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Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from, Europe, America and south Asia, supplying obsolete and hard-to-find components to meet their specific needs.

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We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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Silicon Carbide Schottky Diode

650 V, 6 A

Description

Silicon Carbide (SiC) Schottky Diodes use a completely new technology that provides superior switching performance and higher reliability compared to Silicon. No reverse recovery current, temperature independent switching characteristics, and excellent thermal performance sets Silicon Carbide as the next generation of power semiconductor. System benefits include highest efficiency, faster operating frequency, increased power density, reduced EMI, and reduced system size and cost.

Features

- Max Junction Temperature 175°C
- Avalanche Rated 36 mJ
- High Surge Current Capacity
- Positive Temperature Coefficient
- Ease of Paralleling
- No Reverse Recovery / No Forward Recovery

Applications

- General Purpose
- SMPS, Solar Inverter, UPS
- Power Switching Circuits



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ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

		,		
Symbol	Parameter	FFSD0665A	Unit	
V _{RRM}	Peak Repetitive Reverse Voltage	650	V	
E _{AS}	Single Pulse Avalanche Energy (Note 1)	36	mJ	
١ _F	Continuous Rectified Forward Current @ T _C < 159°C		6	A
	Continuous Rectified Forward Current @ $T_C < 13$	11		
I _{F,Max}	Non-Repetitive Peak Forward Surge Current	$T_{C} = 25^{\circ}C, 10 \ \mu s$	430	A
		T _C = 150°C, 10 μs	415	А
I _{F,SM}	Non-Repetitive Forward Surge Current	Half-Sine Pulse, t _p = 8.3 ms	42	А
I _{F,RM}	Repetitive Forward Surge Current	Half-Sine Pulse, t _p = 8.3 ms	24	А
Ptot	Power Dissipation	$T_{C} = 25^{\circ}C$	89	W
		T _C = 150°C	15	W
T _J , T _{STG}	Operating and Storage Temperature Range		-55 to +175	°C

Table 1. ABSOLUTE MAXIMUM RATINGS (T_C = 25°C unless otherwise noted)

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected. 1. E_{AS} of 36 mJ is based on starting $T_J = 25^{\circ}$ C, L = 0.5 mH, $I_{AS} = 12$ A, V = 50 V.

Table 2. THERMAL CHARACTERISTICS

Symbol	Parameter	Rating	Unit
$R_{ extsf{ heta}JC}$	Thermal Resistance, Junction-to-Case, Max.	1.7	°C/W

Table 3. OPERATING CHARACTERISTICS ($T_C = 25^{\circ}C$, unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Тур	Max	Unit
V _F	Forward Voltage	$I_{F} = 6 \text{ A}, \text{ T}_{C} = 25^{\circ}\text{C}$	-	1.50	1.75	V
		$I_F = 6 \text{ A}, \text{ T}_C = 125^{\circ}\text{C}$	-	1.6	2.0	
		I _F = 6 A, T _C = 175°C	-	1.72	2.4	
I _R	Reverse Current	$V_{R} = 650 \text{ V}, \text{ T}_{C} = 25^{\circ}\text{C}$	-	-	200	μΑ
		$V_{R} = 650 \text{ V}, \text{ T}_{C} = 125^{\circ}\text{C}$	-	-	400	
		$V_{R} = 650 \text{ V}, \text{ T}_{C} = 175^{\circ}\text{C}$	-	-	600	
Q _C	Total Capacitive Charge	V = 400 V	-	22	-	nC
С	Total Capacitance	V _R = 1 V, f = 100 kHz	-	361	-	pF
		V _R = 200 V, f = 100 kHz	-	41	-	
		V _R = 400 V, f = 100 kHz	_	32	_	

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

PART MARKING AND ORDERING INFORMATION

Part Number	Top Mark	Package	Packing Method	Reel Size	Tape Width	Quantity
FFSD0665A	FFSD0665A	D-PAK	N/A	13″	N/A	2500 units



TYPICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)





Figure 2. Reverse Characteristics



Figure 3. Current Derating



TYPICAL CHARACTERISTICS ($T_J = 25^{\circ}C$ unless otherwise noted)



Figure 5. Capacitive Charge vs. Reverse Voltage



Figure 6. Capacitance vs. Reverse Voltage



Figure 7. Capacitance Stored Energy



Figure 8. Junction-to-Case Transient Thermal Response Curve

TYPICAL CHARACTERISTICS (T_J = 25° C unless otherwise noted)



Figure 9. Unclamped Inductive Switching Test Circuit & Waveform

PACKAGE DIMENSIONS



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