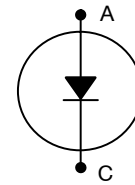


# Extremefast Diode with Solderable Top Metal

**650 V, 200 A**

## PCRKA20065F8M1



### Features

- AEC-Q101 Qualified
- Maximum Junction Temperature 175°C
- Extremefast Technology with Soft Recovery
- Low Forward Voltage ( $V_F = 1.35\text{ V (Typ.) @ } I_F = 200\text{ A}$ )
- Cathode Pad covered with Solderable Metal Layer

### Applications

- Automotive Traction Modules
- General Power Modules



### ORDERING INFORMATION

Part Number	PCRKA20065F8M1	
Packing	Wafer (sawn on foil)	
	mils	$\mu\text{m}$
Die Size	197 × 394	5,000 × 10,000
Anode Area	183 × 381	4,668 × 9,668
Die Thickness	3	78
Top Metal	6 $\mu\text{m}$ AlCu + 1.15 $\mu\text{m}$ Ti/NiV/Ag (STM)	
Back Metal	0.65 $\mu\text{m}$ NiV/Ag	
Topside Passivation	Silicon Nitride plus Polyimide	
Wafer Diameter	200 mm	
Max Possible Die Per Wafer	487	

### ABSOLUTE MAXIMUM RATINGS ( $T_{VJ} = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Ratings	Units
Repetitive Peak Reverse Voltage	$V_{RRM}$	650	V
DC Forward Current, limited by $T_J$ max	$I_F$	(Note 1)	A
Pulsed Forward Current, $t_p$ limited by $T_J$ max (Note 2)	$I_{FM}$	900	A
Operating Junction Temperature	$T_J$	-40 to +175	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	+17 to +25	$^\circ\text{C}$

1. Depends on the thermal properties of assembly.
2. Not subject to production test – verified by design/characterization.

# PCRKA20065F8M1

## ELECTRICAL CHARACTERISTICS OF THE DIODE ( $T_J = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Units
<b>Static Characteristics</b> (Tested on wafers)						
Breakdown Voltage	$V_{BR}$	$I_R = 1 \text{ mA}$	650	-	-	V
Reverse Leakage Current	$I_R$	$V_R = 650 \text{ V}$	-	-	30	$\mu\text{A}$
Forward Voltage	$V_F$	$I_F = 100 \text{ A}$	-	1.15	1.7	V

## Electrical Characteristics (Not subject to production test – verified by design / characterization)

Forward Voltage	$V_F$	$I_F = 200 \text{ A}$	$T_J = 25^\circ\text{C}$	-	1.35	1.9	V
			$T_J = 175^\circ\text{C}$	-	1.3	-	V
Reverse Recovery Charge	$Q_{rr}$	$I_F = 200 \text{ A}, V_R = 400 \text{ V}$ $di_F/dt = 1000 \text{ A}/\mu\text{s}, T_J = 25^\circ\text{C}$		-	3.2	-	$\mu\text{C}$
Reverse Recovery Current	$I_{rr}$			-	55	-	A
Reverse Recovery Time	$T_{rr}$			-	117	-	ns
Reverse Recovery Charge	$Q_{rr}$	$I_F = 200 \text{ A}, V_R = 400 \text{ V}$ $di_F/dt = 1000 \text{ A}/\mu\text{s}, T_J = 175^\circ\text{C}$		-	15.1	-	$\mu\text{C}$
				-	122	-	A
Reverse Recovery Time	$T_{rr}$		-	247	-	nS	

3. For ordering, technique and other information on **onsemi** automotive bare die products, please contact [automotivebaredie@onsemi.com](mailto:automotivebaredie@onsemi.com).

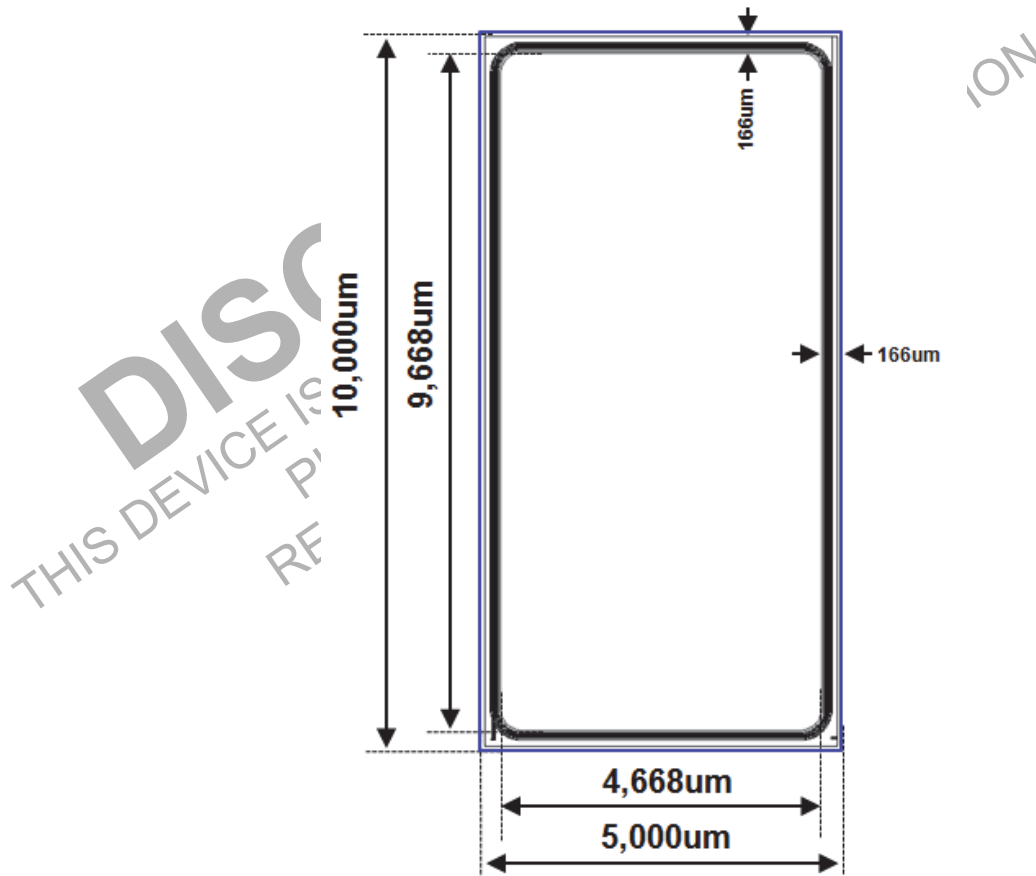


Figure 1. Dimensional Outline and Pad Layout

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