

## Features

- Epitaxial Planar Die Construction
- Built-In Biasing Resistors, R1 = R2
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free "Green" Device (Note 3)**
- **The ADTC143ECAQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**

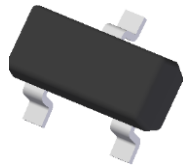
<https://www.diodes.com/quality/product-definitions/>

## Mechanical Data

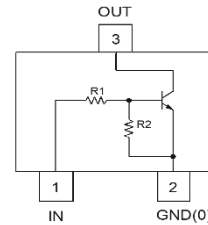
- Package: SOT23
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 (B3)
- Weight: 0.008 grams (Approximate)

| R1, R2 (NOM) |
|--------------|
| 4.7kΩ        |

SOT23



Top View



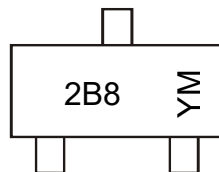
Device Schematic

## Ordering Information (Note 4)

| Orderable Part Number | Package | Marking | Reel Size (inches) | Tape Width (mm) | Packing |         |
|-----------------------|---------|---------|--------------------|-----------------|---------|---------|
|                       |         |         |                    |                 | Qty.    | Carrier |
| ADTC143ECAQ-7         | SOT23   | 2B8     | 7                  | 8               | 3,000   | Reel    |
| ADTC143ECAQ-13        | SOT23   | 2B8     | 13                 | 8               | 10,000  | Reel    |

- 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, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



2B8 = Product Type Marking Code  
YM = Date Code Marking  
Y or  $\bar{Y}$  or  $\underline{Y}$  = Year (ex: M = 2025)  
M = Month (ex: 9 = September)

### Date Code Key

| Year  | 2019 | -   | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 |
|-------|------|-----|------|------|------|------|------|------|------|------|------|------|
| Code  | G    | -   | M    | N    | P    | R    | S    | T    | U    | V    | W    | X    |
| 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.)

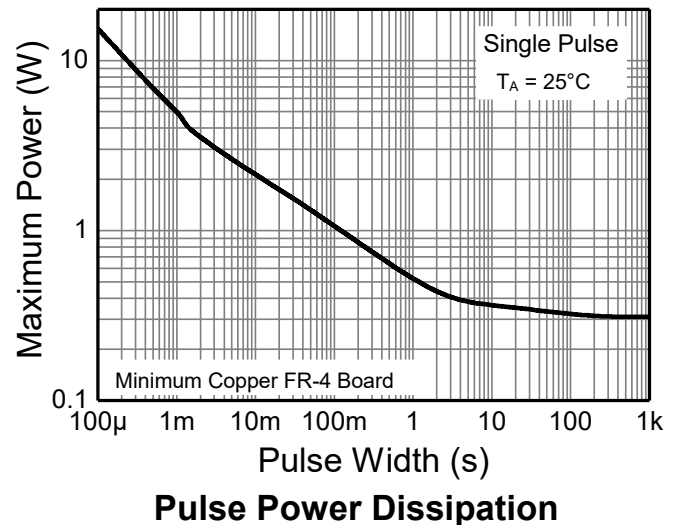
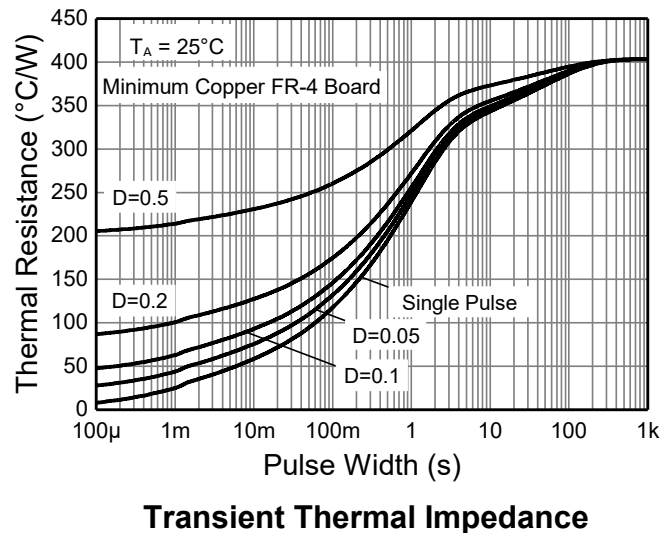
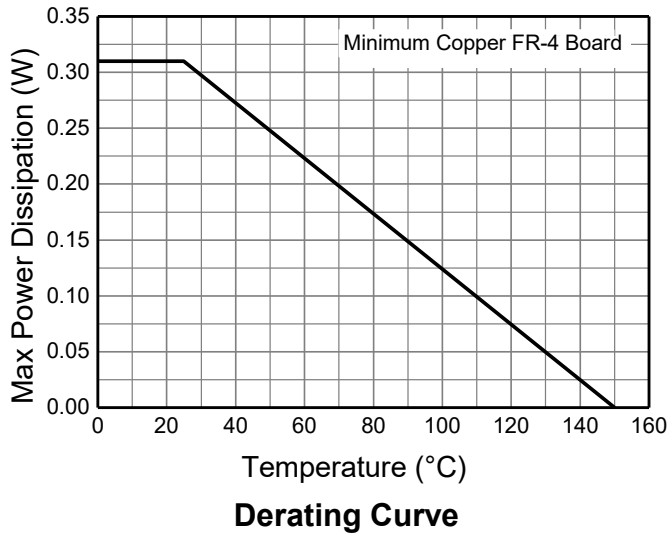
| Characteristic                   | Symbol               | Value      | Unit |
|----------------------------------|----------------------|------------|------|
| Supply Voltage <Pin: (3) to (2)> | V <sub>CC</sub>      | 50         | V    |
| Input Voltage <Pin: (1) to (2)>  | V <sub>IN</sub>      | -10 to +30 | V    |
| Output Current                   | I <sub>C</sub> (Max) | 100        | mA   |

