

DATASHEET

UJ3D1210KS

10A -1200V SiC Schottky Diode

Rev. C, February 2020

Description

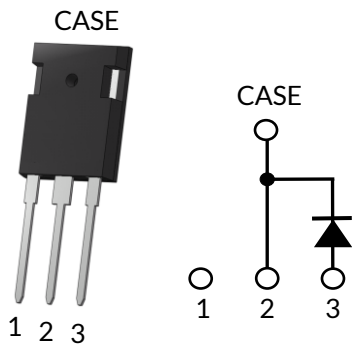
UnitedSiC offers the 3rd generation of high performance SiC Merged-PiN-Schottky (MPS) diodes. With zero reverse recovery charge and 175°C maximum junction temperature, these diodes are ideally suited for high frequency and high efficiency power systems with minimum cooling requirements.

Features

- ♦ Maximum operating temperature of 175°C
- ♦ Easy paralleling
- ♦ Extremely fast switching not dependent on temperature
- ♦ No reverse or forward recovery
- ♦ Enhanced surge current capability, MPS structure
- ♦ Excellent thermal performance, Ag sintered
- ♦ 100% UIS tested
- ♦ AEC-Q101 qualified

Typical applications

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



Part Number	Package	Marking
UJ3D1210KS	TO-247-3L	UJ3D1210KS



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
Surge peak reverse voltage	V_{RSM}		1200	V
Maximum DC forward current	I_F	$T_C = 158^{\circ}\text{C}$	10	A
Non-repetitive forward surge current sine halfwave	I_{FSM}	$T_C = 25^{\circ}\text{C}, t_p = 10\text{ms}$	120	A
		$T_C = 110^{\circ}\text{C}, t_p = 10\text{ms}$	110	
Repetitive forward surge current sine halfwave, $D=0.1$	I_{FRM}	$T_C = 25^{\circ}\text{C}, t_p = 10\text{ms}$	56.7	A
		$T_C = 110^{\circ}\text{C}, t_p = 10\text{ms}$	33.6	
Non-repetitive peak forward current	$I_{F,max}$	$T_C = 25^{\circ}\text{C}, t_p = 10\mu\text{s}$	720	A
		$T_C = 110^{\circ}\text{C}, t_p = 10\mu\text{s}$	720	
i^2t value	$\int i^2 dt$	$T_C = 25^{\circ}\text{C}, t_p = 10\text{ms}$	72	A^2s
		$T_C = 110^{\circ}\text{C}, t_p = 10\text{ms}$	60	
Power dissipation	P_{tot}	$T_C = 25^{\circ}\text{C}$	234.4	W
		$T_C = 158^{\circ}\text{C}$	26.6	
Maximum junction temperature	$T_{J,max}$		175	$^{\circ}\text{C}$
Operating and storage temperature	T_J, T_{STG}		-55 to 175	$^{\circ}\text{C}$
Soldering temperatures, wavesoldering only allowed at leads	T_{sold}	1.6mm from case for 10s	260	$^{\circ}\text{C}$

Thermal Characteristics

Parameter	Symbol	Test Conditions	Value			Units
			Min	Typ	Max	
Thermal resistance, junction-to-case	$R_{\theta JC}$			0.49	0.64	$^{\circ}\text{C/W}$

Electrical Characteristics ($T_J = +25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Value			Units
			Min	Typ	Max	
Forward voltage	V_F	$I_F = 10\text{A}, T_J = 25^\circ\text{C}$	-	1.4	1.6	V
		$I_F = 10\text{A}, T_J = 150^\circ\text{C}$	-	1.85	2.3	
		$I_F = 10\text{A}, T_J = 175^\circ\text{C}$	-	2	2.6	
Reverse current	I_R	$V_R = 1200\text{V}, T_J = 25^\circ\text{C}$	-	10	110	μA
		$V_R = 1200\text{V}, T_J = 175^\circ\text{C}$	-	450		
Total capacitive charge ⁽¹⁾	Q_C	$V_R = 800\text{V}$		51		nC
Total capacitance	C	$V_R = 1\text{V}, f = 1\text{MHz}$		510		pF
		$V_R = 400\text{V}, f = 1\text{MHz}$		48		
		$V_R = 800\text{V}, f = 1\text{MHz}$		41		
Capacitance stored energy	E_C	$V_R = 800\text{V}$		15		μJ

(1) Q_C is independent on T_J , di_F/dt , and I_F as shown in the application note USCi_AN0011.

