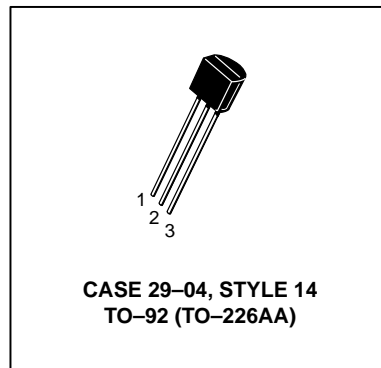
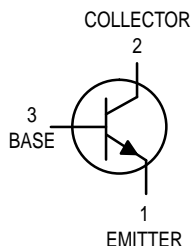


High Current Transistors

NPN Silicon

BC635
BC637
BC639



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 @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	625			mW
		5.0			mW/°C
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	1.5			Watt
		12			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 ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage ⁽¹⁾ ($I_C = 10 \text{ mAdc}, I_E = 0$)	BC635 BC637 BC639	$V_{(BR)CEO}$	45 60 80	— — —	— — —	Vdc
Collector–Base Breakdown Voltage ($I_C = 100 \mu\text{Adc}, I_E = 0$)	BC635 BC637 BC639	$V_{(BR)CBO}$	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%.

BC635 BC637 BC639**ELECTRICAL CHARACTERISTICS** ($T_A = 25^\circ\text{C}$ unless otherwise noted) (Continued)

Characteristic	Symbol	Min	Typ	Max	Unit
ON CHARACTERISTICS⁽¹⁾					
DC Current Gain ($I_C = 5.0\text{ mA}$, $V_{CE} = 2.0\text{ Vdc}$) ($I_C = 150\text{ mA}$, $V_{CE} = 2.0\text{ Vdc}$) ($I_C = 500\text{ mA}$, $V_{CE} = 2.0\text{ V}$)	h_{FE} BC635 BC637 BC639	25 40 40 40 25	— — — — —	— 250 160 160 —	—
Collector–Emitter Saturation Voltage ($I_C = 500\text{ mA}$, $I_B = 50\text{ mA}$)	$V_{CE(sat)}$	—	—	0.5	Vdc
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	—	200	—	MHz
Output Capacitance ($V_{CB} = 10\text{ Vdc}$, $I_E = 0$, $f = 1.0\text{ MHz}$)	C_{ob}	—	7.0	—	pF
Input Capacitance ($V_{EB} = 0.5\text{ Vdc}$, $I_C = 0$, $f = 1.0\text{ MHz}$)	C_{ib}	—	50	—	pF

