

Product Summary

| V _{RRM} (V) | I _O (A) | V _F Max (V) | I _R Max (μA) |
|----------------------|--------------------|------------------------|-------------------------|
| 20 | 2.0 | 0.47 | 150 |

Description

The SDM2U20CSP is a 20-volt 2A 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 1.28mm² board-space with low profile. The low thermal resistance enables designers to meet design challenges of increasing efficiency while at the same time reducing board space.

Applications

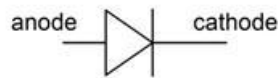
- Blocking Diode
- Boost Diode
- Switching Diode
- Reverse Protection Diode

Features and Benefits

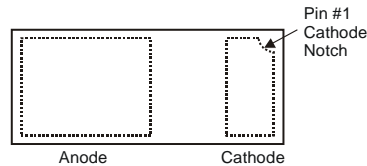
- Low Forward Voltage (V_F) Minimizes Conduction Losses and Improving Efficiency
- Reduced High Temperature Reverse Leakage
- Increased Reliability Against Thermal Runaway Failure in High Temperature Operation
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Mechanical Data

- Case: X3-WLB1608-2
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: NiAu Bump. Solderable per MIL-STD-202, Method 208 ^(e4)
- Polarity: Cathode Dot
- Weight: 0.001 grams (Approximate)



Device Schematic

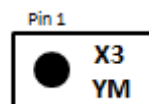


Ordering Information (Note 4)

| Part Number | Case | Packaging |
|---------------|--------------|--------------------|
| SDM2U20CSP-7B | X3-WLB1608-2 | 10,000/Tape & Reel |
| SDM2U20CSP-7 | X3-WLB1608-2 | 5,000/Tape & 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 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>. SDM2U20CSP-7B uses carrier tapes with 2mm pocket-to-pocket pitch; SDM2U20CSP-7 uses carrier tapes with 4mm pocket-to-pocket pitch.

Marking Information



X3= Product Type Marking Code
 YM=Date Code Marking
 Y= Year (ex: B= 2014)
 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_A = +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 _{RRM} | 20 | V |
| Average Rectified Output Current | I _O | 2.0 | A |
| Repetitive Peak Forward Current (Pulse Wave = 1 sec, Duty Cycle = 66%) | I _{FRM} | 5.0 | A |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load | I _{FSM} | 20 | A |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|-----------------------------------|-------------|------|
| Typical Thermal Resistance Junction to Ambient (Note 5) | R _{θJA} | 150 | °C/W |
| Total Power Dissipation (Note 5) | P _{TOT} | 830 | mW |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

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

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--------------------------|----------------|-----|-----|------|------|---------------------------------|
| Forward Voltage Drop | V _F | — | — | 0.42 | V | I _F = 1.0A |
| | | — | — | 0.47 | | I _F = 2.0A |
| Reverse Current (Note 7) | I _R | — | 40 | 150 | μA | V _R = 20V |
| Junction Capacitance | C _J | — | 115 | — | pF | V _R = 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. Copper, 1 square inch pad.
7. Short duration pulse test used to minimize self-heating effect.

