BC637, BC639, BC639-16

High Current Transistors

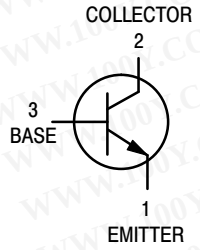
NPN Silicon

ON Semiconductor®

http://onsemi.com

Features

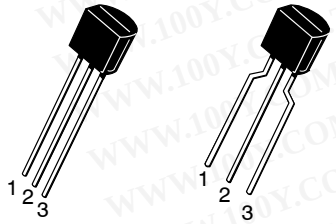
- These are Pb−Free Devices*



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector - Emitter Voltage BC637 BC639	V_{CEO}	 60 80	Vdc
Collector - Base Voltage BC637 BC639	V_{CBO}	 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°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	800 12	mW mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−55 to +150	°C

TO−92
CASE 29
STYLE 14

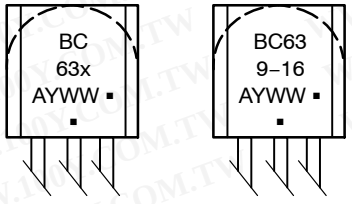


THERMAL CHARACTERISTICS

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

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

MARKING DIAGRAMS



x = 7 or 9
A = Assembly Location
Y = Year
WW = Work Week
▪ = Pb−Free Package

(Note: Microdot may be in either location)

*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

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

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector − Emitter Breakdown Voltage (Note 1) (I_C = 10 μAdc, I_B = 0)	BC637	$V_{(BR)CEO}$	60	−	−	Vdc
	BC639		80	−	−	
Collector − Emitter Zero−Gate Breakdown Voltage(Note 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)	BC637	$V_{(BR)CBO}$	60	−	−	Vdc
	BC639		80	−	−	
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)		I_{CBO}	−	−	100	nAdc
(V_{CB} = 30 Vdc, I_E = 0, T_A = 125°C)			−	−	10	μAdc
ON CHARACTERISTICS (Note 1)						
DC Current Gain (I_C = 5.0 mAdc, V_{CE} = 2.0 Vdc)		h_{FE}	25	−	−	−
(I_C = 150 mAdc, V_{CE} = 2.0 Vdc)	BC637		40	−	160	
	BC639		40	−	160	
	BC639−16ZLT1		100	−	250	
(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%.

ORDERING INFORMATION

Device	Package	Shipping†
BC637G	TO−92 (Pb−Free)	5000 Units / Bulk
BC637RL1G	TO−92 (Pb−Free)	2000 / Tape & Reel
BC639G	TO−92 (Pb−Free)	5000 Units / Bulk
BC639RL1G	TO−92 (Pb−Free)	2000 / Tape & Reel
BC639ZL1G	TO−92 (Pb−Free)	2000 / Ammo Box
BC639−16ZL1G	TO−92 (Pb−Free)	2000 / Ammo Box

