

BC635, BC637, BC639, BC639-16

High Current Transistors

NPN Silicon



ON Semiconductor

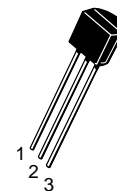
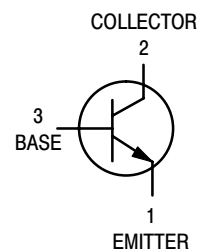
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MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage BC635 BC637 BC639	V_{CEO}	45 60 80	Vdc
Collector-Base Voltage BC635 BC637 BC639	V_{CBO}	45 60 80	Vdc
Emitter-Base Voltage	V_{EBO}	5.0	Vdc
Collector Current — Continuous	I_C	1.0	Adc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	625 5.0	mW mW/°C
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	800 12	mW 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



TO-92 (TO-226AA)
CASE 29
STYLE 14

ORDERING INFORMATION

Device	Package	Shipping
BC635RL1	TO-92	2000/Tape & Reel
BC635ZL1	TO-92	2000/Ammo Pack
BC637	TO-92	5000 Units/Box
BC639	TO-92	5000 Units/Box
BC639RL1	TO-92	2000/Tape & Reel
BC639ZL1	TO-92	2000/Ammo Pack
BC639-16ZL1	TO-92	2000/Ammo Pack

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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 μAdc, I _B = 0)	BC635 BC637 BC639	V _{(BR)CEO}	45 60 80	— — —	— — —	Vdc
Collector–Emitter Zero–Gate Breakdown Voltage (1) (I _C = 100 μAdc, I _B = 0)	BC639–16	V _{(BR)CES}	120	—	—	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
ON CHARACTERISTICS (1)						
DC Current Gain (I _C = 5.0 mAdc, V _{CE} = 2.0 Vdc) (I _C = 150 mAdc, V _{CE} = 2.0 Vdc)	BC635 BC637 BC639 BC639–16ZLT1	h _{FE}	25 40 40 40 100 25	— — — — — —	— 250 160 160 250 —	—
(I _C = 500 mA, V _{CE} = 2.0 V)						
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%.

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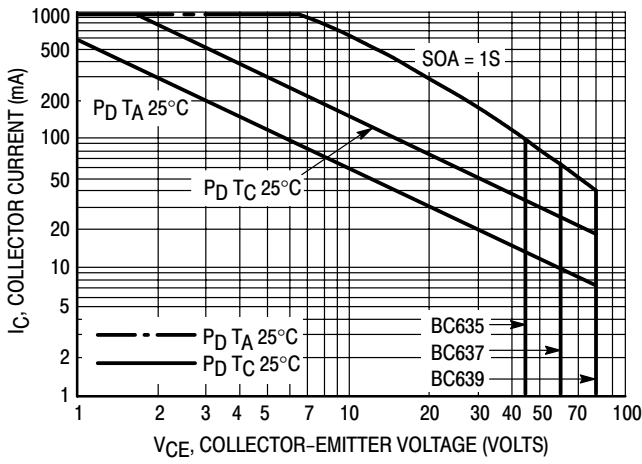