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

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

Note: 5. Mounted on FR-4 PC Board with minimum recommended pad layout.

### Thermal Characteristics and Derating Information

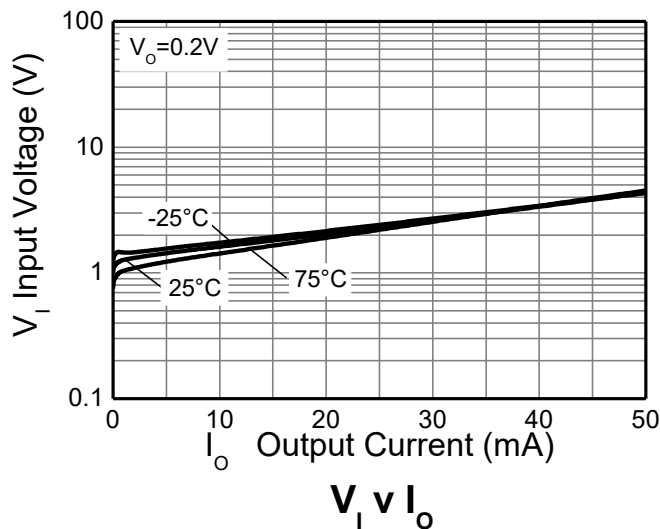
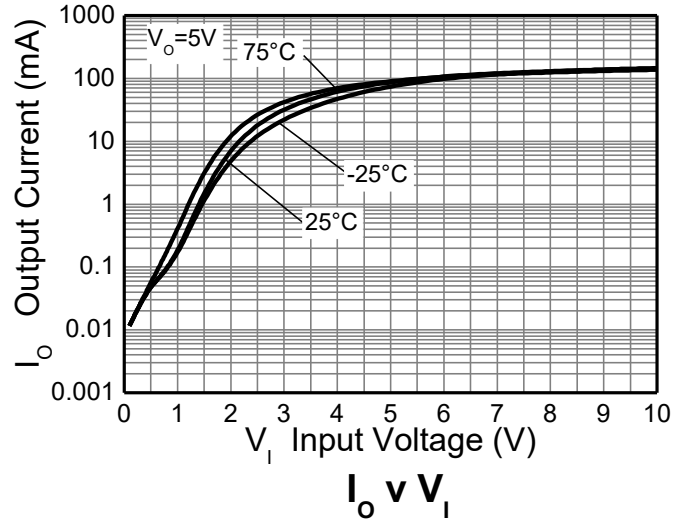
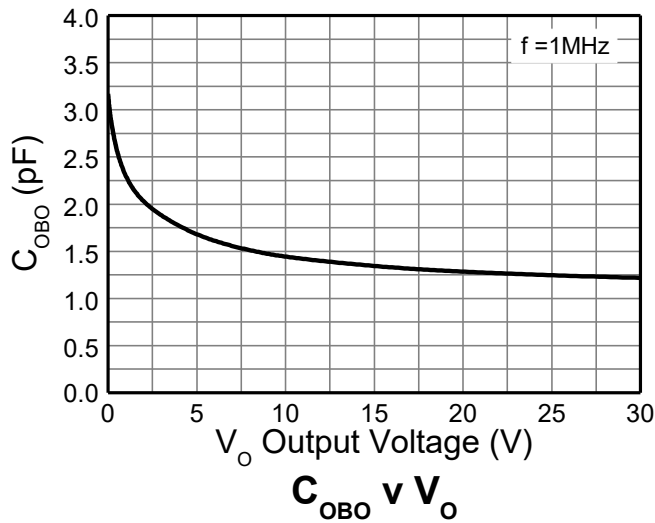
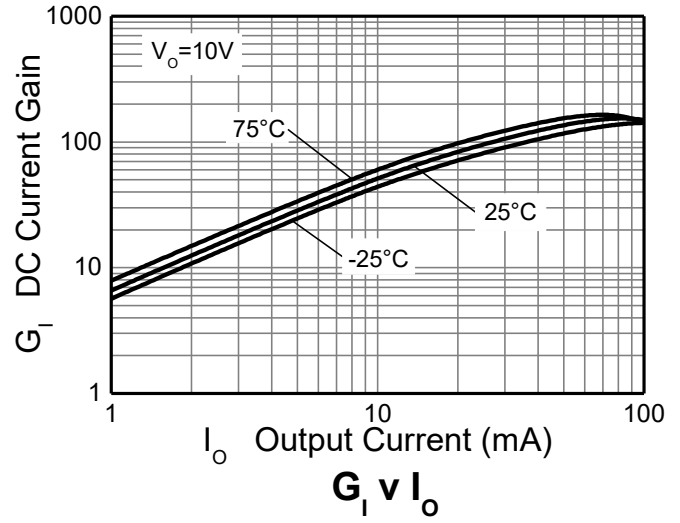
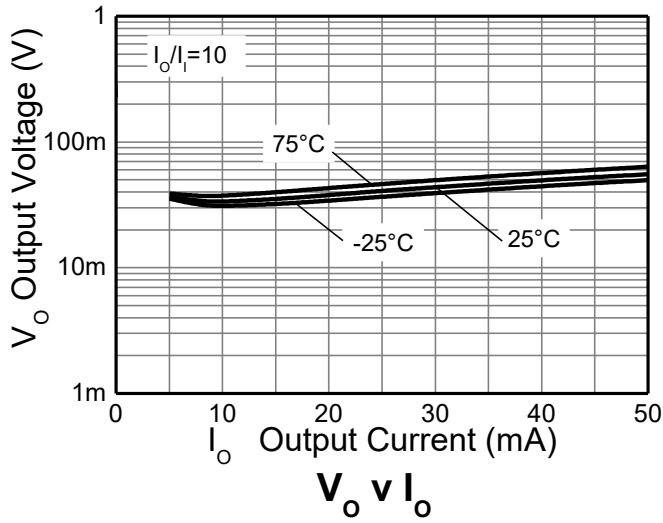


