

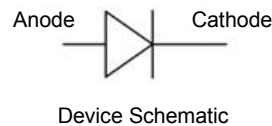
## Product Summary

| $V_{RRM}$ (V) | $I_O$ (A) | $V_F$ Max (V) | $I_R$ Max ( $\mu$ A) |
|---------------|-----------|---------------|----------------------|
| 20            | 1.0       | 0.44          | 100                  |

## Description and Applications

The SDM1U20CSP is a 20V, 1A Schottky barrier rectifier that is optimized for low, forward-voltage drop and low leakage current. Housed in a compact chip scale package (CSP), the SDM1U20CSP occupies only 0.84 mm<sup>2</sup> board-space with low profile. The low thermal resistance enables designers to meet design challenges of increasing efficiency while at the same time reducing board space. It is ideally suited for use in portable applications as:

- Blocking Diodes
- Boost Diodes
- Switching Diodes
- Reverse Protection Diodes

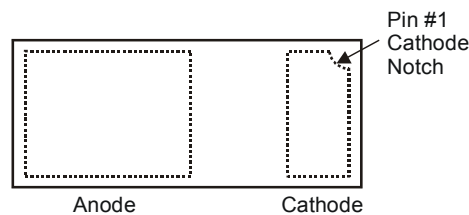


## Features and Benefits

- Low Forward Voltage ( $V_F$ ) Minimizes Conduction Losses and Improves Efficiency
- Reduced High-Temperature Reverse Leakage  
Increased Reliability against Thermal Runaway Failure in High Temperature Operation
- **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-WLB1406-2
- Moisture Sensitivity: Level 1 per J-STD-020
- Polarity: Cathode Dot
- Weight: 0.001 grams (Approximate)



## Ordering Information (Note 4)

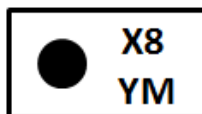
| Part Number  | Case         | Packaging         |
|--------------|--------------|-------------------|
| SDM1U20CSP-7 | X3-WLB1406-2 | 5,000/Tape & Reel |

- 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-WLB1406-2

Pin 1



X8=Product Type Marking Code  
 YM=Date Code Marking  
 Y=Year (ex: G=2019)  
 M=Month (ex: N=November)  
 Dot Denotes Cathode Pin

### Date Code Key

| Year | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|------|------|------|------|------|------|------|------|
| Code | B    | C    | D    | E    | F    | G    | H    |

| 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.)

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 <sub>RRM</sub> | 20    | V    |
| Average Rectified Output Current                                                                    | I <sub>O</sub>   | 1.0   | A    |
| Repetitive Peak Forward Current<br>(Pulse Wave = 1 Sec, Duty Cycle = 66%)                           | I <sub>FRM</sub> | 5.0   | A    |
| Non-Repetitive Peak Forward Surge Current 8.3ms<br>Single Half Sine-Wave Superimposed on Rated Load | I <sub>FSM</sub> | 18    | A    |

## Thermal Characteristics

| Characteristic                                          | Symbol                            | Value       | Unit |
|---------------------------------------------------------|-----------------------------------|-------------|------|
| Typical Thermal Resistance Junction to Ambient (Note 5) | R <sub>θJA</sub>                  | 140         | °C/W |
| Typical Thermal Resistance Junction to Ambient (Note 6) | R <sub>θJA</sub>                  | 73          | °C/W |
| Operating and Storage Temperature Range                 | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150 | °C   |

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

| Characteristic           | Symbol         | Min | Typ | Max  | Unit | Test Condition                  |
|--------------------------|----------------|-----|-----|------|------|---------------------------------|
| Forward Voltage Drop     | V <sub>F</sub> | —   | —   | 0.39 | V    | I <sub>F</sub> = 0.5A           |
|                          |                | —   | —   | 0.44 |      | I <sub>F</sub> = 1.0A           |
| Reverse Current (Note 7) | I <sub>R</sub> | —   | —   | 25   | μA   | V <sub>R</sub> = 10V            |
|                          |                | —   | —   | 100  |      | V <sub>R</sub> = 20V            |
| Junction Capacitance     | C <sub>J</sub> | —   | 76  | —    | pF   | V <sub>R</sub> = 4V, f = 1.0MHz |

Notes: 5. Device mounted on FR-4 PCB, 2oz. Copper, minimum recommended pad layout per <http://www.diodes.com/package-outlines.html>.  
 6. Device mounted on FR-4 PCB, 2oz. 1 square inch Copper.  
 7. Short duration pulse test used to minimize self-heating effect.