Typical Performance Diagrams

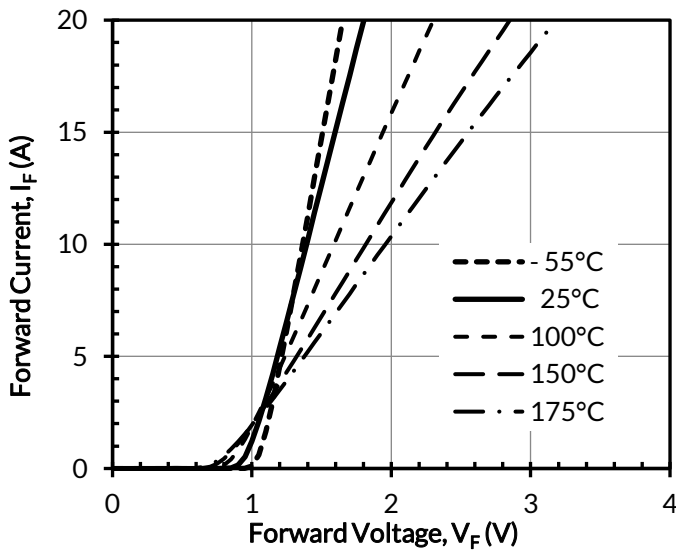


Figure 1. Typical forward characteristics

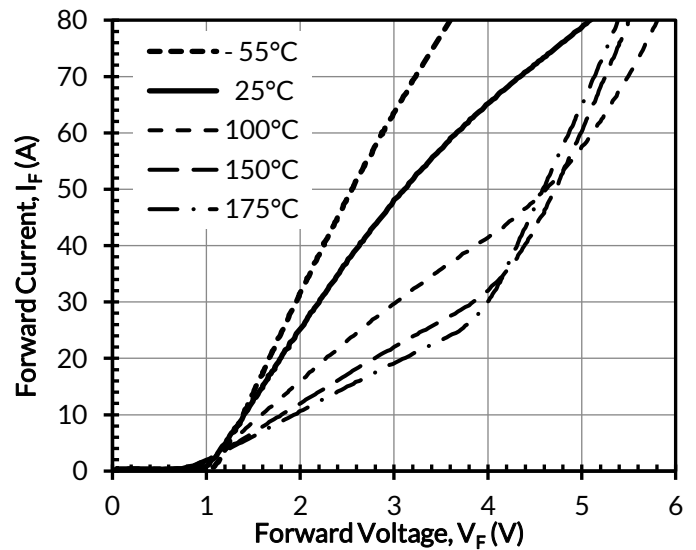


Figure 2. Typical forward characteristics in surge current

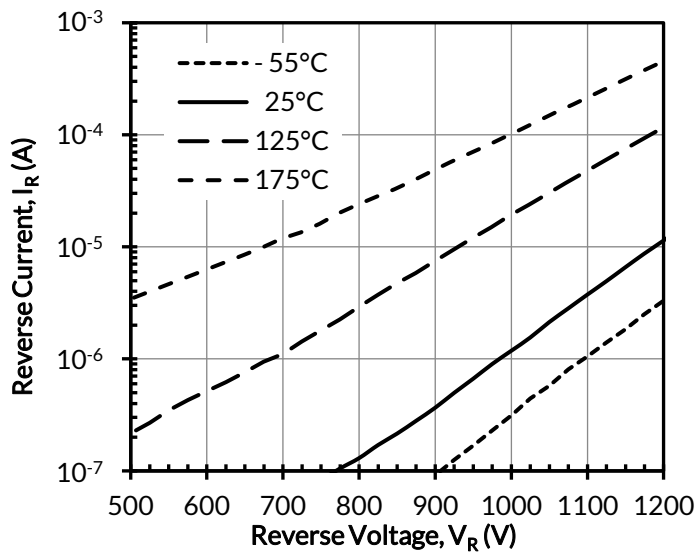


Figure 3. Typical reverse characteristics

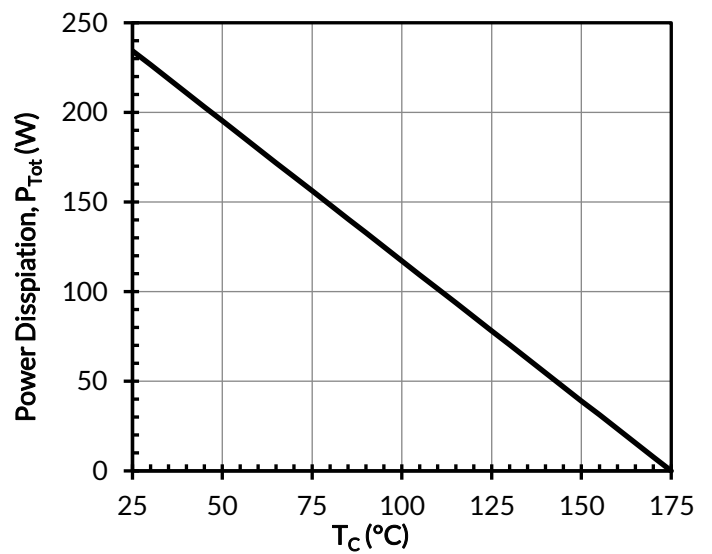


Figure 4. Power dissipation

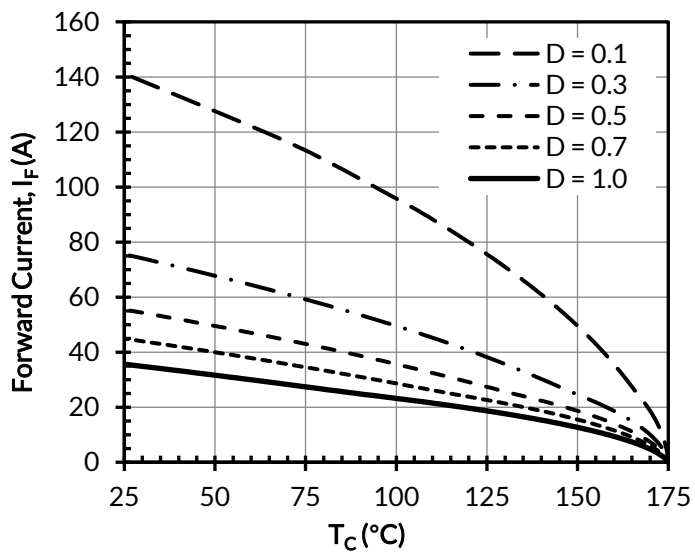


Figure 5. Diode forward current

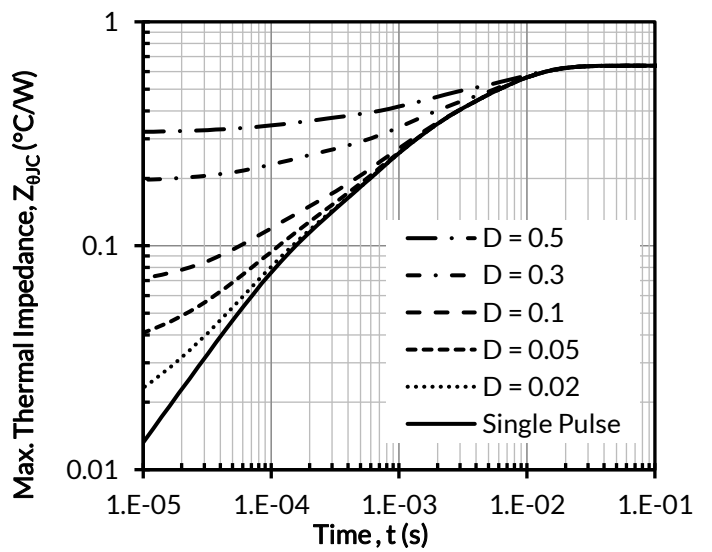


