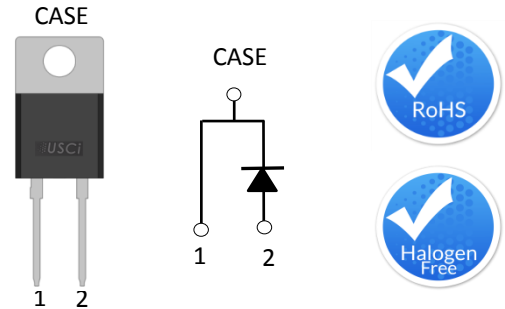


Description

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.



Part Number	Package	Marking
UJ2D1205T	TO-220-2L	UJ2D1205T

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
- ◆ RoHS compliant

Typical Applications

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

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	$T_C = 151^\circ\text{C}$	5	A
Non-repetitive forward surge current sine halfwave	I_{FSM}	$T_C = 25^\circ\text{C}, t_p = 10\text{ms}$	37.5	A
		$T_C = 110^\circ\text{C}, t_p = 10\text{ms}$	30	
Repetitive forward surge current sine halfwave, $D=0.1$	I_{FRM}	$T_C = 25^\circ\text{C}, t_p = 10\text{ms}$	21.3	A
		$T_C = 110^\circ\text{C}, t_p = 10\text{ms}$	13	
Non-repetitive avalanche energy	E_{AS}	$T_j = 25^\circ\text{C}, L = 10\text{mH}, I_{pk}=2.9\text{A}, V_{DD}=100\text{V}$	44	mJ
Power dissipation	P_{Tot}	$T_C = 25^\circ\text{C}$	93	W
		$T_C = 151^\circ\text{C}$	15	
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	$^\circ\text{C}$

Electrical Characteristics

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

Parameter	Symbol	Test Conditions	Value			Units
			Min	Typ	Max	
Forward voltage	V_F	$I_F = 5\text{A}, T_J = 25^\circ\text{C}$	-	1.5	1.7	V
		$I_F = 5\text{A}, T_J = 175^\circ\text{C}$	-	2.5	3	
Reverse current	I_R	$V_R = 1200\text{V}, T_J = 25^\circ\text{C}$	-	30	190	μA
		$V_R = 1200\text{V}, T_J = 175^\circ\text{C}$	-	60	600	
Total capacitive charge ⁽¹⁾	Q_C	$V_R = 800\text{V}$		26		nC
Total capacitance	C	$V_R = 1\text{V}, f = 1\text{MHz}$		260		pF
		$V_R = 400\text{V}, f = 1\text{MHz}$		24		
		$V_R = 800\text{V}, f = 1\text{MHz}$		19		
Capacitance stored energy	E_C	$V_R = 800\text{V}$		6.8		μJ

(1) See Figure 8, Q_C is independent on T_J , di_F/dt , and I_F as shown in the application note USCi_AN0011.

Thermal characteristics

Parameter	symbol	Test Conditions	Value			Units
			Min	Typ	Max	
Thermal resistance	$R_{\theta JC}$			1.19	1.6	$^\circ\text{C/W}$

