

## Product Summary

V <sub>RRM</sub> (V)	I <sub>o</sub> (A)	V <sub>F(MAX)</sub> (mV) @ +25°C	I <sub>R(MAX)</sub> (μA) @ +25°C
45	5	580	140

## 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 2mm<sup>2</sup> 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:

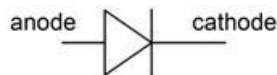
- Blocking Diode
- Boost Diode
- Switching Diode
- Reverse Protection Diode

## Features

- 2mm<sup>2</sup> 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 EMI 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](https://www.diodes.com/quality/product-definitions/) or your local Diodes representative.**

## Mechanical Data

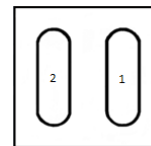
- Case: X3-TSN1616-2
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: NiAu, Solderable per MIL-STD-202, Method 208 (e4)
- Polarity: Cathode Dot
- Weight: 1.4mg (Approximate)



X3-TSN1616-2



Top View



Pin #1

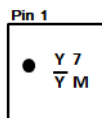
Bottom View

## Ordering Information (Note 4)

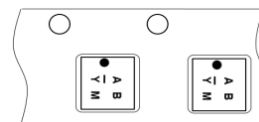
Part Number	Case	Packaging
SDM5U45EP3-7	X3-TSN1616-2	5,000/Tape & Reel

- 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  
 Y M = Date Code Marking  
 Y = Year (ex: 1 = 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

**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>	45	V
Average Rectified Output Current	I <sub>o</sub>	5	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I <sub>FSM</sub>	50	A

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 5)	R <sub>θJA</sub>	180	°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>	—	370	450	mV	I <sub>F</sub> = 1.0A, T <sub>J</sub> = +25°C
			405	480		I <sub>F</sub> = 2.0A, T <sub>J</sub> = +25°C
			465	550		I <sub>F</sub> = 4.0A, T <sub>J</sub> = +25°C
			490	580		I <sub>F</sub> = 5.0A, T <sub>J</sub> = +25°C
Leakage Current (Note 6)	I <sub>R</sub>	—	6	—	μA	V <sub>R</sub> = 10V, T <sub>J</sub> = +25°C
			30	100		V <sub>R</sub> = 40V, T <sub>J</sub> = +25°C
			40	140		V <sub>R</sub> = 45V, T <sub>J</sub> = +25°C
Total Capacitance	C <sub>T</sub>	—	189	—	pF	V <sub>R</sub> = 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.

