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Lead-free Green

SDM5U45EP3

5A SCHOTTKY BARRIER DIODE SURFACE MOUNT PACKAGE

Product Summary

V_{RRM} (V)	I_O (A)	$V_{F(MAX)}$ (mV) @ +25°C	$I_{R(MAX)}$ (µA) @ +25°C
45	5	580	140

Features

- 2mm² Footprint – 67% Smaller Than PowerDI123
- Off Board Profile of 0.3mm – 70% Thinner Than PowerDI123
- Low Forward Voltage Drop Reduces Power Dissipation
- Soft Switching Characteristic Ensures That EMI and EFI Are Minimized
- Guard Ring Die Construction for Transient Protection
- **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-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative. https://www.diodes.com/quality/product-definitions/**

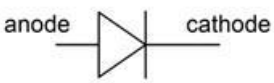
Description and Applications

The SDM5U45EP3 is a 45V 5A Schottky Barrier Rectifier that is optimized for low forward voltage drop and low leakage current, housed in a small surface mount package that occupies only 2mm² board space with very low profile. The low thermal resistance enables designers to meet design challenges of increasing efficiency while at the same time reducing board space. It is ideally suited for use in portable applications such as:

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

Mechanical Data

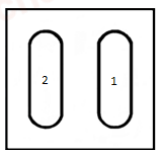
- Case: X3-TSN1616-2
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: NiAu, Solderable per MIL-STD-202, Method 208 (e4)
- Polarity: Cathode Dot
- Weight: 1.4mg (Approximate)



X3-TSN1616-2



Top View



Pin #1

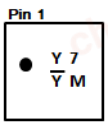
Bottom View

Ordering Information (Note 4)

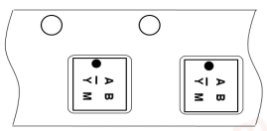
Part Number	Case	Packaging
SDM5U45EP3-7	X3-TSN1616-2	5,000/Tape & Reel

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



Y7 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: I = 2021)
M = Month (ex: 9 = September)
Dot denotes Cathode Pin



Date Code Key

Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Code	H	I	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

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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}	45	V
Average Rectified Output Current	I_O	5	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	50	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 5)	$R_{\theta JA}$	180	°C/W
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	—	370 405 465 490	450 480 550 580	mV	I_F = 1.0A, T_J = +25°C I_F = 2.0A, T_J = +25°C I_F = 4.0A, T_J = +25°C I_F = 5.0A, T_J = +25°C
Leakage Current (Note 6)	I_R	—	6 30 40	— 100 140	μA	V_R = 10V, T_J = +25°C V_R = 40V, T_J = +25°C V_R = 45V, T_J = +25°C
Total Capacitance	C_T	—	189	—	pF	V_R = 5V, f = 1.0MHz

Notes: 5. Device mounted on FR-4 substrate PC board, with minimum recommended pad layout per http://www.diodes.com/package-outlines.html.
6. Short duration pulse test used to minimize self-heating effect.

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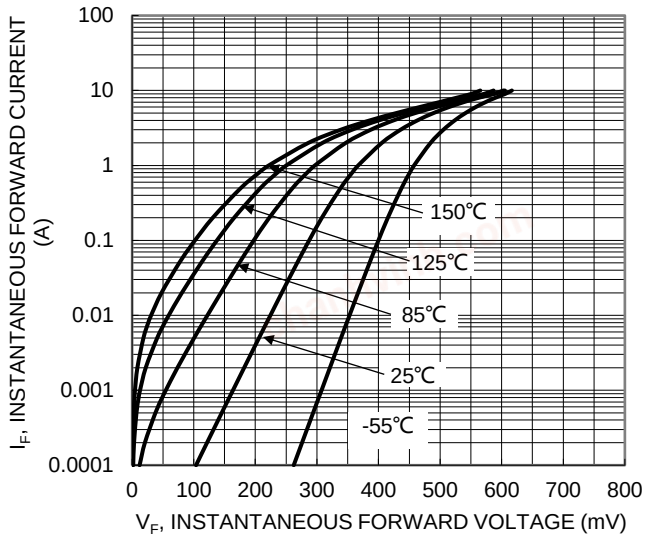


