

**Product Summary (@T<sub>A</sub> = +25°C)**

| V <sub>RRM</sub> (V) | I <sub>O</sub> (mA) | V <sub>F MAX</sub> (V) | I <sub>R MAX</sub> (μA) |
|----------------------|---------------------|------------------------|-------------------------|
| 40                   | 250                 | 0.75                   | 2.0                     |

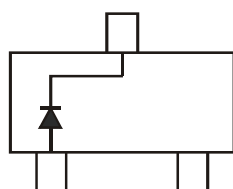
**Description**

This 250mA surface mount Schottky Barrier Diode in SOT323 package offers low turn-on voltage and fast switching capability, designed with PN junction guard ring for transient protection.

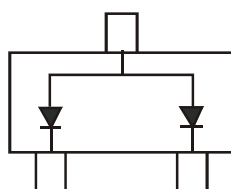
SOT323



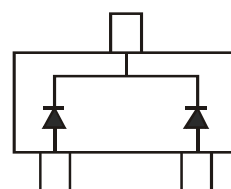
Top View



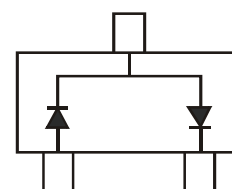
BAT64W



BAT64AW



BAT64CW



BAT64SW

**Features**

- Low Forward Voltage Drop
- Fast Switching
- Ultra-Small Surface Mount Package
- PN Junction Guard Ring for Transient Protection
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Notes 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

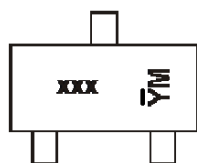
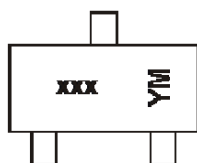
**Mechanical Data**

- Case: SOT323
- Case Material: Molded Plastic, "Green" Molding Compound.  
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Alloy 42 Leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208 ③
- Polarity: See Diagrams Below
- Weight: 0.006 grams (Approximate)

**Ordering Information (Note 4)**

| Part Number  | Compliance | Case   | Packaging          |
|--------------|------------|--------|--------------------|
| BAT64W-7-F   | Standard   | SOT323 | 3000/Tape & Reel   |
| BAT64W-13-F  | Standard   | SOT323 | 10,000/Tape & Reel |
| BAT64AW-7-F  | Standard   | SOT323 | 3000/Tape & Reel   |
| BAT64AW-13-F | Standard   | SOT323 | 10,000/Tape & Reel |
| BAT64CW-7-F  | Standard   | SOT323 | 3000/Tape & Reel   |
| BAT64CW-13-F | Standard   | SOT323 | 10,000/Tape & Reel |
| BAT64SW-7-F  | Standard   | SOT323 | 3000/Tape & Reel   |
| BAT64SW-13-F | Standard   | SOT323 | 10,000/Tape & 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**


xxx = Product Type Marking Code

K61 = BAT64W

K62 = BAT64AW

K63 = BAT64CW

K64 = BAT64SW

YM &amp; Y̅M = Date Code Marking

Y or Y̅ = Year (ex: F = 2018)

M = Month (ex: 9 = September)

**Date Code Key**

| Year | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|------|------|------|------|------|------|------|------|------|------|
| Code | D    | E    | F    | G    | H    | I    | J    | K    | L    |

| 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   |

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

| Characteristic                                                                                      | Symbol                                                 | Value | Unit |
|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------|-------|------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage              | V <sub>RRM</sub><br>V <sub>RWM</sub><br>V <sub>R</sub> | 40    | V    |
| Average Rectified Output Current                                                                    | I <sub>O</sub>                                         | 250   | mA   |
| Repetitive Peak Forward Current<br>Pulse Wave=1ms, Duty Cycle=25%                                   | I <sub>FRM</sub>                                       | 2,000 | mA   |
| Non-Repetitive Peak Forward Surge Current 8.3ms<br>Single Half Sine-Wave Superimposed on Rated Load | I <sub>FSM</sub>                                       | 2,100 | mA   |

**Thermal Characteristics**

| Characteristic                                      | Symbol                            | Value       | Unit |
|-----------------------------------------------------|-----------------------------------|-------------|------|
| Power Dissipation (Note 5)                          | P <sub>D</sub>                    | 200         | mW   |
| Thermal Resistance Junction to Ambient Air (Note 5) | R <sub>θJA</sub>                  | 625         | °C/W |
| Junction and Storage Temperature Range              | T <sub>J</sub> , T <sub>STG</sub> | -65 to +150 | °C   |

