

BC635, BC637, BC639

High Current Transistors

NPN Silicon



ON Semiconductor

Formerly a Division of Motorola

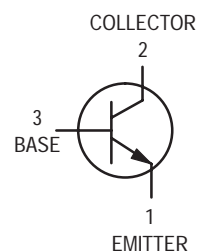
<http://onsemi.com>

MAXIMUM RATINGS

Rating	Symbol	BC635	BC637	BC639	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			$^\circ\text{C}$
Electrostatic Discharge	ESD	HBM>16000, MM>2000			V

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	200	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	83.3	$^\circ\text{C/W}$



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

ORDERING INFORMATION

Device	Package	Shipping
BC635RL1	TO-92	2000 Units/Tape & Reel
BC635ZL1	TO-92	2000 Units/Ammo Pack
BC637	TO-92	2000 Units/Tape & Reel
BC637RL1	TO-92	2000 Units/Tape & Reel
BC637ZL1	TO-92	2000 Units/Ammo Pack
BC639	TO-92	2000 Units/Tape & Reel
BC639RL1	TO-92	2000 Units/Tape & Reel
BC639ZL1	TO-92	2000 Units/Ammo Pack

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

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage ⁽¹⁾ (I _C = 10 mA, I _B = 0)	BC635 BC637 BC639	V _{(BR)CEO}	45 60 80	— — —	— — —	V _{dc}
Collector–Base Breakdown Voltage (I _C = 100 μA, I _E = 0)	BC635 BC637 BC639	V _{(BR)CBO}	45 60 80	— — —	— — —	V _{dc}
Emitter–Base Breakdown Voltage (I _E = 10 μA, I _C = 0)		V _{(BR)EBO}	5.0	—	—	V _{dc}
Collector Cutoff Current (V _{CB} = 30 V _{dc} , I _E = 0) (V _{CB} = 30 V _{dc} , I _E = 0, T _A = 125°C)		I _{CBO}	— —	— —	100 10	nA _{dc} μA _{dc}

ON CHARACTERISTICS⁽¹⁾

DC Current Gain (I _C = 5.0 mA, V _{CE} = 2.0 V _{dc}) (I _C = 150 mA, V _{CE} = 2.0 V _{dc}) (I _C = 500 mA, V _{CE} = 2.0 V)	BC635 BC637 BC639	h _{FE}	25 40 40 40 25	— — — — —	— 250 160 160 —	—
Collector–Emitter Saturation Voltage (I _C = 500 mA, I _B = 50 mA)		V _{CE(sat)}	—	—	0.5	V _{dc}
Base–Emitter On Voltage (I _C = 500 mA, V _{CE} = 2.0 V _{dc})		V _{BE(on)}	—	—	1.0	V _{dc}

DYNAMIC CHARACTERISTICS

Current–Gain — Bandwidth Product (I _C = 50 mA, V _{CE} = 2.0 V _{dc} , f = 100 MHz)		f _T	—	200	—	MHz
Output Capacitance (V _{CB} = 10 V _{dc} , I _E = 0, f = 1.0 MHz)		C _{ob}	—	7.0	—	pF
Input Capacitance (V _{EB} = 0.5 V _{dc} , 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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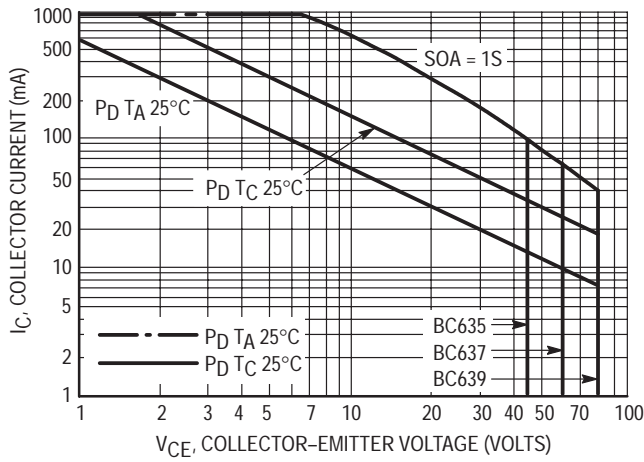


