

## 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

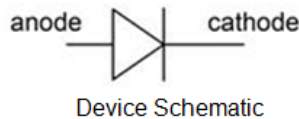
## Description

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

Ideally suited for use in portable applications as:

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

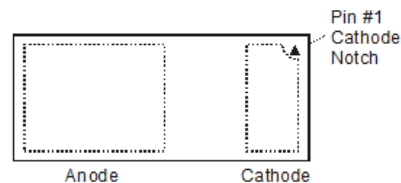


## Features and Benefits

- 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](#) 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

Pin 1



X5 = Product Type Marking Code  
 YM or  $\bar{Y}M$  = 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<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>	40	V
Working Peak Reverse Voltage	V <sub>RWM</sub>		
DC Blocking Voltage	V <sub>R</sub>		
Average Rectified Output Current	I <sub>O</sub>	0.5	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I <sub>FSM</sub>	14	A

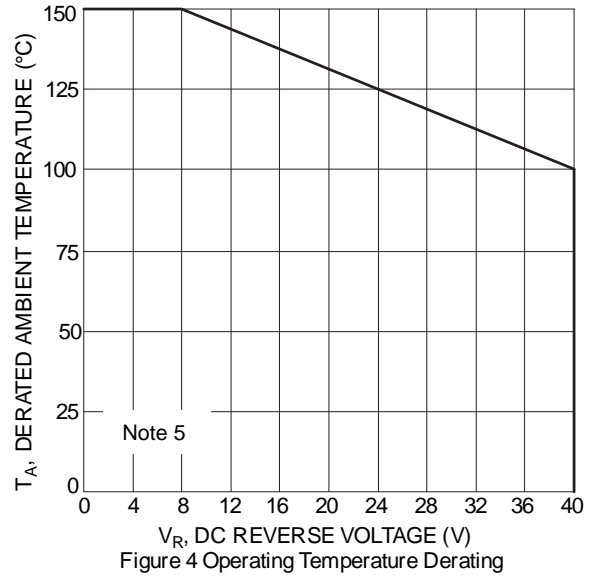
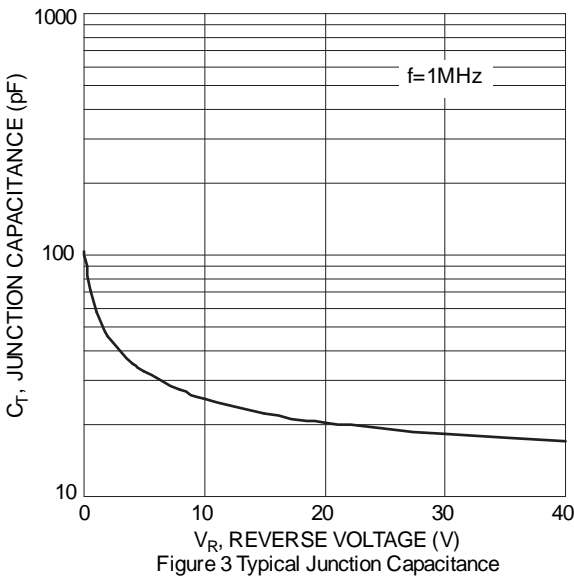
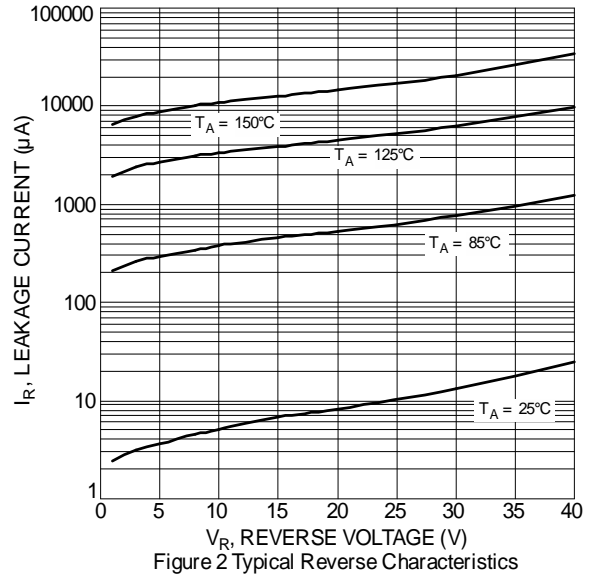
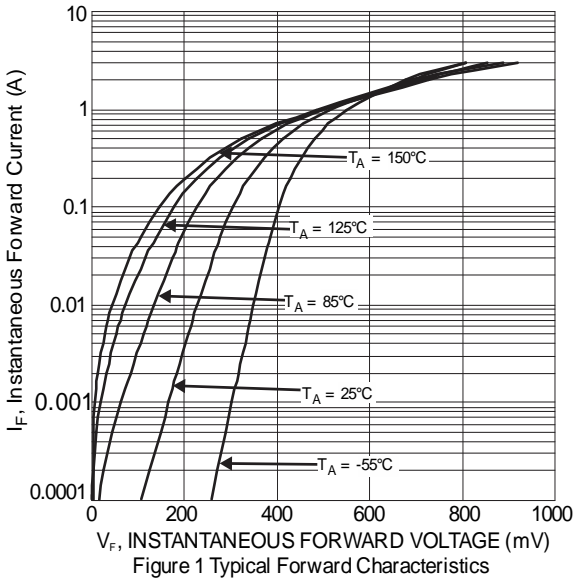
**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 5)	R <sub>θJA</sub>	135	°C/W
Typical Thermal Resistance Junction to Case (Note 5)	R <sub>θJC</sub>	8	°C/W
Typical Thermal Resistance Junction to Ambient (Note 6)	R <sub>θJA</sub>	80	°C/W
Typical Thermal Resistance Junction to Case (Note 6)	R <sub>θJC</sub>	3	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	V <sub>F</sub>	—	0.305	0.36	V	I <sub>F</sub> = 0.1A
		—	0.415	0.46		I <sub>F</sub> = 0.5A
		—	0.34	—		I <sub>F</sub> = 0.5A, T <sub>J</sub> = +125°C
Leakage Current (Note 7)	I <sub>R</sub>	—	—	15	μA	V <sub>R</sub> = 10V
		—	—	75		V <sub>R</sub> = 40V
Junction Capacitance	C <sub>T</sub>	—	35	—	pF	V <sub>R</sub> = 4V, f = 1.0MHz

