

Product Summary

V_{RRM} (V)	I_o (A)	V_F MAX (V)	I_R MAX (μA)
40	0.5	0.46	75

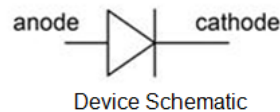
Description

The SDM05U40CSPQ 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 0.6mm² board-space. The low thermal resistance enables designers to meet design challenges of increasing efficiency whilst at the same time reducing board space.

Applications

The SDM05U40CSPQ are ideally suited for use in portable applications as:

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

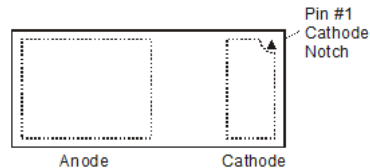


Features and Benefits

- Off Board Profile of 0.275mm – More than 30% Thinner than DFN1006
- Low Forward Voltage (V_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)**
- **The SDM05U40CSPQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**
<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
- Polarity: Cathode Dot
- Weight: 0.001 grams (Approximate)



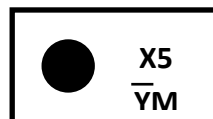
Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
SDM05U40CSPQ-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 YM = Date Code Marking
 Y = Year (ex: K = 2023)
 M = Month (ex: 9 = September)
 Dot Denotes Cathode Pin

Date Code Key

Year	2019	-	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Code	G	-	K	L	M	N	O	P	R	S	T	U

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 capacitive load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	V _{RRM}	40	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

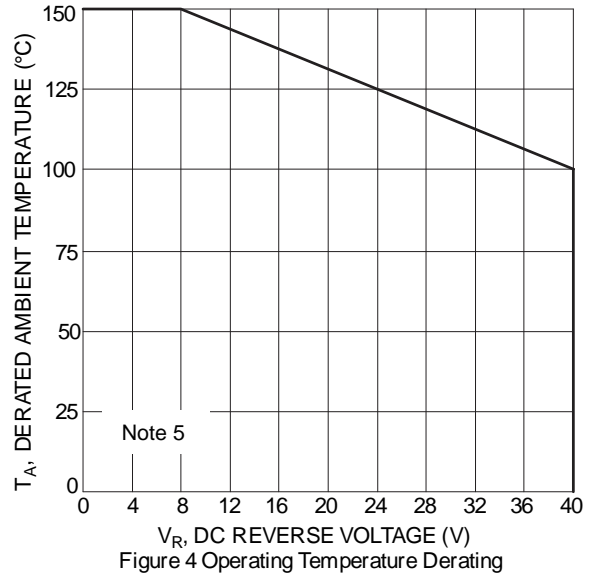
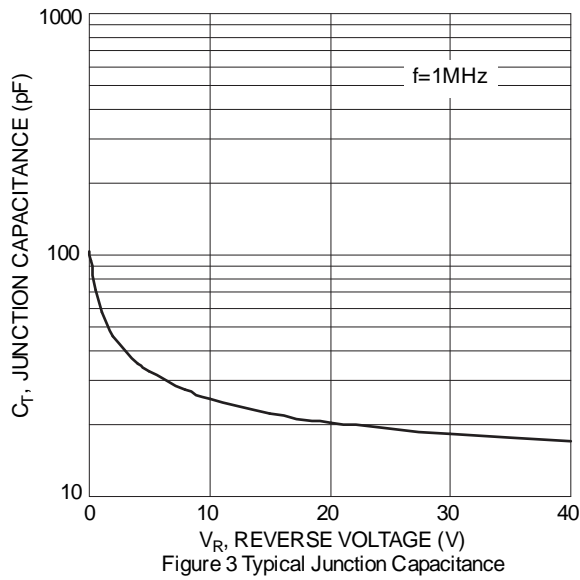
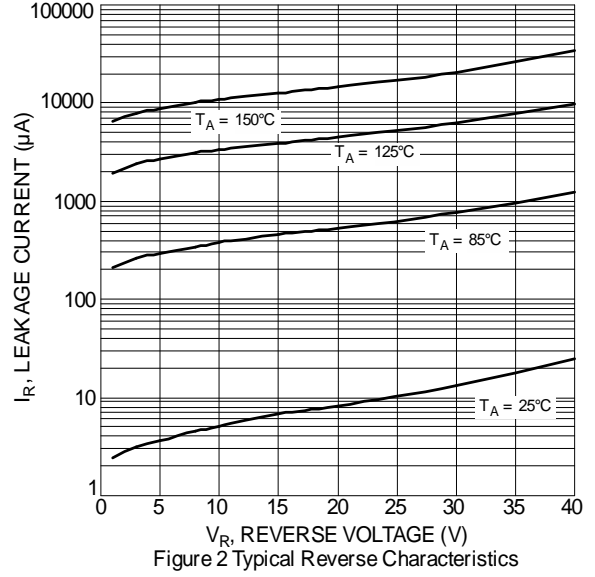
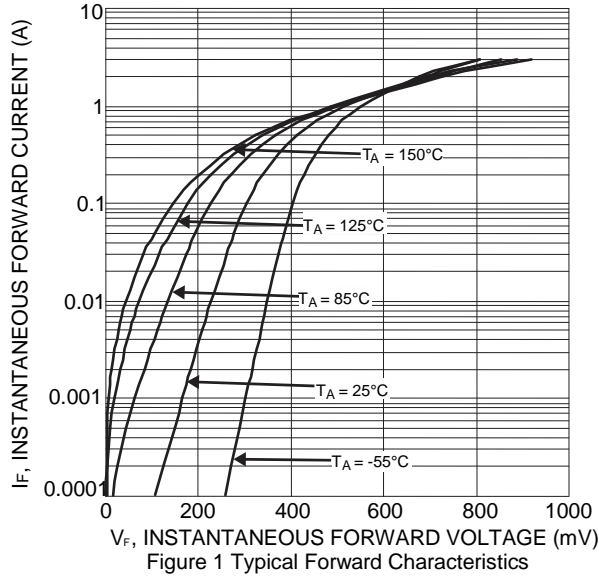
Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 5)	R _{θJA}	135	°C/W
Typical Thermal Resistance Junction to Case (Note 5)	R _{θJC}	8	°C/W
Typical Thermal Resistance Junction to Ambient (Note 6)	R _{θJA}	80	°C/W
Typical Thermal Resistance Junction to Case (Note 6)	R _{θJC}	3	°C/W
Operating and Storage Temperature Range (Note 7)	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	–	0.305	0.36	V	I _F = 0.1A
		–	0.415	0.46		I _F = 0.5A
		–	0.34	–		I _F = 0.5A, T _J = +125°C
Leakage Current (Note 8)	I _R	–	–	15	μA	V _R = 10V
		–	–	75		V _R = 40V
Junction Capacitance	C _T	–	35	–	pF	V _R = 4V, f = 1.0MHz

