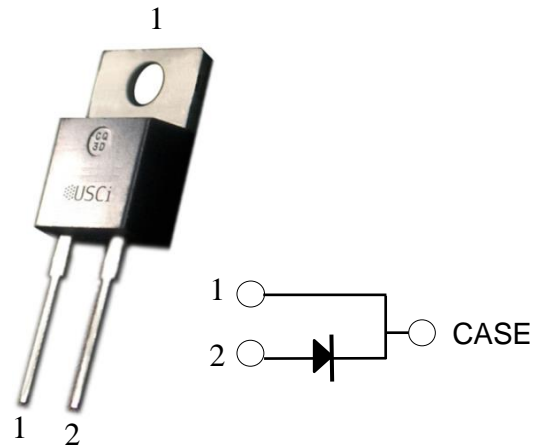


Features

- 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
- Enhanced surge capability

Typical Applications

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



Part Number	Package	Marking
UJD06506TS	TO-220-2	UJD06506TS

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	I_F	$T_C = 153^\circ\text{C}$	6	A
Non-Repetitive Forward Surge Current	I_{FSM}	$T_C = 25^\circ\text{C}$, 8.3ms Half Sine Pulse	48	A
Non-Repetitive Peak Forward Current	$I_{F,max}$	$T_C = 25^\circ\text{C}$, 10 μs	310	A
Non-Repetitive Avalanche Energy	E_{AS}	$T_j = 25^\circ\text{C}$, L = 5mH, $I_{pk}=4.25\text{A}$, $V_{DD}=100\text{V}$	50	mJ
Power Dissipation	P_{Tot}	$T_C = 25^\circ\text{C}$	93	W
		$T_C = 153^\circ\text{C}$	13.7	
Maximum Junction Temperature	$T_{J,max}$		175	$^\circ\text{C}$
Operating and Storage Temperature	T_J, T_{STG}		-55 to 175	$^\circ\text{C}$

Electrical Characteristics

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

Parameter	Symbol	Test Conditions	Value			Units
			Min	Typ	Max	
Forward Voltage	V_F	$I_F = 6\text{A}, T_J = 25^\circ\text{C}$	-	1.5	1.7	V
		$I_F = 6\text{A}, T_J = 150^\circ\text{C}$	-	1.8	2.1	
		$I_F = 6\text{A}, T_J = 175^\circ\text{C}$	-	2	2.25	
Reverse Current	I_R	$V_R = 650\text{V}, T_J = 25^\circ\text{C}$	-	15	200	μA
		$V_R = 650\text{V}, T_J = 175^\circ\text{C}$	-	30	640	
Total Capacitive Charge	Q_C	$V_R = 400\text{V}, I_F = 6\text{A},$ $di/dt = 250\text{A}/\mu\text{s}$		9		nC
Total Capacitance	C	$V_R = 1\text{V}, f = 1\text{MHz}$		179		pF
		$V_R = 300\text{V}, f = 1\text{MHz}$		21		
		$V_R = 600\text{V}, f = 1\text{MHz}$		18		

