

# CPW5-1700-Z025A

## Silicon Carbide Schottky Diode Chip

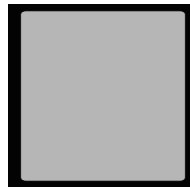
### Z-REC<sup>®</sup> RECTIFIER

|                |   |        |
|----------------|---|--------|
| $V_{RRM}$      | = | 1700 V |
| $I_{F, Rated}$ | = | 25 A   |
| $Q_c$          | = | 255 nC |

#### Features

- 1700-Volt Schottky Rectifier
- Zero Reverse Recovery
- Zero Forward Recovery
- High-Frequency Operation
- Temperature-Independent Switching Behavior
- Extremely Fast Switching
- Positive Temperature Coefficient on  $V_F$

#### Chip Outline



| Part Number     | Die Size                  | Anode | Cathode |
|-----------------|---------------------------|-------|---------|
| CPW5-1700-Z025A | 4.4 x 4.4 mm <sup>2</sup> | Al    | Ni/Au   |

#### Maximum Ratings

| Symbol         | Parameter                                  | Value       | Unit | Test Conditions  | Note |
|----------------|--|-------------|------|------------------|------|
| $V_{RRM}$      | Repetitive Peak Reverse Voltage            | 1700        | V    |                  |      |
| $V_R$          | DC Peak Blocking Voltage                   | 1700        | V    |                  |      |
| $I_F$          | Continuous Forward Current                 | 25          | A    | Limited by $T_J$ | 1    |
| $T_J, T_{stg}$ | Operating Junction and Storage Temperature | -55 to +175 | °C   |                  |      |
| $T_{Proc}$     | Maximum Processing Temperature             | 325         | °C   | 10 min Maximum   |      |

Note 1: Assume  $R_{\theta JC}$  Thermal Resistance = 0.39°C/W

### Electrical Characteristics

| Symbol | Parameter                 | Typ.               | Max.       | Unit          | Test Conditions   | Note   |
|--------|---------------------------|--------------------|------------|---------------|---|--------|
| $V_F$  | Forward Voltage           | 1.5<br>2.5         | 1.8<br>3.0 | V             | $I_F = 25\text{ A}$ $T_J = 25^\circ\text{C}$<br>$I_F = 25\text{ A}$ $T_J = 175^\circ\text{C}$   | Fig. 1 |
| $I_R$  | Reverse Current           | 20<br>120          | 200<br>300 | $\mu\text{A}$ | $V_R = 1700\text{ V}$ $T_J = 25^\circ\text{C}$<br>$V_R = 1700\text{ V}$ $T_J = 175^\circ\text{C}$   | Fig. 2 |
| $Q_C$  | Total Capacitive Charge   | 255                |            | nC            | $V_R = 1700\text{ V}$ , $I_F = 25\text{ A}$<br>$di/dt = 200\text{ A}/\mu\text{s}$<br>$T_J = 25^\circ\text{C}$   | Fig. 3 |
| C      | Total Capacitance         | 1950<br>190<br>140 |            | pF            | $V_R = 0\text{ V}$ , $T_J = 25^\circ\text{C}$ , $f = 100\text{ KHz}$<br>$V_R = 800\text{ V}$ , $T_J = 25^\circ\text{C}$ , $f = 100\text{ KHz}$<br>$V_R = 1700\text{ V}$ , $T_J = 25^\circ\text{C}$ , $f = 100\text{ KHz}$ | Fig. 4 |
| $E_C$  | Capacitance Stored Energy | 175                |            | $\mu\text{J}$ | $V_R = 1700\text{ V}$   |        |

### Mechanical Parameters

| Parameter                    | Typ.          | Unit          |
|------------------------------|---------------|---------------|
| Die Size                     | 4.4 x 4.4     | mm            |
| Anode Pad opening            | 3.5 x 3.5     | mm            |
| Thickness                    | 380 $\pm$ 10% | $\mu\text{m}$ |
| Wafer Size                   | 150           | mm            |
| Anode Metalization (Al)      | 4             | $\mu\text{m}$ |
| Cathode Metalization (Ni/Au) | 0.9           | $\mu\text{m}$ |
| Frontside Passivation        | Polyimide     |               |