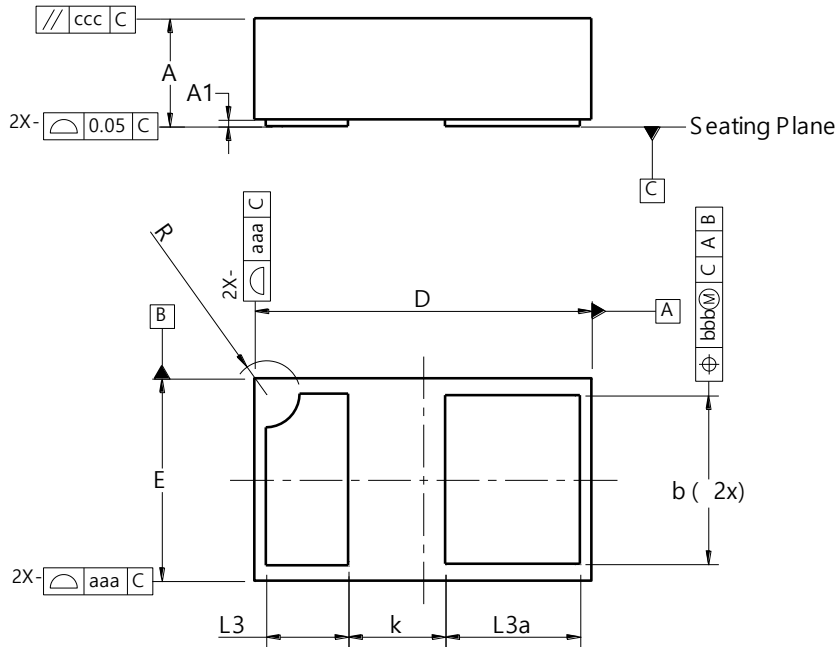
- Notes:
- Device mounted on FR-4 PCB, 2oz. copper, minimum recommended pad layout per <http://www.diodes.com/package-outlines.html>.
 - Device mounted on FR-4 PCB, 2oz. 1 square inch copper.
 - The heat generated must be less than the thermal conductivity from junction to case: $dP_D/dT_J < 1/R_{\theta JC}$ or junction to ambient: $dP_D/dT_J < 1/R_{\theta JA}$.
 - 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

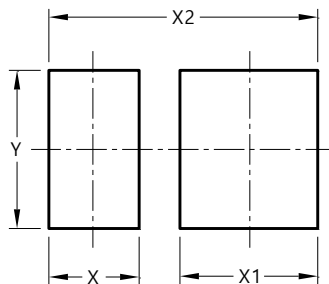


X3-WLB1006-2			
Dim	Min	Max	Typ
A	0.25	0.30	0.275
A1	0.00	0.01	-
b	0.450	0.550	0.500
D	0.95	1.05	1.000
E	0.55	0.65	0.600
k	-	-	0.288
L3	0.194	0.294	0.244
L3a	0.350	0.450	0.400
R	-	-	0.100
aaa	0.05		
bbb	0.05		
ccc	0.05		
All Dimensions in mm			

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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