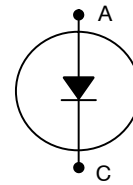


Extremefast Diode with Solderable Top Metal

650 V, 200 A**PCRKA20065F8M1****Features**

- AEC-Q101 Qualified
- Maximum Junction Temperature 175°C
- Extremefast Technology with Soft Recovery
- Low Forward Voltage ($V_F = 1.35$ V (Typ.) @ $I_F = 200$ 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	μm
Die Size	197×394	$5,000 \times 10,000$
Anode Area	183×381	$4,668 \times 9,668$
Die Thickness	3	78
Top Metal	6 μm AlCu + 1.15 μm Ti/NiV/Ag (STM)	
Back Metal	0.65 μm 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
Static Characteristics (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	μA
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	–	μC
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	–	μC
Reverse Recovery Current	I_{rr}			–	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.

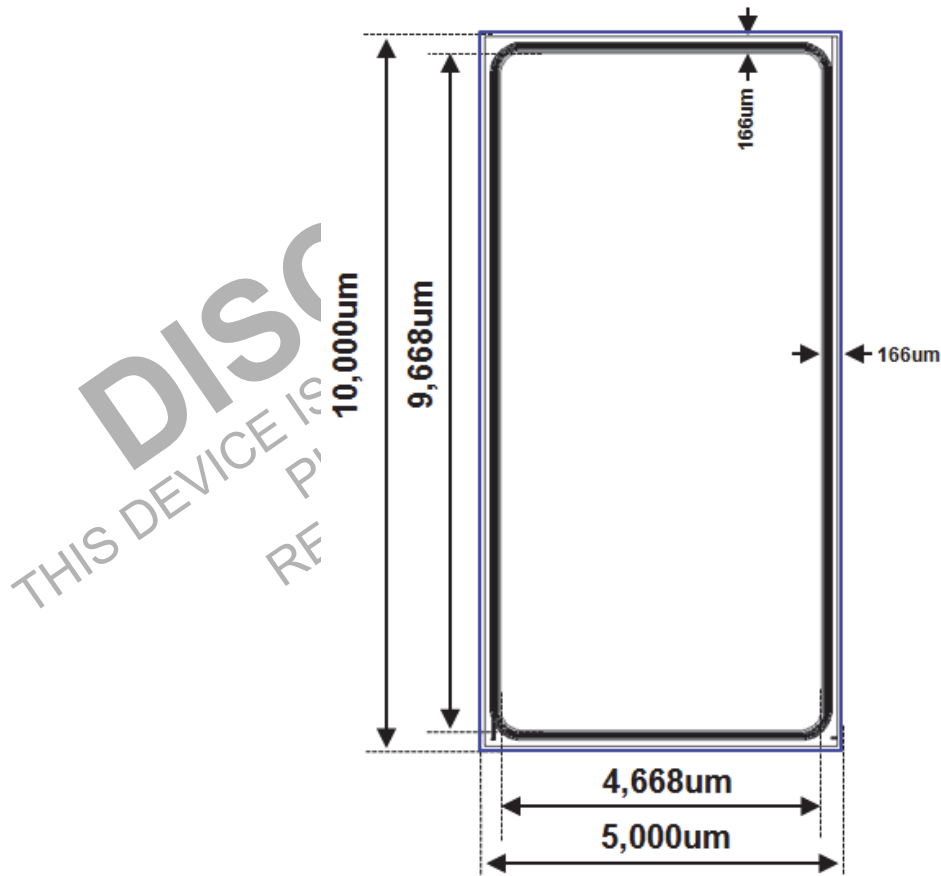


Figure 1. Dimensional Outline and Pad Layout

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