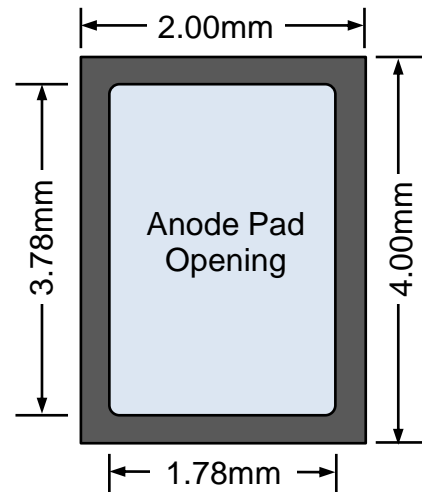


Features

- Positive temperature coefficient for safe operation and ease of paralleling
- 175°C maximum operating junction temperature
- Extremely fast switching not dependent on temperature
- Essentially no reverse or forward recovery



Typical Applications

- Power converters
- Industrial motor drives
- Switching-mode power supplies
- Power factor correction modules

Part Number	Anode Metal	Cathode Metal	Packaging
UJD06550Z	Al (5 μ m)	Ti/Ni/Au (0.07/0.1/0.1 μ m)	Die on Tape

Descriptions

United Silicon Carbide, Inc offers the xR series of high-performance SiC Schottky diodes. With zero reverse recovery charge and 175°C maximum junction temperature, USCI's diodes are ideally suited for high-frequency and high-efficiency power systems with minimum cooling requirements.

Maximum Ratings

Parameter	Symbol	Test Conditions	Value	Units
DC Blocking Voltage	V_{DC}		650	V
Repetitive Peak Reverse Voltage, $T_j=25^\circ\text{C}$	V_{RRM}		650	V
Surge Peak Reverse Voltage	V_{RSM}		650	V
Maximum DC Forward Current ⁽¹⁾	I_F	$T_C = 100^\circ\text{C}$	50	A
Non-Repetitive Forward Surge Current ⁽¹⁾	I_{FSM}	$T_C = 25^\circ\text{C}$, 8.3ms Half Sine Pulse	TBD	A
Non-Repetitive Peak Forward Current ⁽¹⁾	$I_{F,max}$	$T_C = 25^\circ\text{C}$, 10 μ s	TBD	A
Non-Repetitive Avalanche Energy ⁽¹⁾	E_{AS}	$T_j = 25^\circ\text{C}$, L = 5mH, $I_{pk}=5.5\text{A}$, $V_{DD}=100\text{V}$	TBD	mJ
Maximum Junction Temperature	$T_{J,max}$		175	$^\circ\text{C}$
Operating and Storage Temperature	T_j, T_{STG}		-55 to 175	$^\circ\text{C}$

(1) Assumes a maximum junction-to-case thermal resistance of 0.65°C/W.

Electrical Characteristics

$T_J = +25^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Test Conditions	Value			Units
			Min	Typ	Max	
Forward Voltage	V_F	$I_F = 50\text{A}, T_J = 25^\circ\text{C}$	-	1.55	1.7	V
		$I_F = 50\text{A}, T_J = 150^\circ\text{C}$	-	2	2.1	
		$I_F = 50\text{A}, T_J = 175^\circ\text{C}$	-	2.1	2.25	
Reverse Current	I_R	$V_R = 650\text{V}, T_J = 25^\circ\text{C}$	-	135	500	μA
		$V_R = 650\text{V}, T_J = 175^\circ\text{C}$	-	270		
Total Capacitive Charge	Q_C	$V_R = 400\text{V}, I_F = 50\text{A},$ $di/dt = 250\text{A}/\mu\text{s}$		103		nC
Total Capacitance	C	$V_R = 1\text{V}, f = 1\text{MHz}$		1400		pF
		$V_R = 300\text{V}, f = 1\text{MHz}$		145		
		$V_R = 600\text{V}, f = 1\text{MHz}$		112		

Mechanical Characteristics

Parameter	Typical Value	Units
Die Dimensions (L x W)	2.00 x 4.00	mm
Top Anode Pad Opening (L x W)	1.78 x 3.78	mm
Wafer Size	100	mm
Anode Metallization (Al)	5	μm
Cathode Metallization (Ti/Ni/Au)	0.07/0.1/0.1	μm
Frontside Passivation BCB	5.5	μm
Die Thickness	100	μm

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