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

| Characteristic                     | Symbol             | Min | Typ | Max                      | Unit | Test Condition                                                                                         |
|------------------------------------|--------------------|-----|-----|--------------------------|------|--------------------------------------------------------------------------------------------------------|
| Reverse Breakdown Voltage (Note 6) | V <sub>(BR)R</sub> | 40  | —   | —                        | V    | I <sub>R</sub> = 100μA                                                                                 |
| Forward Voltage                    | V <sub>F</sub>     | —   | —   | 350<br>430<br>520<br>750 | mV   | I <sub>F</sub> = 1mA<br>I <sub>F</sub> = 10mA<br>I <sub>F</sub> = 30mA<br>I <sub>F</sub> = 100mA       |
| Reverse Leakage Current (Note 6)   | I <sub>R</sub>     | —   | —   | 2.0                      | μA   | V <sub>R</sub> = 40V                                                                                   |
| Total Capacitance                  | C <sub>T</sub>     | —   | 6.0 | —                        | pF   | V <sub>R</sub> = 1V, f = 1.0MHz                                                                        |
| Reverse Recovery Time              | t <sub>RR</sub>    | —   | 3.0 | —                        | ns   | I <sub>F</sub> = I <sub>R</sub> = 10mA,<br>I <sub>RR</sub> = 0.1I <sub>R</sub> , R <sub>L</sub> = 100Ω |

Notes: 5. Mounted on FR-4 PC board with recommended pad layout, which can be found on our website at <http://www.diodes.com/package-outlines.html>.  
6. Short duration pulse test used to minimize self-heating effect.