## Typical Characteristics

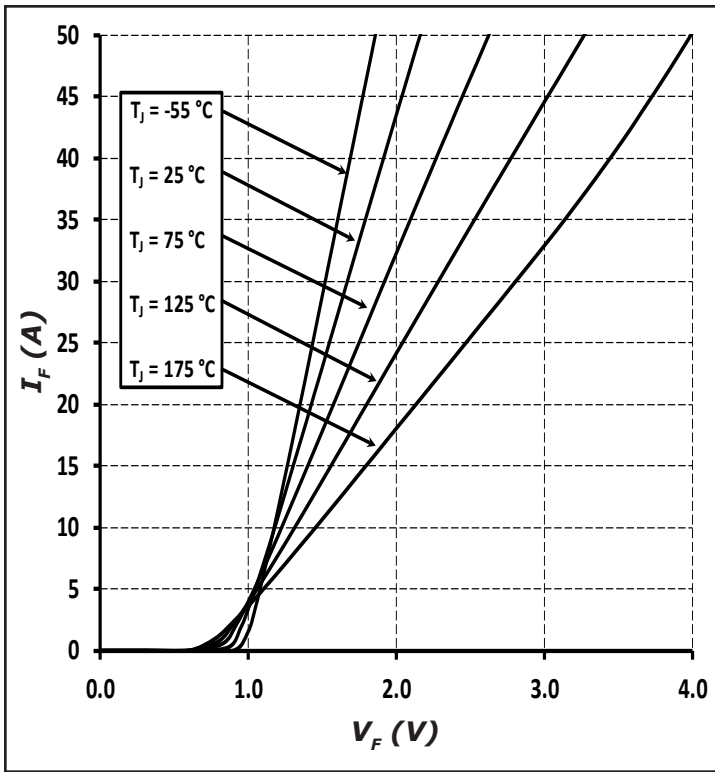


Figure 1. Forward Characteristics

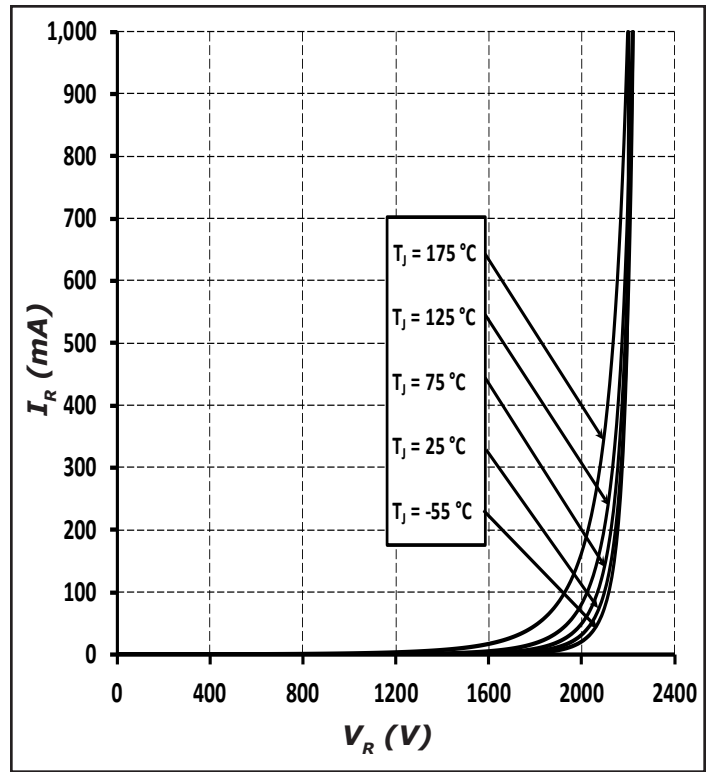


Figure 2. Reverse Characteristics

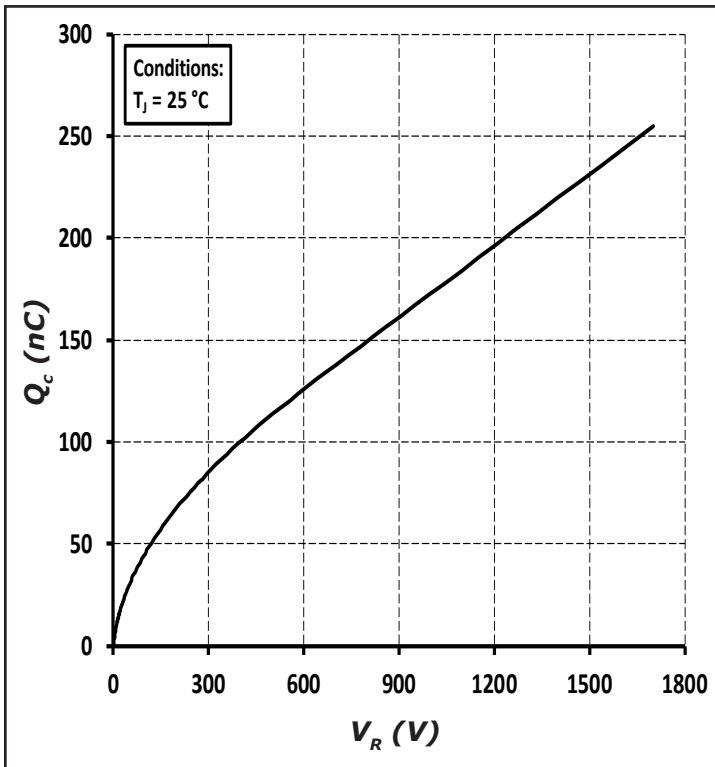


Figure 3. Total Capacitance Charge vs. Reverse Voltage

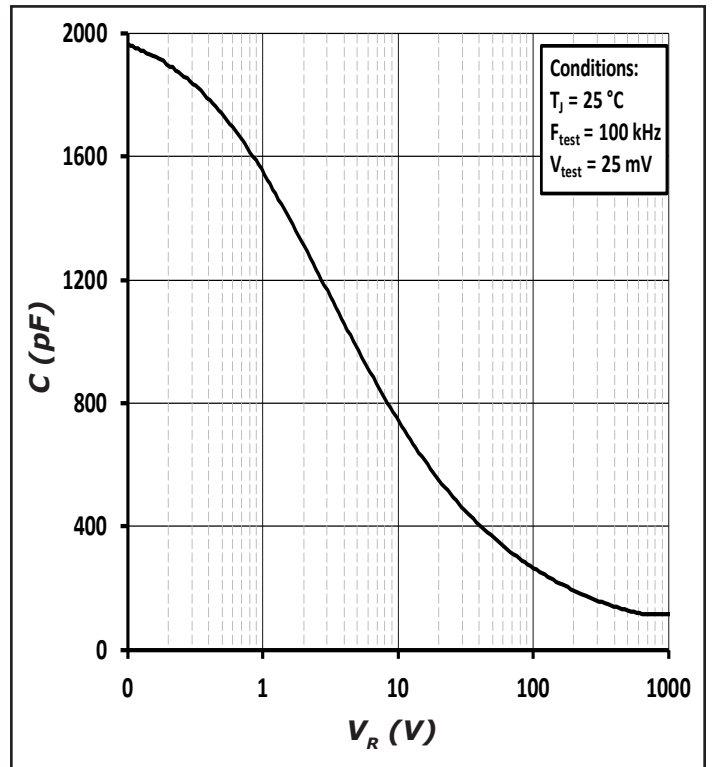
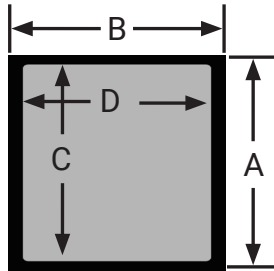


Figure 4. Capacitance vs. Reverse Voltage

## Chip Dimensions



| Symbol | Dimension |       |
|--------|-----------|-------|
|        | mm        | inch  |
| A      | 4.4       | 0.173 |
| B      | 4.4       | 0.173 |
| C      | 3.5       | 0.138 |
| D      | 3.5       | 0.138 |

## Product Ordering Part Numbers

| Part Number         | Wafer Size | Delivery Platform  |
|---------------------|------------|--|
| CPW5-1700-Z025A-FR6 | 150mm      | Sawn wafer on Adwill D-485H UV Tape with Black Frame (epak eOP0319 (FF-070 Size)) [E142 Wafer Map] |

## Notes

- RoHS Compliance**  
 The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU Directive 2011/65/EC (RoHS2), as implemented January 2, 2013. RoHS Declarations for this product can be obtained from your Cree representative or from the Product Documentation sections of [www.cree.com](http://www.cree.com).
- REACH Compliance**  
 REACH substances of high concern (SVHCs) information is available for this product. Since the European Chemical Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future, please contact a Cree representative to insure you get the most up-to-date REACH SVHC Declaration. REACH banned substance information (REACH Article 67) is also available upon request.
- This product has not been designed or tested for use in, and is not intended for use in, applications implanted into the human body nor in applications in which failure of the product could lead to death, personal injury or property damage, including but not limited to equipment used in the operation of nuclear facilities, life-support machines, cardiac defibrillators or similar emergency medical equipment, aircraft navigation or communication or control systems, or air traffic control systems.

## Related Links

- Cree SiC Schottky diode portfolio: <http://www.wolfspeed.com/Power/Products#SiCSchottkyDiodes>
- Schottky diode Spice models: <http://www.wolfspeed.com/power/tools-and-support/DIODE-model-request2>
- SiC MOSFET and diode reference designs: <http://go.pardot.com/l/101562/2015-07-31/349i>