Typical Performance

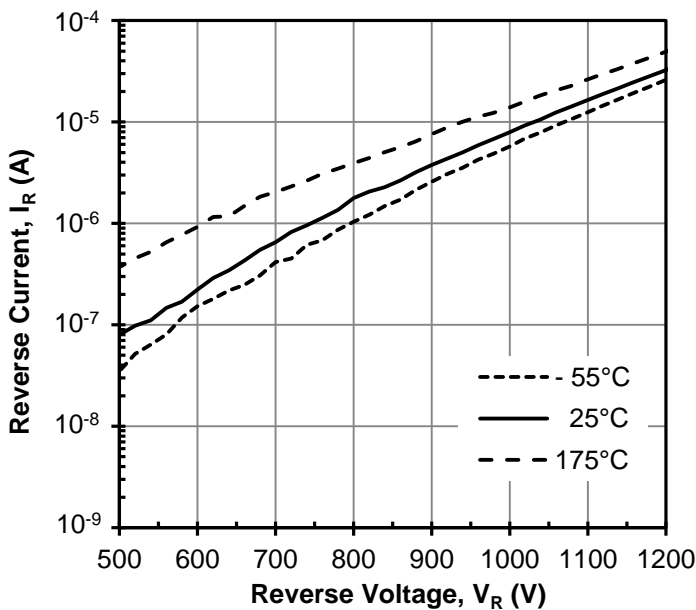


Figure 1 Typical reverse characteristics

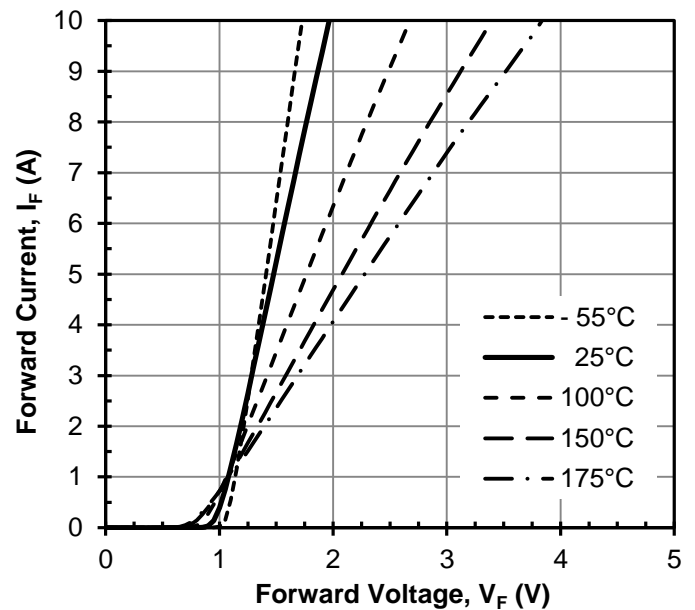


Figure 2 Typical forward characteristics

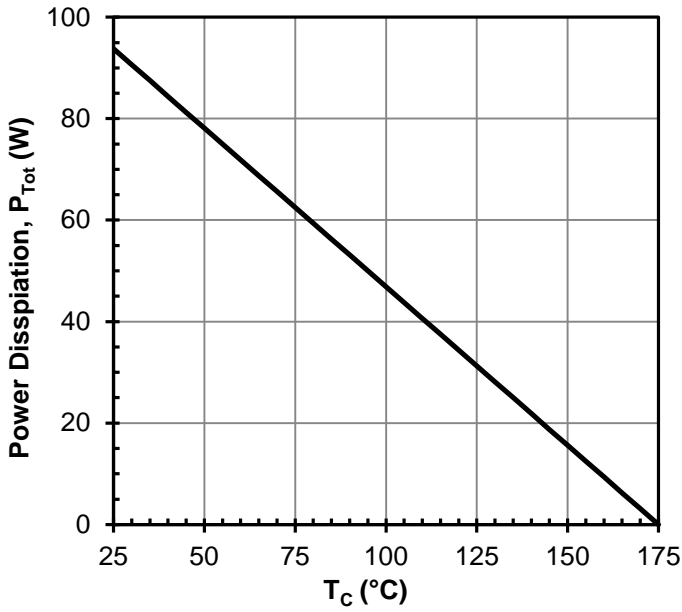


Figure 3 Power dissipation