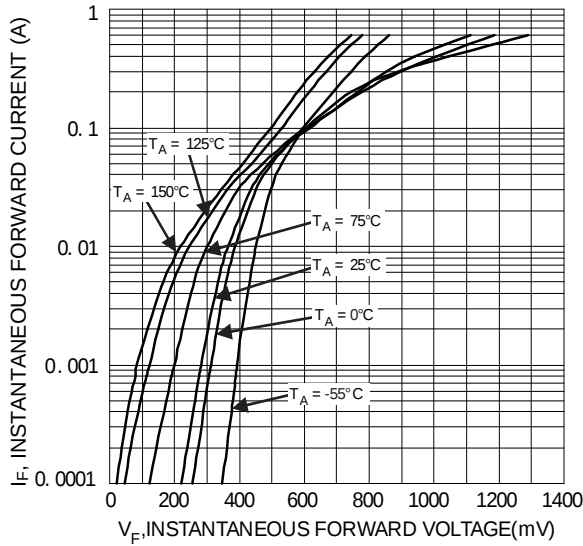


Fig.1 Typical Forward Characteristics

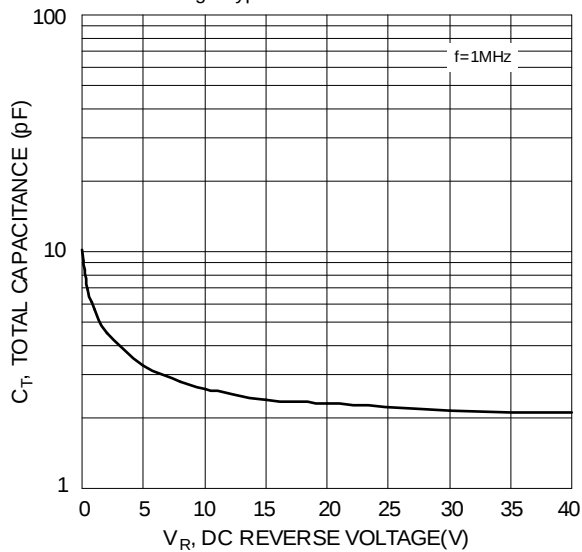


Figure 3 Total Capacitance vs. Reverse Voltage

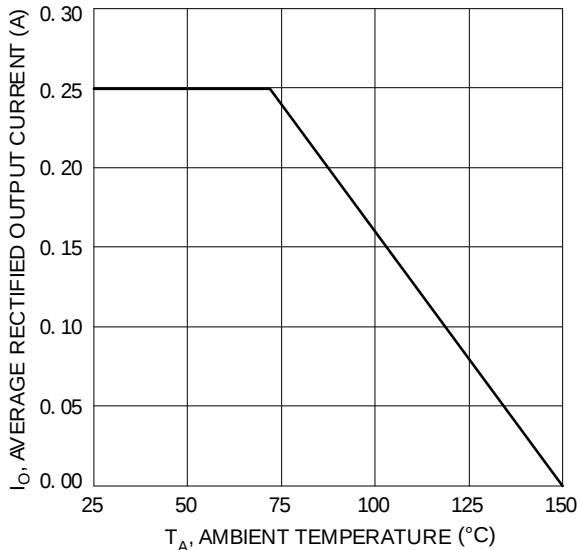


Figure 5 DC Forward Current Derating

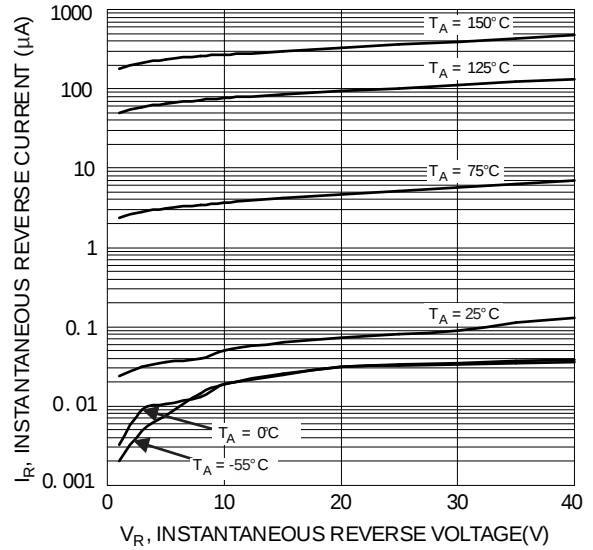


Figure 2 Typical Reverse Characteristics

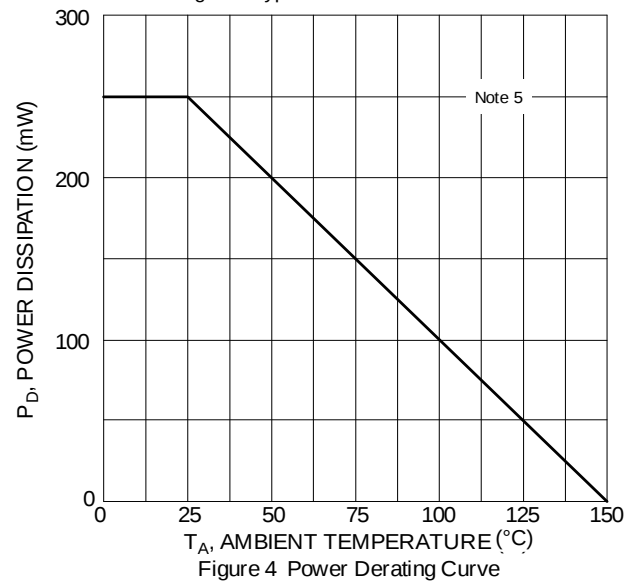
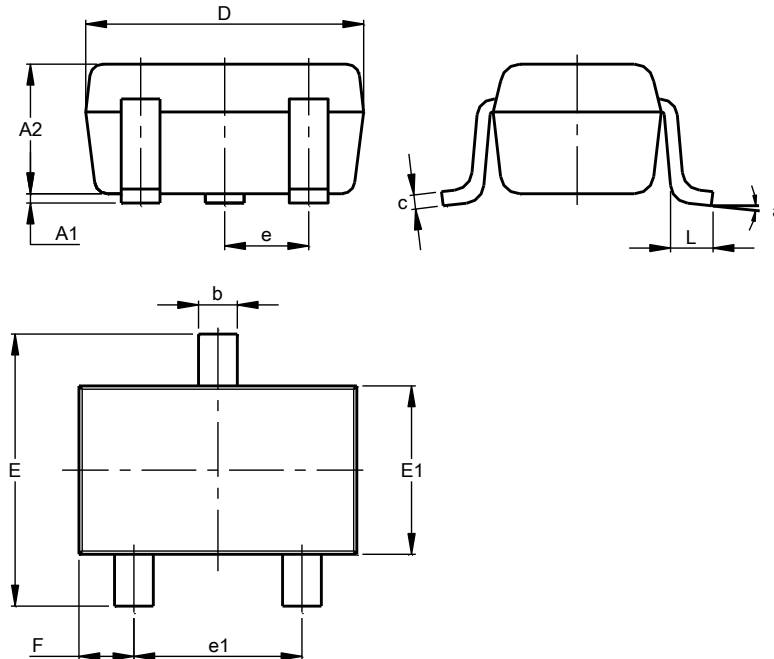


Figure 4 Power Derating Curve

## Package Outline Dimensions

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

**SOT323**

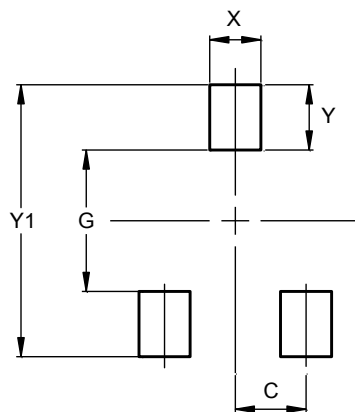


| SOT323               |           |       |       |
|----------------------|-----------|-------|-------|
| Dim                  | Min       | Max   | Typ   |
| A1                   | 0.00      | 0.10  | 0.05  |
| A2                   | 0.90      | 1.00  | 0.95  |
| b                    | 0.25      | 0.40  | 0.30  |
| c                    | 0.10      | 0.18  | 0.11  |
| D                    | 1.80      | 2.20  | 2.15  |
| E                    | 2.00      | 2.20  | 2.10  |
| E1                   | 1.15      | 1.35  | 1.30  |
| e                    | 0.650 BSC |       |       |
| e1                   | 1.20      | 1.40  | 1.30  |
| F                    | 0.375     | 0.475 | 0.425 |
| L                    | 0.25      | 0.40  | 0.30  |
| a                    | 0°        | 8°    | —     |
| All Dimensions in mm |           |       |       |

## Suggested Pad Layout

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

**SOT323**



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 0.650         |
| G          | 1.300         |
| X          | 0.470         |
| Y          | 0.600         |
| Y1         | 2.500         |

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