

ON Semiconductor

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PCRKA30065F8M1

650 V/300 A Extremefast Diode with Solderable Top Metal



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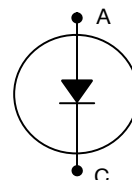
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Features

- 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 × 10,000
Anode Area	243 × 353	6,167 × 8,967
Die Thickness	3	77
Top Metal	6 μm AlSiCu + 1.15 μm Ti/NiV/Ag (STM)	
Back Metal	1.4 μm Ti/NiV/Ag	
Topside Passivation	Silicon Nitride plus Polyimide	
Wafer Diameter	200 mm	
Max Possible Die Per Wafer	331	

PCRKA30065F8M1

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_{VJ} max	IF	(Note 1)	A
Pulsed Forward Current, tp limited by T_{VJ} max (Note 2)	IFM	900	A
Operating Junction Temperature	T_{VJ}	- 40 to + 175	$^{\circ}\text{C}$
Storage Temperature Range	Tstg	+ 17 to + 25	$^{\circ}\text{C}$

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

ELECTRICAL CHARACTERISTICS OF THE DIODE ($T_{VJ} = 25^{\circ}\text{C}$ 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	$V_R = 650\text{ V}$	-	-	30	μA
Breakdown Voltage	V_{BR}	$I_R = 1\text{ mA}$	650	-	-	V
Forward Voltage	V_F	$I_F = 100\text{ A}$	-	1.1	1.65	V

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

Forward Voltage	V_F	$I_F = 300\text{ A}$	$T_{VJ} = 25^{\circ}\text{C}$	-	1.2	1.9	V
			$T_{VJ} = 175^{\circ}\text{C}$	-	1.1	-	V
Reverse Recovery Charge	Q_{rr}	$I_F = 300\text{ A}, V_R = 300\text{ V}$ $dI_F/dt = 3000\text{ A}/\mu\text{s}, T_{VJ} = 25^{\circ}\text{C}$	-	8.5	-	μC	
Reverse Recovery Current	I_{rr}		-	138	-	A	
Reverse Recovery Time	T_{rr}		-	100	-	ns	
Reverse Recovery Charge	Q_{rr}	$I_F = 300\text{ A}, V_R = 300\text{ V}$ $dI_F/dt = 3000\text{ A}/\mu\text{s}, T_{VJ} = 150^{\circ}\text{C}$	-	9.4	-	μC	
			Reverse Recovery Current	I_{rr}	-	154	-
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

PCRKA30065F8M1

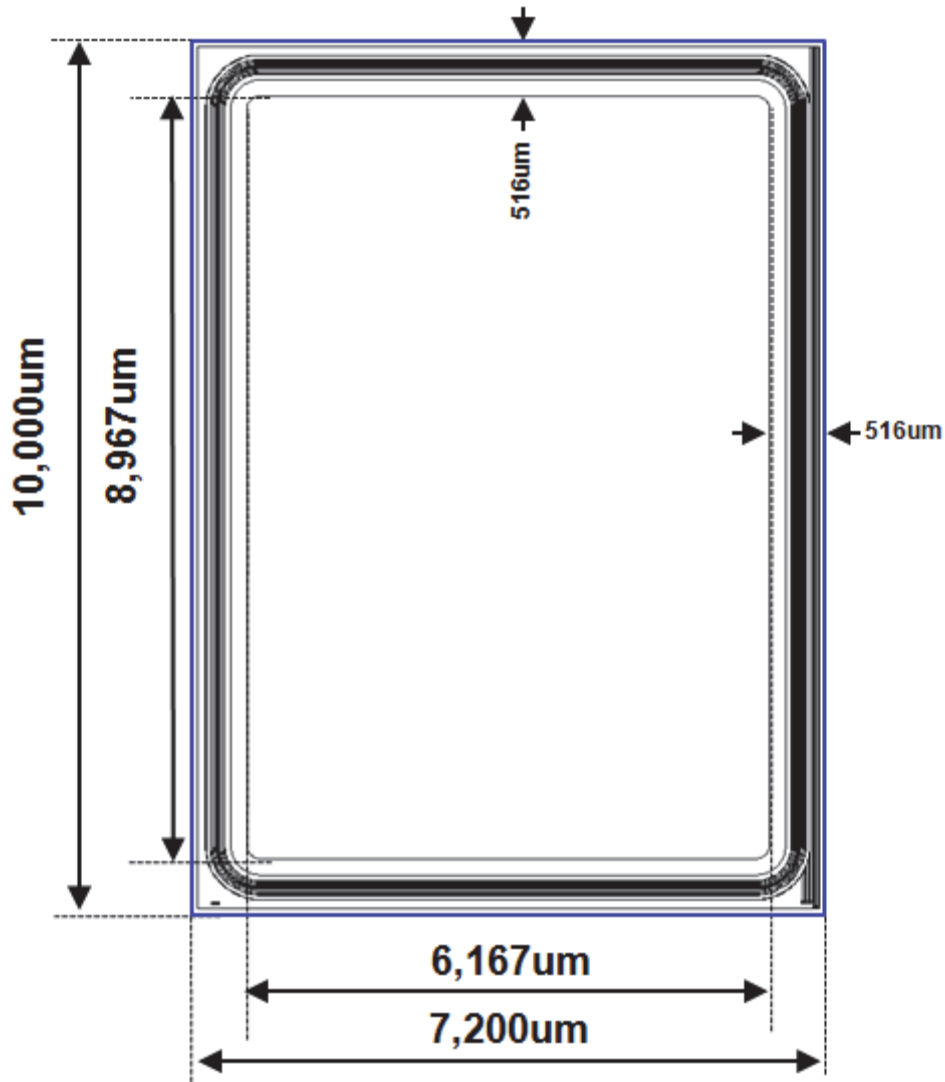



Figure 1. Dimensional Outline and Pad Layout

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