



**THE DATASHEET OF  
SDM20U40-7**



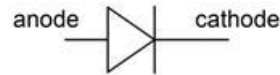
## Features

- Low Forward Voltage Drop
- Guard Ring Construction for Transient Protection
- Negligible Reverse Recovery Time
- Low Reverse Capacitance
- Ultra-Small Surface-Mount Package
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability.**  
<https://www.diodes.com/quality/product-definitions/>
- **An automotive-compliant part is available under separate datasheet (SDM20U40Q)**

## Mechanical Data

- Package: SOD523
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Lead Free Plating (Matte Tin Finish). Solderable per MIL-STD-202, Method 208 (E3)
- Polarity: Cathode Band
- Weight: 0.002 grams (Approximate)

SOD523

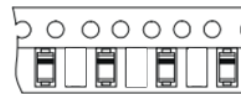
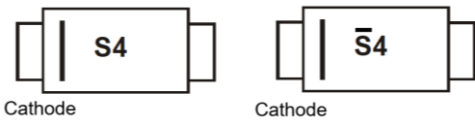


## Ordering Information (Note 4)

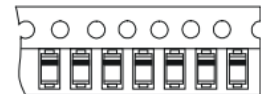
| Part Number          | Package | Packing |             |
|----------------------|---------|---------|-------------|
|                      |         | Qty.    | Carrier     |
| SDM20U40-7 (Note 5)  | SOD523  | 3,000   | Tape & Reel |
| SDM20U40-13 (Note 6) | SOD523  | 10,000  | Tape & Reel |

- 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/>.
  5. Dispensed in every other cavity of the tape.
  6. Dispensed in every cavity of the tape.

## Marking Information



Note 5



Note 6

S4 & S̄4 = Product Type Marking Code

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

| Characteristic                                       | Symbol              | Value | Unit |
|--|---------------------|-------|------|
| Peak Repetitive Reverse Voltage                      | V <sub>RRM</sub>    | 40    | V    |
| Working Peak Reverse Voltage                         | V <sub>RWM</sub>    |       |      |
| DC Blocking Voltage                                  | V <sub>R</sub>      |       |      |
| RMS Reverse Voltage                                  | V <sub>R(RMS)</sub> | 28    | V    |
| Forward Continuous Current (Note 7)                  | I <sub>FM</sub>     | 250   | mA   |
| Non-Repetitive Peak Forward Surge Current @ t ≤ 1.0s | I <sub>FSM</sub>    | 1.0   | A    |

**Thermal Characteristics**

| Characteristic                                       | Symbol                            | Value       | Unit |
|--|-----------------------------------|-------------|------|
| Power Dissipation (Note 7)                           | P <sub>D</sub>                    | 190         | mW   |
| Thermal Resistance, Junction to Ambient Air (Note 7) | R <sub>θJA</sub>                  | 660         | °C/W |
| Operating 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 Conditions  |
|------------------------------------|--------------------|-----|-----|----------------------|----------|--|
| Reverse Breakdown Voltage (Note 8) | V <sub>(BR)R</sub> | 40  | —   | —                    | V        | I <sub>R</sub> = 10μA  |
| Forward Voltage Drop               | V <sub>F</sub>     | —   | —   | 0.35<br>0.37<br>0.60 | V        | I <sub>F</sub> = 10mA<br>I <sub>F</sub> = 20mA<br>I <sub>F</sub> = 200mA                                   |
| Peak Reverse Current (Note 8)      | I <sub>R</sub>     | —   | —   | 5<br>1               | μA<br>μA | V <sub>R</sub> = 30V<br>V <sub>R</sub> = 10V   |
| Total Capacitance                  | C <sub>T</sub>     | —   | 50  | —                    | pF       | V <sub>R</sub> = 0V, f = 1.0MHz  |
| Reverse Recovery Time              | t <sub>RR</sub>    | —   | 10  | —                    | ns       | I <sub>F</sub> = I <sub>R</sub> = 200mA,<br>I <sub>RR</sub> = 0.1 x I <sub>R</sub> , R <sub>L</sub> = 100Ω |

