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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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BC337, BC337-16, BC337-25, BC337-40, BC338-25

Amplifier Transistors

NPN Silicon

Features

- Pb-Free Packages are Available*

MAXIMUM RATINGS

| Rating | Symbol | BC337 | BC338 | Unit |
|---|----------------|-------------|-------|----------------------------|
| Collector – Emitter Voltage | V_{CEO} | 45 | 25 | Vdc |
| Collector – Base Voltage | V_{CBO} | 50 | 30 | Vdc |
| Emitter – Base Voltage | V_{EBO} | 5.0 | | Vdc |
| Collector Current – Continuous | I_C | 800 | | mAdc |
| 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 | W mW/ $^\circ\text{C}$ |
| Operating and Storage Junction Temperature Range | T_J, T_{stg} | -55 to +150 | | $^\circ\text{C}$ |

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.

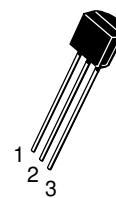
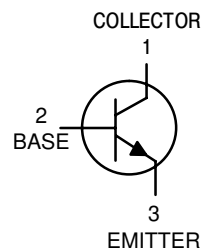
THERMAL CHARACTERISTICS

| 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 | $^\circ\text{C}/\text{W}$ |



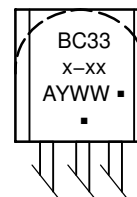
ON Semiconductor®

<http://onsemi.com>



TO-92
CASE 29
STYLE 17

MARKING DIAGRAM



BC33x-xx = Device Code

(Refer to page 4)

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 4 of this data sheet.

BC337, BC337-16, BC337-25, BC337-40, BC338-25

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

| Characteristic | Symbol | Min | Typ | Max | Unit |
|--|--|----------|--------|------------|------|
| OFF CHARACTERISTICS | | | | | |
| Collector-Emitter Breakdown Voltage (I _C = 10 mA, I _B = 0) BC338 | BC337 V _{(BR)CEO} | 45 25 | - - | - - | Vdc |
| Collector-Emitter Breakdown Voltage (I _C = 100 μA, I _E = 0) | BC337 BC338 V _{(BR)CES} | 50 30 | - - | - - | Vdc |
| Emitter-Base Breakdown Voltage (I _E = 10 μA, I _C = 0) | V _{(BR)EBO} | 5.0 | - | - | Vdc |
| Collector Cutoff Current (V _{CB} = 30 V, I _E = 0) (V _{CB} = 20 V, I _E = 0) | BC337 BC338 I _{CBO} | - - | - - | 100 100 | nAdc |
| Collector Cutoff Current (V _{CE} = 45 V, V _{BE} = 0) (V _{CE} = 25 V, V _{BE} = 0) | BC337 BC338 I _{CES} | - - | - - | 100 100 | nAdc |
| Emitter Cutoff Current (V _{EB} = 4.0 V, I _C = 0) | I _{EBO} | - | - | 100 | nAdc |

ON CHARACTERISTICS

| | | | | | | |
|---|--|-----------------|--------------------------------|-----------------------|-------------------------------|---|
| DC Current Gain (I _C = 100 mA, V _{CE} = 1.0 V) | BC337 BC337-16 BC337-25/BC338-25 BC337-40 | h _{FE} | 100 100 160 250 60 | - - - - - | 630 250 400 630 - | - |
| Base-Emitter On Voltage (I _C = 300 mA, V _{CE} = 1.0 V) | V _{BE(on)} | - | - | 1.2 | Vdc | |
| Collector-Emitter Saturation Voltage (I _C = 500 mA, I _B = 50 mA) | V _{CE(sat)} | - | - | 0.7 | Vdc | |

SMALL-SIGNAL CHARACTERISTICS

| | | | | | |
|--|-----------------|---|-----|---|-----|
| Output Capacitance (V _{CB} = 10 V, I _E = 0, f = 1.0 MHz) | C _{ob} | - | 15 | - | pF |
| Current-Gain-Bandwidth Product (I _C = 10 mA, V _{CE} = 5.0 V, f = 100 MHz) | f _T | - | 210 | - | MHz |

