

## Product Summary

| $V_{RRM}$ (V) | $I_O$ (A) | $V_F$ (MAX) (V)<br>@ +25°C | $I_R$ (MAX) (μA)<br>@ +25°C |
|---------------|-----------|----------------------------|-----------------------------|
| 40            | 1         | 0.59                       | 20                          |

## Description and Applications

Packaged in the robust industry-standard U-DFN1608-2 package, the SDM1A40LP8 provides very low  $V_F$  and excellent reverse-leakage stability at high temperatures. It is ideal for use as a rectifier, freewheel diode, or blocking diode in:

- DC-DC Converters
- AC-DC Adaptors

## Features and Benefits

- Reduced Ultra-Low Forward Voltage Drop ( $V_F$ ). Better Efficiency and Cooler Operation.
- 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 refer to the related automotive grade (Q-suffix) part. A listing can be found at <https://www.diodes.com/products/automotive/automotive-products/>.
- This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability. <https://www.diodes.com/quality/product-definitions/>

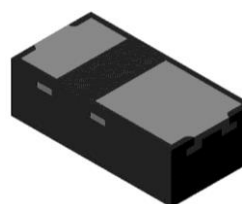
## Mechanical Data

- Case: U-DFN1608-2
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: NiPdAu over Copper Leadframe. Solderable per MIL-STD-202, Method 208 **(e4)**
- Weight: 0.002 grams (Approximate)

U-DFN1608-2



Top View



Bottom View

Cathode Side

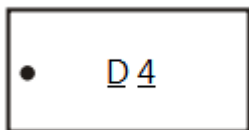
## Ordering Information (Note 4)

| Part Number  | Case        | Packaging          |
|--------------|-------------|--------------------|
| SDM1A40LP8-7 | U-DFN1608-2 | 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/>.

## Marking Information

U-DFN1608-2


D 4 = Product Type Marking Code

Dot Denotes Cathode Side



## Maximum Ratings (@ $T_A = +25^\circ\text{C}$ , 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                                                                     | $V_{RRM}$ | 40    | V    |
| Working Peak Reverse Voltage                                                                        | $V_{RWM}$ |       |      |
| DC Blocking Voltage                                                                                 | $V_{RM}$  |       |      |
| Average Rectified Output Current                                                                    | $I_O$     | 1     | A    |
| Non-Repetitive Peak Forward Surge Current 8.3ms<br>Single Half Sine-Wave Superimposed on Rated Load | $I_{FSM}$ | 7     | A    |
| Repetitive Peak Forward Current ( $t_p = 1\text{ms}$ , Duty Cycle = 25%)                            | $I_{FRM}$ | 5     | A    |

## Thermal Characteristics (Per Leg)

| Characteristic                                           | Symbol          | Value       | Unit               |
|----------------------------------------------------------|-----------------|-------------|--------------------|
| Typical Thermal Resistance, Junction to Ambient (Note 5) | $R_{\theta JA}$ | 100         | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range                  | $T_J, T_{STG}$  | -65 to +150 | $^\circ\text{C}$   |

## Electrical Characteristics (Per Leg) (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

| Characteristic                | Symbol   | Min | Typ  | Max  | Unit          | Test Condition                                                 |
|-------------------------------|----------|-----|------|------|---------------|----------------------------------------------------------------|
| Forward Voltage Drop (Note 6) | $V_F$    | —   | 0.44 | 0.51 | V             | $I_F = 0.5\text{A}, T_J = +25^\circ\text{C}$                   |
|                               |          | —   | 0.36 | —    |               | $I_F = 0.5\text{A}, T_J = +125^\circ\text{C}$                  |
|                               |          | —   | 0.51 | 0.59 |               | $I_F = 1\text{A}, T_J = +25^\circ\text{C}$                     |
|                               |          | —   | 0.46 | —    |               | $I_F = 1\text{A}, T_J = +125^\circ\text{C}$                    |
| Leakage Current (Note 6)      | $I_R$    | —   | 0.6  | —    | $\mu\text{A}$ | $V_R = 10\text{V}, T_J = +25^\circ\text{C}$                    |
|                               |          | —   | 5    | 20   | mA            | $V_R = 40\text{V}, T_J = +25^\circ\text{C}$                    |
|                               |          | —   | 2.3  | —    |               | $V_R = 40\text{V}, T_J = +125^\circ\text{C}$                   |
| Reverse Recovery Time         | $t_{RR}$ | —   | 14   | —    | ns            | $I_F = 10\text{mA}, I_{RRM} = 0.1I_R, T_A = +25^\circ\text{C}$ |
| Total Capacitance             | $C_T$    | —   | 69   | —    | pF            | $V_R = 1\text{V}, f = 1\text{MHz}$                             |

 Notes: 5. Test with FR-4 PC board 1-inch sq. copper pad, 2oz.  
 6. Short duration pulse test used to minimize self-heating effect.