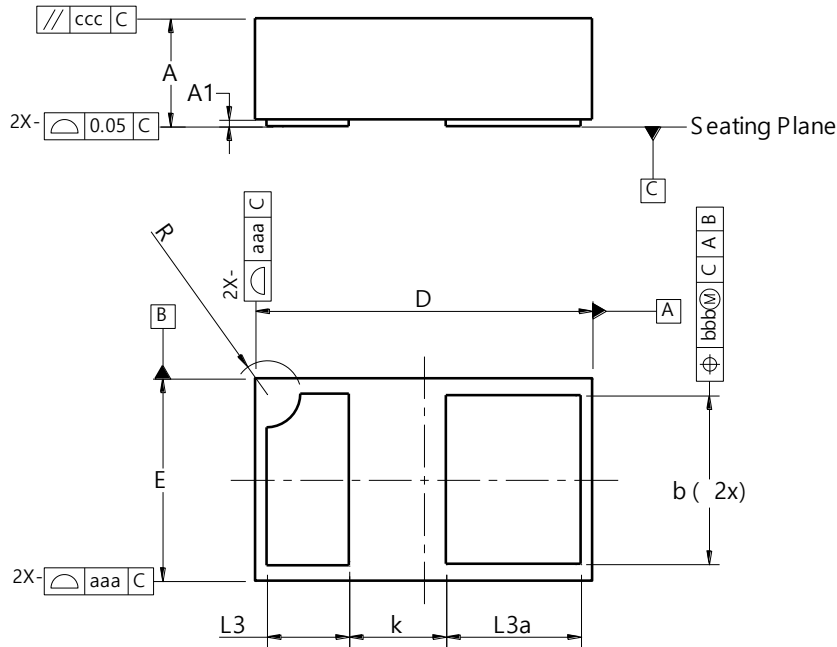
Notes: 5. Device mounted on FR-4 PCB, 2oz. Copper, minimum recommended pad layout per <http://www.diodes.com/package-outlines.html>.  
6. Device mounted on FR-4 PCB, 2oz. 1 square inch copper.  
7. Short duration pulse test used to minimize self-heating effect.



**Package Outline Dimensions**

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

**X3-WLB1006-2**

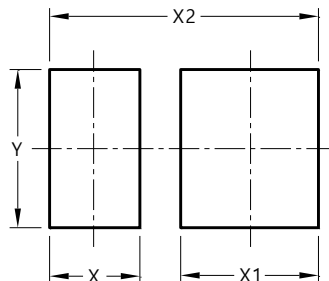


X3-WLB1006-2			
Dim	Min	Max	Typ
A	0.25	0.30	0.275
A1	0.00	0.01	-
b	0.450	0.550	0.500
D	0.95	1.05	1.000
E	0.55	0.65	0.600
k	-	-	0.288
L3	0.194	0.294	0.244
L3a	0.350	0.450	0.400
R	-	-	0.100
aaa	0.05		
bbb	0.05		
ccc	0.05		
All Dimensions in mm			

**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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