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

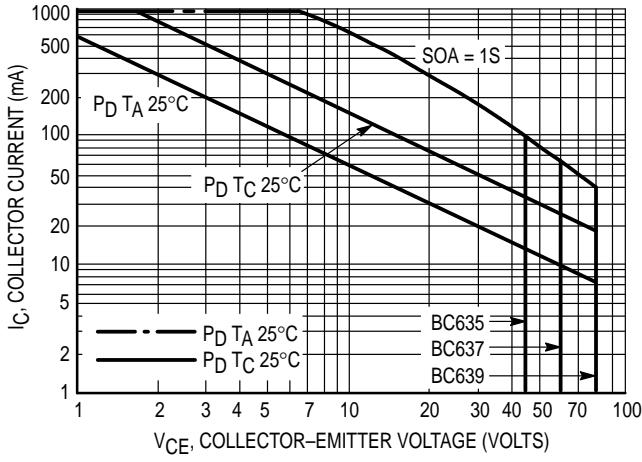


Figure 1. Active Region Safe Operating Area

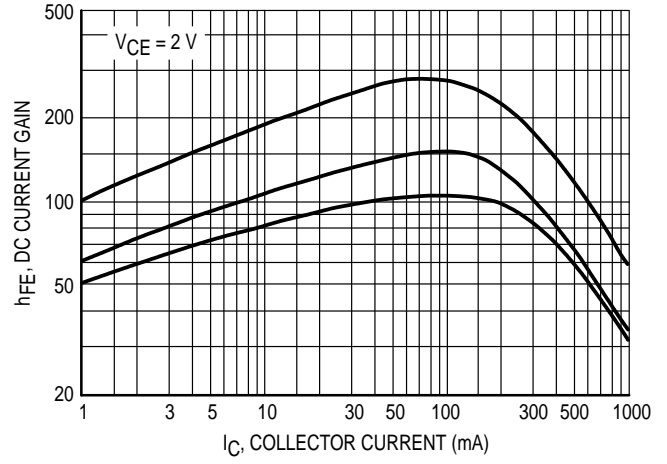


Figure 2. DC Current Gain

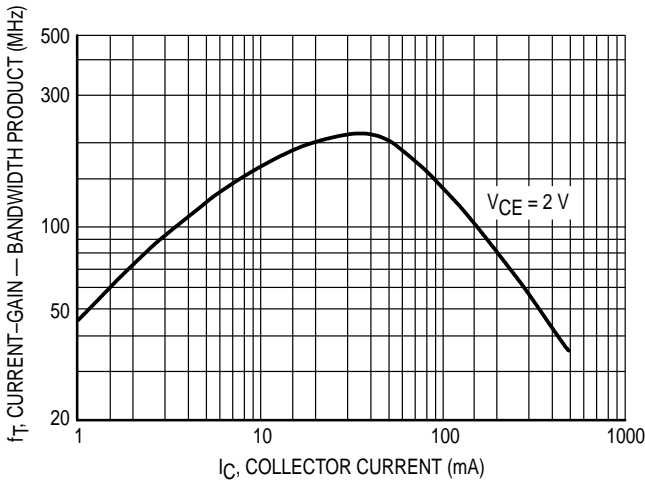


Figure 3. Current-Gain — Bandwidth Product

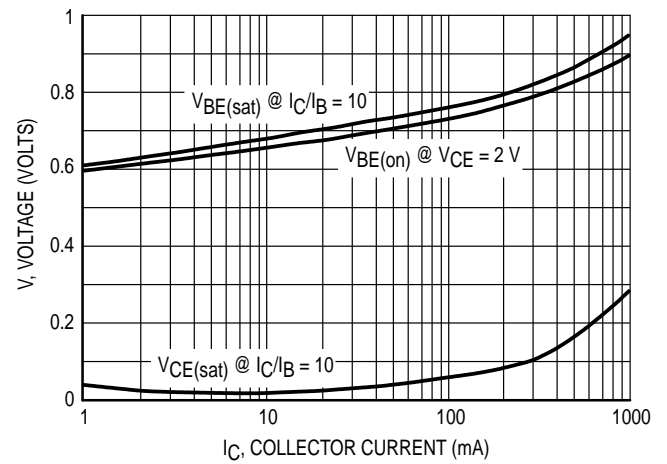


Figure 4. "Saturation" and "On" Voltages

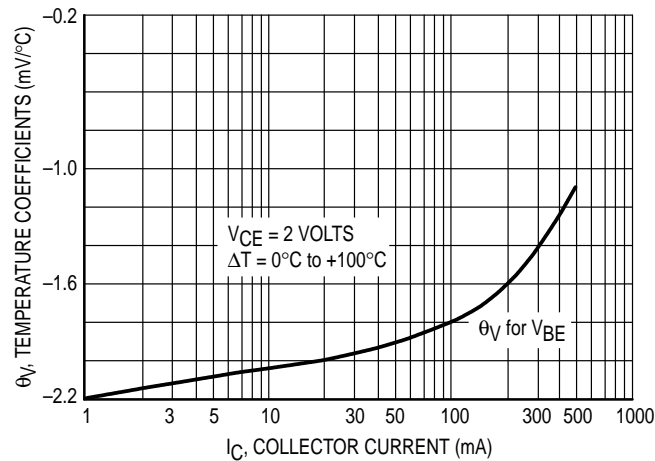
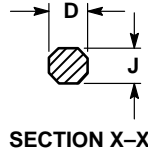
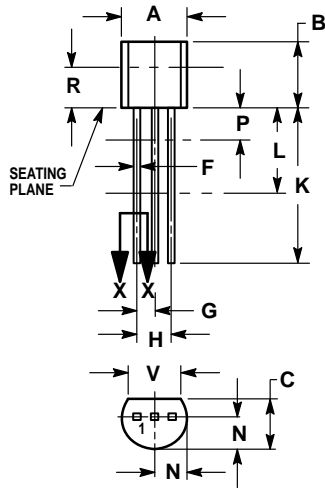


Figure 5. Temperature Coefficients

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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