

BCX17LT1, BCX18LT1, PNP BCX19LT1, NPN

General Purpose Transistors

(Voltage and Current are Negative
for PNP Transistors)

Features

- Pb-Free Package is Available

MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|---|-----------|----------|------|
| Collector-Emitter Voltage BCX17LT1, BCX19LT1 BCX18LT1 | V_{CEO} | 45 25 | Vdc |
| Collector-Base Voltage BCX17LT1, BCX19LT1 BCX18LT1 | V_{CBO} | 50 30 | Vdc |
| Emitter-Base Voltage | V_{EBO} | 5.0 | Vdc |
| Collector Current – Continuous | I_C | 500 | mAdc |

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

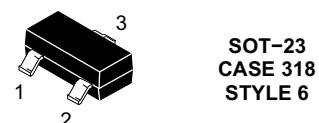
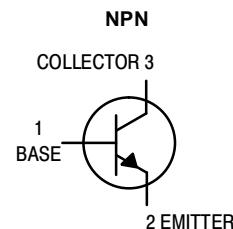
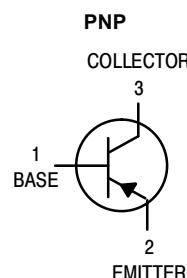
| Characteristic | Symbol | Max | Unit |
|---|-----------------|-------------|----------------------------------|
| Total Device Dissipation FR-5 Board (Note 1), $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 225 1.8 | mW $\text{mW}/^\circ\text{C}$ |
| Thermal Resistance, Junction-to-Ambient | $R_{\theta JA}$ | 556 | $^\circ\text{C}/\text{W}$ |
| Total Device Dissipation Alumina Substrate, (Note 2) $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 300 2.4 | mW $\text{mW}/^\circ\text{C}$ |
| Thermal Resistance, Junction-to-Ambient | $R_{\theta JA}$ | 417 | $^\circ\text{C}/\text{W}$ |
| Junction and Storage Temperature | T_J, T_{stg} | -55 to +150 | $^\circ\text{C}$ |

1. FR-5 = $1.0 \times 0.75 \times 0.062$ in.
2. Alumina = $0.4 \times 0.3 \times 0.024$ in 99.5% alumina.

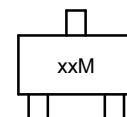


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MARKING DIAGRAM



xx = T1, T2, or U1
M = Date Code

ORDERING INFORMATION

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

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ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|----------------|--------|-----|-----|-----|------|
|----------------|--------|-----|-----|-----|------|

OFF CHARACTERISTICS

| | | | | | |
|--|-----------------------------|----------|--------|------------|--|
| Collector-Emitter Breakdown Voltage ($I_C = 10 \text{ mA}_\text{dc}$, $I_B = 0$) BCX17, 19 BCX18 | $V_{(\text{BR})\text{CEO}}$ | 45 25 | - - | - - | Vdc |
| Collector-Emitter Breakdown Voltage ($I_C = 10 \mu\text{A}_\text{dc}$, $I_B = 0$) BCX17, 19 BCX18 | $V_{(\text{BR})\text{CES}}$ | 50 30 | - - | - - | Vdc |
| Collector Cutoff Current ($V_{CB} = 20 \text{ Vdc}$, $I_E = 0$) ($V_{CB} = 20 \text{ Vdc}$, $I_E = 0$, $T_A = 150^\circ\text{C}$) | I_{CBO} | - - | - - | 100 5.0 | nA_dc μA_dc |
| Emitter Cutoff Current ($V_{EB} = 5.0 \text{ Vdc}$, $I_C = 0$) | I_{EBO} | - | - | 10 | μA_dc |

ON CHARACTERISTICS

| | | | | | |
|--|----------------------|-----------------|-------------|------|-----|
| DC Current Gain ($I_C = 100 \text{ mA}_\text{dc}$, $V_{CE} = 1.0 \text{ Vdc}$) ($I_C = 300 \text{ mA}_\text{dc}$, $V_{CE} = 1.0 \text{ Vdc}$) ($I_C = 500 \text{ mA}_\text{dc}$, $V_{CE} = 1.0 \text{ Vdc}$) | h_{FE} | 100 70 40 | - - - | 600 | - |
| Collector-Emitter Saturation Voltage ($I_C = 500 \text{ mA}_\text{dc}$, $I_B = 50 \text{ mA}_\text{dc}$) | $V_{CE(\text{sat})}$ | - | - | 0.62 | Vdc |
| Base-Emitter On Voltage ($I_C = 500 \text{ mA}_\text{dc}$, $V_{CE} = 1.0 \text{ Vdc}$) | $V_{BE(\text{on})}$ | - | - | 1.2 | Vdc |

