

## Product Summary

| $V_{RRM}$ (V) | $I_o$ (A) | $V_F$ MAX (V) | $I_R$ MAX ( $\mu$ A) |
|---------------|-----------|---------------|----------------------|
| 40            | 1         | 0.56          | 75                   |

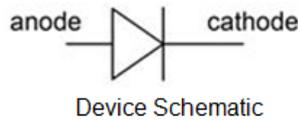
## Description

The SDM1A40CSP is a 40-volt 1A Schottky barrier rectifier that is optimized for low forward voltage drop and low leakage current, housed in a compact chip scale package (CSP) that occupies only 0.6mm<sup>2</sup> board-space. The low thermal resistance enables designers to meet design challenges of increasing efficiency whilst at the same time reducing board space.

## Applications

It is ideally suited for use in portable applications as a:

- Blocking Diode
- Boost Diode
- Switching Diode
- Reverse Protection Diode

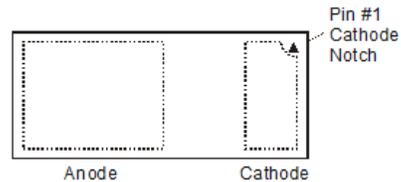


## Features and Benefits

- Off Board Profile of 0.275mm – More than 30% Thinner than DFN1006
- 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)**

## Mechanical Data

- Case: X3-WLB1006-2
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: NiAu Bump. Solderable per MIL-STD-202, Method 208@4
- Polarity: Cathode Dot
- Weight: 0.001 grams (Approximate)

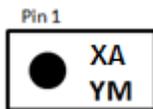


## Ordering Information (Note 4)

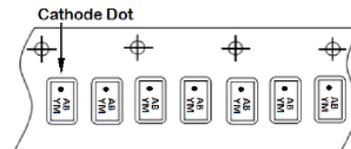
| Part Number  | Case         | Packaging   |
|--------------|--------------|-------------|
| SDM1A40CSP-7 | X3-WLB1006-2 | 5,000/ Reel |

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  2. See [http://www.diodes.com/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) 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 <http://www.diodes.com/products/packages.html>.

## Marking Information



XA = Product Type Marking Code  
 YM = Date Code Marking  
 Y or Ȳ = Year (ex: C = 2015)  
 M = Month (ex: 9 = September)  
 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 capacitance load, derate current by 20%.

| Characteristic  | Symbol           | Value | Unit |
|---|------------------|-------|------|
| Peak Repetitive Reverse Voltage   | V <sub>RRM</sub> | 40    | V    |
| Average Rectified Output Current  | I <sub>O</sub>   | 1     | A    |
| Repetitive peak Forward Current<br>(Pulse Wave = 1 msec, Duty Cycle = 25%)                          | I <sub>FRM</sub> | 5     | A    |
| Non-Repetitive Peak Forward Surge Current 8.3ms<br>Single Half Sine-Wave Superimposed on Rated Load | I <sub>FSM</sub> | 14    | A    |

