

## Product Summary

| $V_{RRM}$ (V) | $I_o$ (A) | $V_F$ Max (V)<br>@ +25°C | $I_R$ Max (mA)<br>@ +25°C |
|---------------|-----------|--------------------------|---------------------------|
| 60            | 1         | 0.53                     | 0.06                      |

## Description and Applications

The SDM160S1FQ is a single rectifier packaged in SOD123F. Offering low  $V_F$ , low power loss and high efficiency, this device is ideal for use in general rectification applications as a:

- Boost Diode
- Blocking Diode

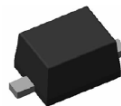
## Features and Benefits

- Guard Ring Die Construction for Transient Protection
- Low Power Loss, High Efficiency
- Interlocking Clip Design for High Surge Current Capacity
- **Lead-Free Finish; 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)**

## Mechanical Data

- Case: SOD123F
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208  $\text{E3}$
- Polarity: Cathode Band
- Weight: 0.015 grams (Approximate)

SOD123F



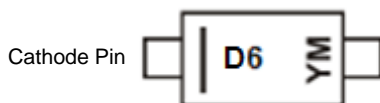
Top View

## Ordering Information (Note 5)

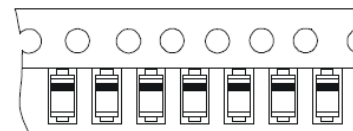
| Part Number  | Case    | Packaging         |
|--------------|---------|-------------------|
| SDM160S1FQ-7 | SOD123F | 3,000/Tape & Reel |

- Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
  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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to [http://www.diodes.com/product\\_compliance\\_definitions.html](http://www.diodes.com/product_compliance_definitions.html).
  5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

## Marking Information



D6 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex.: D = 2016)  
 M = Month (ex.: 9 = September)  
 Bar Denotes Cathode Pin



Bar Denotes Cathode Pin

### Date Code Key

| Year | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|------|------|------|------|------|------|------|------|------|
| Code | A    | 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> | 60    | V    |
| Working Peak Reverse Voltage  | V <sub>RWM</sub> |       |      |
| DC Blocking Voltage   | V <sub>RM</sub>  |       |      |
| Average Rectified Output Current  | I <sub>O</sub>   | 1     | A    |
| Non-Repetitive Peak Forward Surge Current<br>8.3ms Single Half Sine-Wave Superimposed on Rated Load | I <sub>FSM</sub> | 50    | A    |

**Thermal Characteristics**

| Characteristic  | Symbol                            | Value       | Unit |
|---|-----------------------------------|-------------|------|
| Typical Thermal Resistance Junction to Case (Note 6)    | R <sub>θJC</sub>                  | 40          | °C/W |
| Typical Thermal Resistance Junction to Ambient (Note 6) | R <sub>θJA</sub>                  | 100         |      |
| Operating and Storage Temperature Range                 | T <sub>J</sub> , T <sub>STG</sub> | -55 to +175 | °C   |

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

| Characteristic                     | Symbol             | Min | Typ   | Max   | Unit | Test Condition                                |
|------------------------------------|--------------------|-----|-------|-------|------|---|
| Reverse Breakdown Voltage (Note 8) | V <sub>(BR)R</sub> | 60  | —     | —     | V    | I <sub>R</sub> = 1.0mA                        |
| Forward Voltage Drop               | V <sub>F</sub>     | —   | 0.32  | 0.37  | V    | I <sub>F</sub> = 0.1A, T <sub>J</sub> = +25°C |
|                                    |                    | —   | 0.43  | 0.49  |      | I <sub>F</sub> = 0.7A, T <sub>J</sub> = +25°C |
|                                    |                    | —   | 0.46  | 0.53  |      | I <sub>F</sub> = 1A, T <sub>J</sub> = +25°C   |
| Leakage Current (Note 9)           | I <sub>R</sub>     | —   | 0.002 | —     | mA   | V <sub>R</sub> = 10V, T <sub>J</sub> = +25°C  |
|                                    |                    | —   | 0.010 | 0.060 |      | V <sub>R</sub> = 60V, T <sub>J</sub> = +25°C  |
|                                    |                    | —   | 0.40  | —     |      | V <sub>R</sub> = 60V, T <sub>J</sub> = +85°C  |
|                                    |                    | —   | 3.7   | —     |      | V <sub>R</sub> = 60V, T <sub>J</sub> = +125°C |
| Total Capacitance                  | C <sub>T</sub>     | —   | 48    | —     | pF   | V <sub>R</sub> = 10V, f = 1MHz                |

- Notes:
6. Device mounted on FR-4 substrate, 0.4\*\*0.5", 2oz, single-sided, PC boards with 0.2\*\*0.25" copper pad.
  7. Device mounted on 1\*\*MRP FR-4 PC board, 2oz.
  8. Device mounted on 1-inch sq. copper pad, 2oz.
  9. Short duration pulse test used to minimize self-heating effect.

