

# CPW2-0650-S006B–silicon Carbide Schottky Diode Chip

## Z-REC™ RECTIFIER

$$V_{RRM} = 650 \text{ V}$$

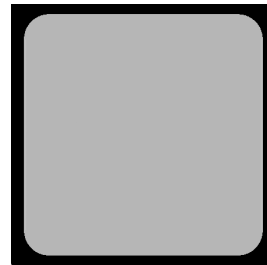
$$I_{F(AVG)} = 6 \text{ A}$$

$$Q_c = 16 \text{ nC}$$

### Features

- 650-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	Anode	Cathode	Package	Marking
CPW2-0650-S006B	Al	Ni/Ag	Sawn on Foil	Wafer # on Foil

### Maximum Ratings

Symbol	Parameter	Value	Unit	Test Conditions	Note
$V_{RRM}$	Repetitive Peak Reverse Voltage	650	V		
$V_{RSM}$	Surge Peak Reverse Voltage	650	V		
$V_{DC}$	DC Blocking Voltage	650	V		
$I_{F(AVG)}$	Average Forward Current	6	A	$T_J = 175^\circ\text{C}$	
$I_{FRM}$	Repetitive Peak Forward Surge Current	41	A	$T_C = 25^\circ\text{C}$ , $t_p = 10 \text{ ms}$ , Half Sine Wave, $D = 0.3$	1
$I_{FSM}$	Non-Repetitive Peak Forward Surge Current	200	A	$T_C = 25^\circ\text{C}$ , $t_p = 10 \mu\text{s}$ , Pulse	1
$T_J, T_{stg}$	Operating Junction and Storage Temperature	-55 to +175	$^\circ\text{C}$		



## Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
$V_F$	Forward Voltage	1.6 1.9	1.8 2.4	V	$I_F = 6\text{ A}$ $T_J = 25^\circ\text{C}$ $I_F = 6\text{ A}$ $T_J = 175^\circ\text{C}$	
$I_R$	Reverse Current	12 24	60 220	$\mu\text{A}$	$V_R = 650\text{ V}$ $T_J = 25^\circ\text{C}$ $V_R = 650\text{ V}$ $T_J = 175^\circ\text{C}$	
$Q_C$	Total Capacitive Charge	16		nC	$V_R = 650\text{ V}$ , $I_F = 6\text{ A}$ $di/dt = 500\text{ A}/\mu\text{s}$ $T_J = 25^\circ\text{C}$	
C	Total Capacitance	294 27 26		pF	$V_R = 0\text{ V}$ , $T_J = 25^\circ\text{C}$ , $f = 1\text{ MHz}$ $V_R = 200\text{ V}$ , $T_J = 25^\circ\text{C}$ , $f = 1\text{ MHz}$ $V_R = 400\text{ V}$ , $T_J = 25^\circ\text{C}$ , $f = 1\text{ MHz}$	

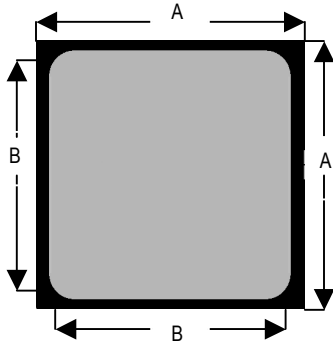
Note:

- Assumes  $\theta_{JC}$  Thermal Resistance of  $1.6^\circ\text{C}/\text{W}$  or less

## Mechanical Parameters

Parameter	Typ.	Unit
Die Size	1.55 x 1.55	mm
Anode Pad Size	1.29 x 1.29	mm
Anode Pad Opening	1.08 x 1.08	mm
Thickness	377 $\pm$ 10%	$\mu\text{m}$
Wafer Size	100	mm
Anode Metalization (Al)	4	$\mu\text{m}$
Cathode Metalization (Ni/Ag)	1.8	$\mu\text{m}$
Frontside Passivation	Polyimide	

## Chip Dimensions



symbol	dimension	
	mm	inch
A	1.55	0.061
B	1.29	0.051

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The die-on-tape method of delivering these SiC die may be considered a means of temporary storage only. Due to an increase in adhesion over time, die stored for an extended period may affix too strongly to the tape. These die should be stored in a temperature-controlled nitrogen dry box soon after receipt. Cree will further recommend that all die be removed from tape to a wafer pack, to a similar storage medium, or used in production within 2 – 3 weeks of delivery to assure 100% release of all die without issues.