Thermal characteristics

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

Typical Performance

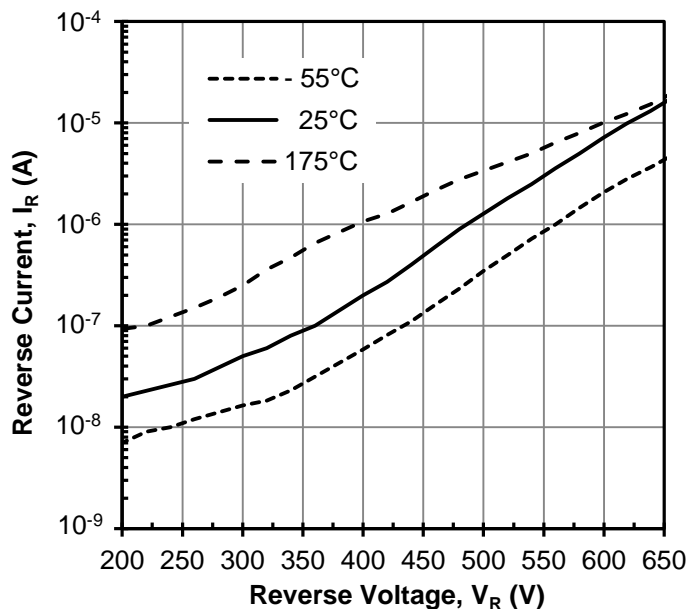


Figure 1 Typical reverse characteristics

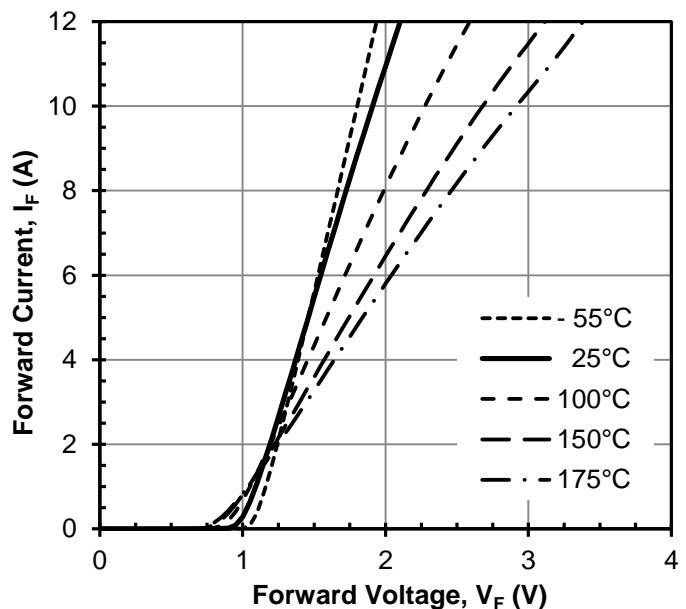


Figure 2 Typical forward characteristics

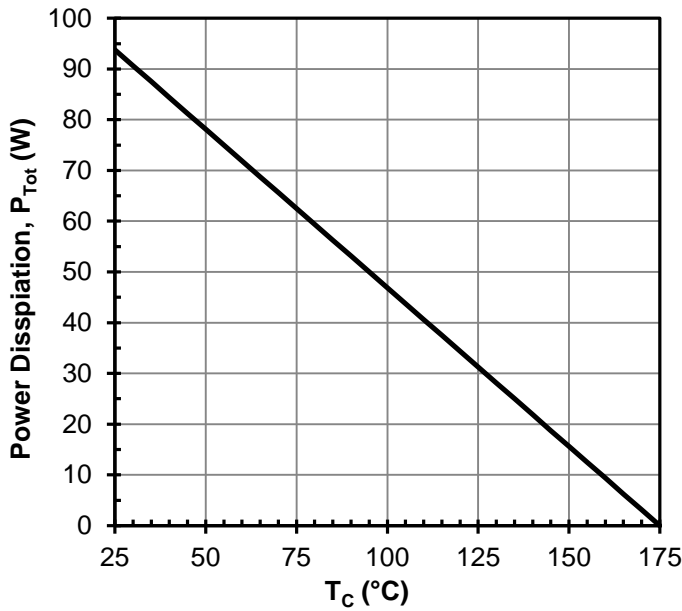


Figure 3 Power dissipation

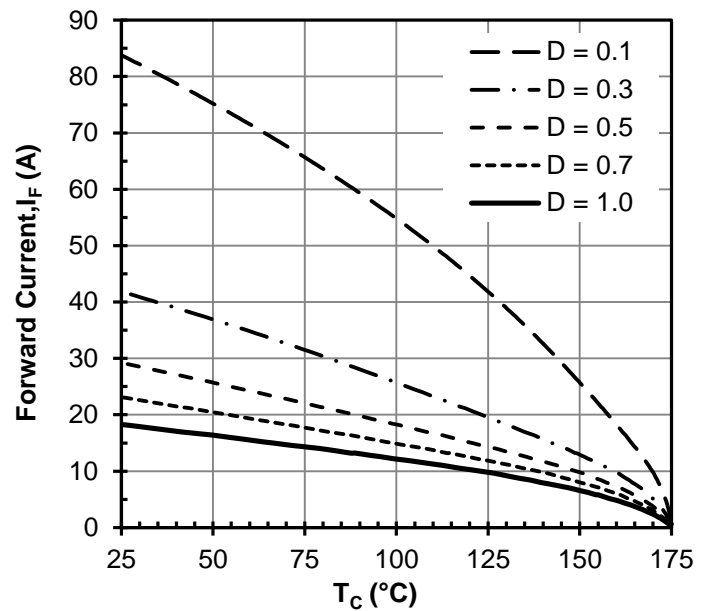


Figure 4 Diode forward current

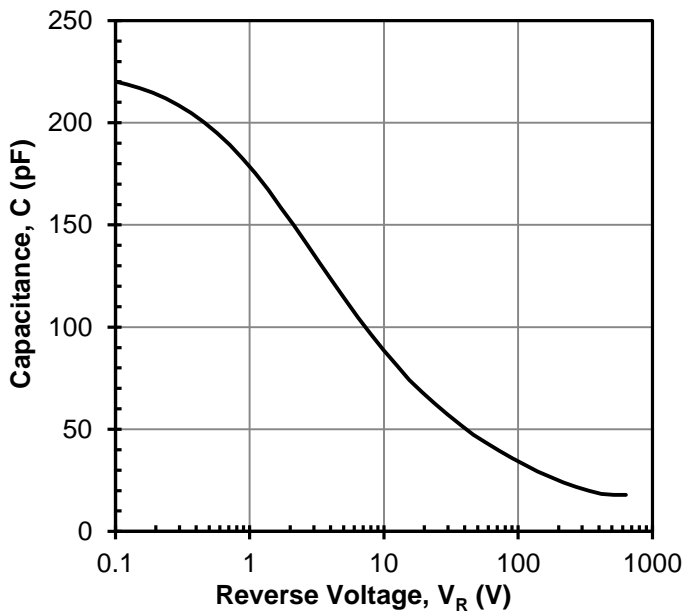