Figure 1. Active Region Safe Operating Area

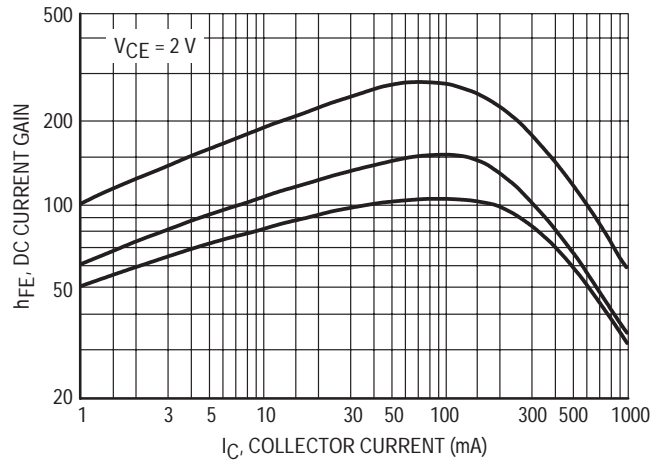


Figure 2. DC Current Gain

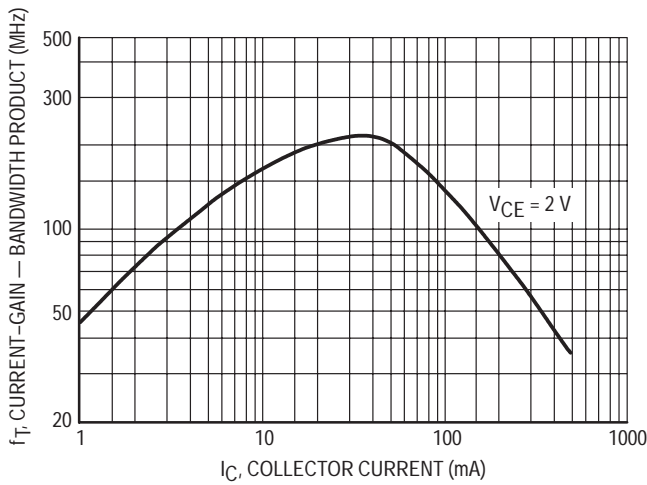


Figure 3. Current-Gain — Bandwidth Product

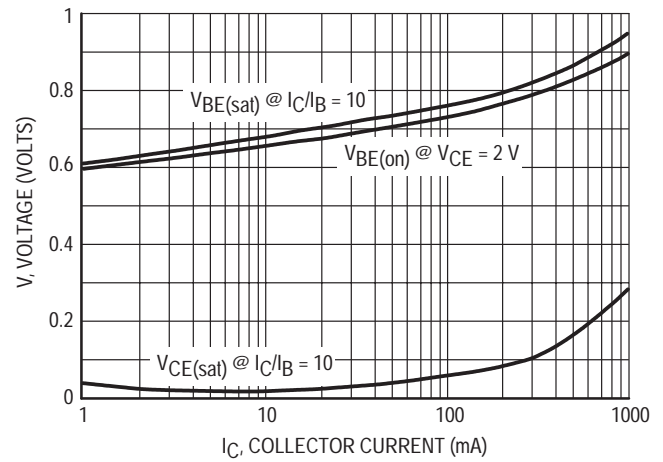


Figure 4. "Saturation" and "On" Voltages

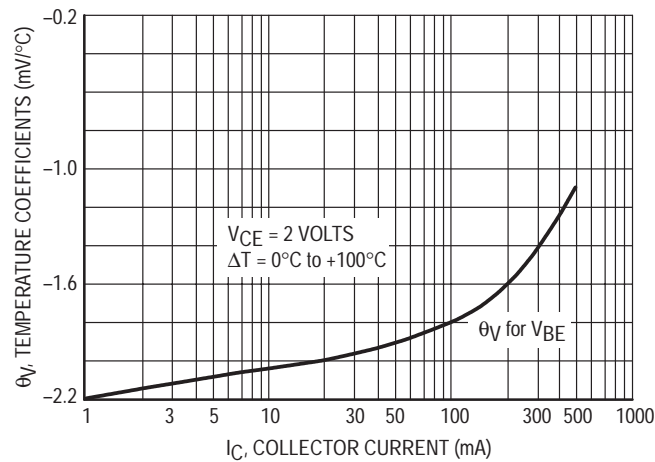
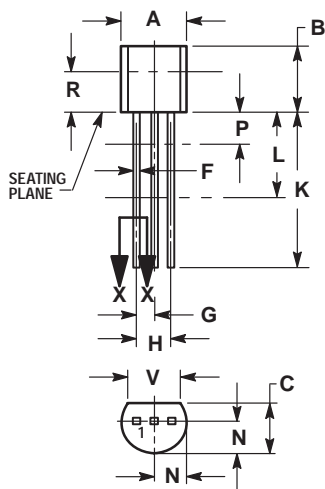


Figure 5. Temperature Coefficients

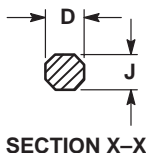
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PACKAGE DIMENSIONS

TO-92 (TO-226AA) CASE 029-04 ISSUE AD




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



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	---

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