

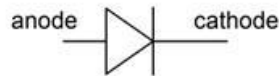
## Product Summary

V <sub>RRM</sub> (V)	I <sub>o</sub> (A)	V <sub>F</sub> Max (V)	I <sub>r</sub> Max (μA)
30	0.5	0.55	9

## Description and Applications

The SDT05U30CP3 is a 30-volt 0.5A trench 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 0.18mm<sup>2</sup> board space with low profile. The low thermal resistance enables designers to meet design challenges of increasing efficiency whilst at the same time reducing board space. The SDT05U30CP3 are ideally suited for use in portable applications as:

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



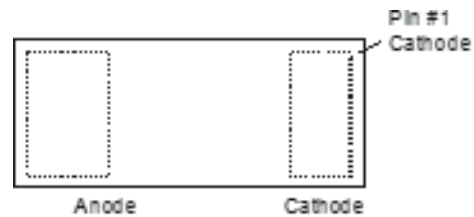
Device Schematic

## Features and Benefits

- Low-forward voltage (V<sub>F</sub>) minimizes conduction losses and improves efficiency.
- Low Leakage-Maximizes Battery Power
- 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@diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

## Mechanical Data

- Package: X3-DSN0603-2
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: NiAu Bump. Solderable per MIL-STD-202, Method 208 (e4)
- Polarity: Cathode Dot
- Weight: 0.115mg (Approximate)

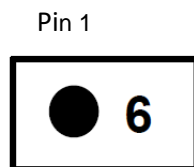


## Ordering Information (Note 4)

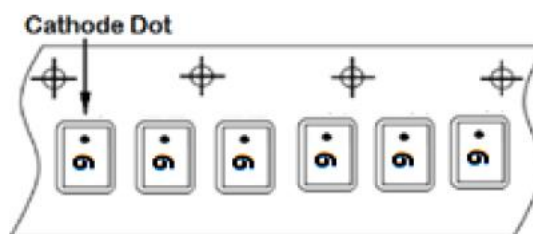
Part Number	Package	Packing	
		Qty.	Carrier
SDT05U30CP3-7	X3-DSN0603-2	10,000	Tape & Reel

- 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



6 = Product Type Marking Code  
Dot Denotes Cathode Pin



**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>	30	V
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>	7	A
ESD (Human Body Model)	ESD	8	kV
ESD (Machine Model)		0.4	

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 5)	R <sub>θJA</sub>	220	°C/W
Typical Thermal Resistance Junction to Ambient (Note 6)	R <sub>θJA</sub>	80	°C/W
Typical Thermal Resistance Junction to Case (Note 5)	R <sub>θJC</sub>	35	°C/W
Typical Thermal Resistance Junction to Case (Note 6)	R <sub>θJC</sub>	20	°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>	—	0.26	0.33	V	I <sub>F</sub> = 10mA, T <sub>J</sub> = +25°C
		—	0.35	0.41		I <sub>F</sub> = 100mA, T <sub>J</sub> = +25°C
		—	0.39	0.47		I <sub>F</sub> = 200mA, T <sub>J</sub> = +25°C
		—	0.49	0.55		I <sub>F</sub> = 500mA, T <sub>J</sub> = +25°C
Reverse Current (Note 7)	I <sub>R</sub>	—	2.6	9	μA	V <sub>R</sub> = 30V, T <sub>J</sub> = +25°C
		—	1.1	—	mA	V <sub>R</sub> = 30V, T <sub>J</sub> = +125°C
Junction Capacitance	C <sub>T</sub>	—	18.8	—	pF	V <sub>R</sub> = 10V, 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 1inch square copper pad, 2oz.  
7. Short duration pulse test used to minimize self-heating effect.