ORDERING INFORMATION

| Device | Marking | Package | Shipping [†] |
|-----------|---------|---------------------|-----------------------|
| BCX17LT1 | T1 | SOT-23 | 3,000 Tape & Reel |
| BCX17LT1G | T1 | SOT-23 (Pb-Free) | 3,000 Tape & Reel |
| BCX17LT3 | T1 | SOT-23 | 10,000 Tape & Reel |
| BCX18LT1 | T2 | SOT-23 | 3,000 Tape & Reel |
| BCX19LT1 | U1 | SOT-23 | 3,000 Tape & Reel |

[†]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.

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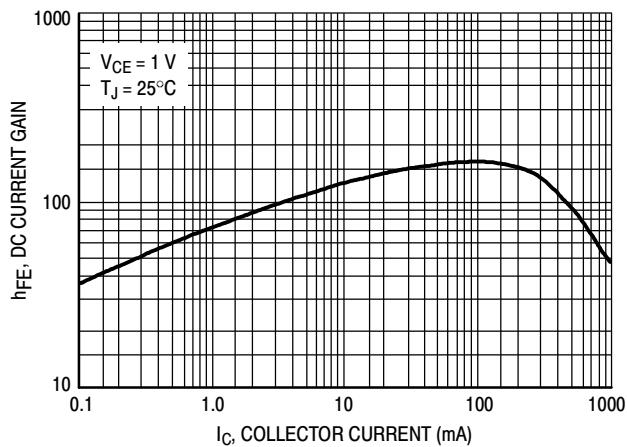