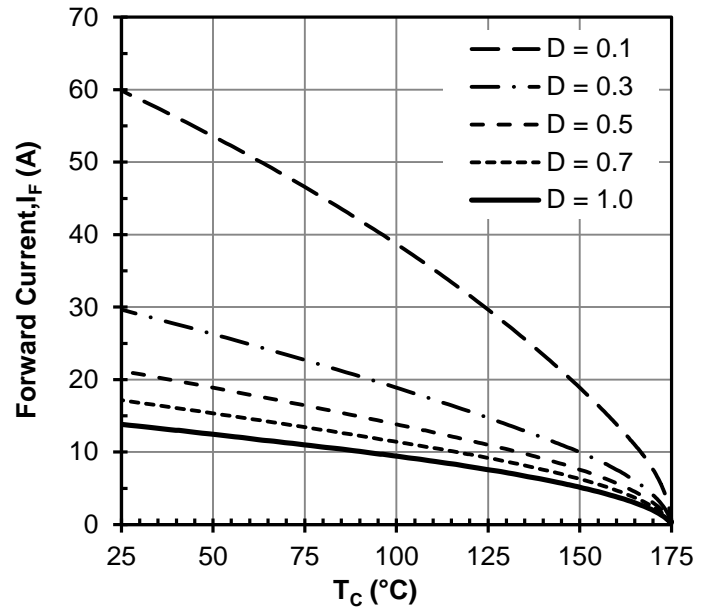


Figure 4 Diode forward current

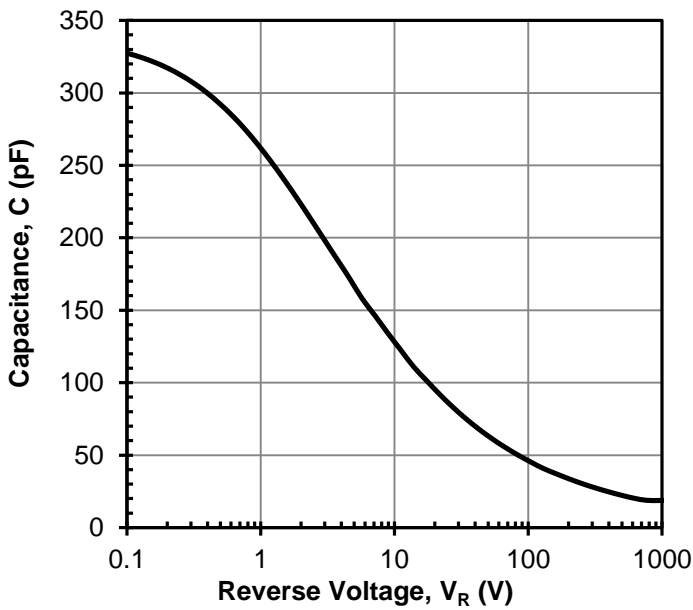


Figure 5 Capacitance vs. reverse voltage

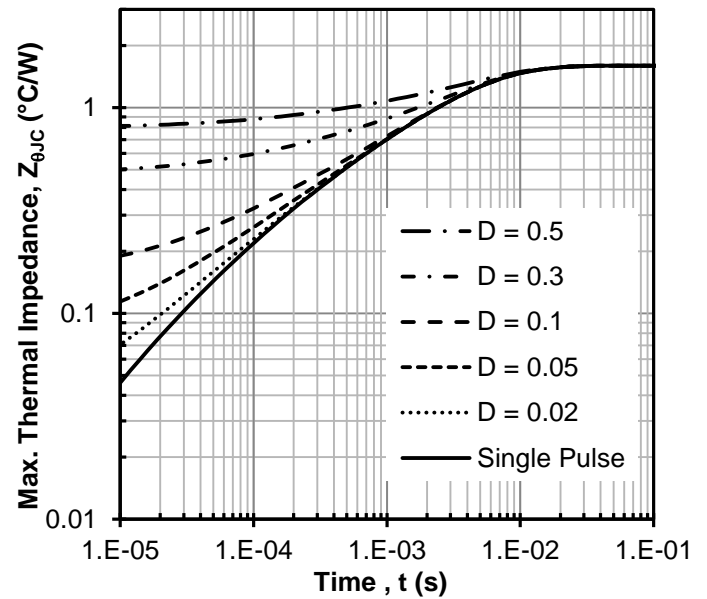


Figure 6 Maximum transient thermal impedance

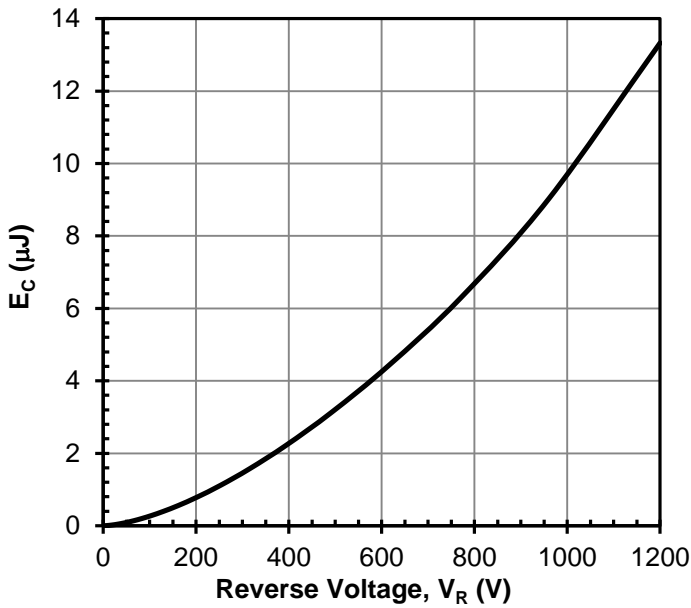