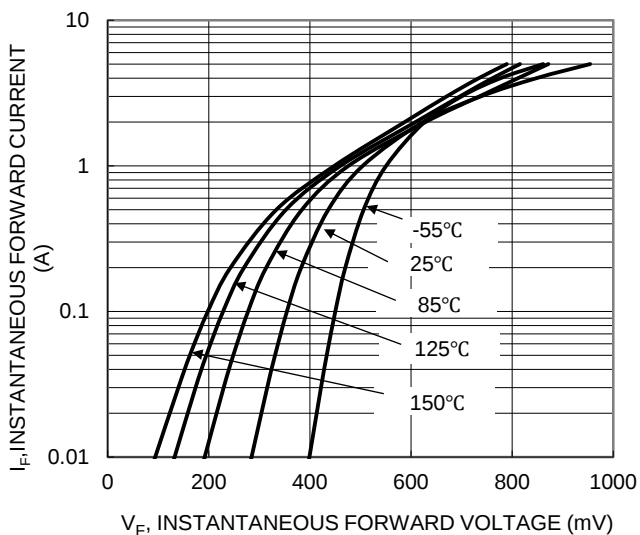


Figure 1. Typical Forward Characteristics

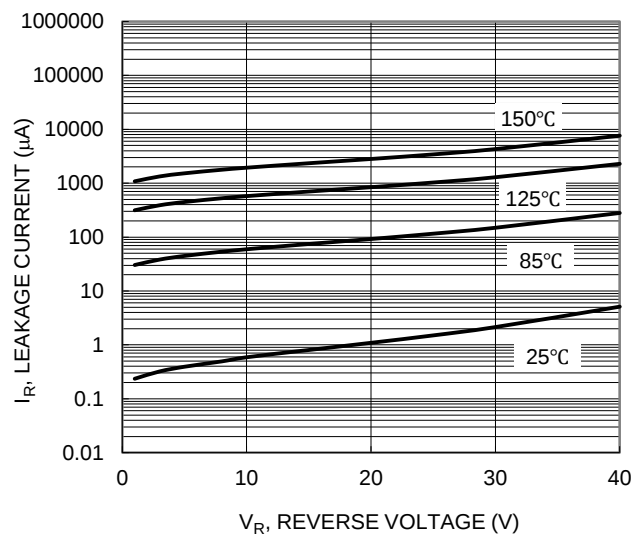


Figure 2. Typical Reverse Characteristics

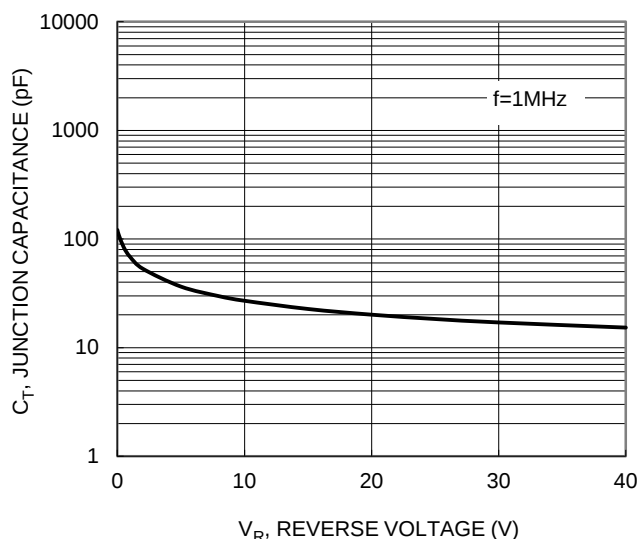


Figure 3. Typical Junction Capacitance

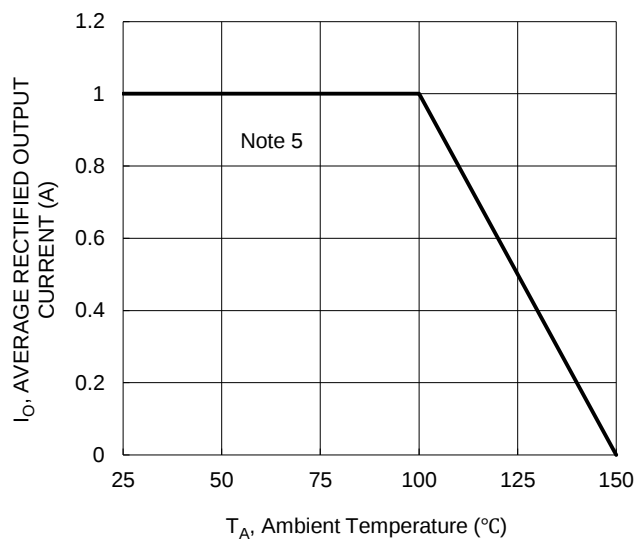


Figure 4. DC Forward Current Derating Curve

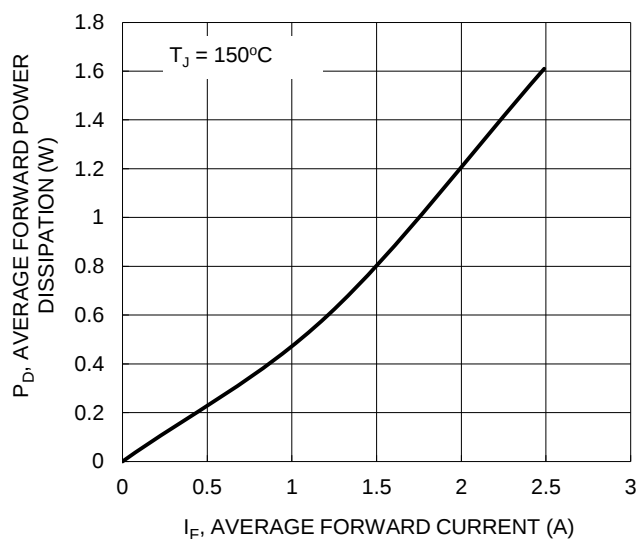
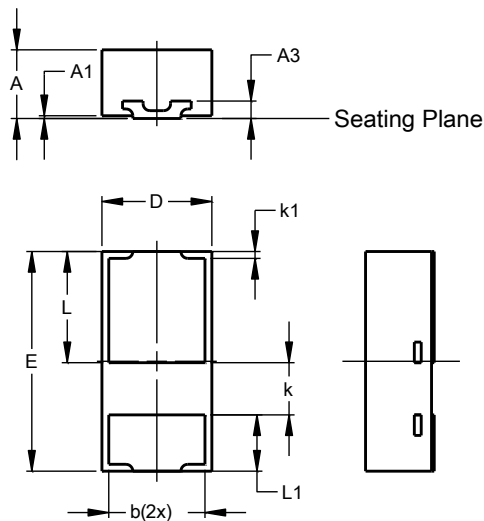


Figure 5. Forward Power Dissipation

## Package Outline Dimensions

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

**U-DFN1608-2**

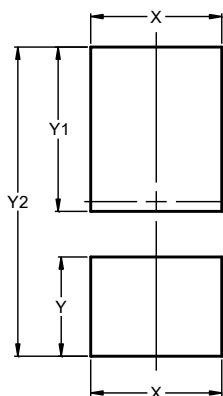


| U-DFN1608-2          |          |      |       |
|----------------------|----------|------|-------|
| Dim                  | Min      | Max  | Typ   |
| A                    | 0.47     | 0.53 | 0.50  |
| A1                   | 0.00     | 0.05 | 0.02  |
| A3                   | -        | -    | 0.127 |
| b                    | 0.65     | 0.75 | 0.70  |
| D                    | 0.75     | 0.85 | 0.80  |
| E                    | 1.55     | 1.65 | 1.60  |
| k                    | 0.38 BSC |      |       |
| k1                   | 0.05 BSC |      |       |
| L                    | 0.76     | 0.86 | 0.81  |
| L1                   | 0.36     | 0.46 | 0.41  |
| All Dimensions in mm |          |      |       |

## Suggested Pad Layout

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

**U-DFN1608-2**



| Dimensions | Value (in mm) |
|------------|---------------|
| X          | 0.800         |
| Y          | 0.610         |
| Y1         | 1.010         |
| Y2         | 1.900         |

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