**Thermal Characteristics**

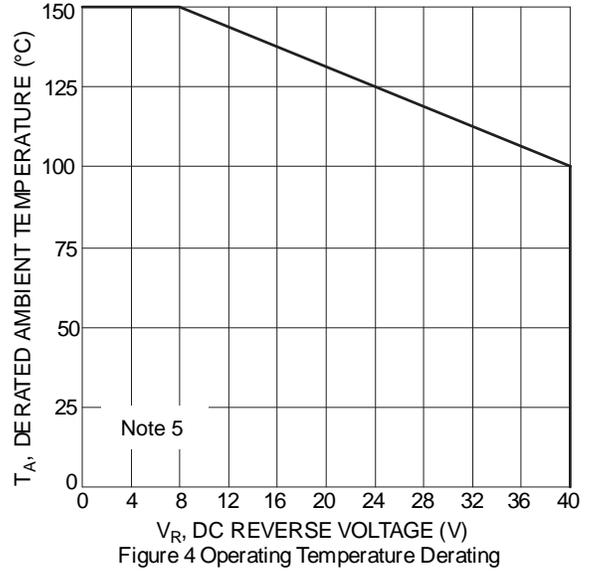
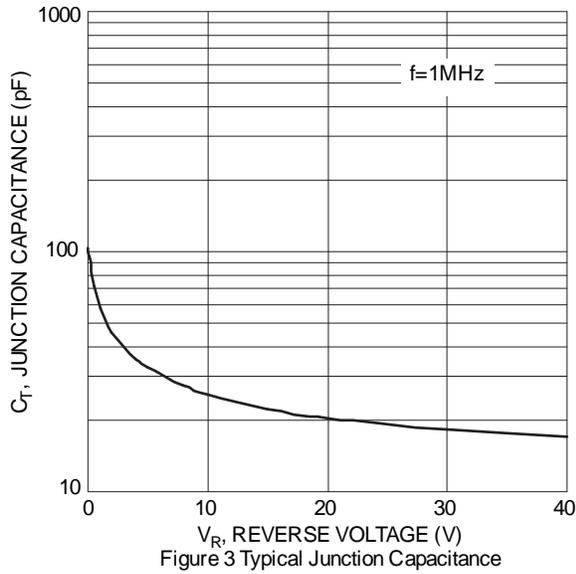
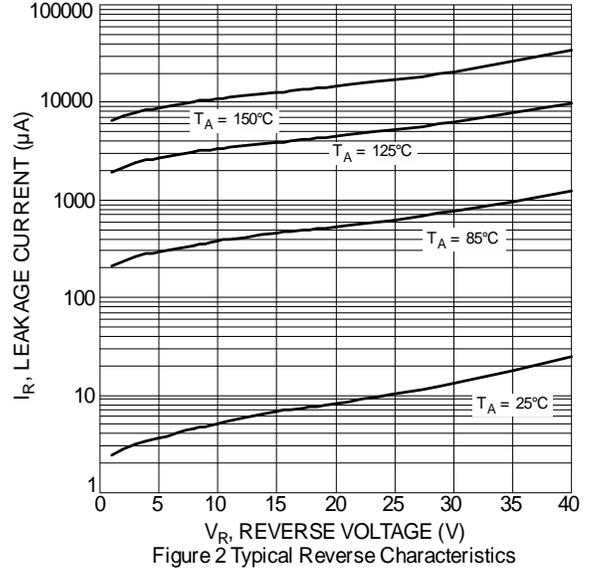
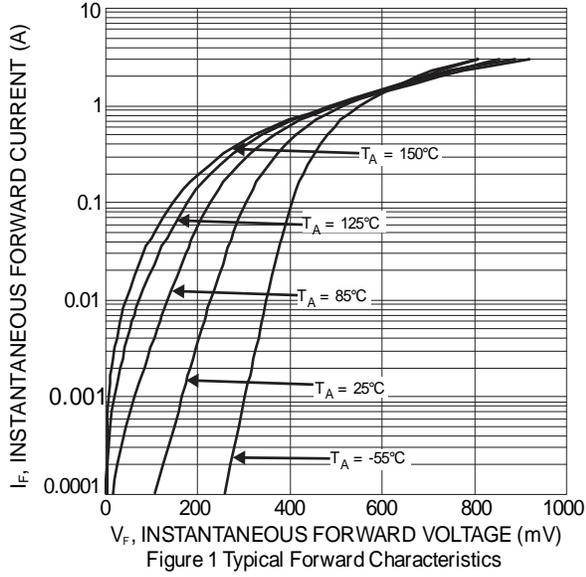
| Characteristic  | Symbol                            | Value       | Unit |
|---|-----------------------------------|-------------|------|
| Typical Thermal Resistance Junction to Ambient (Note 5) | R <sub>θJA</sub>                  | 135         | °C/W |
| Typical Thermal Resistance Junction to Ambient (Note 6) | R <sub>θJA</sub>                  | 80          | °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> | -   | 0.41 | 0.46 | V    | I <sub>F</sub> = 0.5A, T <sub>J</sub> = +25°C  |
|                          |                | -   | 0.51 | 0.56 |      | I <sub>F</sub> = 1.0A, T <sub>J</sub> = +25°C  |
|                          |                | -   | 0.49 | -    |      | I <sub>F</sub> = 1.0A, T <sub>J</sub> = +125°C |
| Leakage Current (Note 7) | I <sub>R</sub> | -   | -    | 15   | μA   | V <sub>R</sub> = 10V, T <sub>J</sub> = +25°C   |
|                          |                | -   | -    | 75   |      | V <sub>R</sub> = 40V, T <sub>J</sub> = +25°C   |
|                          |                | -   | 9.5  | -    |      | V <sub>R</sub> = 40V, T <sub>J</sub> = +125°C  |
| Junction Capacitance     | C <sub>T</sub> | -   | 35   | -    | 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/datasheets/ap02001.pdf>.
  6. Device mounted on FR-4 PCB, 2oz. 1 square inch Copper.
  7. Short duration pulse test used to minimize self-heating effect.

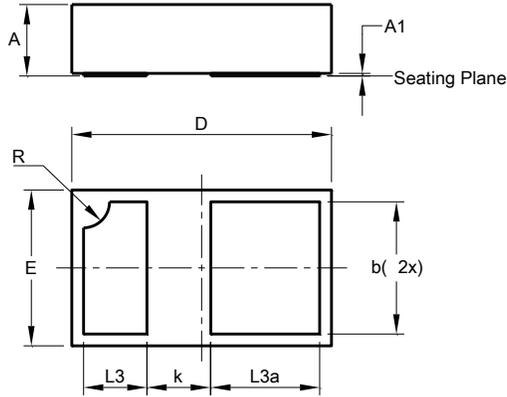
NEW PRODUCT



**Package Outline Dimensions**

Please see AP02001 at [http://www.diodes.com/\\_files/datasheets/ap02001.pdf](http://www.diodes.com/_files/datasheets/ap02001.pdf) for the latest version.

**X3-WLB1006-2**

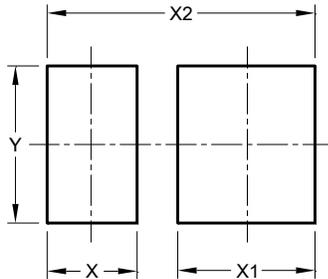


| X3-WLB1006-2         |       |       |       |
|----------------------|-------|-------|-------|
| Dim                  | Min   | Max   | Typ   |
| A                    | 0.25  | 0.30  | 0.275 |
| A1                   | 0.00  | 0.01  | -     |
| b                    | 0.450 | 0.550 | 0.500 |
| D                    | 0.95  | 1.05  | 1.000 |
| E                    | 0.55  | 0.65  | 0.600 |
| k                    | -     | -     | 0.288 |
| L3                   | 0.194 | 0.294 | 0.244 |
| L3a                  | 0.350 | 0.450 | 0.400 |
| R                    | -     | -     | 0.100 |
| All Dimensions in mm |       |       |       |

**Suggested Pad Layout**

Please see AP02001 at [http://www.diodes.com/\\_files/datasheets/ap02001.pdf](http://www.diodes.com/_files/datasheets/ap02001.pdf) for the latest version.

**X3-WLB1006-2**



| Dimensions | Value (in mm) |
|------------|---------------|
| X          | 0.332         |
| X1         | 0.507         |
| X2         | 0.989         |
| Y          | 0.579         |

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