# 0.1A SCHOTTKY BARRIER DIODE CHIP SCALE PACKAGE

## Product Summary

| $V_{RRM}$ (V) | $I_O$ (mA) | $V_F$ Max (mV) @ +25°C | $I_R$ Max (µA) @ +25°C |
|---|---|---|---|
| 50 | 100 | 500 | 25 |

## Description

The SDM01U50CP3 is a 50-volt 100mA Schottky Barrier Diode that is optimized for low forward voltage drop and low leakage current. It's housed in a compact Chip Scale Package (CSP) that occupies only 0.18mm$^2$ board space. The low thermal resistance enables designers to meet design challenges of increasing efficiency while reducing board space. It is ideally suited for use in portable applications.

## Applications

- Blocking Diode
- Reverse Protection Diode
- Boost Diode

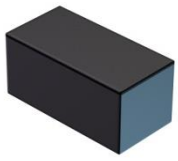
## Features and Benefits

- 0.18mm$^2$ Footprint, Off Board Profile of 0.275mm
- Very Low Forward Voltage – Minimizes Power Dissipation Losses
- Low Leakage – Maximizes Battery Power
- Soft, Fast Switching Capability
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative.**
  **https://www.diodes.com/quality/product-definitions/**

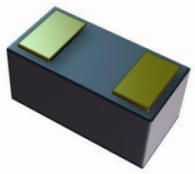
## Mechanical Data

- Case: X3-WLB0603-2
- Moisture Sensitivity: Level 1 per J-STD-020
- Polarity Indicator: Cathode Dot
- Terminals: NiAu Bump. Solderable per MIL-STD-202, Method 208 e4
- Weight: 0.1mg (Approximate)

**X3-WLB0603-2**



Top View



Bottom View

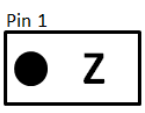
## Ordering Information (Note 4)

| Part Number | Case | Packaging |
|---|---|---|
| SDM01U50CP3-7 | X3-WLB0603-2 | 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

**X3-WLB0603-2**




Z= Product Type Marking Code
Dot Denotes Cathode Pin

## Maximum Ratings (@$T_A$ = +25°C, unless otherwise specified.)

Single phase, half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%.

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Peak Repetitive Reverse Voltage | $V_{RRM}$ | 50 | V |
| Average Rectified Output Current | $I_O$ | 100 | mA |
| Repetitive Peak Forward Current, $t_P \le 1ms$; $\delta \le 0.25$ | $I_{FRM}$ | 3 | A |
| Non-Repetitive Peak Forward Surge Current, 8.3ms<br>Single Half Sine-Wave Superimposed on Rated Load | $I_{FSM}$ | 4 | A |
| ESD Rating: Human Body Model<br>Machine Model | ESD | 8<br>0.4 | kV |

## Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Typical Thermal Resistance Junction to Ambient (Notes 5 & 6) | $R_{\theta JA}$ | 220 | °C/W |
| Operating Temperature Range (Note 6) | $T_J$ | -55 to +150 | °C |
| Storage Temperature Range | $T_{STG}$ | -55 to +150 | °C |

## Electrical Characteristics (@$T_A$ = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|---|---|---|---|---|---|---|
| Forward Voltage Drop | $V_F$ | —<br>—<br>— | 240<br>305<br>420 | 300<br>380<br>500 | mV | $I_F$ = 1mA, $T_J$ = +25°C<br>$I_F$ = 10mA, $T_J$ = +25°C<br>$I_F$ = 100mA, $T_J$ = +25°C |
| Leakage Current (Note 7) | $I_R$ | —<br>— | 1<br>4 | 8<br>25 | µA | $V_R$ = 30V, $T_J$ = +25°C<br>$V_R$ = 50V, $T_J$ = +25°C |
| Junction Capacitance | $C_J$ | — | 7.5 | — | pF | $V_R$ = 5V, $T_J$ = +25°C , f = 1MHz |

Notes:
5. Device mounted on FR-4 substrate PC board, with minimum recommended pad layout per http://www.diodes.com/package-outlines.html.
6. For Schottky barrier diodes, thermal runaway must be avoided with adequate thermal dissipation in design to prevent $T_J$ keeping rising under the operating conditions in applications.
7. Short duration pulse test used to minimize self-heating effect.

