

## Product Summary

V <sub>RRM</sub> (V)	I <sub>o</sub> (A)	V <sub>F</sub> MAX (V)	I <sub>R</sub> MAX (μA)
40	0.5	0.46	75

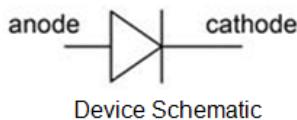
## Description

The DIODES™ SDM05U40CSP is a 40-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 0.6mm<sup>2</sup> board-space. The low thermal resistance enables designers to meet design challenges of increasing efficiency whilst at the same time reducing board space.

## Applications

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

- Blocking diodes
- Boost diodes
- Switching diodes
- Reverse protection diodes



## Features and Benefits

- Off Board Profile of 0.275mm – More than 30% Thinner than DFN1006
- Low Forward Voltage (V<sub>F</sub>) 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)
- For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](mailto:contact_us) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>

## Mechanical Data

- Package: X3-WLB1006-2
- 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)



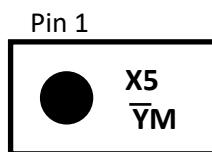
## Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
SDM05U40CSP-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) & 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



X5 = Product Type Marking Code  
 YM or YM = Date Code Marking  
 Y = Year (ex: J = 2022)  
 M = Month (ex: 9 = September)  
 Dot Denotes Cathode Pin

Date Code Key

Year	2013	...	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Code	A	...	J	K	L	M	N	O	P	R	S	T
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 capacitive load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	$V_{RRM}$		
Working Peak Reverse Voltage	$V_{RWM}$	40	V
DC Blocking Voltage	$V_R$		
Average Rectified Output Current	$I_O$	0.5	A
Non-Repetitive Peak Forward Surge Current 8.3ms	$I_{FSM}$	14	A
Single Half Sine-Wave Superimposed on Rated Load			

## Thermal Characteristics

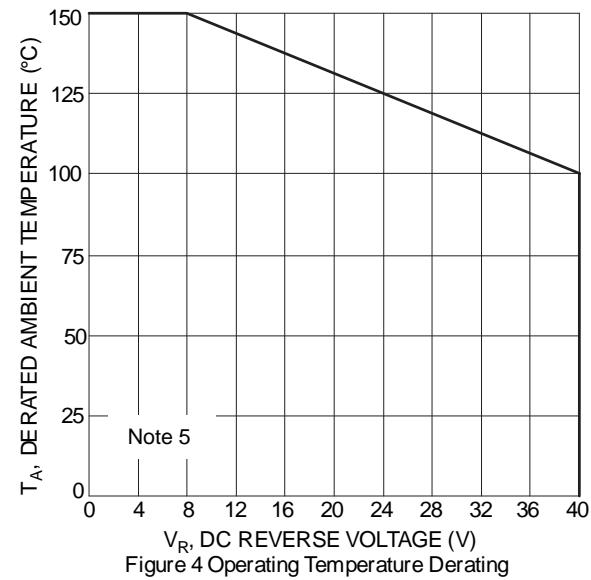
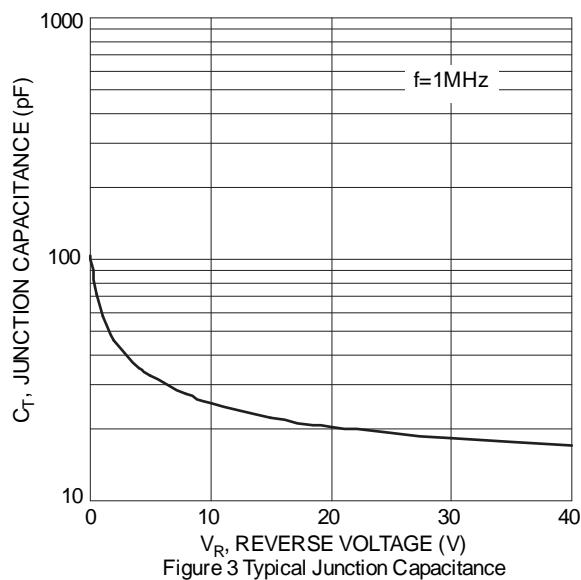
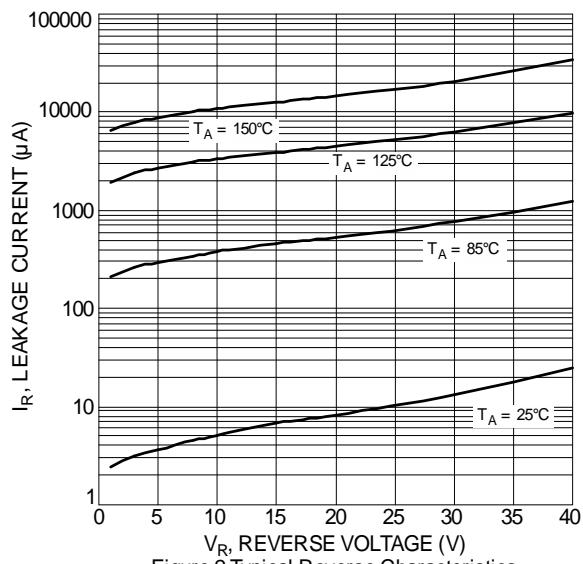
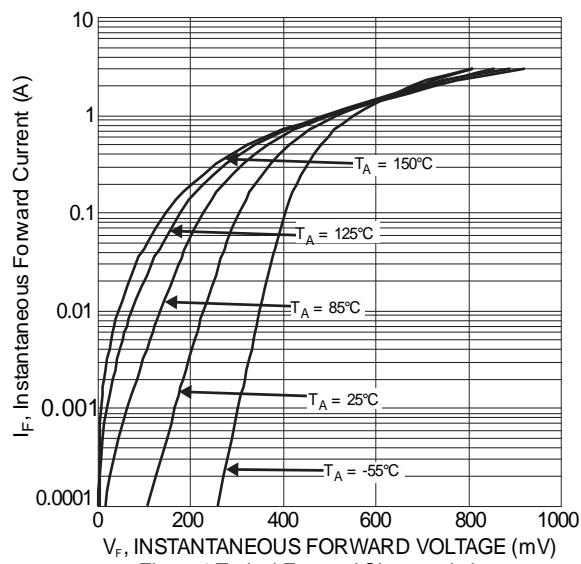
Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 5)	$R_{\theta JA}$	135	$^\circ\text{C}/\text{W}$
Typical Thermal Resistance Junction to Ambient (Note 6)	$R_{\theta JA}$	80	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	$V_F$	—	0.305	0.36	V	$I_F = 0.1\text{A}$
		—	0.415	0.46		$I_F = 0.5\text{A}$
		—	0.34	—		$I_F = 0.5\text{A}, T_J = +125^\circ\text{C}$
Leakage Current (Note 7)	$I_R$	—	—	15	$\mu\text{A}$	$V_R = 10\text{V}$
		—	—	75		$V_R = 40\text{V}$
Junction Capacitance	$C_T$	—	35	—	pF	$V_R = 4\text{V}, f = 1.0\text{MHz}$