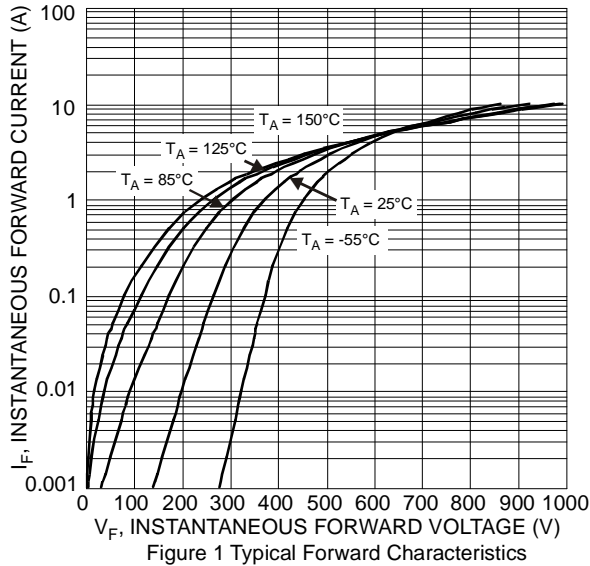


Figure 1 Typical Forward Characteristics

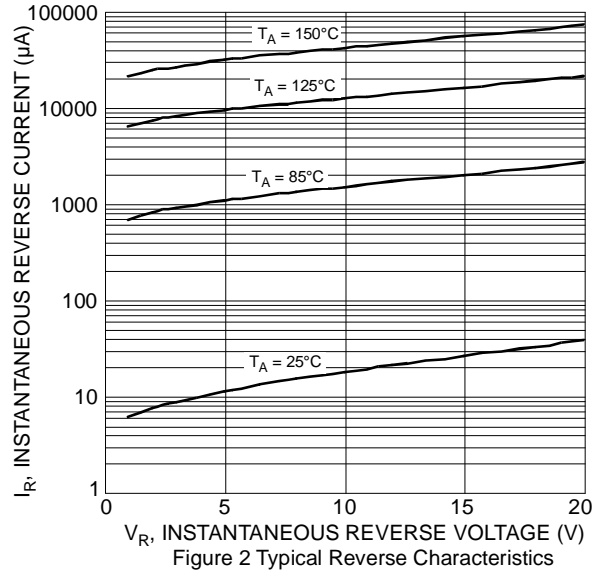


Figure 2 Typical Reverse Characteristics

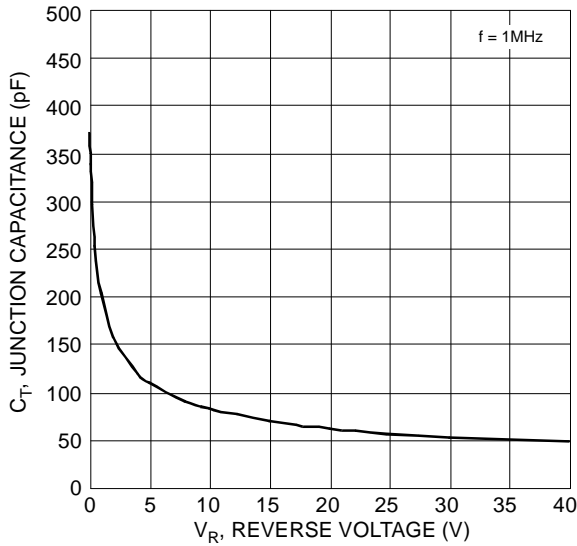


Figure 3 Typical Junction Capacitance

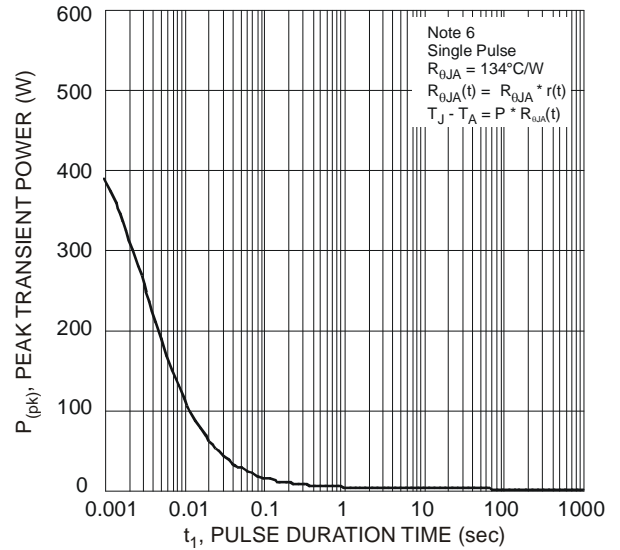
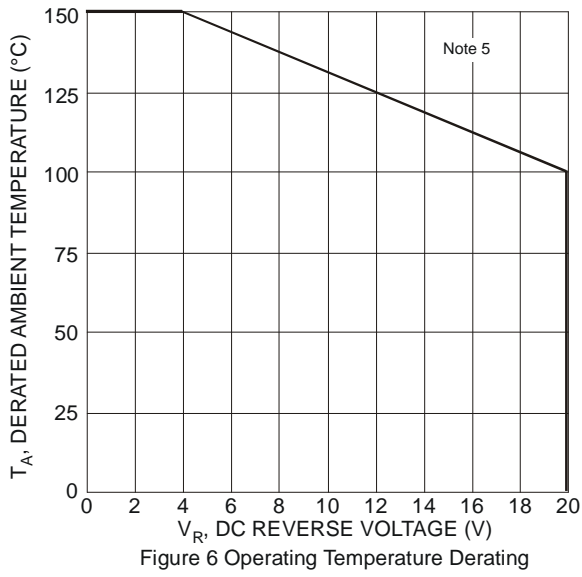
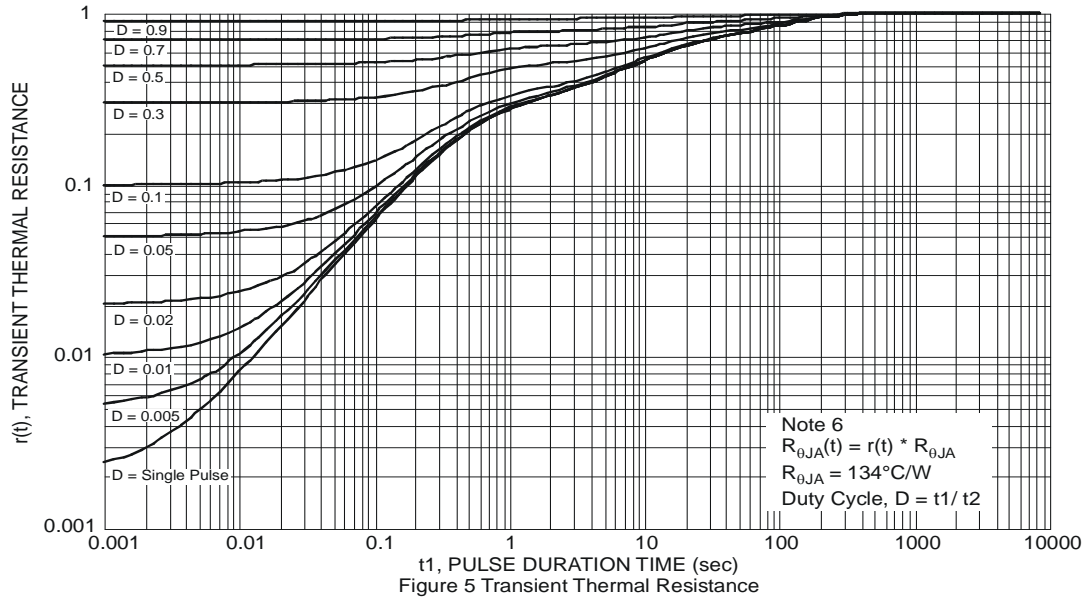


