

**Product Summary** (@ T<sub>A</sub> = +25°C)

| V <sub>RRM</sub> (V) | I <sub>O</sub> (A) | V <sub>F(MAX)</sub> (mV) | I <sub>R(MAX)</sub> (μA) |
|----------------------|--------------------|--------------------------|--------------------------|
| 50                   | 5                  | 520                      | 300                      |

**Applications**

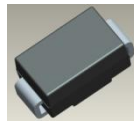
- SMPS
- AC-DC
- DC-DC Converter
- Freewheeling Diodes

**Features and Benefits**

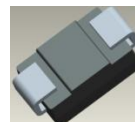
- Low Leakage Current
- Soft, Fast Switching Capability
- +150°C Operating Junction Temperature
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

**Mechanical Data**

- Case: SMA
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Lead Free Plating (Matte Tin Finish.). Solderable per MIL-STD-202, Method 208 <sup>(e3)</sup>
- Polarity Indicator: Cathode Band
- Weight: 0.064 grams (Approximate)



Top View



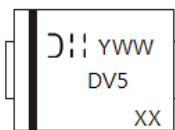
Bottom View

**Ordering Information** (Note 4)

| Part Number  | Compliance | Case | Packaging         |
|--------------|------------|------|-------------------|
| SDT5A50SA-13 | Commercial | SMA  | 5,000/Tape & Reel |

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
  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**



DV5 = Product Type Marking Code  
 ⑈⑈ = Manufacturers' Code Marking  
 YWW = Date Code Marking  
 Y = Last Digit of Year (ex: 8 for 2018)  
 WW = Week Code 01 to 52  
 XX = Foundry and Assembly Site

Note: 5. Device has a cathode band (as shown above) and may also have a cathode notch.

### 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> | 50    | V    |
| Working Peak Reverse Voltage   | V <sub>RWM</sub> |       |      |
| DC Blocking Voltage  | V <sub>RM</sub>  |       |      |
| 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 |
|---|-----------------------------------|-------------|------|
| Maximum Thermal Resistance                      |                                   |             |      |
| Thermal Resistance Junction to Ambient (Note 6) | R <sub>θJA</sub>                  | 65          | °C/W |
| Thermal Resistance Junction to Case (Note 6)    | R <sub>θJC</sub>                  | 25          |      |
| Operating and Storage Temperature Range         | T <sub>J</sub> , T <sub>STG</sub> | -65 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> | —   | 0.44 | 0.52 | V    | I <sub>F</sub> = 5.0A, T <sub>J</sub> = +25°C  |
|                          |                | —   | 0.37 | 0.45 |      | I <sub>F</sub> = 5.0A, T <sub>J</sub> = +125°C |
| Leakage Current (Note 7) | I <sub>R</sub> | —   | 60   | 300  | μA   | V <sub>R</sub> = 50V, T <sub>J</sub> = +25°C   |
|                          |                | —   | 20   | 90   |      | V <sub>R</sub> = 50V, T <sub>J</sub> = +125°C  |

Notes: 6. Device mounted on FR-4 substrate, 0.4"\*0.5", 2oz, single-sided, PC boards with 0.2"\*0.25" copper pad.  
7. Short duration pulse test used to minimize self-heating effect.

