PCRKA30065F8M1

650 V/300 A Extremefast Diode with Solderable Top Metal

ON Semiconductor®

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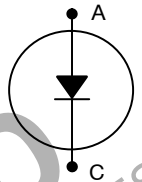
Features

- AEC–Q101 Qualified
- Maximum Junction Temperature 175°C
- Extremefast Technology With Soft Recovery
- Low Forward Voltage (VF = 1.2 V (Typ.) @ IF = 300 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	

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	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	°C
Storage Temperature Range	Tstg	+ 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
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
		I_F = 300 A, 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}	I_F = 300 A, V_R = 300 V, dI_F/dt = 3000 A/μs, T_{VJ} = 150°C	−	9.4	−	μC
Reverse Recovery Current	I_{rr}			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

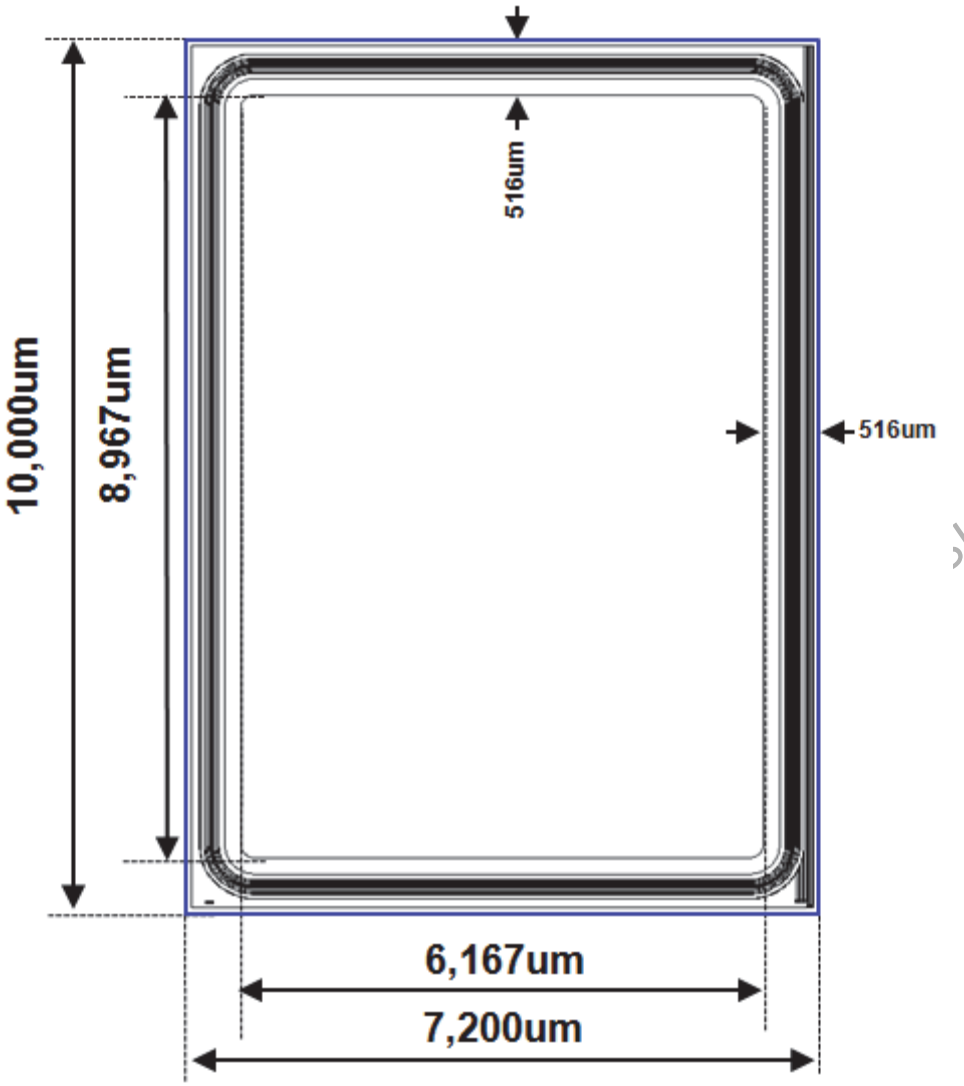


Figure 1. Dimensional Outline and Pad Layout

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:
Technical Library: www.onsemi.com/design/resources/technical−documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support
For additional information, please contact your local Sales Representative at www.onsemi.com/support/sales

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