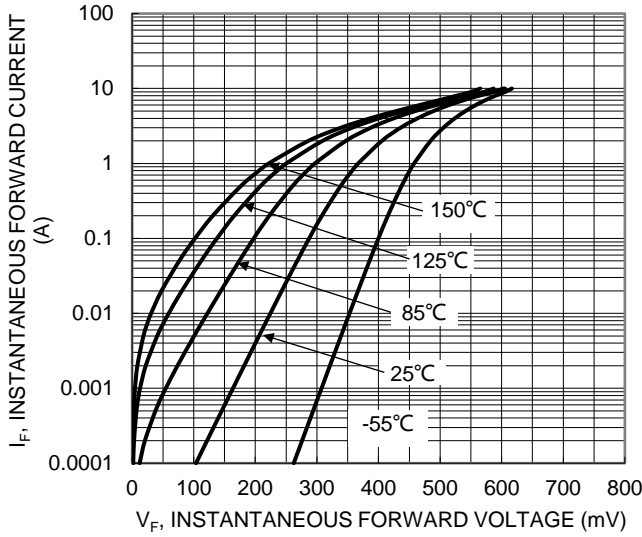


Figure 1. Typical Forward Characteristics

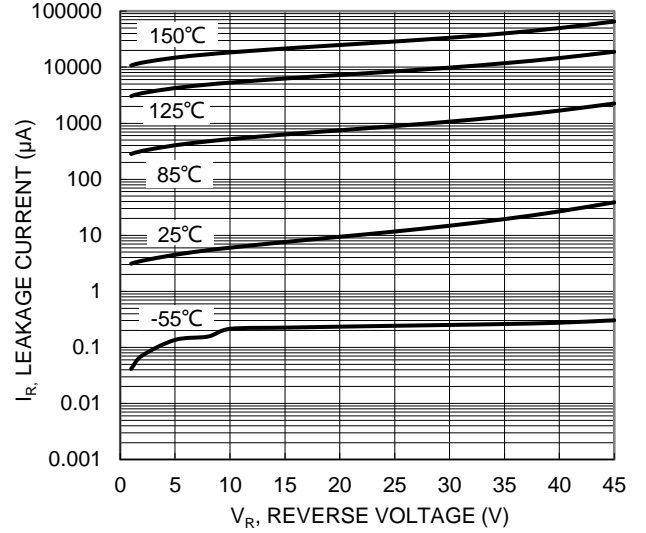


Figure 2. Typical Reverse Characteristics

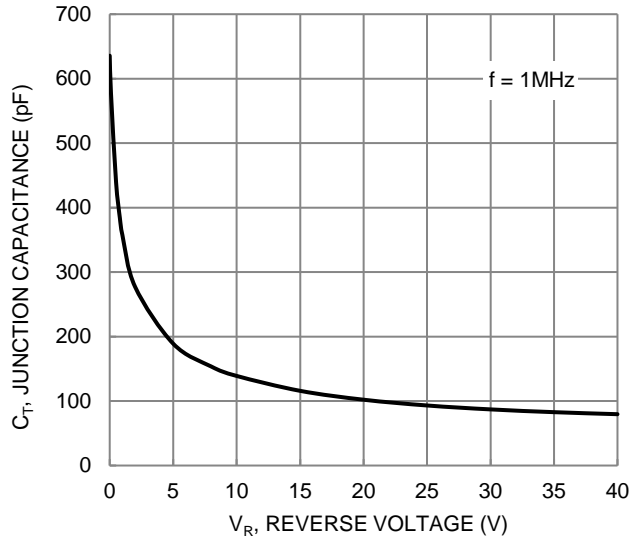
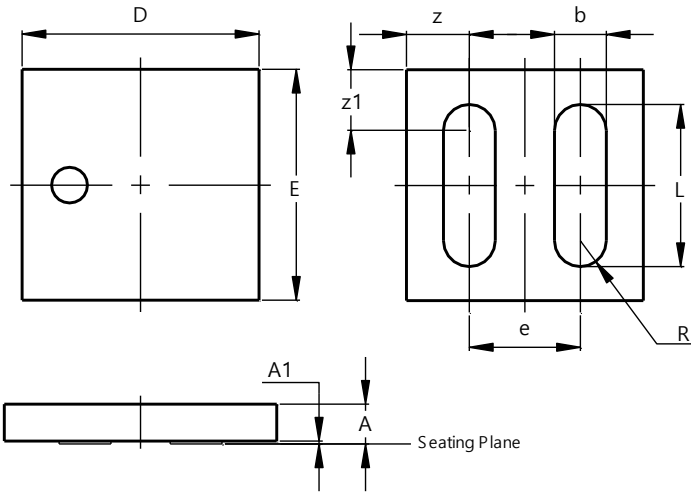


Figure 3. Typical Junction Capacitance

**Package Outline Dimensions**

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

**X3-TSN1616-2**

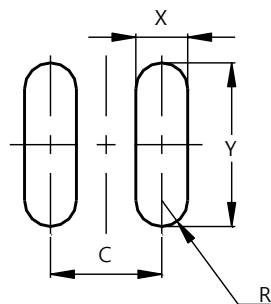


X3-TSN1616-2			
Dim	Min	Max	Typ
A	0.20	0.30	0.25
A1	--	0.02	--
b	0.30	0.40	0.35
D	1.56	1.64	1.60
E	1.56	1.64	1.60
e	--	--	0.75
L	1.05	1.15	1.10
z	--	--	0.425
z1	--	--	0.425
R	--	--	0.175
All Dimensions in mm			

**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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