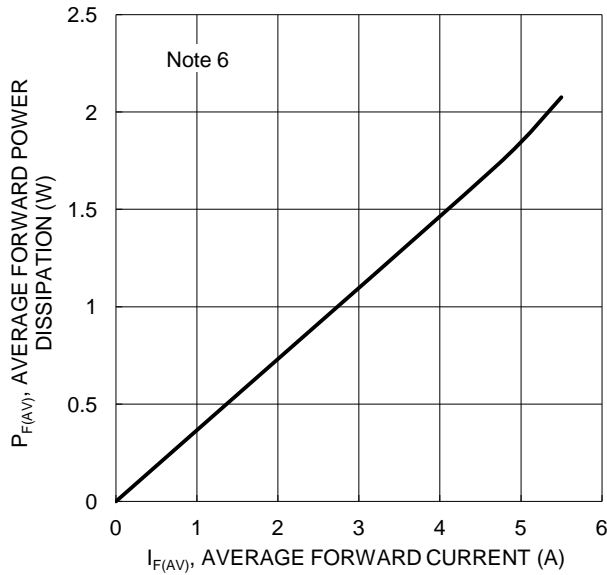


Figure 1. Forward Power Dissipation

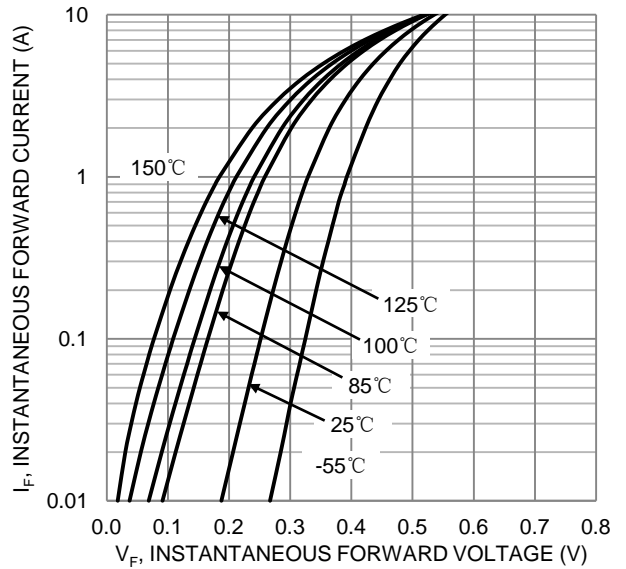


Figure 2. Typical Forward Characteristics

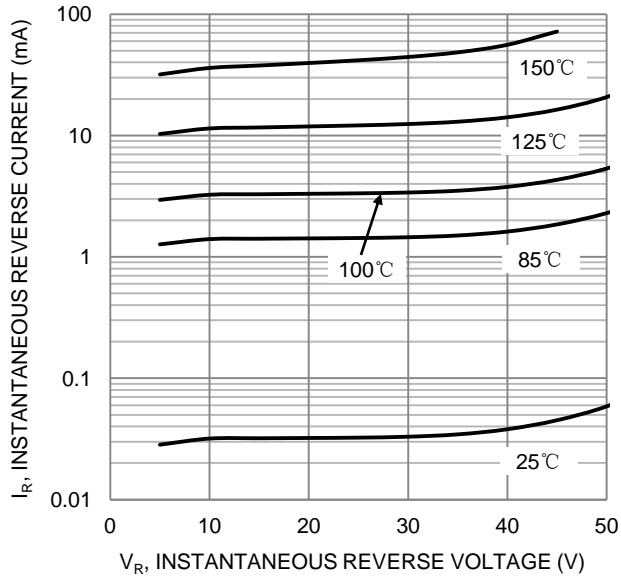


Figure 3. Typical Reverse Characteristics

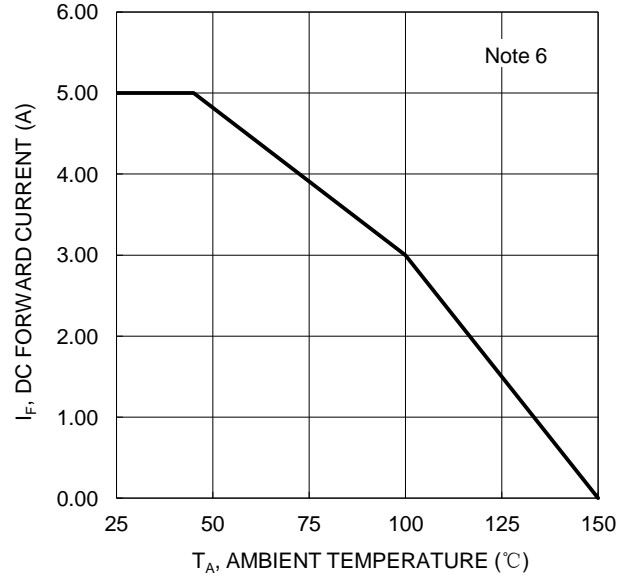
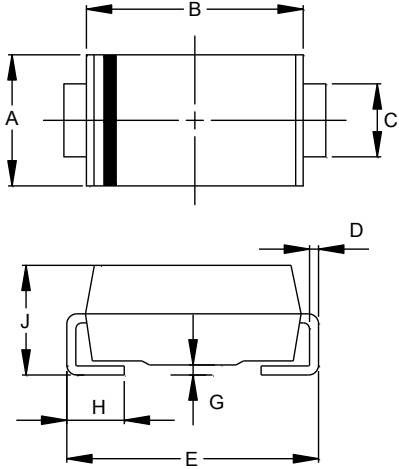


Figure 4. DC Forward Current Derating

**Package Outline Dimensions**

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

**SMA**

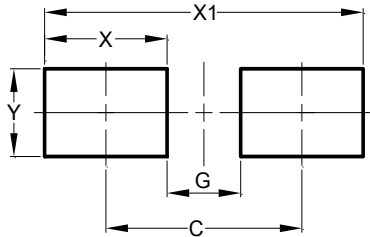


| SMA                  |      |      |
|----------------------|------|------|
| Dim                  | Min  | Max  |
| A                    | 2.29 | 2.92 |
| B                    | 4.00 | 4.60 |
| C                    | 1.27 | 1.63 |
| D                    | 0.15 | 0.31 |
| E                    | 4.80 | 5.59 |
| G                    | 0.05 | 0.20 |
| H                    | 0.76 | 1.52 |
| J                    | 1.96 | 2.40 |
| All Dimensions in mm |      |      |

**Suggested Pad Layout**

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

**SMA**



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 4.00          |
| G          | 1.50          |
| X          | 2.50          |
| X1         | 6.50          |
| Y          | 1.70          |

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