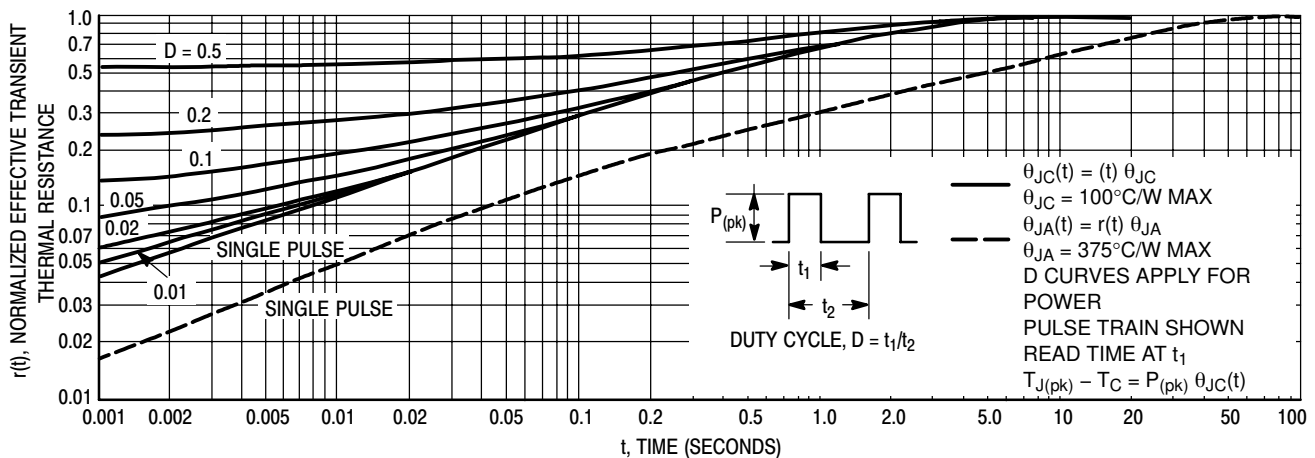


Figure 1. Thermal Response

BC337, BC337-16, BC337-25, BC337-40, BC338-25

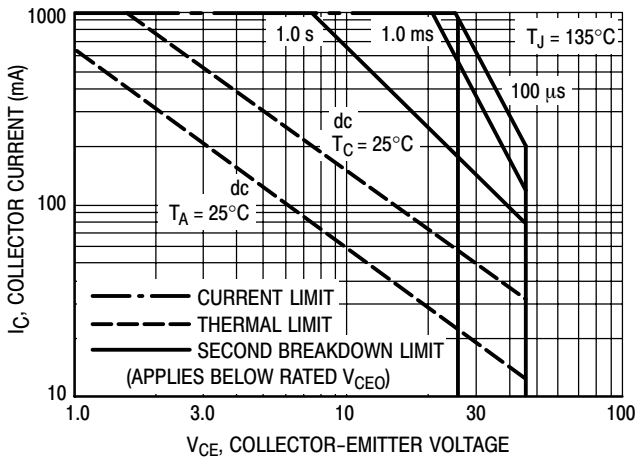


Figure 2. Active Region - Safe Operating Area

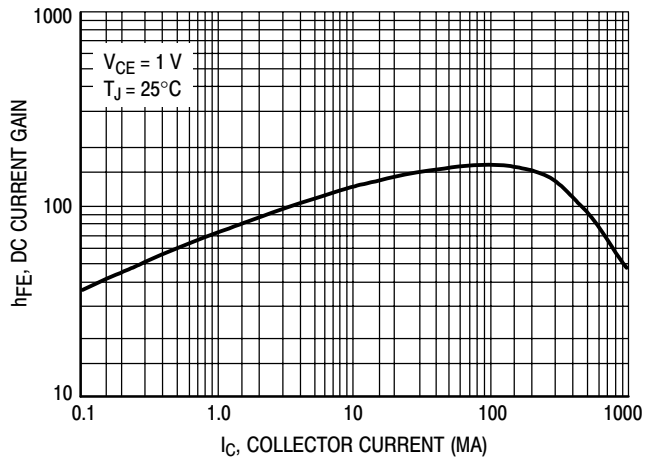


Figure 3. DC Current Gain

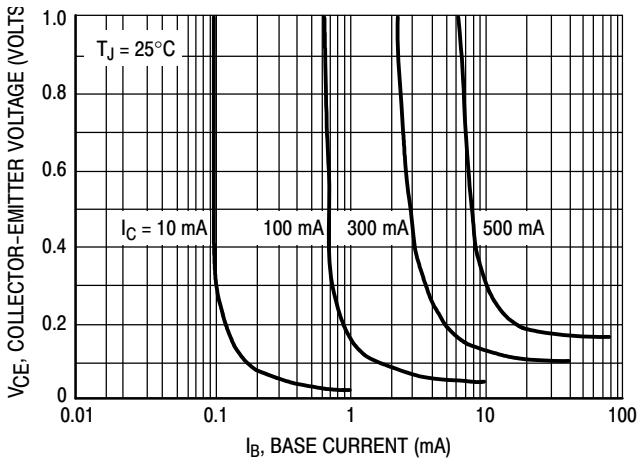


Figure 4. Saturation Region

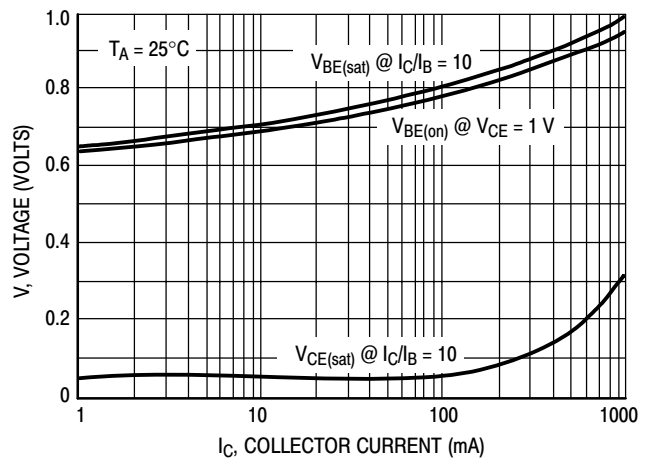


Figure 5. "On" Voltages

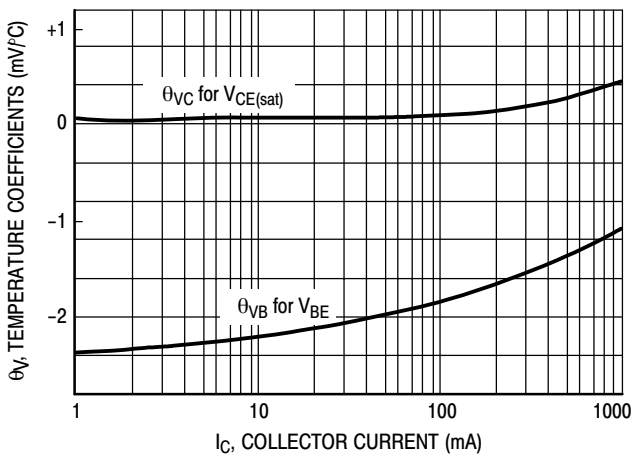


Figure 6. Temperature Coefficients

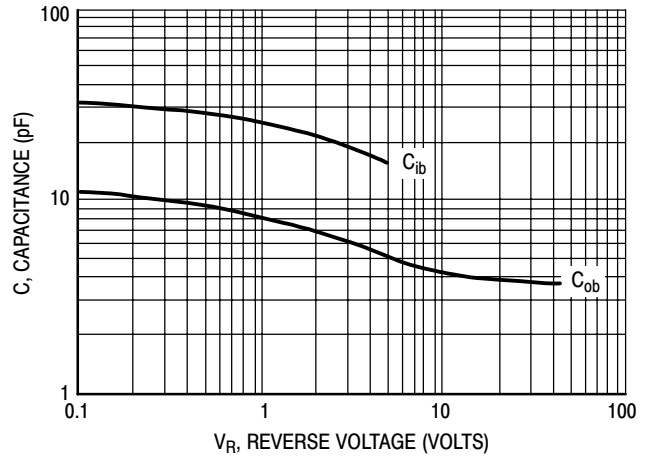


Figure 7. Capacitances

BC337, BC337-16, BC337-25, BC337-40, BC338-25

ORDERING INFORMATION

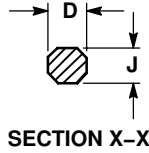
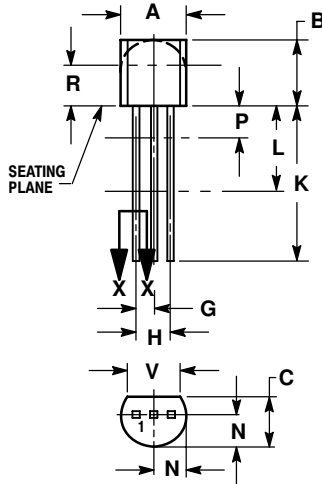
| Device | Package | Marking | Shipping† |
|--------------|--------------------|---------|--------------------|
