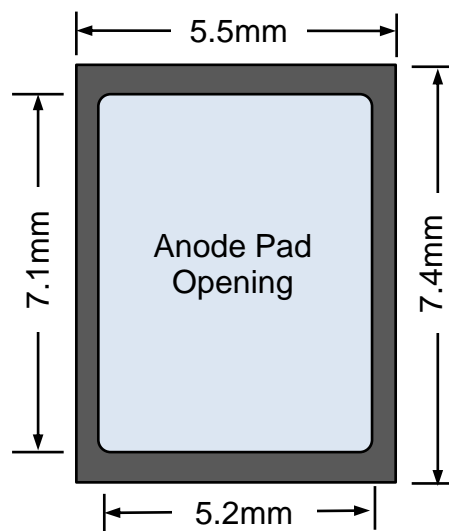


Features

- 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
UJ3D12100Z	Al (5μm)	Ti/Ni/Ag (0.1/0.2/1μm)	Die on tape (6")

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_R		1200	V
Repetitive Peak Reverse Voltage, $T_j=25^\circ\text{C}$	V_{RRM}		1200	V
Maximum DC Forward Current ⁽¹⁾	I_F	$T_C = 137^\circ\text{C}$	100	A
Non-Repetitive Forward Surge Current ⁽¹⁾	I_{FSM}	$T_C = 25^\circ\text{C}$, 8.3ms Half Sine Pulse	TBD	A
Non-Repetitive Avalanche Energy ⁽¹⁾	E_{AS}	$T_j = 25^\circ\text{C}$, $L = 10\text{mH}$, $I_{pk}=\text{TBD}$, $V_{DD}=100\text{V}$	TBD	mJ
Maximum Junction Temperature	$T_{J,max}$		175	°C
Operating and Storage Temperature	T_J, T_{STG}		-55 to 175	°C

(1) Assumes a maximum junction-to-case thermal resistance of 0.125°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	$I_F = 100\text{A}, T_J = 25^\circ\text{C}$	-	1.5	1.7	V
		$I_F = 100\text{A}, T_J = 175^\circ\text{C}$	-	2.5	3	
Reverse Current	I_R	$V_R = 1200\text{V}, T_J = 25^\circ\text{C}$	-	40	1200	μA
		$V_R = 1200\text{V}, T_J = 175^\circ\text{C}$	-	200	3600	
Total Capacitive Charge	Q_C	$V_R = 600\text{V}, I_F = 60\text{A},$ $di/dt = 480\text{A}/\mu\text{s}$		316		nC
Total Capacitance	C	$V_R = 1\text{V}, f = 1\text{MHz}$		5000		pF
		$V_R = 300\text{V}, f = 1\text{MHz}$		500		
		$V_R = 600\text{V}, f = 1\text{MHz}$		356		

Typical Performance

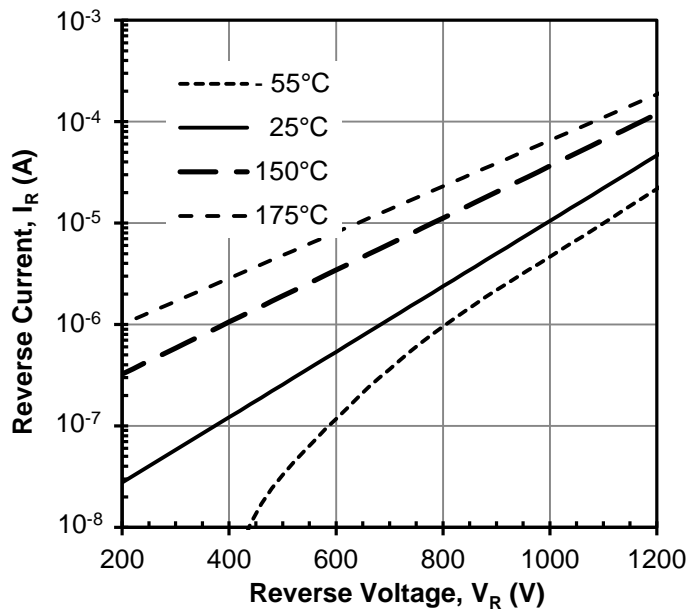


Figure 1 Typical reverse characteristics

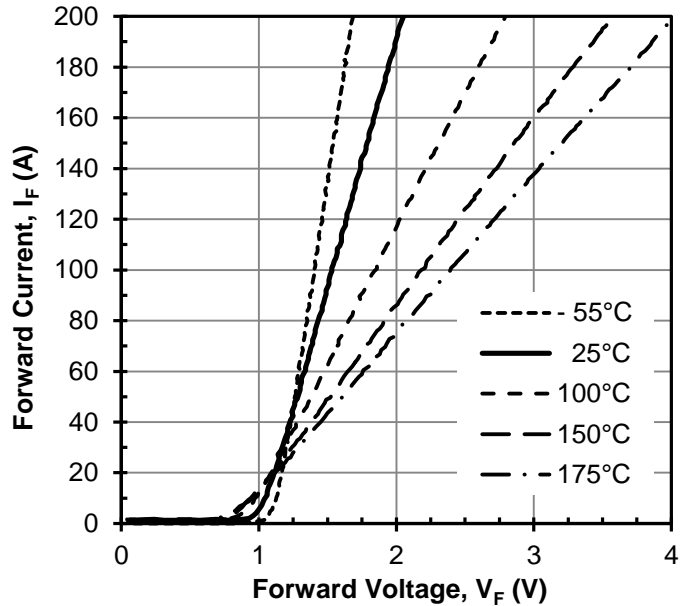


Figure 2 Typical forward characteristics

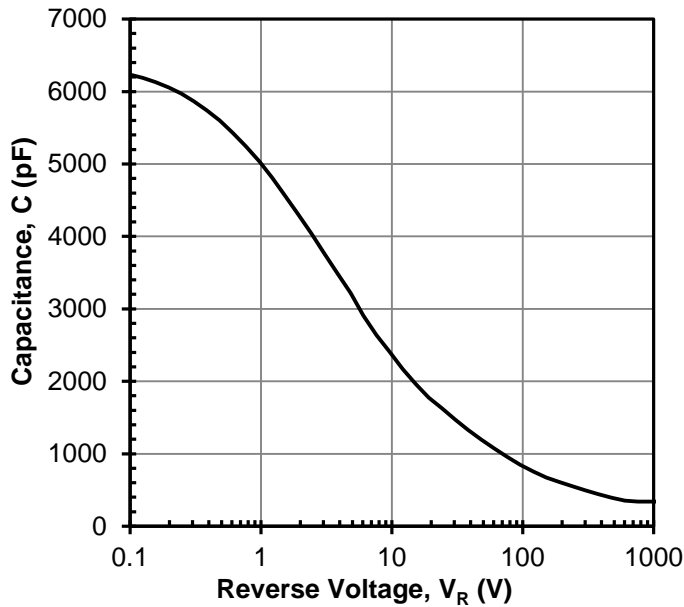


Figure 3 Capacitance vs. reverse voltage

Mechanical Characteristics

Parameter	Typical Value	Units
Die Dimensions (L x W)	5.5 x 7.4	mm
Top Anode Pad Opening (L x W)	5.2 x 7.1	mm
Wafer Size	150	mm
Anode Metallization (Al)	5	μm
Cathode Metallization (Ti/Ni/Ag)	0.1/0.2/1.0	μm
Die Thickness	150	μm

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