DIE DATA SHEET
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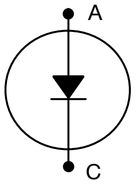
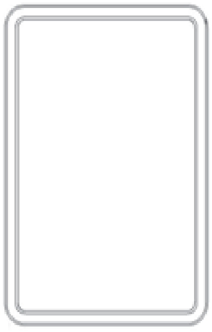
Extremefast Diode with Solderable Top Metal

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 × 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	

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.

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March, 2022 − Rev. 1

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

Parameter	Symbol	Test Condition		Min.	Typ.	Max.	Units
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.

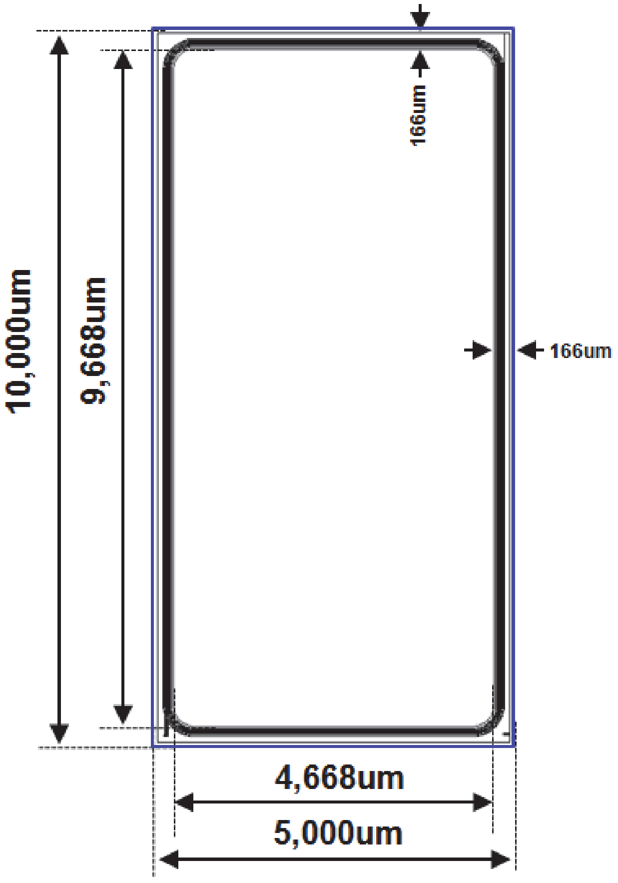

Figure 1. Dimensional Outline and Pad Layout

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