

PCRKA20065F8M1

650 V, 200 A Extremefast Diode with Solderable Top Metal



ON Semiconductor®

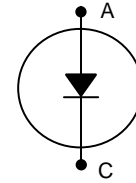
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Features

- 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 × 10,000
Anode Area	183 × 381	4,668 × 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	

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ABSOLUTE MAXIMUM RATINGS (T_{VJ} = 25°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	°C
Storage Temperature Range	T _{stg}	+17 to +25	°C

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

ELECTRICAL CHARACTERISTICS OF THE DIODE (T_J = 25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Units
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Static Characteristics (Tested on wafers)

Breakdown Voltage	V _{BR}	I _R = 1 mA	650	–	–	V
Reverse Leakage Current	I _R	V _R = 650 V	–	–	30	μA
Forward Voltage	V _F	I _F = 100 A	–	1.15	1.7	V

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

Forward Voltage	V _F	I _F = 200 A	T _J = 25°C	–	1.35	1.9	V
			T _J = 175°C	–	1.3	–	V
Reverse Recovery Charge	Q _{rr}	I _F = 200 A, V _R = 400 V dI _F /dt = 1000 A/μs, T _J = 25°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 A, V _R = 400 V dI _F /dt = 1000 A/μs, T _J = 175°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

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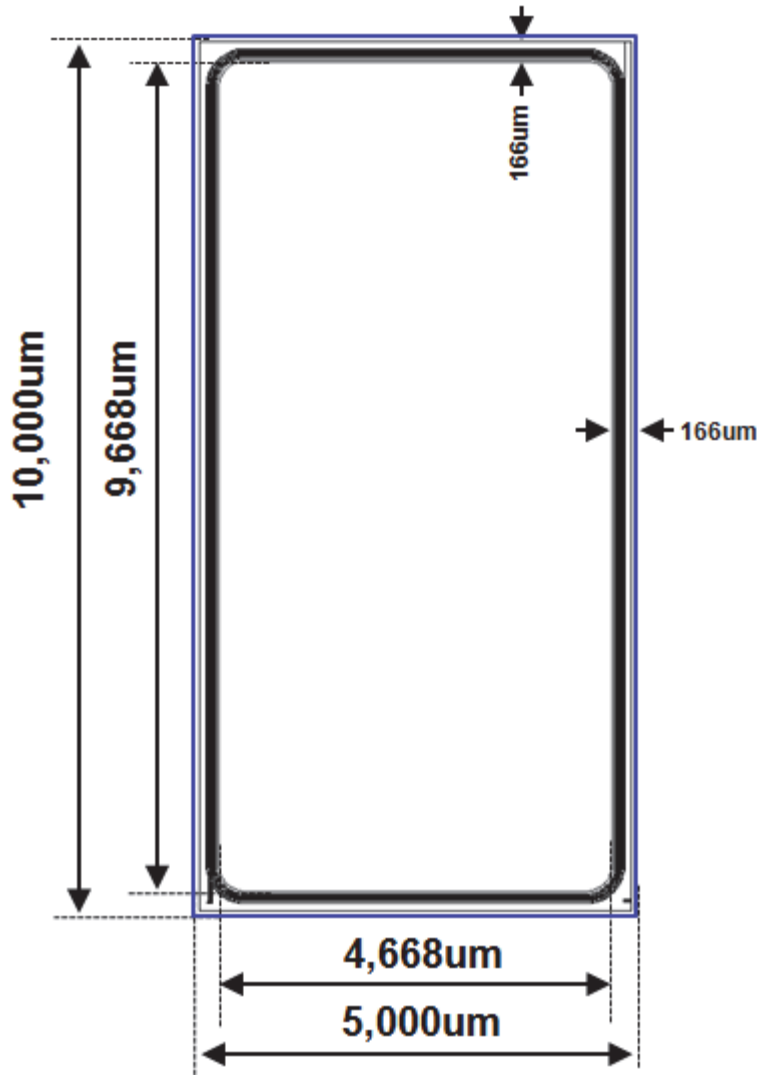



Figure 1. Dimensional Outline and Pad Layout

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