Figure 1. DC Current Gain

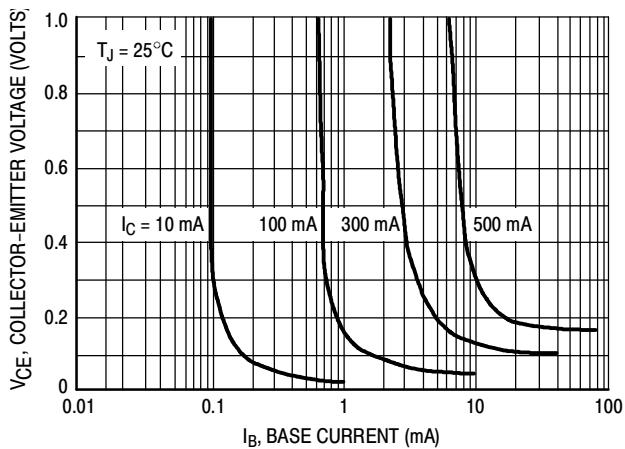


Figure 2. Saturation Region

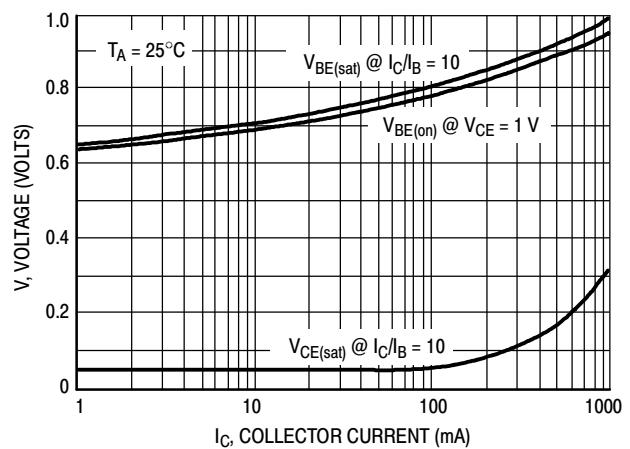


Figure 3. "On" Voltages

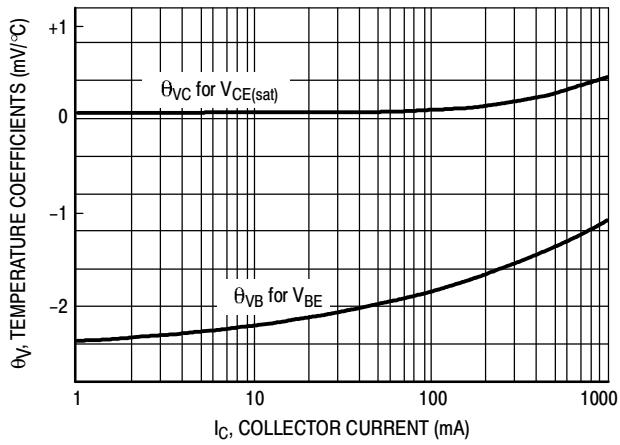


Figure 4. Temperature Coefficients

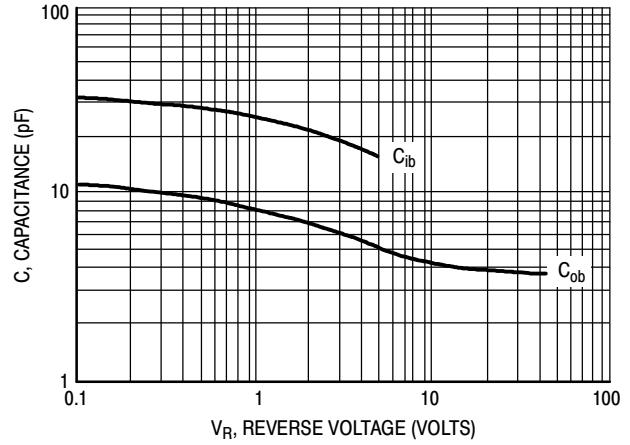
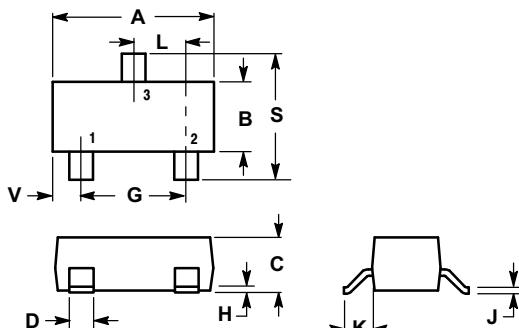


Figure 5. Capacitances

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PACKAGE DIMENSIONS

SOT-23 (TO-236) CASE 318-08 ISSUE AK



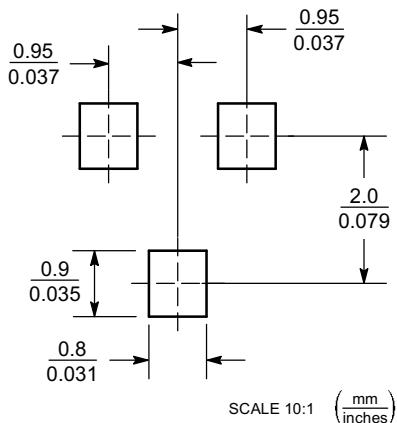
NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. 318-01 THRU -07 AND -09 OBSOLETE, NEW STANDARD 318-08.

| DIM | INCHES | | MILLIMETERS | |
|-----|--------|--------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.1102 | 0.1197 | 2.80 | 3.04 |
| B | 0.0472 | 0.0551 | 1.20 | 1.40 |
| C | 0.0350 | 0.0440 | 0.89 | 1.11 |
| D | 0.0150 | 0.0200 | 0.37 | 0.50 |
| G | 0.0701 | 0.0807 | 1.78 | 2.04 |
| H | 0.0005 | 0.0040 | 0.013 | 0.100 |
| J | 0.0034 | 0.0070 | 0.085 | 0.177 |
| K | 0.0140 | 0.0285 | 0.35 | 0.69 |
| L | 0.0350 | 0.0401 | 0.89 | 1.02 |
| S | 0.0830 | 0.1039 | 2.10 | 2.64 |
| V | 0.0177 | 0.0236 | 0.45 | 0.60 |

STYLE 6:
PIN 1. BASE
2. Emitter
3. Collector

SOLDERING FOOTPRINT*



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

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