Figure 1. Active Region Safe Operating Area

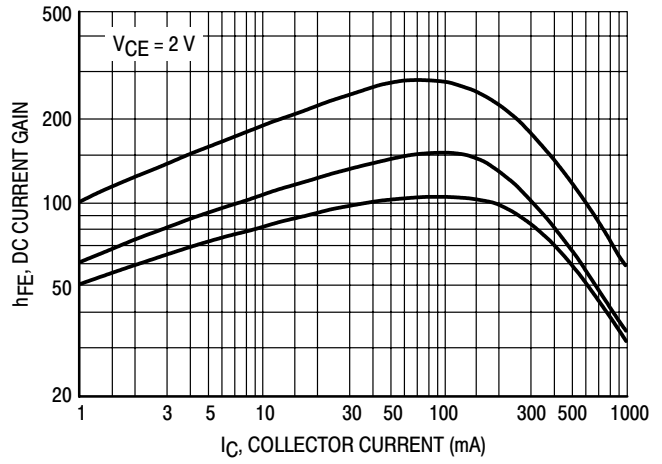


Figure 2. DC Current Gain

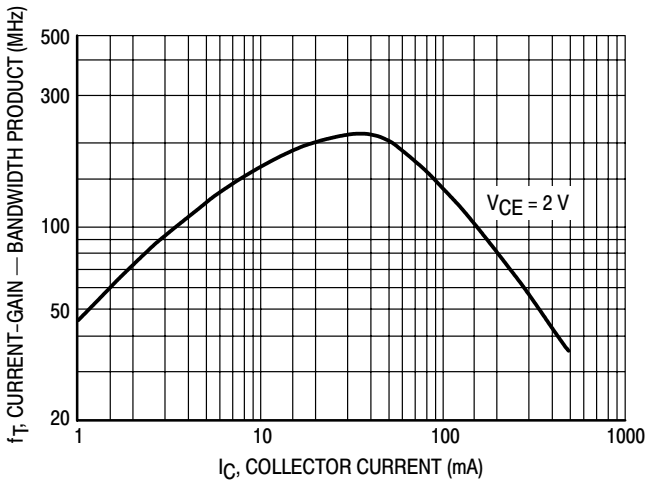


Figure 3. Current-Gain — Bandwidth Product

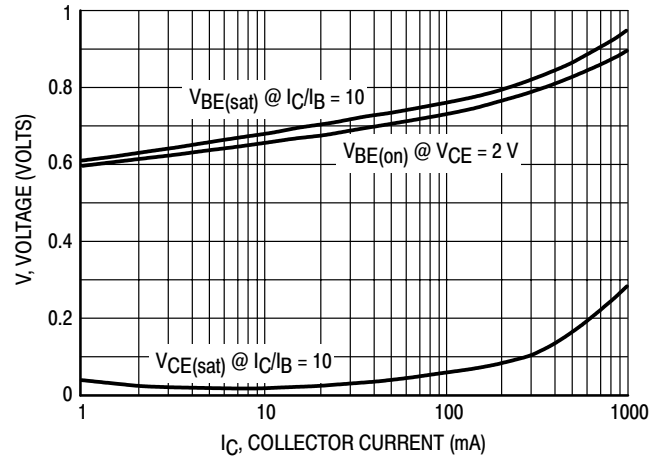


Figure 4. "Saturation" and "On" Voltages

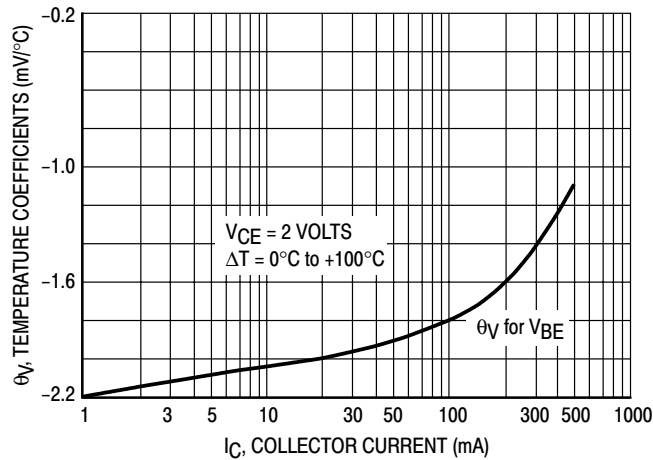
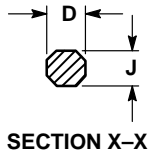
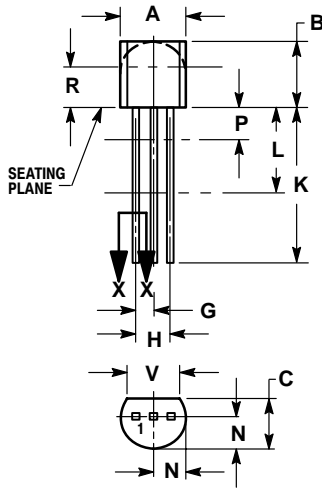


Figure 5. Temperature Coefficients

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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.

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	0.021	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:

1. EMITTER
2. COLLECTOR
3. BASE

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