



**THE DATASHEET OF
SDM20U40Q-7**



Product Summary (@T_A = +25°C)

| V _{RRM} (V) | I _O (mA) | V _{F(MAX)} (V) | I _{R(MAX)} (μA) |
|----------------------|---------------------|-------------------------|--------------------------|
| 40 | 250 | 0.6 | 5 |

Features and Benefits

- Low Forward-Voltage Drop
- Guard-Ring Construction for Transient Protection
- Negligible Reverse-Recovery Time
- Low Reverse Capacitance
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

Applications

- SMPS
- DC-DC Converter
- Freewheeling Diodes
- Reverse Polarity Protection
- Blocking Diodes

Mechanical Data

- Case: SOD523
- Case Material: Molded Plastic, "Green" Molding Compound, UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: Cathode Band
- Terminals: Finish—Matte Tin Annealed over Alloy 42 Leadframe. Solderable per MIL-STD-202, Method 208 **e3**
- Weight: 0.002 grams (Approximate)



Top View



Ordering Information (Note 5)

| Part Number | Packaging | Shipping |
|--------------|-----------|--------------------|
| SDM20U40Q-7 | SOD523 | 3,000/Tape & Reel |
| SDM20U40Q-13 | 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to <https://www.diodes.com/quality/>.
 5. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



S4 = Product Type Marking Code

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

| Characteristic | Symbol | Value | Unit |
|--|---------------------|-------|------|
| Peak Repetitive Reverse Voltage | V _{RRM} | 40 | V |
| Working Peak Reverse Voltage | V _{RWM} | | |
| DC Blocking Voltage | V _R | | |
| RMS Reverse Voltage | V _{R(RMS)} | 28 | V |
| Forward Continuous Current (Note 6) | I _O | 250 | mA |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load | I _{FSM} | 1.0 | A |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|--|-----------------------------------|-------------|------|
| Power Dissipation (Note 6) | P _D | 150 | mW |
| Thermal Resistance, Junction to Ambient Air (Note 6) | R _{θJA} | 667 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -65 to +125 | °C |

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

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Conditions |
|------------------------------------|--------------------|-----|-----|----------------------|----------|--|
| Reverse Breakdown Voltage (Note 7) | V _{(BR)R} | 40 | — | — | V | I _R = 10μA |
| Forward Voltage Drop | V _F | — | — | 0.35 0.37 0.60 | V | I _F = 10mA I _F = 20mA I _F = 200mA |
| Peak Reverse Current (Note 7) | I _R | — | — | 5 1 | μA μA | V _R = 30V V _R = 10V |
| Total Capacitance | C _T | — | 50 | — | pF | V _R = 0V, f = 1.0MHz |
| Reverse Recovery Time | t _{RR} | — | 10 | — | ns | I _F = I _R = 200mA, I _{RR} = 0.1 × I _R , R _L = 100Ω |

Notes: 6. Device mounted on FR-4 board with recommended pad layout, which can be found at <http://www.diodes.com/package-outlines.html>.
7. Short duration pulse test used so as to minimize self-heating effect.

