

PCRKA30065F8M1

650 V/300 A Extremefast Diode with Solderable Top Metal



ON Semiconductor®

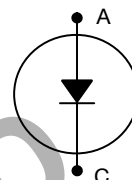
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Features

- AEC-Q101 Qualified
- Maximum Junction Temperature 175°C
- Extremefast Technology With Soft Recovery
- Low Forward Voltage ($V_F = 1.2 \text{ V (Typ.) @ } I_F = 300 \text{ A}$)
- Cathode Pad Covered With Solderable Metal Layer

Applications

- Automotive Traction Modules
- General Power Modules



ORDERING INFORMATION

Part Number	PCRKA30065F8M1	
Packing	Water (sawn on foil)	
	mils	μm
Die Size	283×394	$7,200 \times 10,000$
Anode Area	243×353	$6,167 \times 8,967$
Die Thickness	3	77
Top Metal	$6 \mu\text{m AlSiCu} + 1.15 \mu\text{m Ti/NiV/Ag (STM)}$	
Back Metal	$1.4 \mu\text{m Ti/NiV/Ag}$	
Topside Passivation	Silicon Nitride plus Polyimide	
Wafer Diameter	200 mm	
Max Possible Die Per Wafer	331	

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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 _{VJ} max	I _F	(Note 1)	A
Pulsed Forward Current, tp limited by T _{VJ} max (Note 2)	I _{FM}	900	A
Operating Junction Temperature	T _{VJ}	– 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_{VJ} = 25°C unless otherwise noted)

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

Reverse Leakage Current	I _R	V _R = 650 V	–	–	30	μA
Breakdown Voltage	V _{BR}	I _R = 1 mA	650	–	–	V
Forward Voltage	V _F	I _F = 100 A	–	1.1	1.65	V

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

Forward Voltage	V _F	I _F = 300 A	T _{VJ} = 25 °C	–	1.2	1.9	V
			T _{VJ} = 175 °C	–	1.1	–	V
Reverse Recovery Charge	Q _{rr}	I _F = 300 A, V _R = 300 V dI _F /dt = 3000 A/μs, T _{VJ} = 25 °C		–	8.5	–	μC
Reverse Recovery Current	I _{rr}			138	–	A	
Reverse Recovery Time	T _{rr}			–	100	–	ns
Reverse Recovery Charge	Q _{rr}			–	9.4	–	μC
Reverse Recovery Current	I _{rr}	I _F = 300 A, V _R = 300 V dI _F /dt = 3000 A/μs, T _{VJ} = 150 °C		–	154	–	A
Reverse Recovery Time	T _{rr}			–	98	–	nS

3. For ordering, technique and other information on Onsemi automotive bare die products, please contact automotivebaredie@onsemi.com

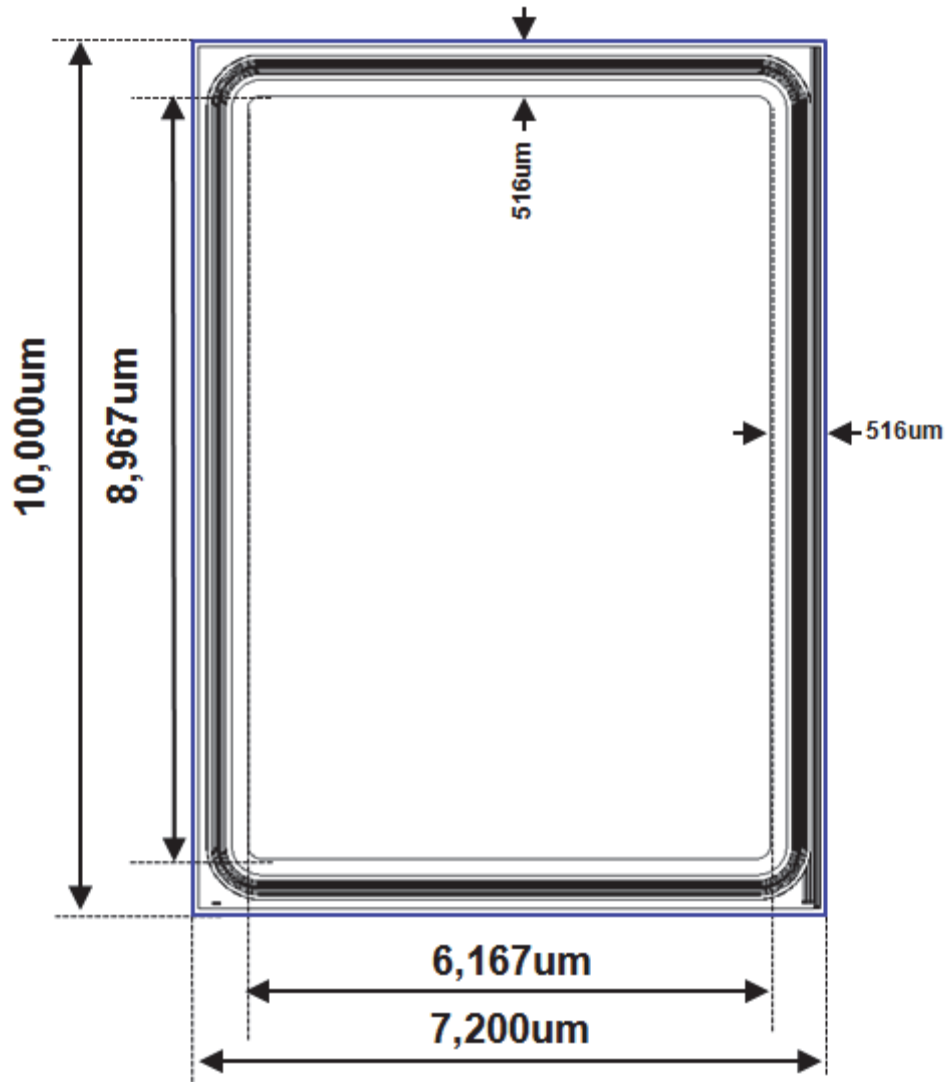


Figure 1. Dimensional Outline and Pad Layout

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