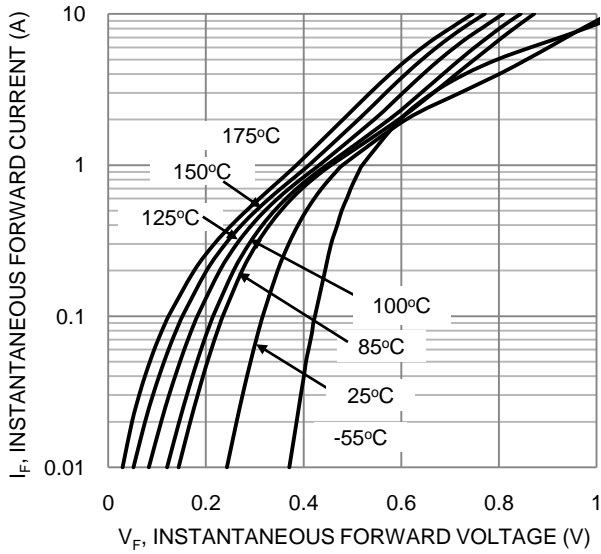


Figure 1. Typical Forward Characteristics

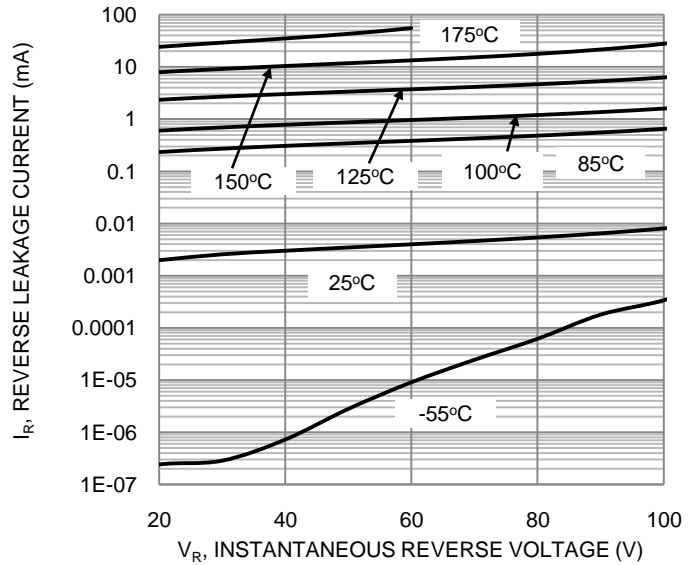


Figure 2. Typical Reverse Characteristics

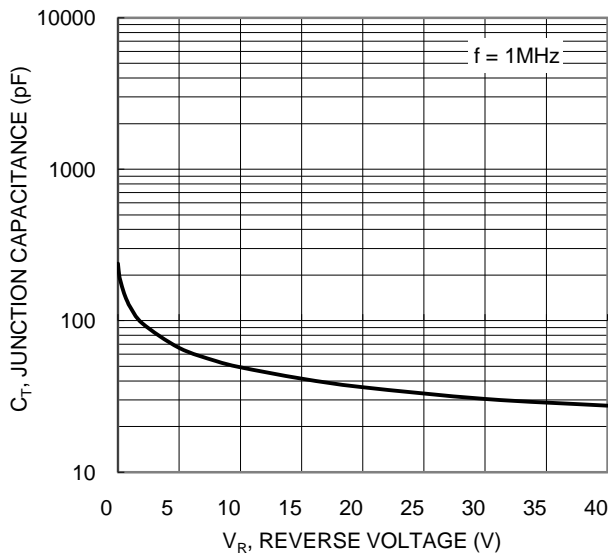


Figure 3. Typical Junction Capacitance

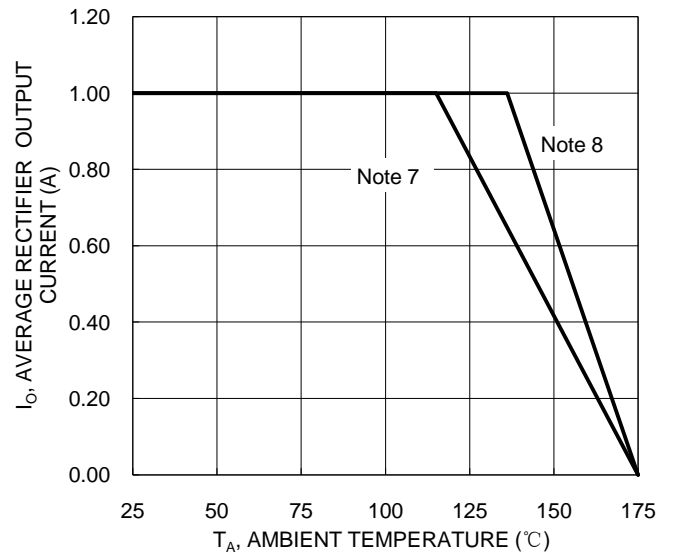


Figure 4. DC Forward Current Derating

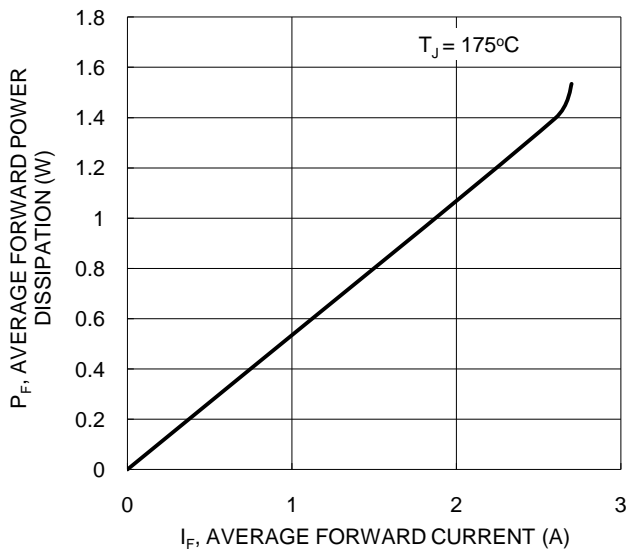
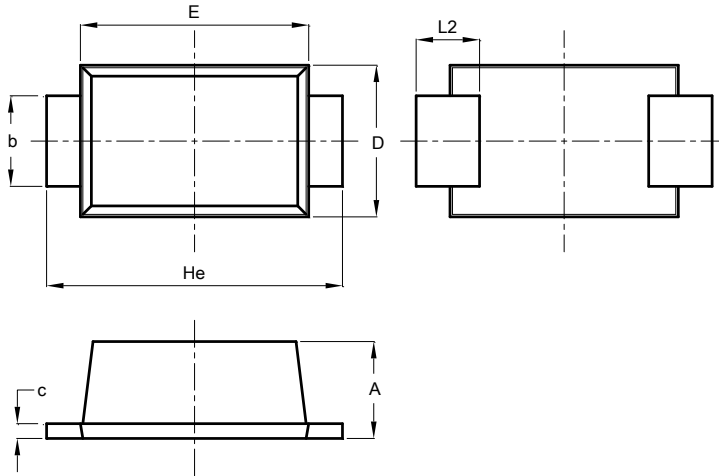


Figure 5. Forward Power Dissipation

**Package Outline Dimensions**

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

**SOD123F**

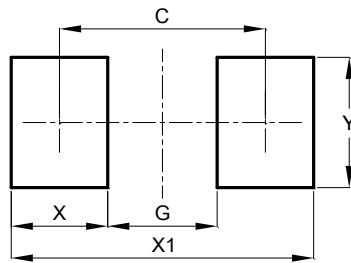


| SOD123F              |      |      |      |
|----------------------|------|------|------|
| Dim                  | Min  | Max  | Typ  |
| A                    | 0.81 | 1.15 | -    |
| b                    | 0.80 | 1.35 | -    |
| c                    | 0.05 | 0.30 | -    |
| D                    | 1.70 | 1.90 | 1.80 |
| E                    | 2.60 | 2.80 | 2.70 |
| He                   | 3.30 | 3.70 | 3.50 |
| L2                   | 0.35 | 0.85 | -    |
| All Dimensions in mm |      |      |      |

**Suggested Pad Layout**

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

**SOD123F**



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 2.86          |
| G          | 1.52          |
| X          | 1.34          |
| X1         | 4.20          |
| Y          | 1.80          |

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