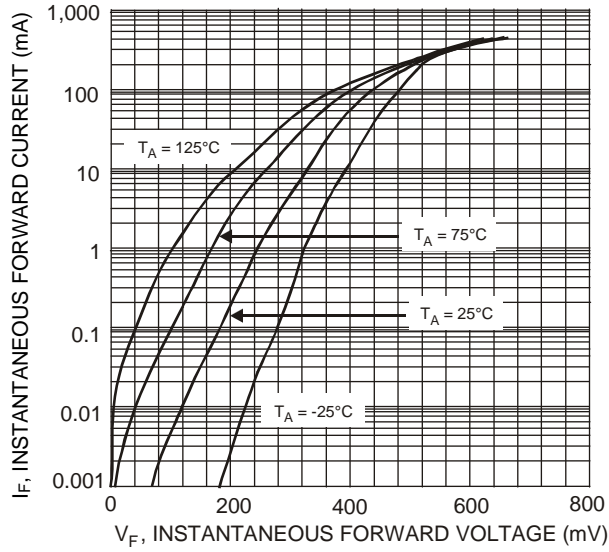


Figure 1 Typical Forward Characteristics

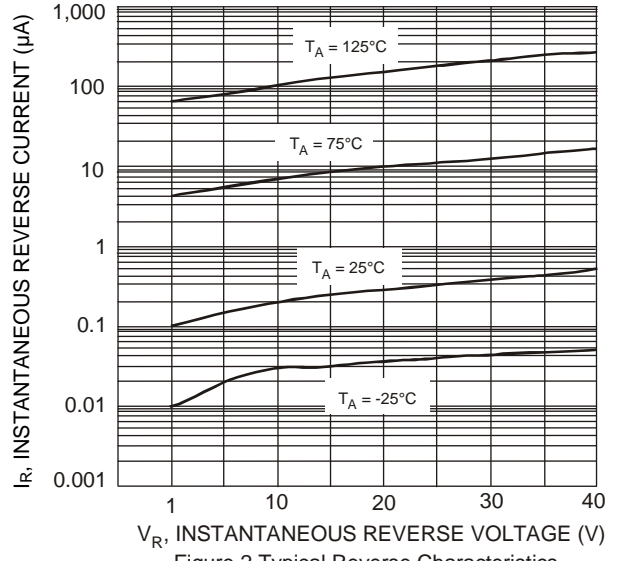


Figure 2 Typical Reverse Characteristics

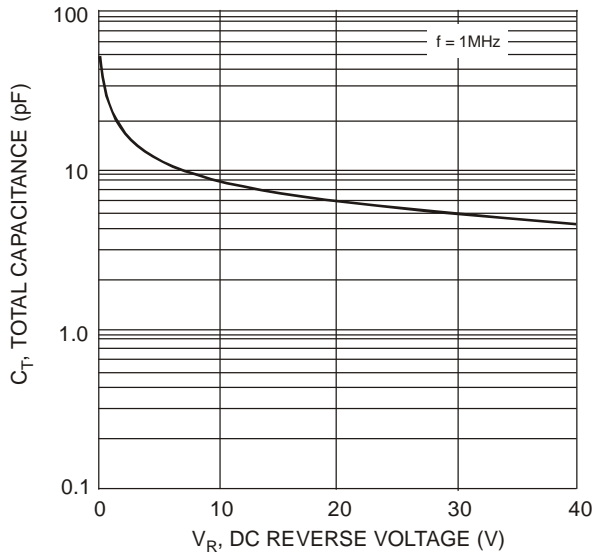


Figure 3 Total Capacitance vs. Reverse Voltage

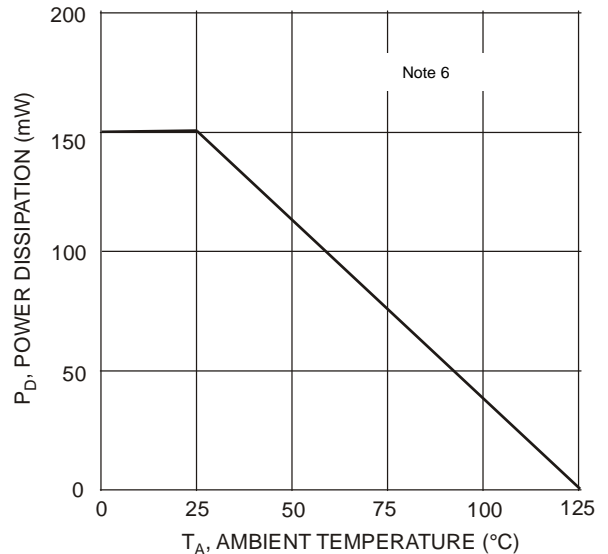
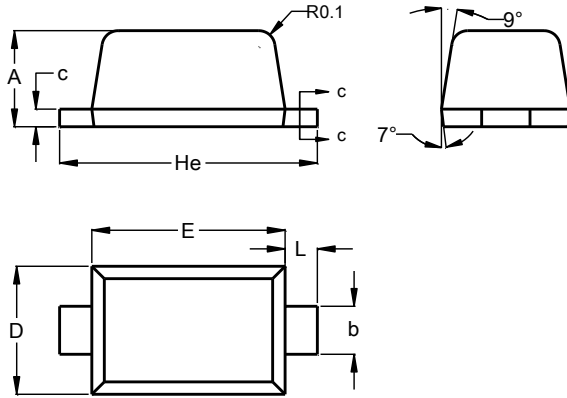


Figure 4 Power Derating Curve

Package Outline Dimensions

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

SOD523

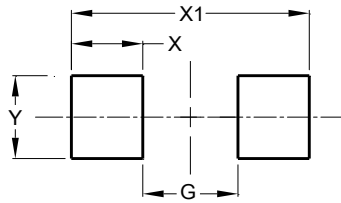


| SOD523 | | |
|----------------------|------|------|
| Dim | Min | Max |
| A | 0.55 | 0.65 |
| b | 0.26 | 0.34 |
| c | 0.11 | 0.17 |
| D | 0.75 | 0.85 |
| E | 1.15 | 1.25 |
| He | 1.55 | 1.65 |
| L | 0.10 | 0.30 |
| All Dimensions in mm | | |

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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