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

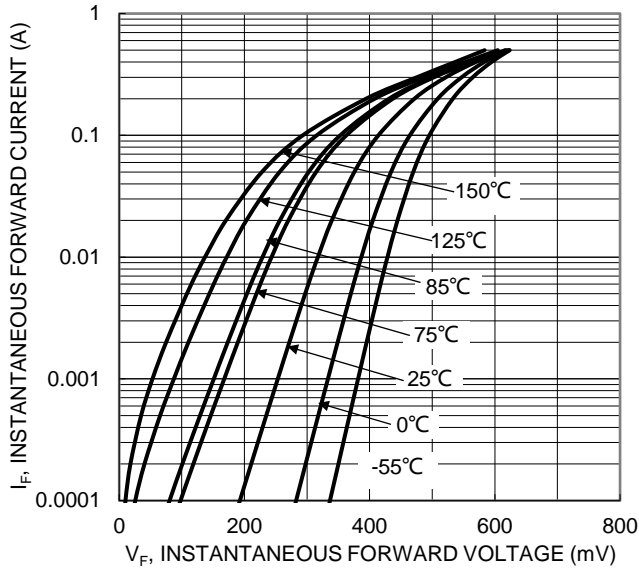


Figure 1 Typical Forward Characteristics

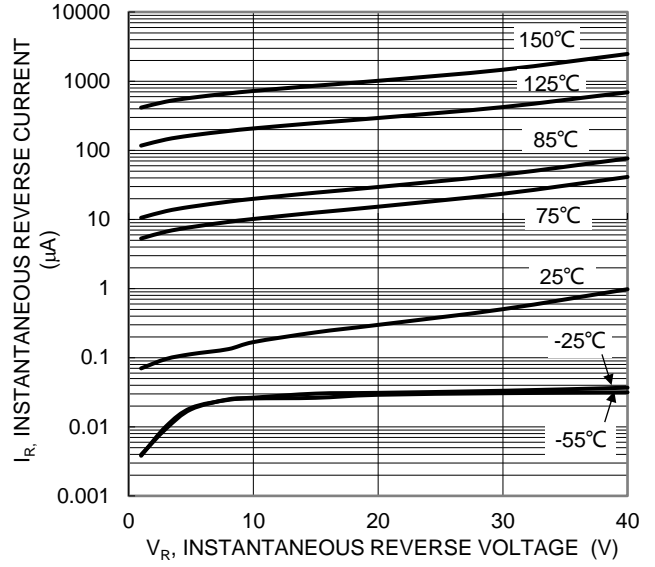


Figure 2 Typical Reverse Characteristics

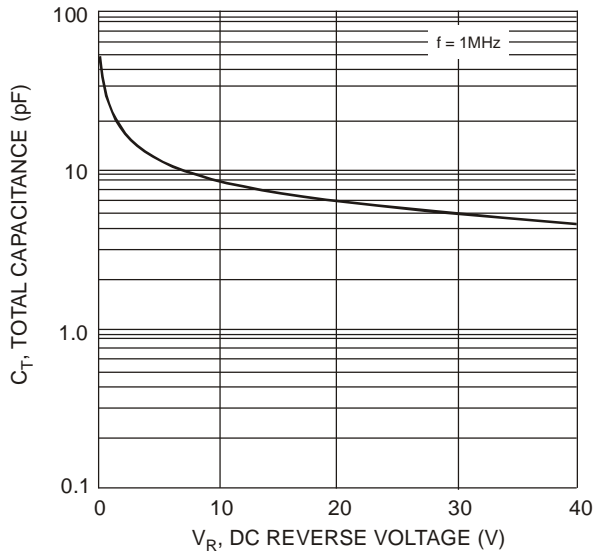


Figure 3 Total Capacitance vs. Reverse Voltage

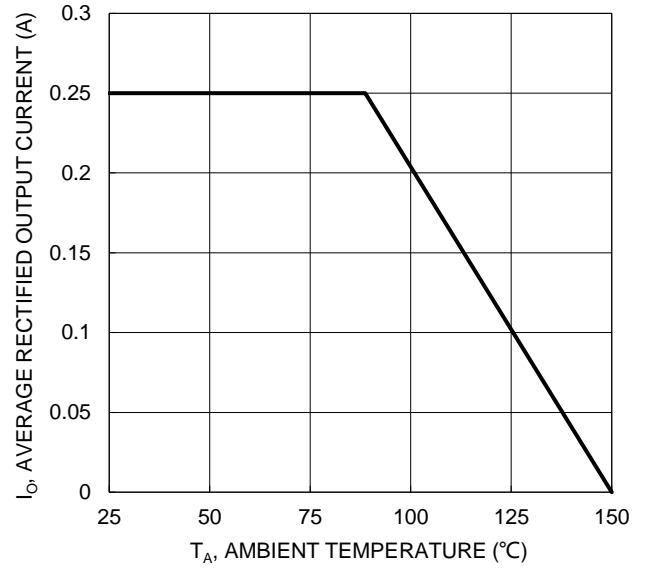
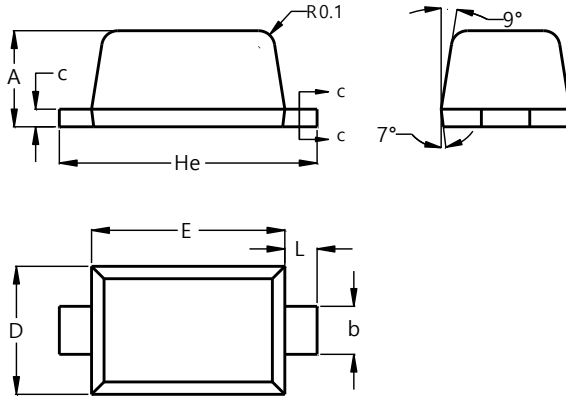


Figure 4 DC Forward Current Derating

**Package Outline Dimensions**

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

**SOD523**

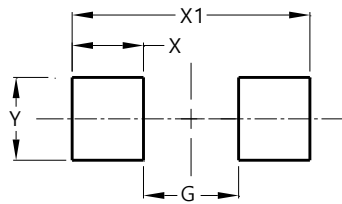


| SOD523               |      |      |
|----------------------|------|------|
| Dim                  | Min  | Max  |
| A                    | 0.55 | 0.65 |
| b                    | 0.26 | 0.34 |
| c                    | 0.11 | 0.17 |
| D                    | 0.75 | 0.85 |
| E                    | 1.15 | 1.25 |
| He                   | 1.55 | 1.65 |
| L                    | 0.10 | 0.30 |
| All Dimensions in mm |      |      |

**Suggested Pad Layout**

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

**SOD523**



| Dimensions | Value (in mm) |
|------------|---------------|
| G          | 0.80          |
| X          | 0.60          |
| X1         | 2.00          |
| Y          | 0.70          |

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