

## Features

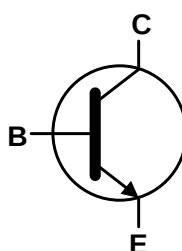
- $BV_{CEO} > 125V$
- $I_C = 800mA$  High Continuous Collector Current
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

## Mechanical Data

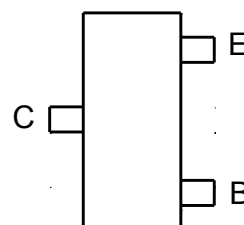
- Case: SOT23
- Case Material: Molded Plastic, "Green" Molding Compound.  
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish—Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208③
- Weight 0.008 grams (Approximate)



Top View



Device Symbol

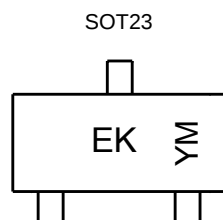

 Top View  
Pin-Out

## Ordering Information (Note 5)

| Part Number | Compliance | Marking | Reel Size (inches) | Tape Width (mm) | Quantity Per Reel |
|-------------|------------|---------|--------------------|-----------------|-------------------|
| BCX41TA     | AEC-Q101   | EK      | 7                  | 8               | 3000              |

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
  2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  4. For packaging details, see <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



EK = Product Type Marking Code  
 YM = Date Code Marking  
 Y or  $\bar{Y}$  = Year (ex: E = 2017)  
 M or  $\bar{M}$  = Month (ex: 9 = September)

### Date Code Key

| Year | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Code | F    | G    | H    | I    | J    | K    | L    | M    | N    | O    | P    | Q    |

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code  | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | O   | N   | D   |

**Absolute Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic               | Symbol           | Value | Unit |
|------------------------------|------------------|-------|------|
| Collector-Base Voltage       | V <sub>CBO</sub> | 125   | V    |
| Collector-Emitter Voltage    | V <sub>CEO</sub> | 125   | V    |
| Emitter-Base Voltage         | V <sub>EBO</sub> | 5     | V    |
| Continuous Collector Current | I <sub>C</sub>   | 800   | mA   |
| Peak Pulse Current           | I <sub>CM</sub>  | 1     | A    |
| Base Current                 | I <sub>B</sub>   | 100   | mA   |

**Thermal Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

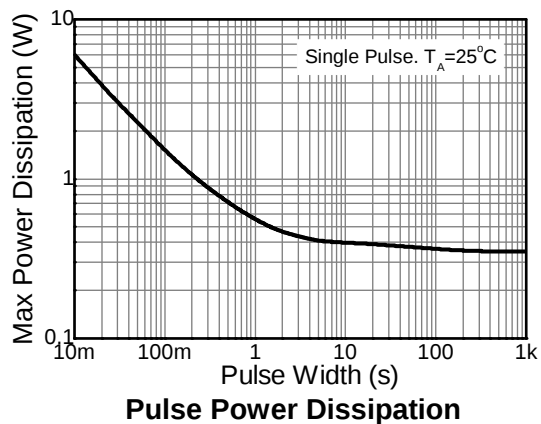
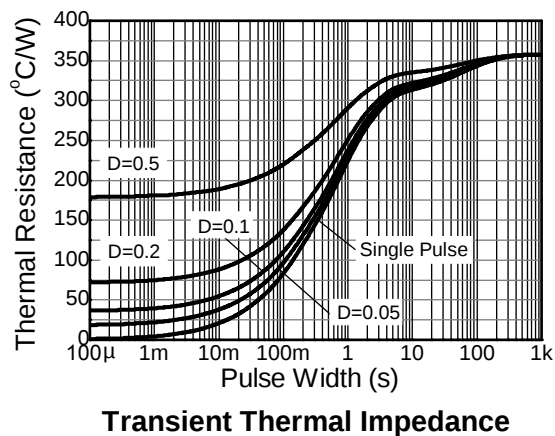
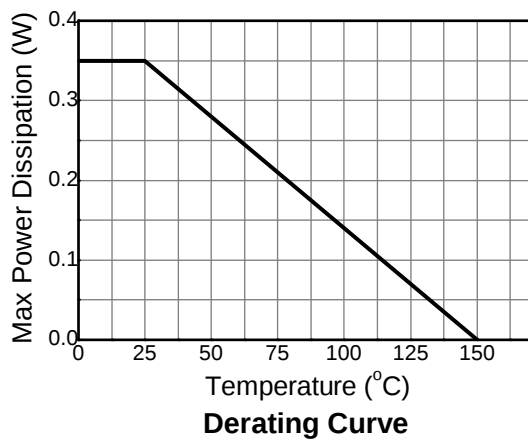
| Characteristic                          | Symbol                            | Value       | Unit |
|-----------------------------------------|-----------------------------------|-------------|------|
| Power Dissipation                       | P <sub>D</sub>                    | 310         | mW   |
| (Note 5)                                |                                   | 350         |      |
| Thermal Resistance, Junction to Ambient | R <sub>θJA</sub>                  | 403         | °C/W |
| (Note 6)                                |                                   | 357         |      |
| Thermal Resistance, Junction to Leads   | R <sub>θJL</sub>                  | 350         | °C/W |
| Operating and Storage Temperature Range | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150 | °C   |