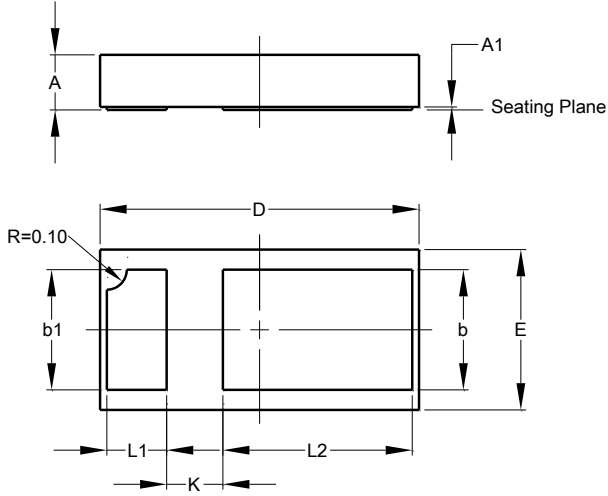
Figure 4 Single Pulse Maximum Power Dissipation



Package Outline Dimensions

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.

X3-WLB1608-2

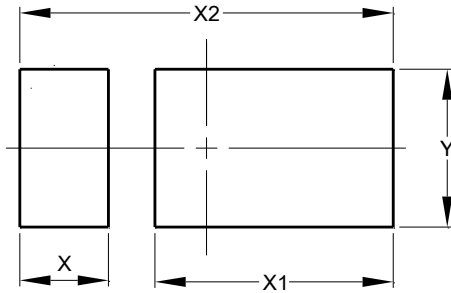


| X3-WLB1608-2 | | | |
|----------------------|-------|-------|-------|
| Dim | Min | Max | Typ |
| A | 0.250 | 0.300 | 0.275 |
| A1 | - | 0.015 | - |
| b | - | - | 0.600 |
| b1 | - | - | 0.600 |
| D | 1.57 | 1.63 | 1.60 |
| E | 0.77 | 0.83 | 0.80 |
| K | - | - | 0.282 |
| L1 | 0.25 | 0.35 | 0.30 |
| L2 | 0.90 | 1.00 | 0.95 |
| All Dimensions in mm | | | |

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.

X3-WLB1608-2



| Dimensions | Value (in mm) |
|------------|---------------|
| X | 0.385 |
| X1 | 1.035 |
| X2 | 1.622 |
| Y | 0.690 |

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