Figure 5 Capacitance vs. reverse voltage

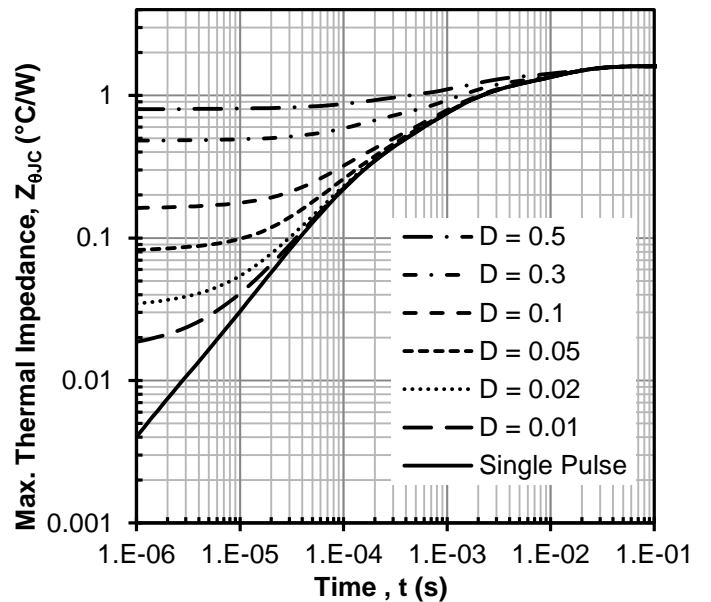
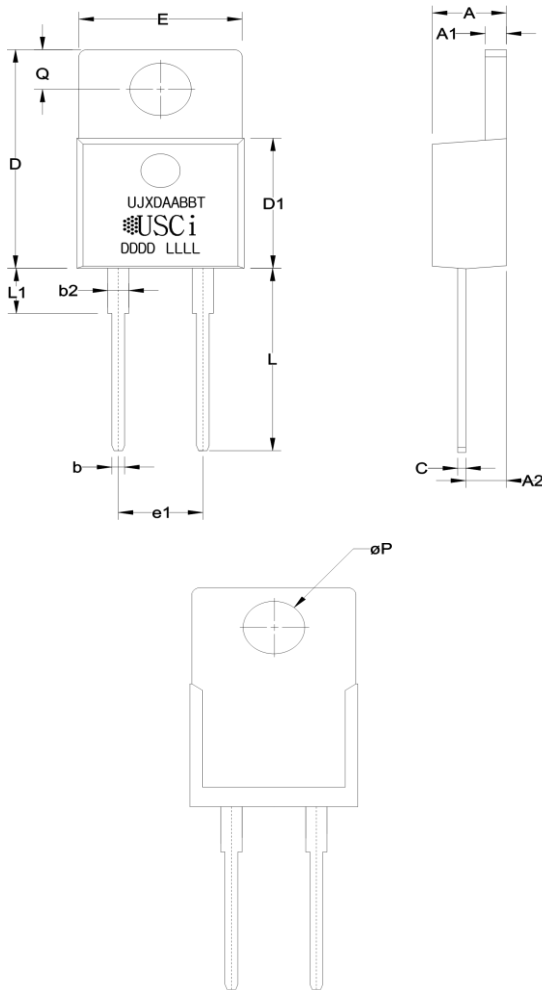


Figure 6 Maximum transient thermal impedance

Mechanical Characteristics



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	0.5	0.51	12.70	12.95
L1	0.12	0.15	3.05	3.81
øP	0.143	0.147	3.63	3.73
Q	0.1	0.12	2.54	3.05

Mounting	M3/M3.5	1Nm
Torque	Screw	8.8 lbf-in

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