

Product Summary

V _{RRM} (V)	I _O (A)	V _F Max (V)	I _R Max (µA)
20	0.5	0.43	55

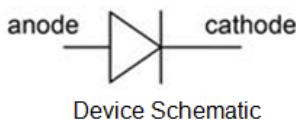
Description

The SDM05U20CSP is a 20-Volt 0.5A 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 0.6mm² board space. The low thermal resistance enables designers to meet design challenges of increasing efficiency while at the same time reducing board space.

Applications

It is ideally suited for use in portable applications such as:

- Blocking Diodes
- Boost Diodes
- Switching Diodes
- Reverse Protection Diodes



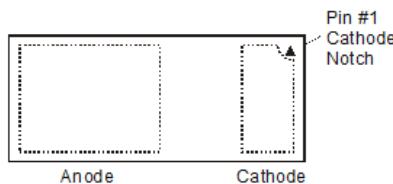
Device Schematic

Features and Benefits

- Off Board Profile of 0.275mm – More than 30% Thinner than DFN1006
- Low Forward Voltage (V_F) Minimizes Conduction Losses and Improves 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-WLB1006-2
- Moisture Sensitivity: Level 1 per J-STD-020
- Polarity: Cathode Dot
- Terminals: Finish – NiAu Bump, Solderable per MIL-STD-202, Method 208 ^(e)
- Weight: 0.001 grams (Approximate)

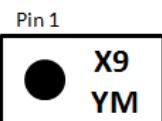


Ordering Information (Note 4)

Part Number	Case	Packaging
SDM05U20CSP-7	X3-WLB1006-2	5,000/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>.

Marking Information



Pin 1
 X9
 YM
 Y or YM = Year (ex: C = 2015)
 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 (@ $T_A = +25^\circ\text{C}$, 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	0.5	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	14	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 5)	$R_{\theta JA}$	155	°C/W
Typical Thermal Resistance Junction to Ambient (Note 6)	$R_{\theta JA}$	95	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	V_F	—	—	0.34	V	$I_F = 0.1\text{A}$
		—	—	0.43		$I_F = 0.5\text{A}$
		—	0.29	—		$I_F = 0.5\text{A}, T_J = +125^\circ\text{C}$
Leakage Current (Note 7)	I_R	—	—	15	μA	$V_R = 10\text{V}$
		—	—	55		$V_R = 20\text{V}$
Junction Capacitance	C_T	—	46	—	pF	$V_R = 4\text{V}, f = 1.0\text{MHz}$

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. 1 square inch Copper.
 7. Short duration pulse test used to minimize self-heating effect.