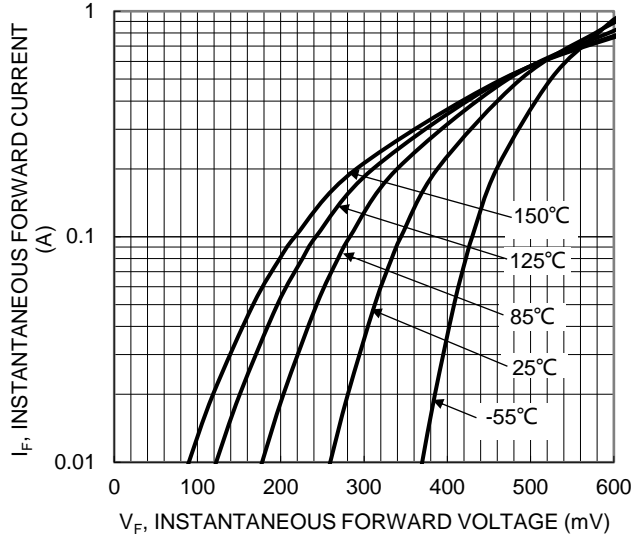


Figure 1. Typical Forward Characteristics

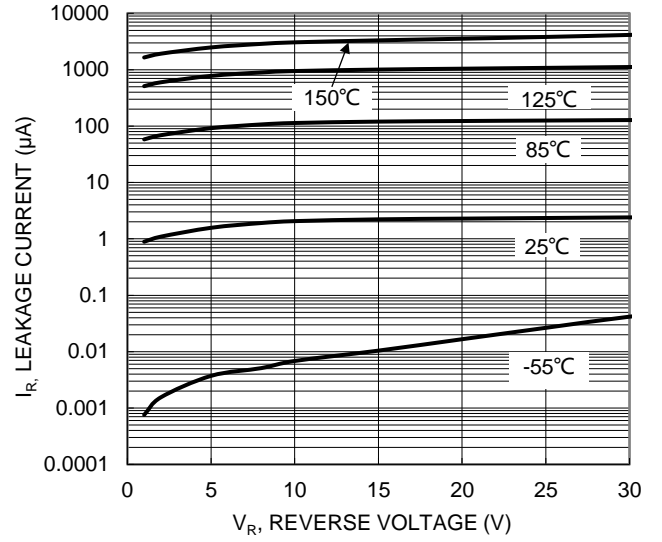


Figure 2. Typical Reverse Characteristics

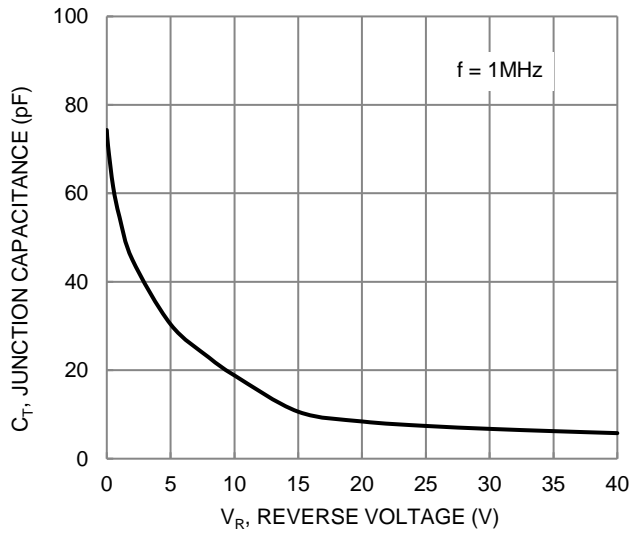


Figure 3. Typical Junction Capacitance

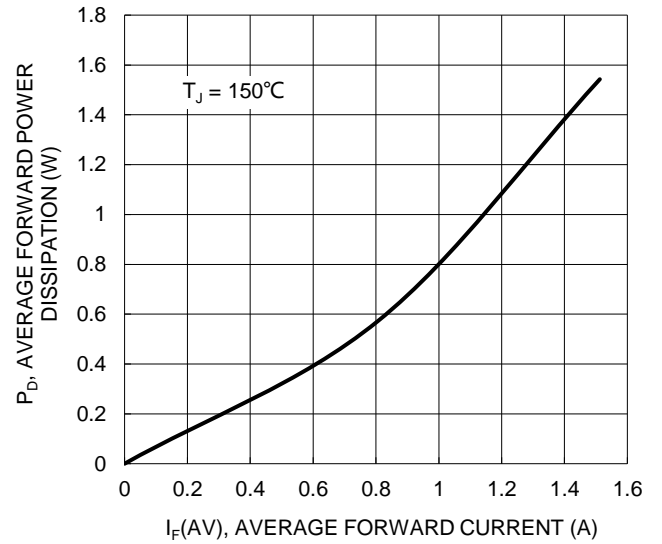
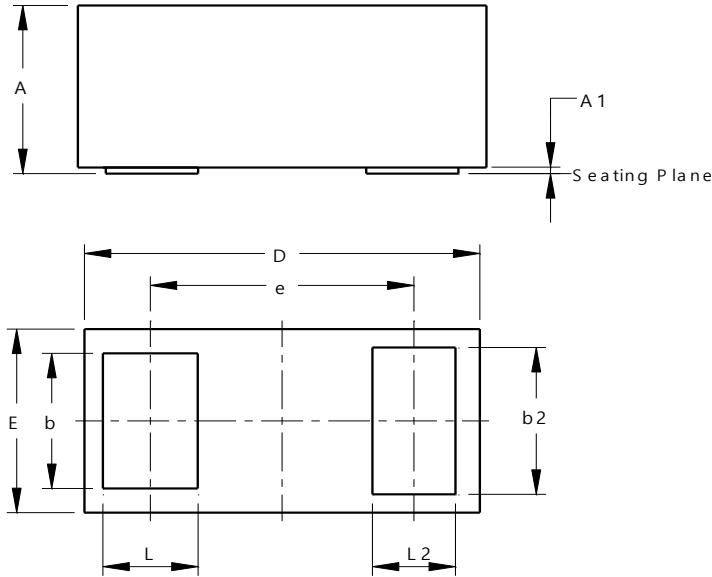


Figure 4. Forward Power Dissipation

**Package Outline Dimensions** (Note 8)

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

**X3-DSN0603-2**



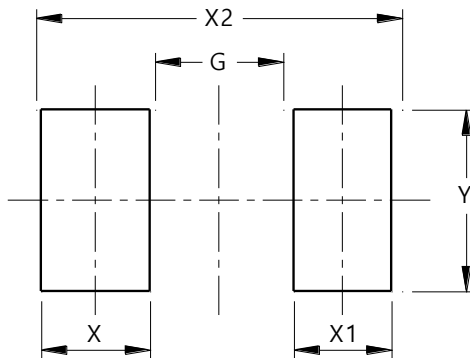
X3-DSN0603-2			
Dim	Min	Max	Typ
A	0.225	0.275	0.250
A1	0.00	0.02	--
b	0.196	0.246	0.221
b2	0.216	0.266	0.241
D	0.575	0.625	0.600
E	0.275	0.325	0.300
e	--	--	0.400
L	0.134	0.174	0.154
L2	0.116	0.156	0.136
All Dimensions in mm			

Note 8: Device side walls are electrically active bare silicon. Avoid contact of solder or flux on the side walls during the PCB assembly process.

**Suggested Pad Layout**

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

**X3-DSN0603-2**



Dimensions	Value (in mm)
G	0.262
X	0.174
X1	0.156
X2	0.625
Y	0.276

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