Figure 7 Typical capacitance stored energy vs. reverse voltage

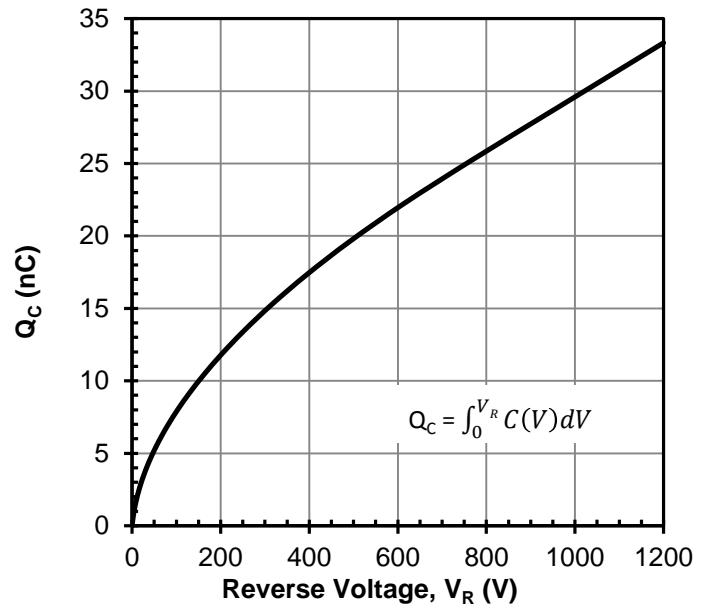


Figure 8 Typical capacitive charge vs. reverse voltage

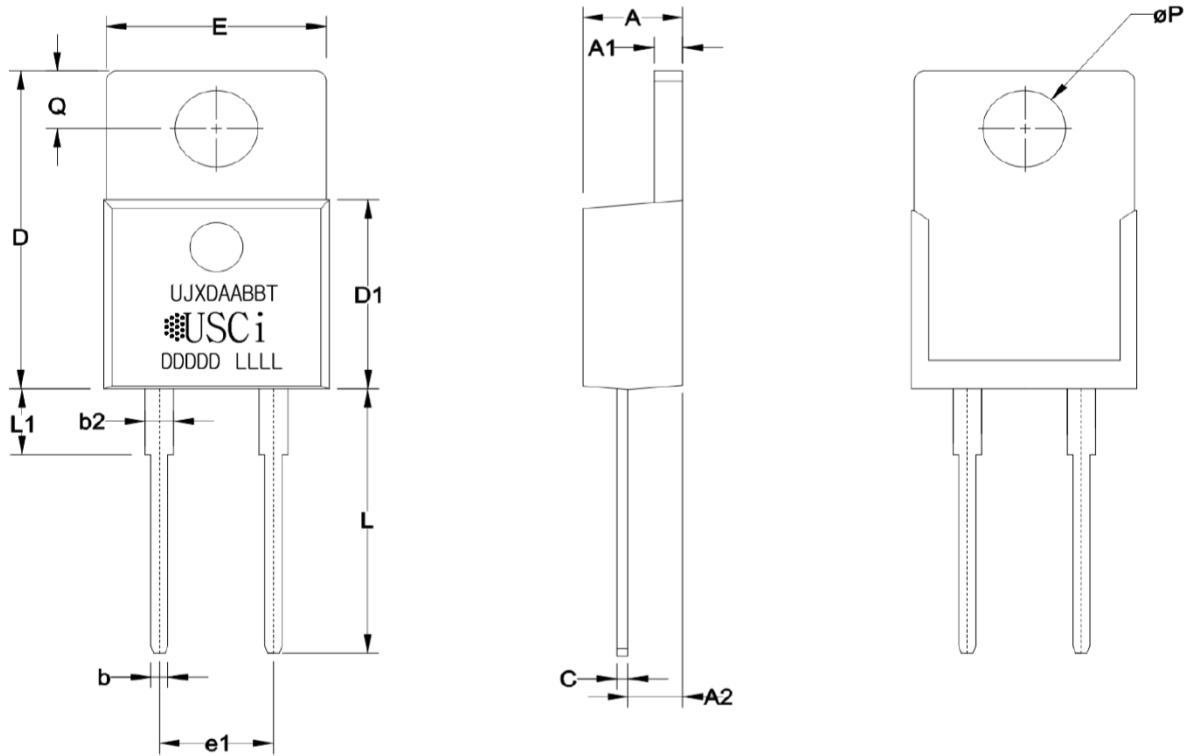
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TO-220-2L OUTLINE



