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Please note: As part of the Fairchild Semiconductor integration, some of the Fairchild orderable part numbers will need to change in order to meet ON Semiconductor's system requirements. Since the ON Semiconductor product management systems do not have the ability to manage part nomenclature that utilizes an underscore (_), the underscore (_) in the Fairchild part numbers will be changed to a dash (-). This document may contain device numbers with an underscore (_). Please check the ON Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.onsemi.com. Please email any questions regarding the system integration to Fairchild_questions@onsemi.com.

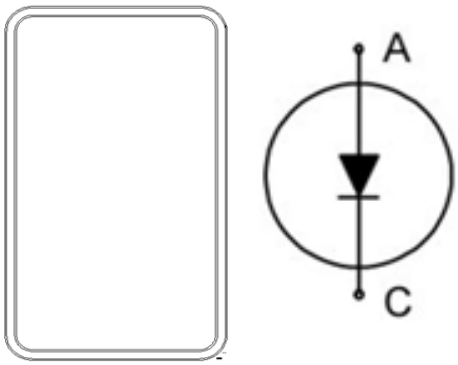
August 2016

PCRKA16065F8

650V / 160A Extremefast Diode

Features

- AEC-Q101 Qualified
- Maximum Junction Temperature 175°C
- Extremefast Technology with Soft Recovery
- Low Forward Voltage (VF = 1.4V (Typ) @IF = 160A)



Applications

- Automotive Traction Modules
- General Power Modules

Ordering Information

P/N	PCRKA16065F8	
Packing	Wafer (Saw-On-Foil)	
	mils	μm
Die Size	165 X 283	4,200 X 7,200
Anode Area	145 x 263	3,678 x 6,678
Scribe Lane	3.14	80
Die thickness	3	77
Top Metal	Al (0.5% Cu)	
Back Metal	VNi/Ag	
Topside Passivation	Silicon Nitride Plus Polyimide	
Wafer diameter	200mm	
Max. Possible Die per Wafer	788	

Absolute Maximum Ratings (T_{VJ} =25°C unless otherwise specified)

Symbol	Parameter	Ratings	Units
V_R	Voltage Cathode to Anode	650	V
I_F	Continuous Forward Current	(Note 1)	A
T_{VJ}	Junction Temperature Range	-55 to +175	°C
	Operating Junction Temperature	-55 to +150	°C
Tstg	Storage Temperature Range	+17 to +25	°C

Notes:
1: Depends on the thermal properties of assembly

Electrical Characteristics of the Diode (T_{VJ} =25°C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
Static Characteristics (Tested on wafer)						
I_R	Reverse Current	V_R = 650V	-	-	30	μA
V_{BR}	Breakdown Voltage	I_R= 1mA	650	-	-	V
V_F	Forward Voltage	I_F = 100A	0.7	1.21	1.75	V

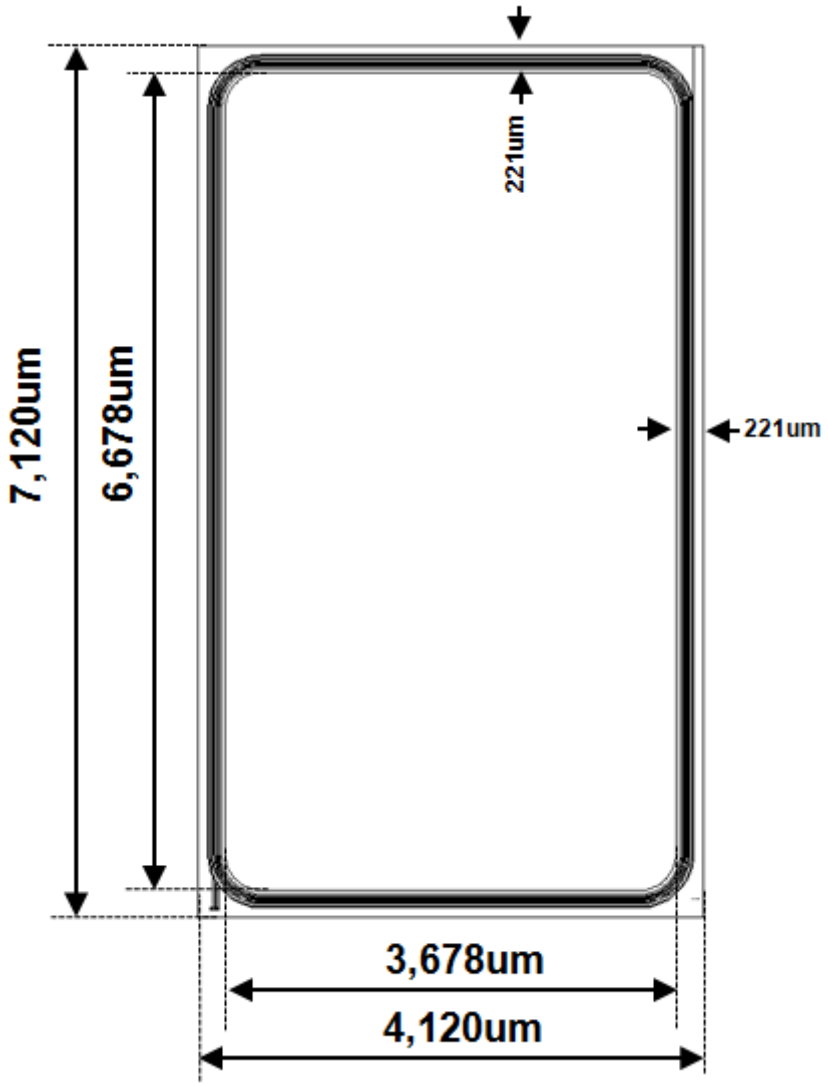
Electrical Characteristics (Not subject to production test, verified by design /characterization)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
I_R	Reverse Current	V_R = 650V, T_{VJ} = 175°C	-	600	-	μA
V_F	Forward Voltage	I_F = 160A	-	1.4	1.9	V
		I_F = 160A, T_{VJ} = 175°C	-	1.35		V
Q_{rr}	Reverse Recovery Charge	I_F = 160A, V_R = 400V, dI_F/dt = 1000A/μs, T_{VJ} = 25°C	-	3.3	-	μC
I_{rr}	Reverse Recovery Current		-	50		A
T_{rr}	Reverse Recovery Time		-	132	-	ns
Q_{rr}	Reverse Recovery Charge	I_F = 160A, V_R = 400V, dI_F/dt = 1000A/μs, T_{VJ} = 175°C	-	12.5	-	μC
I_{rr}	Reverse Recovery Current		-	101.7		A
T_{rr}	Reverse Recovery Time		-	245	-	ns

For ordering, technique and other information on Fairchild automotive bare die products, please contact automotivedie@fairchildsemi.com

August 2016

Physical Dimensions



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Advance Information	Formative / In Design	Datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
Preliminary	First Production	Datasheet contains preliminary data; supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve design.
No Identification Needed	Full Production	Datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve the design.
Obsolete	Not In Production	Datasheet contains specifications on a product that is discontinued by Fairchild Semiconductor. The datasheet is for reference information only.

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Literature Distribution Center for ON Semiconductor
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