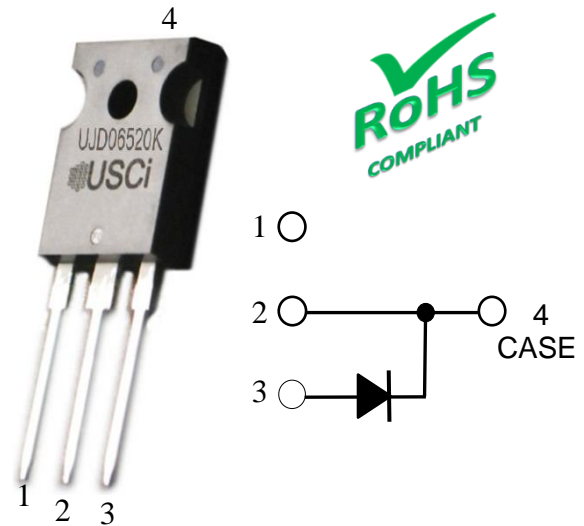


Features

- 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



Part Number	Package	Marking
UJD06520K	TO-247-3	UJD06520K

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	$T_C = 125^\circ\text{C}$	20	A
Non-Repetitive Forward Surge Current	I_{FSM}	$T_C = 25^\circ\text{C}$, 8.3ms Half Sine Pulse	90	A
Non-Repetitive Peak Forward Current	$I_{F,max}$	$T_C = 25^\circ\text{C}$, 10 μs	910	A
Non-Repetitive Avalanche Energy	E_{AS}	$T_j = 25^\circ\text{C}$, L = 5mH, $I_{pk}=7.8\text{A}$	168	mJ
Power Dissipation	P_{Tot}	$T_C = 25^\circ\text{C}$	136	W
		$T_C = 125^\circ\text{C}$	45	
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	$I_F = 20\text{A}, T_j = 25^\circ\text{C}$	-	1.5	1.7	V
		$I_F = 20\text{A}, T_j = 150^\circ\text{C}$	-	1.8	2.1	
		$I_F = 20\text{A}, T_j = 175^\circ\text{C}$	-	1.95	2.25	
Reverse Current	I_R	$V_R = 650\text{V}, T_j = 25^\circ\text{C}$	-	50	500	μA
		$V_R = 650\text{V}, T_j = 175^\circ\text{C}$	-	100	1600	
Total Capacitive Charge	Q_C	$V_R = 400\text{V}, I_F = 20\text{A},$ $di/dt = 250\text{A}/\mu\text{s}$		32		nC
Total Capacitance	C	$V_R = 1\text{V}, f = 1\text{MHz}$		580		pF
		$V_R = 300\text{V}, f = 1\text{MHz}$		62		
		$V_R = 600\text{V}, f = 1\text{MHz}$		56		

Thermal characteristics

Parameter	symbol	Test Conditions	Value			Units
			Min	Typ	Max	
Thermal Resistance	$R_{\theta JC}$				1.1	$^\circ\text{C}/\text{W}$