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

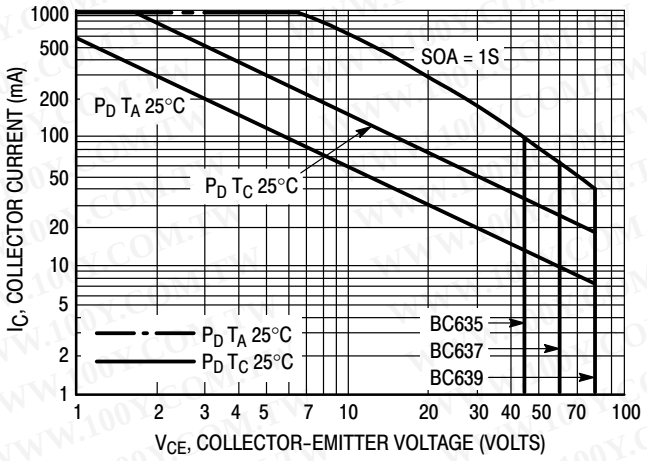


Figure 1. Active Region Safe Operating Area

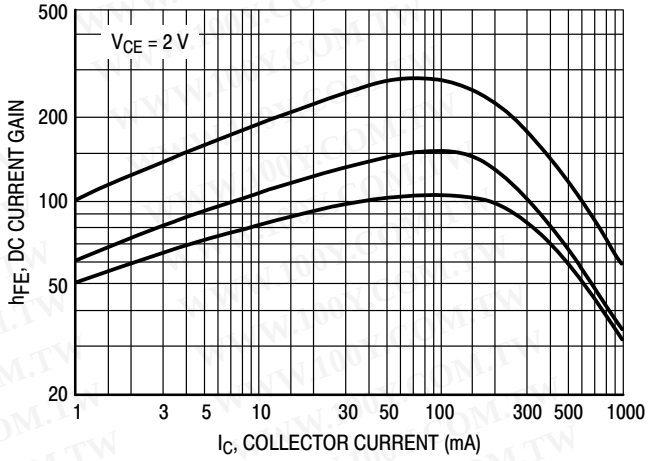


Figure 2. DC Current Gain

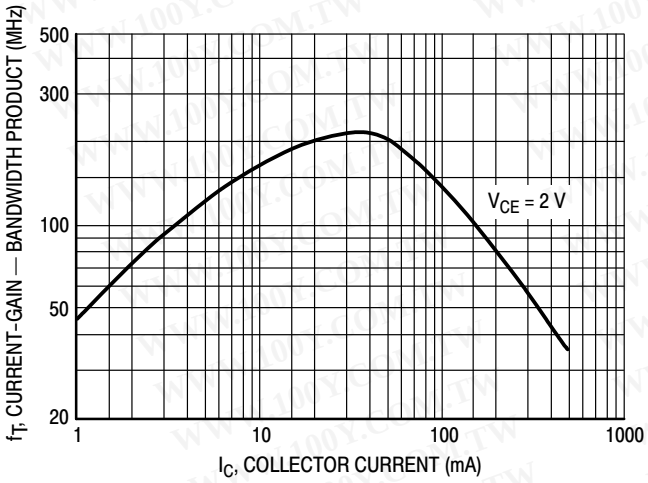


Figure 3. Current−Gain — Bandwidth Product

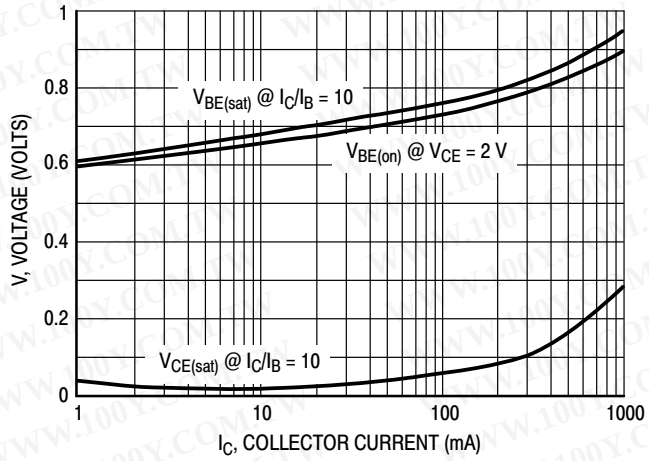


Figure 4. “Saturation” and “On” Voltages

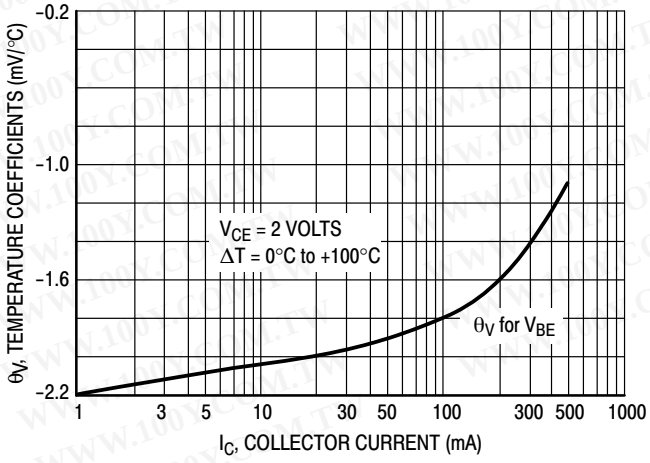
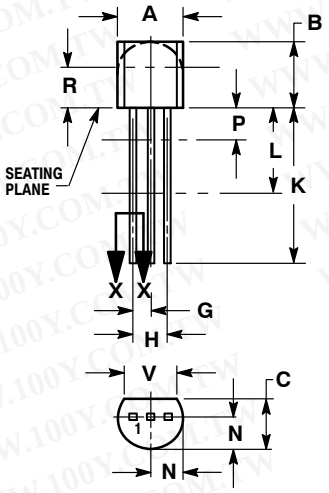


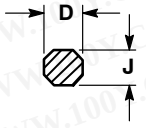
Figure 5. Temperature Coefficients

PACKAGE DIMENSIONS

TO−92 (TO−226)
CASE 29−11
ISSUE AM



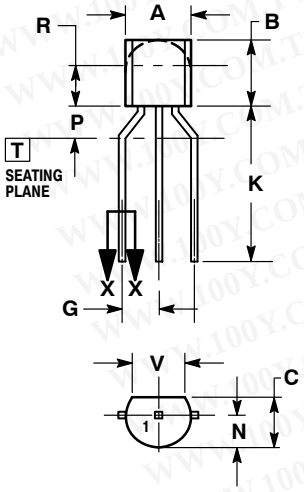
STRAIGHT LEAD
BULK PACK



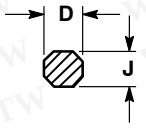
SECTION X−X

NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. 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	0.021	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	---



BENT LEAD
TAPE & REEL
AMMO PACK



SECTION X−X

NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

	MILLIMETERS	
DIM	MIN	MAX
A	4.45	5.20
B	4.32	5.33
C	3.18	4.19
D	0.40	0.54
G	2.40	2.80
J	0.39	0.50
K	12.70	---
N	2.04	2.66
P	1.50	4.00
R	2.93	---
V	3.43	---

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

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303−675−2175 or 800−344−3860 Toll Free USA/Canada
Fax: 303−675−2176 or 800−344−3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800−282−9855 Toll Free USA/Canada
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910
Japan Customer Focus Center
Phone: 81−3−5773−3850

ON Semiconductor Website: **www.onsemi.com**

Order Literature: http://www.onsemi.com/orderlit

For additional information, please contact your local Sales Representative