Figure 6. Maximum transient thermal impedance

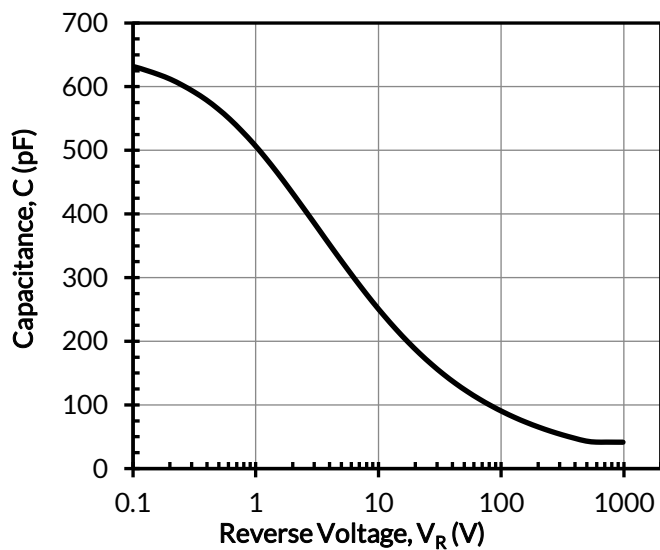


Figure 7. Capacitance vs. reverse voltage at 1MHz

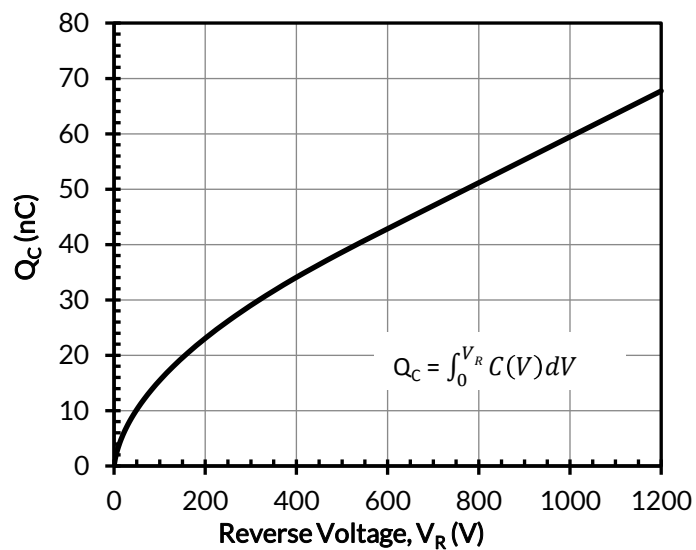


Figure 8. Typical capacitive charge vs. reverse voltage

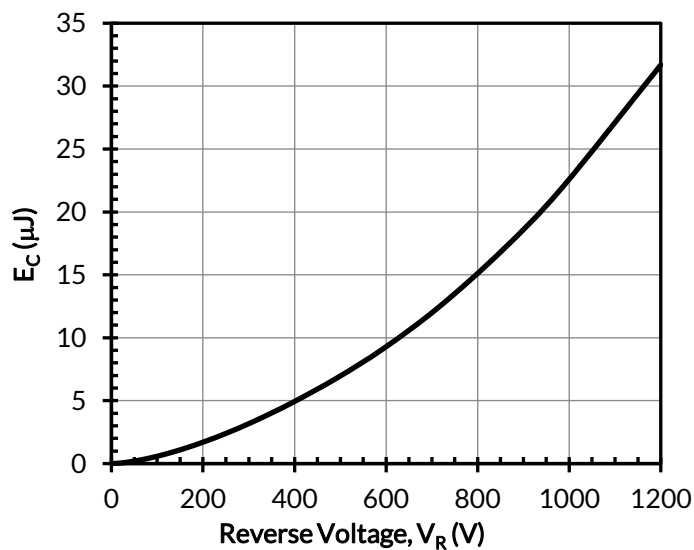


Figure 9. Typical capacitance stored energy vs. reverse voltage

Disclaimer

UnitedSiC reserves the right to change or modify any of the products and their inherent physical and technical specifications without prior notice. UnitedSiC assumes no responsibility or liability for any errors or inaccuracies within.

Information on all products and contained herein is intended for description only. No license, express or implied, to any intellectual property rights is granted within this document.

UnitedSiC assumes no liability whatsoever relating to the choice, selection or use of the UnitedSiC products and services described herein.

Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru

moschip.ru_4

moschip.ru_6

moschip.ru_9