



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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BC635, BC637, BC639, BC639-16

High Current Transistors

NPN Silicon

Features

- Pb-Free Packages are Available*

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/ $^\circ\text{C}$ |
| Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C | P_D | 800 12 | mW mW/ $^\circ\text{C}$ |
| Operating and Storage Junction Temperature Range | T_J, T_{stg} | -55 to +150 | $^\circ\text{C}$ |

THERMAL CHARACTERISTICS

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

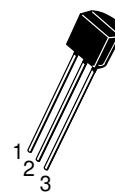
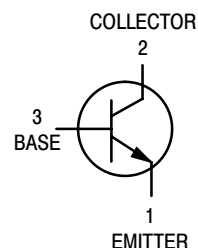
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

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



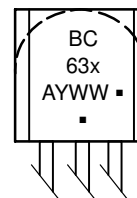
ON Semiconductor®

<http://onsemi.com>



TO-92
CASE 29
STYLE 14

MARKING DIAGRAM



BC63x = Device Code
x = 5, 7, or 9
A = Assembly Location
Y = Year
WW = Work Week
▪ = Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 4 of this data sheet.

BC635, BC637, BC639, BC639-16

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) | BC635 BC637 BC639 | V _{(BR)CEO} | 45 60 80 | – – – | – – – | Vdc |
| 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) | 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 (Note 1) | | | | | | |
| DC Current Gain (I _C = 5.0 mAdc, V _{CE} = 2.0 Vdc) (I _C = 150 mAdc, V _{CE} = 2.0 Vdc) (I _C = 500 mA, V _{CE} = 2.0 V) | BC635 BC637 BC639 BC639–16ZLT1 | h _{FE} | 25 40 40 40 100 25 | – – – – – – | – 250 160 160 250 – | – |
| 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%.