Typical Performance

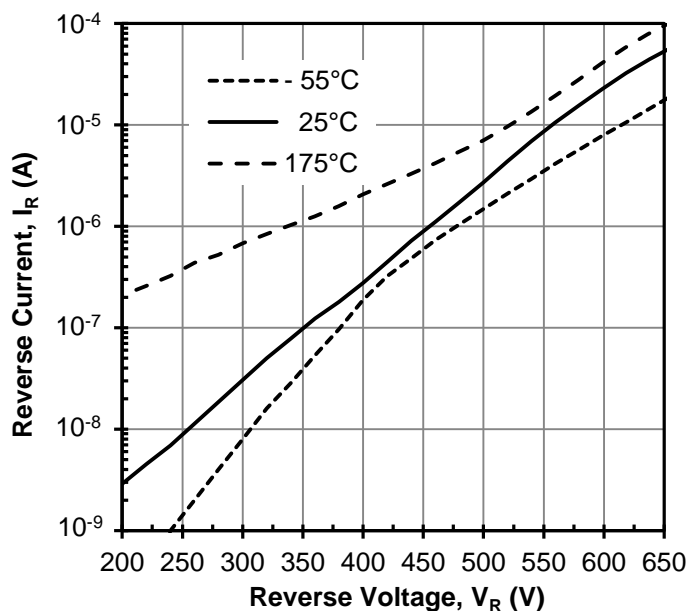


Figure 1 Typical reverse characteristics

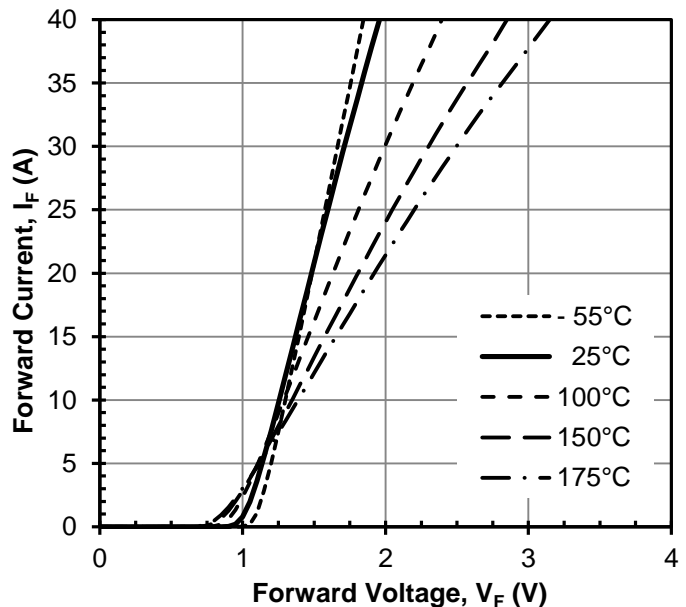


Figure 2 Typical forward characteristics

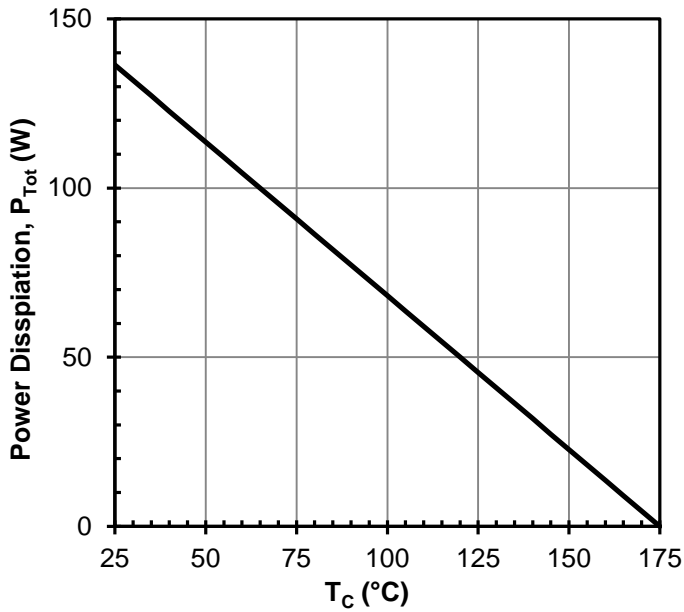


Figure 3 Power dissipation

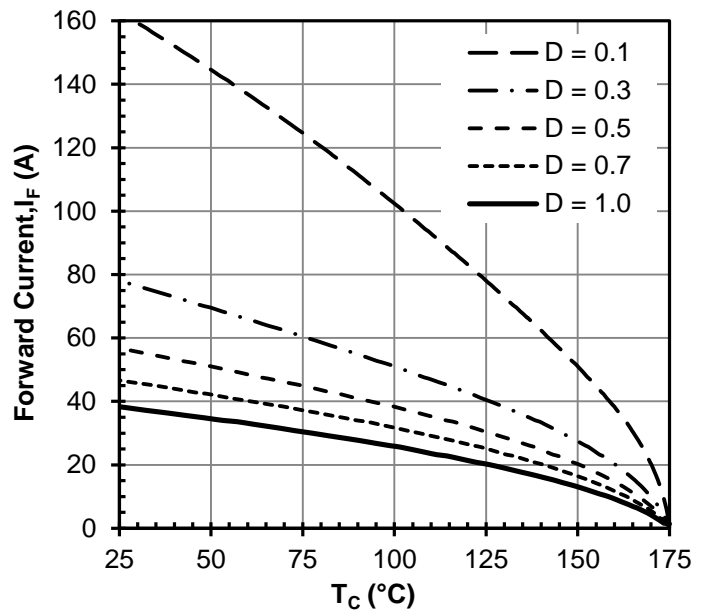


Figure 4 Diode forward current

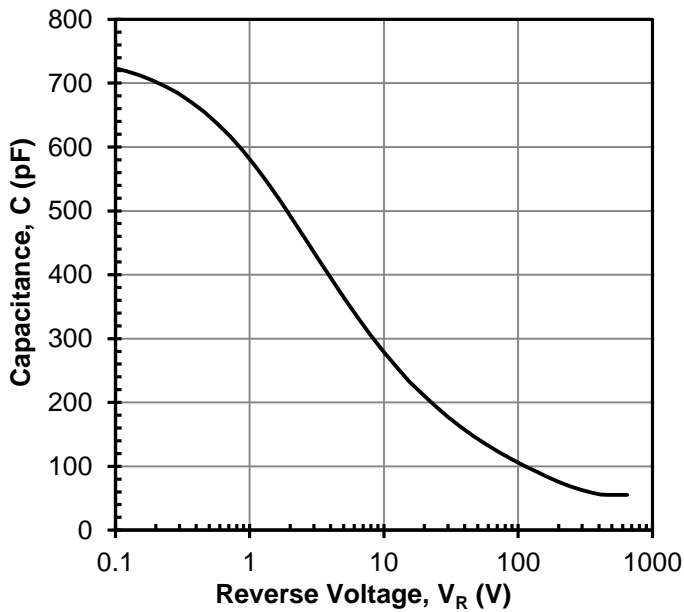


Figure 5 Capacitance vs. reverse voltage

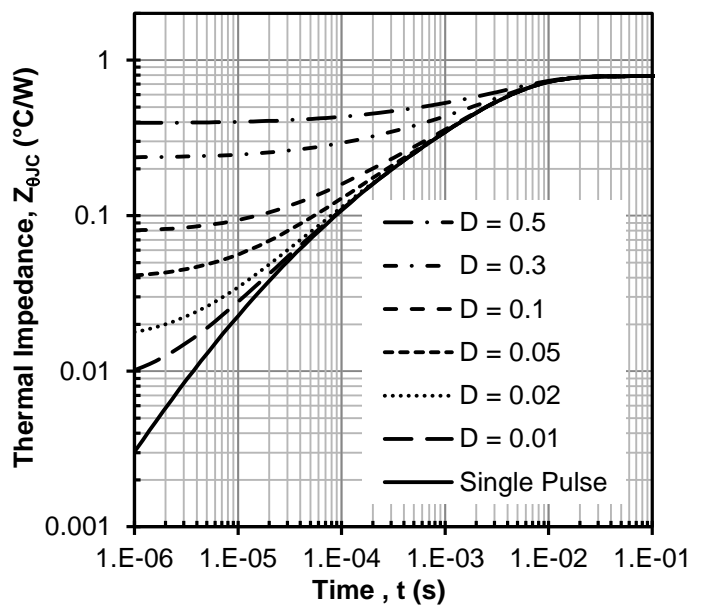
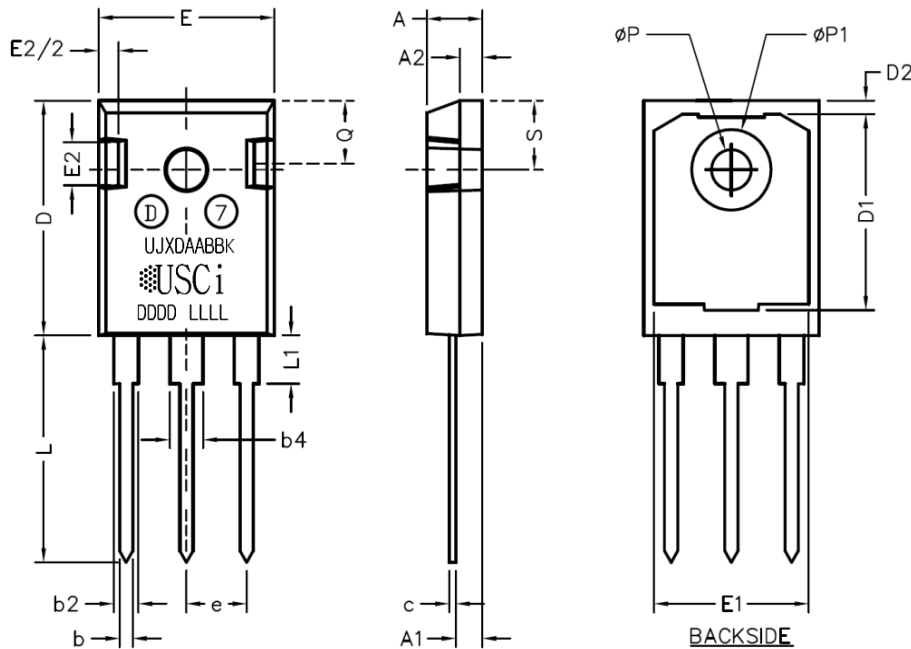


Figure 6 Transient thermal impedance

Mechanical Characteristics



Symbols	Min	Nom	Max
A	.193	.198	.203
A1	.090	.095	.100
A2	.073	.078	.083
b	.042	.047	.052
b2	.075	.080	.094
b4	.113	.118	.133
c	.022	.024	.027
D	.820	.825	.830
D1	.684	.690	.696
D2	.042	.047	.052
E	.621	.626	.631
E1	.547	.552	.557
E2	.135	.146	.157
E2/2	.081	.088	.095
e	.215 BSC		
L	.789	.794	.799
L1	.164	.170	.176
ϕP	.140	.142	.144
$\phi P1$.278	.283	.288
Q	.216	.221	.226
S	.238	.243	.248

ALL DIMENSIONS IN INCH

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

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