| BC337 | TO-92 | 7 | 5000 Units / Box |
| BC337G | TO-92 (Pb-Free) | 7 | 5000 Units / Box |
| BC337RL1 | TO-92 | 7 | 2000 / Tape & Reel |
| BC337RL1G | TO-92 (Pb-Free) | 7 | 2000 / Tape & Reel |
| BC337ZL1 | TO-92 | 7 | 2000 / Ammo Box |
| BC337ZL1G | TO-92 (Pb-Free) | 7 | 2000 / Ammo Box |
| BC337-16 | TO-92 | 7-16 | 5000 Units / Box |
| BC337-16G | TO-92 (Pb-Free) | 7-16 | 5000 Units / Box |
| BC337-16RL1 | TO-92 | 7-16 | 2000 / Tape & Reel |
| BC337-16RL1G | TO-92 (Pb-Free) | 7-16 | 2000 / Tape & Reel |
| BC337-16ZL1 | TO-92 | 7-16 | 2000 / Ammo Box |
| BC337-16ZL1G | TO-92 (Pb-Free) | 7-16 | 2000 / Ammo Box |
| BC337-25 | TO-92 | 7-25 | 5000 Units / Box |
| BC337-25G | TO-92 (Pb-Free) | 7-25 | 5000 Units / Box |
| BC337-25RL1 | TO-92 | 7-25 | 2000 / Tape & Reel |
| BC337-25RL1G | TO-92 (Pb-Free) | 7-25 | 2000 / Tape & Reel |
| BC337-25ZL1 | TO-92 | 7-25 | 2000 / Ammo Box |
| BC337-25ZL1G | TO-92 (Pb-Free) | 7-25 | 2000 / Ammo Box |
| BC337-40 | TO-92 | 7-40 | 5000 Units / Box |
| BC337-40G | TO-92 (Pb-Free) | 7-40 | 5000 Units / Box |
| BC337-40RL1 | TO-92 | 7-40 | 2000 / Tape & Reel |
| BC337-40RL1G | TO-92 (Pb-Free) | 7-40 | 2000 / Tape & Reel |
| BC337-40ZL1 | TO-92 | 7-40 | 2000 / Ammo Box |
| BC337-40ZL1G | TO-92 (Pb-Free) | 7-40 | 2000 / Ammo Box |
| BC338-25ZL1 | TO-92 | 8-25 | 2000 / Ammo Box |
| BC338-25ZL1G | TO-92 (Pb-Free) | 8-25 | 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.

BC337, BC337-16, BC337-25, BC337-40, BC338-25

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 17:

- PIN 1. COLLECTOR
2. BASE
3. EMITTER

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