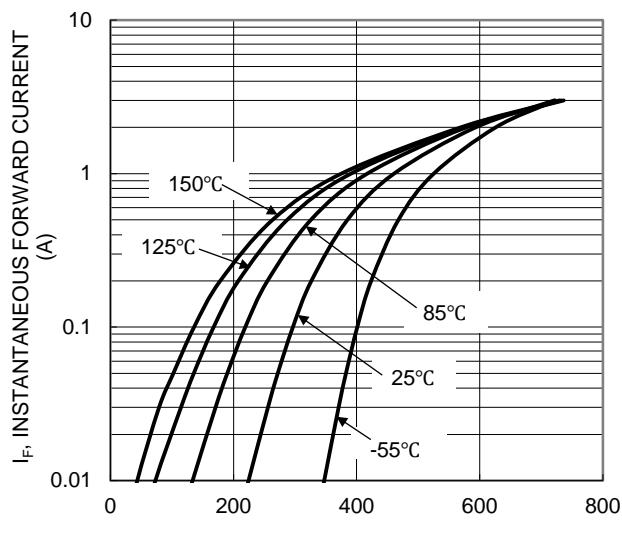


Figure 1. Typical Forward Characteristics

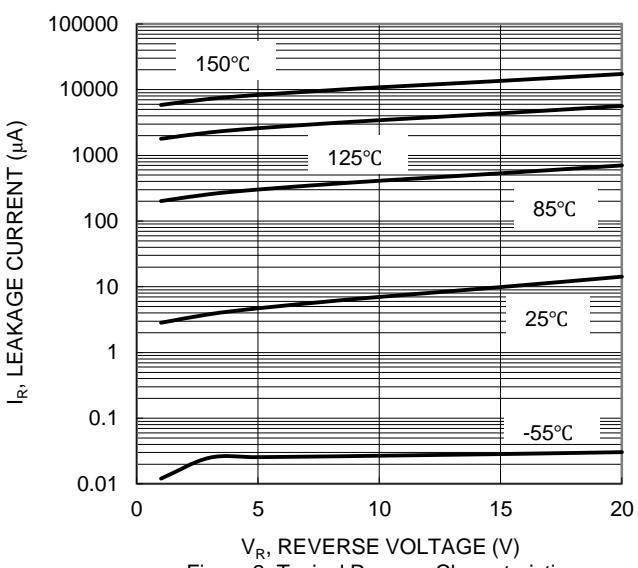


Figure 2. Typical Reverse Characteristics

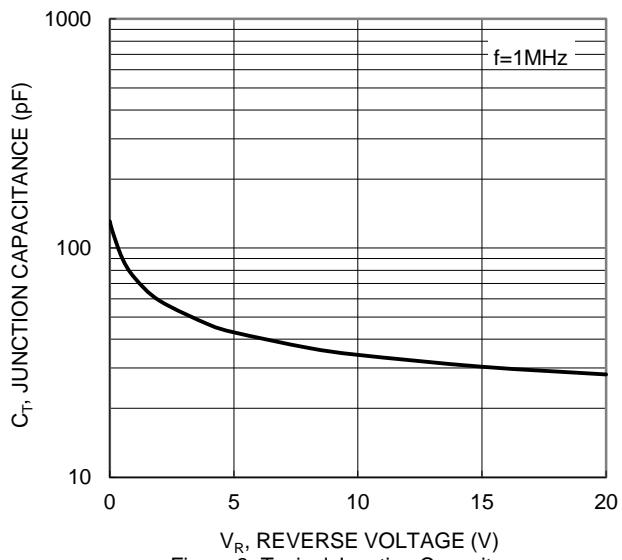
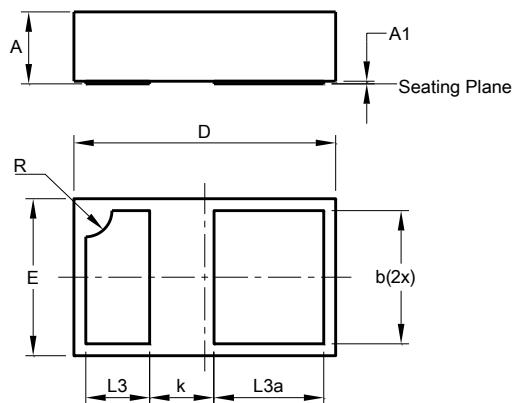


Figure 3. Typical Junction Capacitance

Package Outline Dimensions

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

X3-WLB1006-2



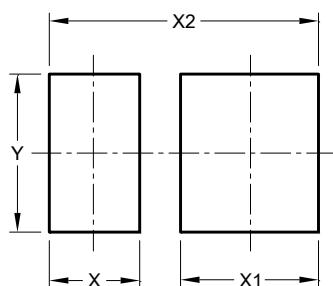
X3-WLB1006-2			
Dim	Min	Max	Typ
A	0.25	0.30	0.275
A1	0.00	0.01	-
b	0.450	0.550	0.500
D	0.95	1.05	1.000
E	0.55	0.65	0.600
k	-	-	0.288
L3	0.194	0.294	0.244
L3a	0.350	0.450	0.400
R	-	-	0.100

All Dimensions in mm

Suggested Pad Layout

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

X3-WLB1006-2



Dimensions	Value (in mm)
X	0.332
X1	0.507
X2	0.989
Y	0.579

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