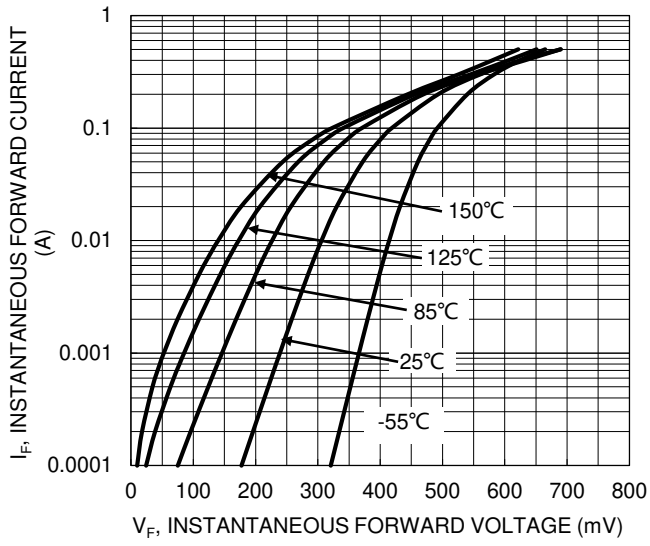



Figure 1. Typical Forward Characteristics

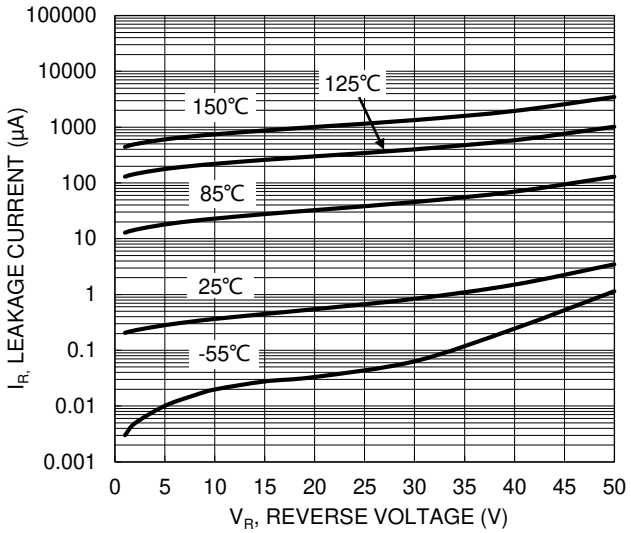



Figure 2. Typical Reverse Characteristics

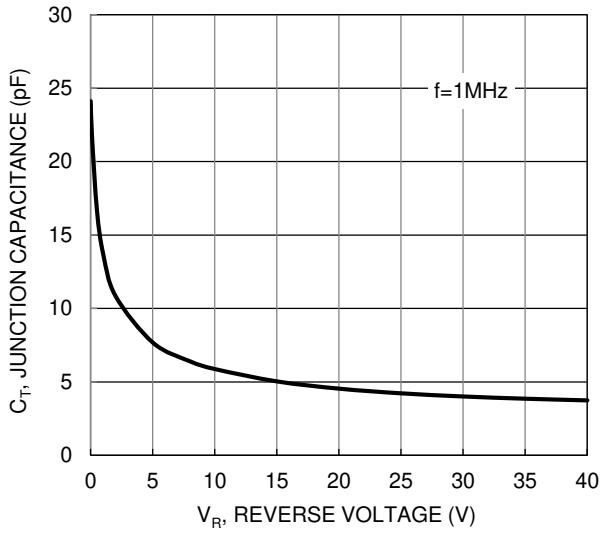
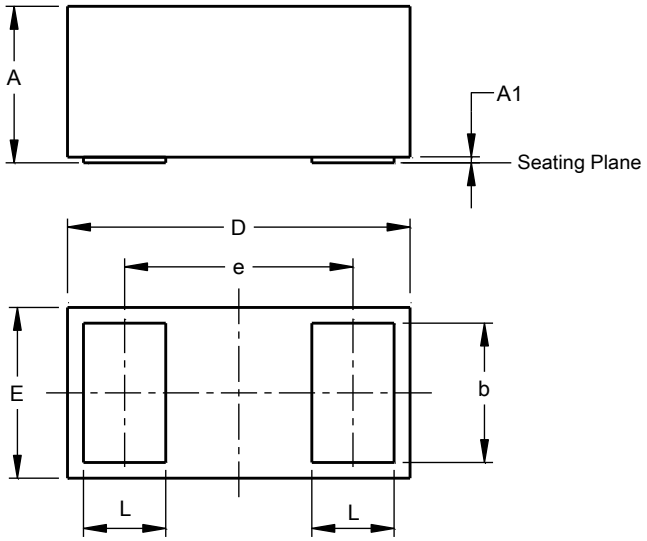



Figure 3.Typical Junction Capacitance

## Package Outline Dimensions (Note 8)

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

**X3-WLB0603-2**



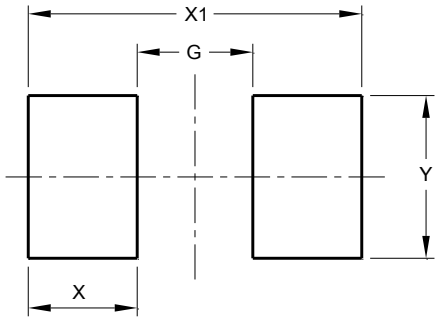

| X3-WLB0603-2 | | | |
|---|---|---|---|
| **Dim** | **Min** | **Max** | **Typ** |
| **A** | 0.250 | 0.300 | 0.275 |
| **A1** | 0.00 | 0.01 | - |
| **b** | 0.220 | 0.280 | 0.245 |
| **D** | 0.575 | 0.625 | 0.600 |
| **E** | 0.275 | 0.325 | 0.300 |
| **e** | - | - | 0.400 |
| **L** | 0.120 | 0.180 | 0.144 |
| **All Dimensions in mm** | | | |

Note 8. Device side walls are electrically active bare silicon. Avoid contact of solder or flux on the side walls during the PCB assembly process.

## Suggested Pad Layout

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

**X3-WLB0603-2**




| Dimensions | Value (in mm) |
|---|---|
| **G** | 0.206 |
| **X** | 0.194 |
| **Y** | 0.291 |
| **X1** | 0.594 |

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