Notes:

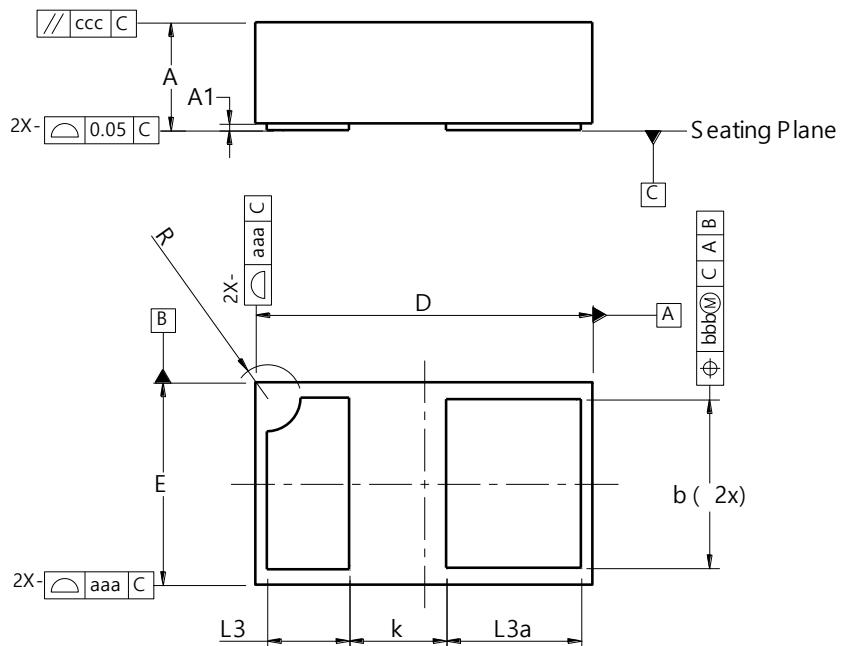
- 5. Device mounted on FR-4 PCB, 2oz. Copper, minimum recommended pad layout per <http://www.diodes.com/package-outlines.html>.
- 6. Device mounted on FR-4 PCB, 2oz. 1 square inch Copper.
- 7. Short duration pulse test used to minimize self-heating effect.



## Package Outline Dimensions

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

X3-WLB1006-2

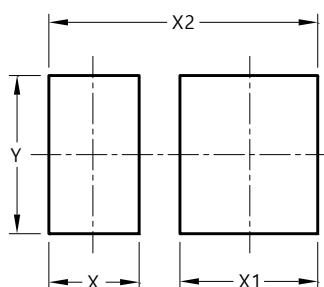


X3-WLB1006-2			
Dim	Min	Max	Typ
<b>A</b>	0.25	0.30	0.275
<b>A1</b>	0.00	0.01	-
<b>b</b>	0.450	0.550	0.500
<b>D</b>	0.95	1.05	1.000
<b>E</b>	0.55	0.65	0.600
<b>k</b>	-	-	0.288
<b>L3</b>	0.194	0.294	0.244
<b>L3a</b>	0.350	0.450	0.400
<b>R</b>	-	-	0.100
<b>aaa</b>	0.05		
<b>bbb</b>	0.05		
<b>ccc</b>	0.05		
All Dimensions in mm			

## Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> 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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