BC635, BC637, BC639, BC639-16

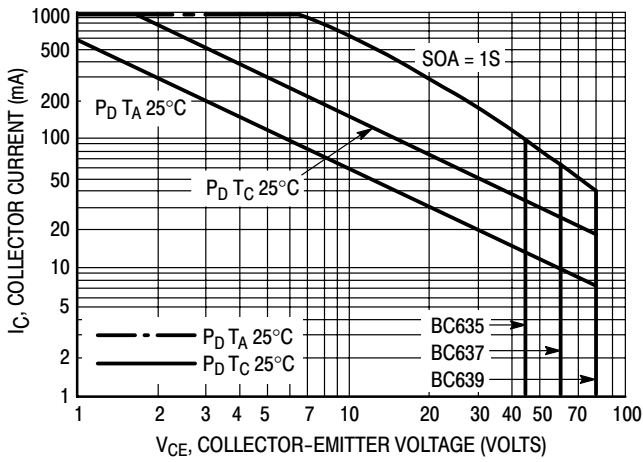


Figure 1. Active Region Safe Operating Area

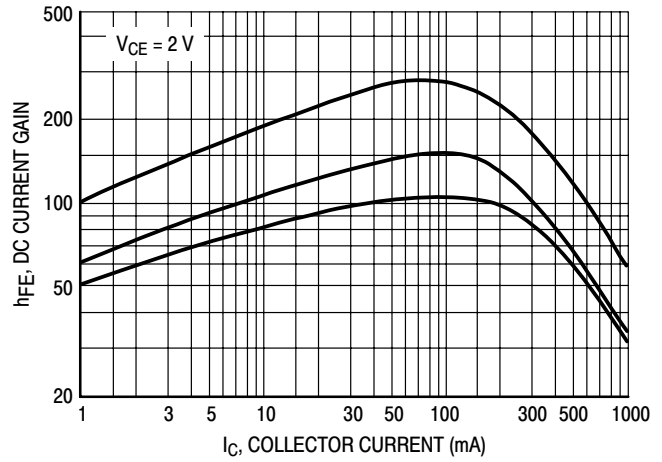


Figure 2. DC Current Gain

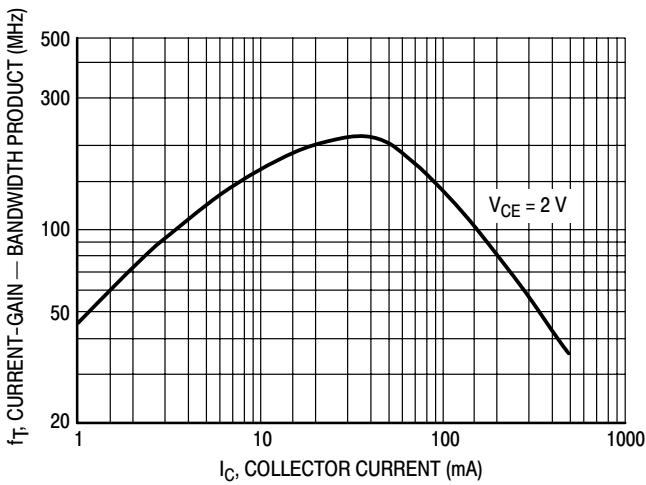


Figure 3. Current-Gain — Bandwidth Product

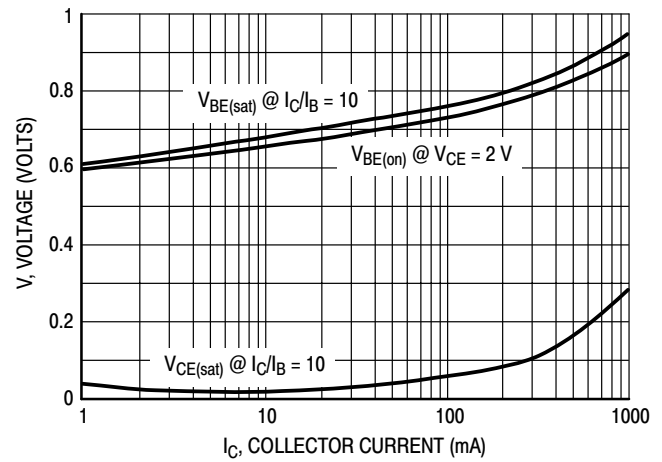


Figure 4. "Saturation" and "On" Voltages

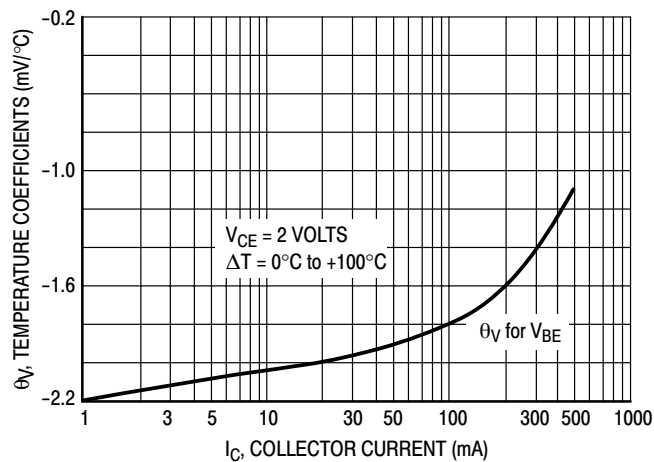


Figure 5. Temperature Coefficients

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DEVICE ORDERING INFORMATION

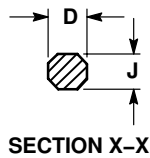
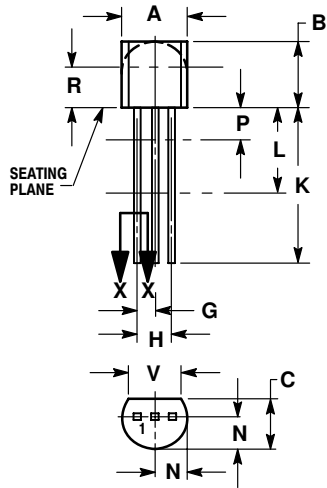
| Device | Package | Shipping† |
|--------------|--------------------|--------------------|
| BC635RL1 | TO-92 | 2000 / Tape & Reel |
| BC635RL1G | TO-92 (Pb-Free) | 2000 / Tape & Reel |
| BC635ZL1 | TO-92 | 2000 / Tape & Reel |
| BC635ZL1G | TO-92 (Pb-Free) | 2000 / Tape & Reel |
| BC637 | TO-92 | 5000 Units / Box |
| BC637G | TO-92 (Pb-Free) | 5000 Units / Box |
| BC639 | TO-92 | 5000 Units / Box |
| BC639G | TO-92 (Pb-Free) | 5000 Units / Box |
| BC639RL1 | TO-92 | 2000 / Tape & Reel |
| BC639RL1G | TO-92 (Pb-Free) | 2000 / Tape & Reel |
| BC639ZL1 | TO-92 | 2000 / Ammo Box |
| BC639ZL1G | TO-92 (Pb-Free) | 2000 / Ammo Box |
| BC639-16ZL1 | TO-92 | 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.

BC635, BC637, BC639, BC639-16

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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