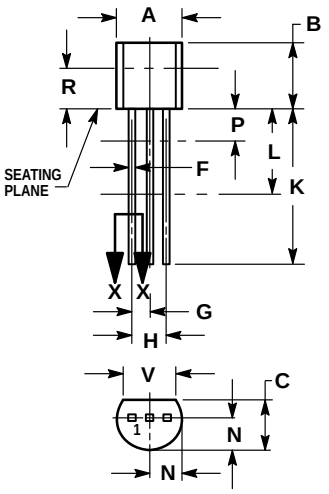
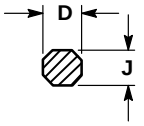


Figure 5. Temperature Coefficients

PACKAGE DIMENSIONS





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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