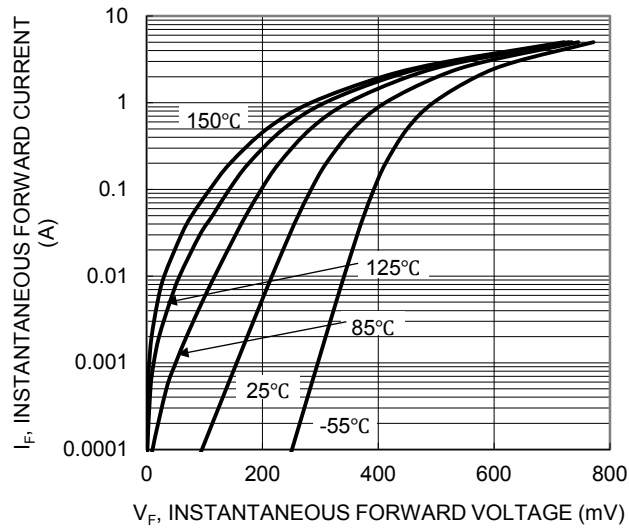


Figure 1. Typical Forward Characteristics

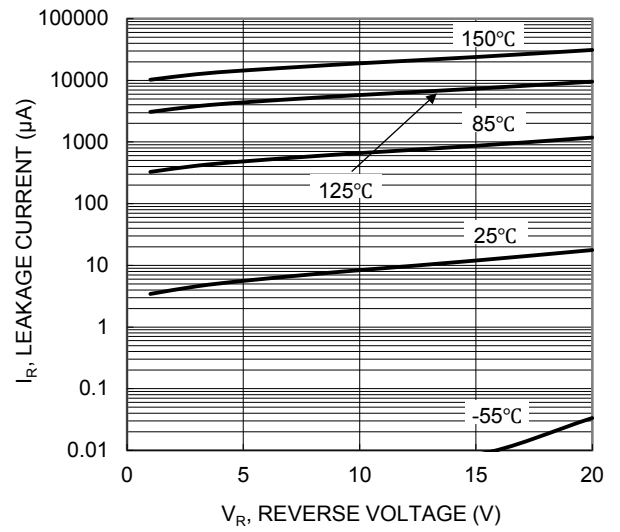


Figure 2. Typical Reverse Characteristics

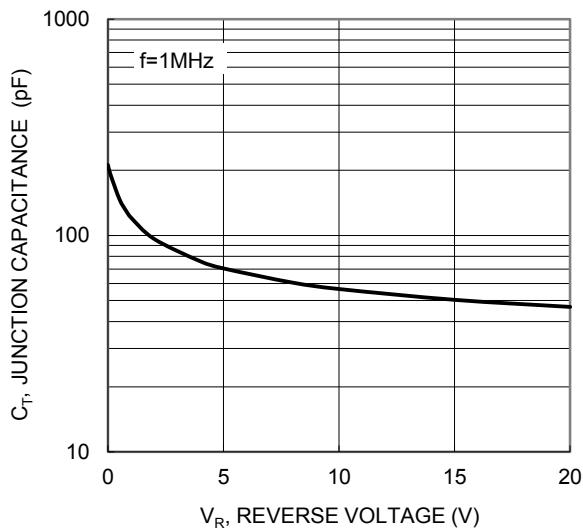


Figure 3. Typical Junction Capacitance

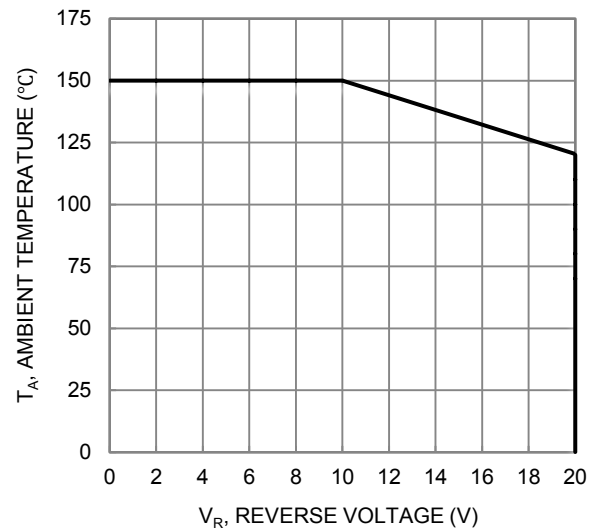
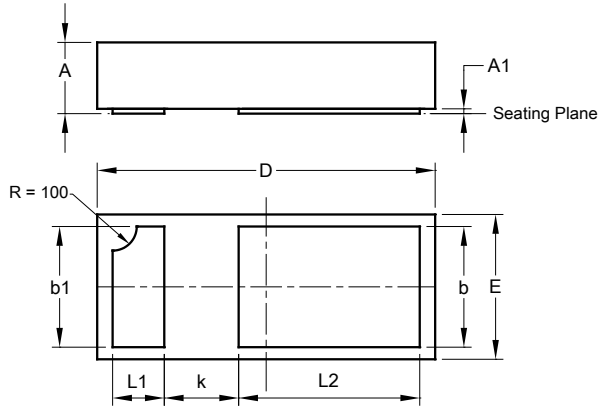


Figure 4. Operating Temperature Derating

## Package Outline Dimensions

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

### X3-WLB1406-2

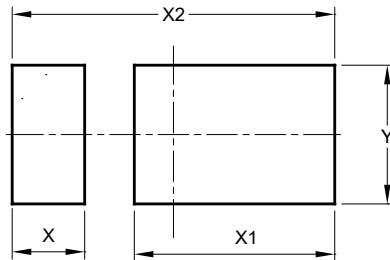


| X3-WLB1406-2         |       |       |       |
|----------------------|-------|-------|-------|
| Dim                  | Min   | Max   | Typ   |
| A                    | 0.250 | 0.300 | 0.275 |
| A1                   | 0.000 | 0.015 | -     |
| b                    | 0.45  | 0.55  | -     |
| b1                   | 0.45  | 0.55  | -     |
| D                    | 1.37  | 1.43  | 1.40  |
| E                    | 0.57  | 0.63  | 0.60  |
| k                    | -     | -     | 0.30  |
| L1                   | 0.20  | 0.26  | -     |
| L2                   | 0.70  | 0.80  | -     |
| All Dimensions in mm |       |       |       |

## Suggested Pad Layout

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

### X3-WLB1406-2



| Dimensions | Value (in mm) |
|------------|---------------|
| X          | 0.304         |
| X1         | 0.840         |
| X2         | 1.352         |
| Y          | 0.580         |

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