DIM	INCHES		MILLIMETERS	
	min	max	min	max
A	0.165	0.185	4.19	4.70
A1	0.048	0.052	1.22	1.32
A2	0.094	0.098	2.39	2.49
b	0.025	0.035	0.64	0.89
b2	0.045	0.055	1.14	1.40
C	0.018	0.025	0.46	0.64
D	0.595	0.615	15.11	15.62
D1	0.355	0.365	9.02	9.27
E	0.381	0.391	9.68	9.93
e1	0.198	0.202	5.03	5.13
L	0.500	0.510	12.70	12.95
L1	0.120	0.150	3.05	3.81
ØP	0.143	0.147	3.63	3.73
Q	0.100	0.120	2.54	3.05

PART MARKING

UJXDAABBT

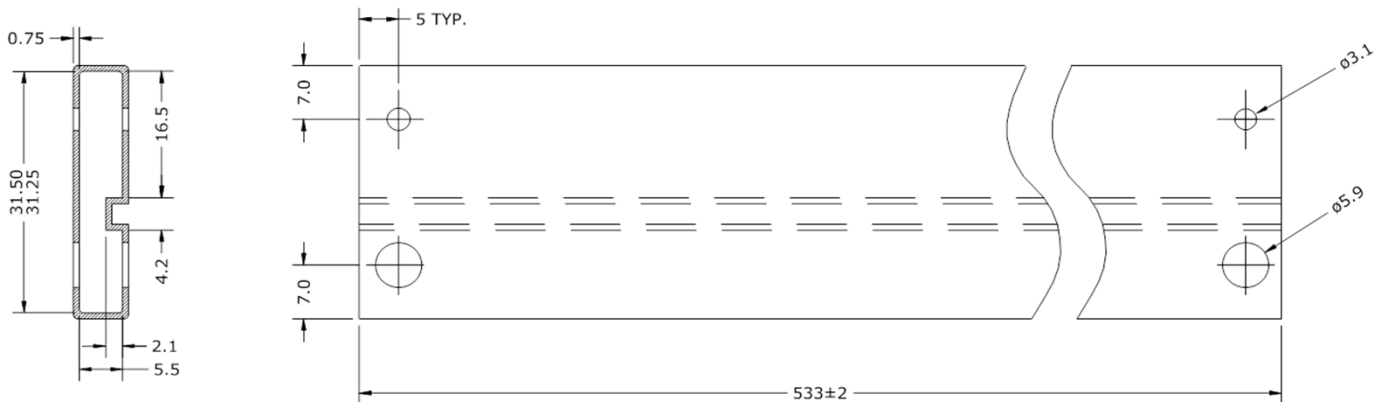
 DDDD LLLL

U =	USCi
JXD =	DIODE
X =	GENERATION
AA =	VOLTAGE RATING
BB =	CURRENT RATING
T =	TO-220-2L

DDDD= DATE CODE

LLLL = LOT CODE

TO-220-2L TUBE OUTLINE



ALL UNITS IN MILLIMETERS
 TOLERANCES +/-0.25mm UNLESS OTHERWISE SPECIFIED

50 units per tube

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