**ESD Ratings** (Note 8)

| Characteristic                           | Symbol  | Value | Unit | JEDEC Class |
|------------------------------------------|---------|-------|------|-------------|
| Electrostatic Discharge—Human Body Model | ESD HBM | 4000  | V    | 3A          |
| Electrostatic Discharge—Machine Model    | ESD MM  | 400   | V    | C           |

- Notes:
- For the device mounted on minimum recommended pad layout FR-4 PCB with high coverage of single sided 1oz copper in still air condition; the device is measured when operating in a steady-state condition.
  - Same as note (6), except the device is mounted on 15mm × 15mm FR-4 PCB.
  - Thermal resistance from junction to solder-point (at the end of the leads).
  - Refer to JEDEC specification JESD22-A114 and JESD22-A115.

**Thermal Characteristics and Derating Information** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

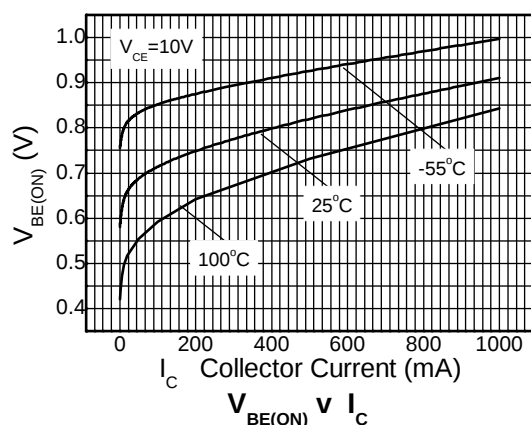
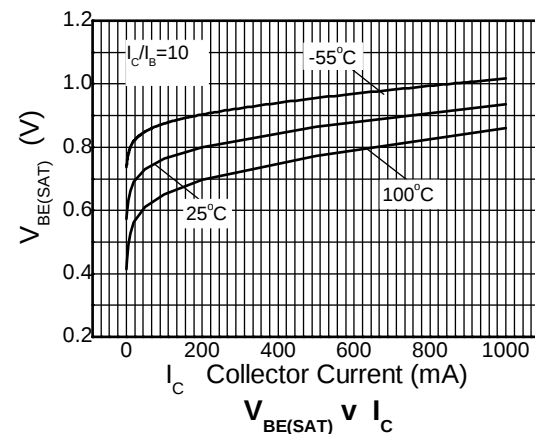
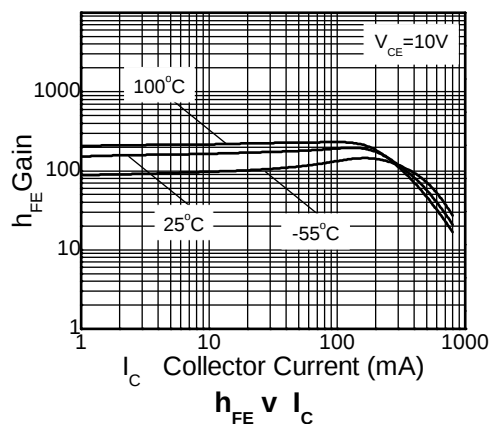
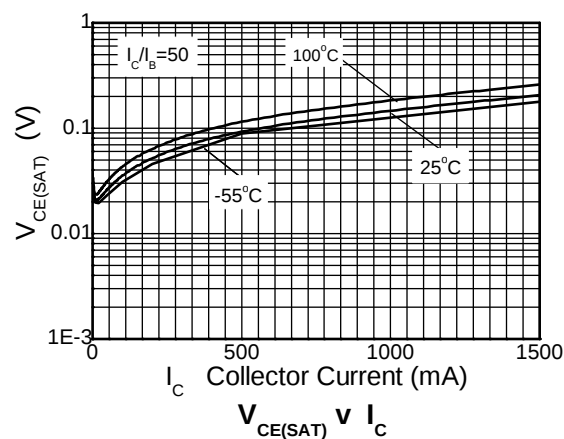
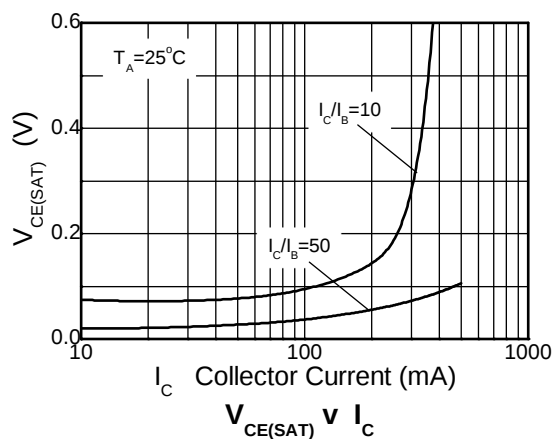


# Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic                               | Symbol               | Min            | Typ | Max       | Unit     | Test Condition                                                                                                                                          |
|----------------------------------------------|----------------------|----------------|-----|-----------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>OFF CHARACTERISTICS</b>                   |                      |                |     |           |          |                                                                                                                                                         |
| Collector-Emitter Breakdown Voltage          | BV <sub>CES</sub>    | 125            | —   | —         | V        | I <sub>C</sub> = 100μA                                                                                                                                  |
| Collector-Emitter Breakdown Voltage (Note 9) | BV <sub>CEO</sub>    | 125            | —   | —         | V        | I <sub>CEO</sub> = 10mA                                                                                                                                 |
| Emitter-Base Breakdown Voltage               | BV <sub>EBO</sub>    | 7              | —   | —         | V        | I <sub>EBO</sub> = 10μA                                                                                                                                 |
| Collector-Base Cut-Off Current               | I <sub>CES</sub>     | —              | —   | 100<br>10 | nA<br>μA | V <sub>CB</sub> = 100V<br>V <sub>CB</sub> = 100V, T <sub>A</sub> = +150°C                                                                               |
| Collector Cut-Off Current                    | I <sub>CEX</sub>     | —              | —   | 10<br>75  | μA<br>μA | V <sub>CE</sub> = 100V, V <sub>BE</sub> = 0.2V,<br>T <sub>A</sub> = +85°C<br>V <sub>CE</sub> = 100V, V <sub>BE</sub> = 0.2V,<br>T <sub>A</sub> = +125°C |
| Emitter-base Cut-off Current                 | I <sub>EBO</sub>     | —              | —   | 100       | nA       | V <sub>EB</sub> = 5.6V                                                                                                                                  |
| <b>ON CHARACTERISTICS (Note 10)</b>          |                      |                |     |           |          |                                                                                                                                                         |
| Static Forward Current Transfer Ratio        | h <sub>FE</sub>      | 25<br>63<br>40 | —   | —         | —        | I <sub>C</sub> = 100μA, V <sub>CE</sub> = 1V<br>I <sub>C</sub> = 100mA, V <sub>CE</sub> = 1V<br>I <sub>C</sub> = 200mA, V <sub>CE</sub> = 1V            |
| Collector-Emitter Saturation Voltage         | V <sub>CE(SAT)</sub> | —              | —   | 0.9       | V        | I <sub>C</sub> = 300mA, I <sub>B</sub> = 30mA                                                                                                           |
| Base-Emitter Saturation Voltage              | V <sub>BE(SAT)</sub> | —              | —   | 1.4       | V        | I <sub>C</sub> = 300mA, I <sub>B</sub> = 30mA                                                                                                           |
| <b>SMALL SIGNAL CHARACTERISTICS (Note 9)</b> |                      |                |     |           |          |                                                                                                                                                         |
| Transition Frequency                         | f <sub>T</sub>       | —              | 100 | —         | MHz      | I <sub>C</sub> = 10mA, V <sub>CE</sub> = 5V,<br>f = 20MHz                                                                                               |
| Output Capacitance                           | C <sub>OBO</sub>     | —              | 12  | —         | pF       | V <sub>CB</sub> = 10V, f = 1MHz                                                                                                                         |

Note: 9. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

**Typical Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)



Please see <http://www.diodes.com/package-outlines.html> for the latest version.

| SOT23                |       |       |       |
|----------------------|-------|-------|-------|
| Dim                  | Min   | Max   | Typ   |
| A                    | 0.37  | 0.51  | 0.40  |
| B                    | 1.20  | 1.40  | 1.30  |
| C                    | 2.30  | 2.50  | 2.40  |
| D                    | 0.89  | 1.03  | 0.915 |
| F                    | 0.45  | 0.60  | 0.535 |
| G                    | 1.78  | 2.05  | 1.83  |
| H                    | 2.80  | 3.00  | 2.90  |
| J                    | 0.013 | 0.10  | 0.05  |
| K                    | 0.890 | 1.00  | 0.975 |
| K1                   | 0.903 | 1.10  | 1.025 |
| L                    | 0.45  | 0.61  | 0.55  |
| L1                   | 0.25  | 0.55  | 0.40  |
| M                    | 0.085 | 0.150 | 0.110 |
| a                    | 0°    | 8°    | —     |
| All Dimensions in mm |       |       |       |

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 2.0           |
| X          | 0.8           |
| X1         | 1.35          |
| Y          | 0.9           |
| Y1         | 2.9           |

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