Figure 1. Typical Forward Characteristics

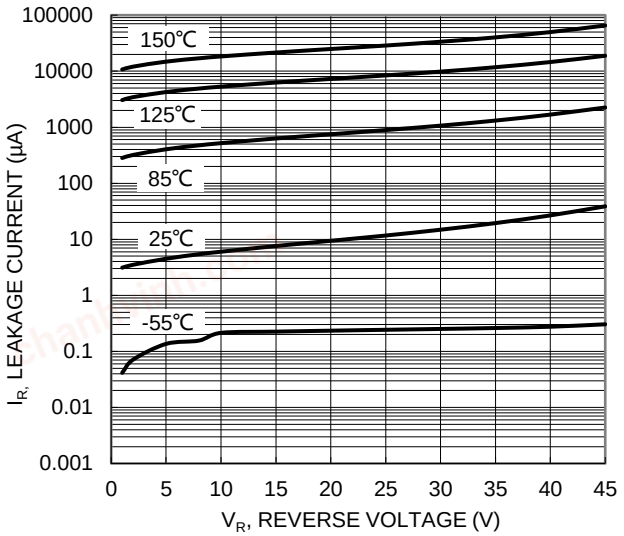


Figure 2. Typical Reverse Characteristics

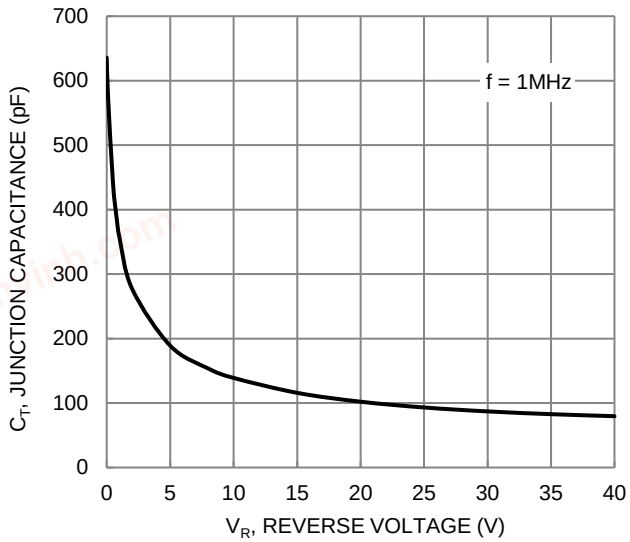


Figure 3. Typical Junction Capacitance

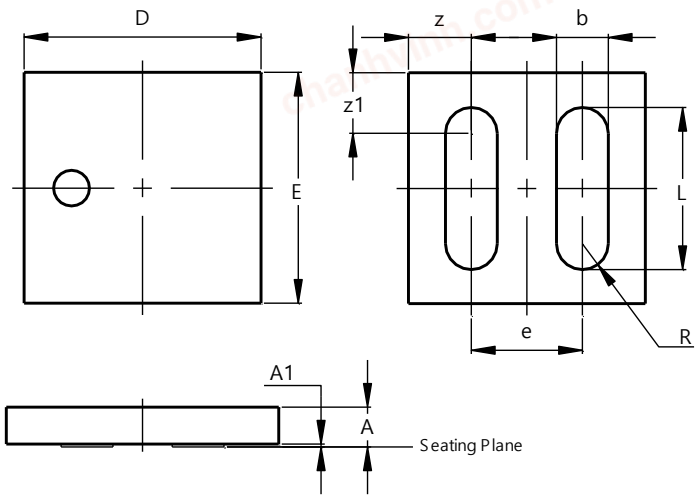
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Package Outline Dimensions

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

X3-TSN1616-2

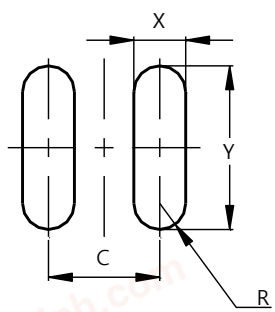


X3-TSN1616-2			
Dim	**Min**	**Max**	**Typ**
A	0.20	0.30	0.25
A1	--	0.02	--
b	0.30	0.40	0.35
D	1.56	1.64	1.60
E	1.56	1.64	1.60
e	--	--	0.75
L	1.05	1.15	1.10
z	--	--	0.425
z1	--	--	0.425
R	--	--	0.175
All Dimensions in mm			

Suggested Pad Layout

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

X3-TSN1616-2



Dimensions	Value (in mm)
C	0.75
X	0.35
Y	1.10

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