**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic                  | Symbol                          | Min | Typ | Max | Unit | Test Condition                                             |
|---------------------------------|---------------------------------|-----|-----|-----|------|------------------------------------------------------------|
| Input Voltage                   | V <sub>I(off)</sub> (Note 6)    | 0.5 | 1.1 | —   | V    | V <sub>CC</sub> = 5V, I <sub>O</sub> = 100μA               |
|                                 | V <sub>I(on)</sub> (Note 7)     | —   | 1.9 | 3.0 |      | V <sub>O</sub> = 0.3V, I <sub>O</sub> = 20mA               |
| Output Voltage                  | V <sub>O(on)</sub>              | —   | 0.1 | 0.3 | V    | I <sub>O</sub> /I <sub>I</sub> = 10mA / 0.5mA              |
| Input Current                   | I <sub>I</sub>                  | —   | —   | 1.8 | mA   | V <sub>I</sub> = 5V                                        |
| Output Current                  | I <sub>O(off)</sub>             | —   | —   | 0.5 | μA   | V <sub>CC</sub> = 50V, V <sub>I</sub> = 0                  |
| DC Current Gain                 | G <sub>I</sub>                  | 20  | —   | —   | —    | V <sub>O</sub> = 5V, I <sub>O</sub> = 10mA                 |
| Input Resistor Tolerance        | ΔR <sub>1</sub>                 | -30 | —   | +30 | %    | —                                                          |
| Resistance Ratio Tolerance      | ΔR <sub>2</sub> /R <sub>1</sub> | -20 | —   | +20 | %    | —                                                          |
| Gain-Bandwidth Product (Note 8) | f <sub>T</sub>                  | —   | 250 | —   | MHz  | V <sub>CE</sub> = 10V, I <sub>E</sub> = 5mA,<br>f = 100MHz |

Notes: 6. Guarantees that the device will be switched OFF if the Input Voltage is less than 0.5V.  
7. Guarantees that the device will be switched ON if the Input Voltage is more than 3V.  
8. Transistor - For Reference Only.

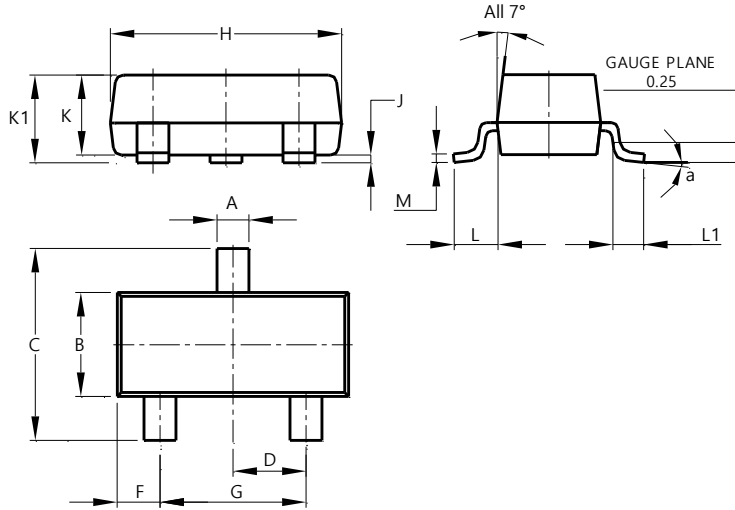
**Typical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)



## Package Outline Dimensions

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

**SOT23**

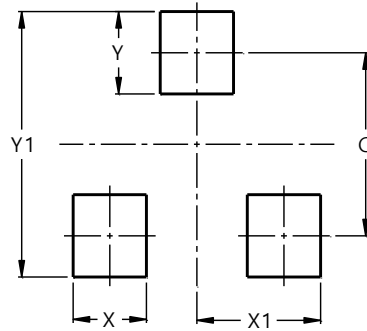


| SOT23                |       |       |       |
|----------------------|-------|-------|-------|
| Dim                  | Min   | Max   | Typ   |
| A                    | 0.37  | 0.51  | 0.40  |
| B                    | 1.20  | 1.40  | 1.30  |
| C                    | 2.30  | 2.50  | 2.40  |
| D                    | 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 |       |       |       |

## Suggested Pad Layout

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

**SOT23**



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

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