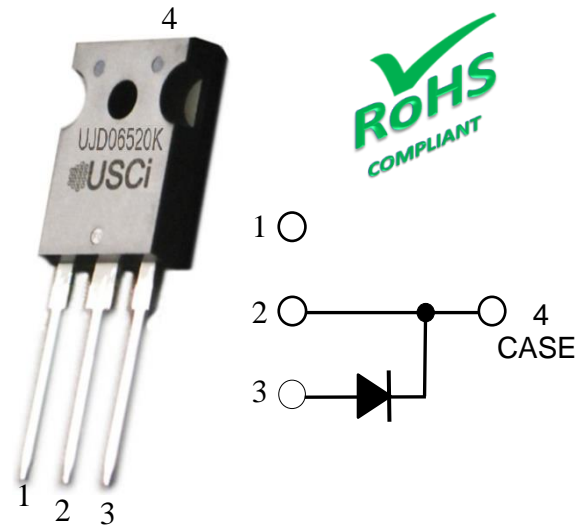


### Features

- 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
<b>UJD06520K</b>	<b>TO-247-3</b>	<b>UJD06520K</b>

### 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 $\mu\text{s}$	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	$\mu\text{A}$
		$V_R = 650\text{V}, T_j = 175^\circ\text{C}$	-	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

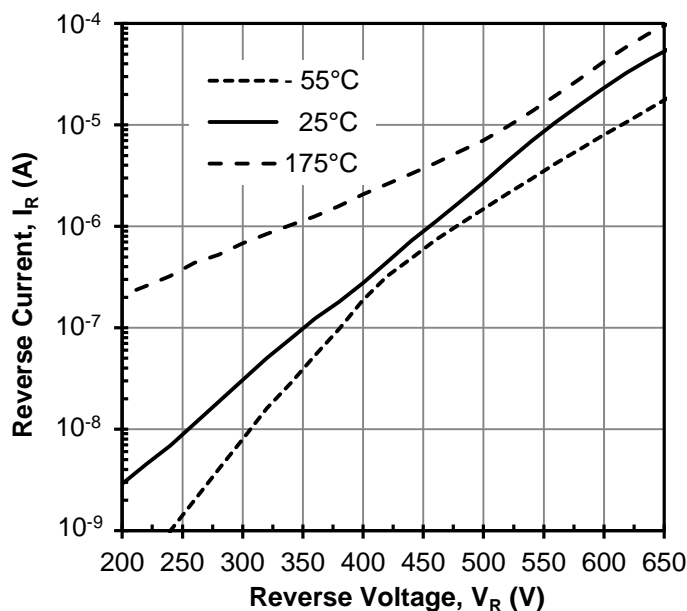


Figure 1 Typical reverse characteristics

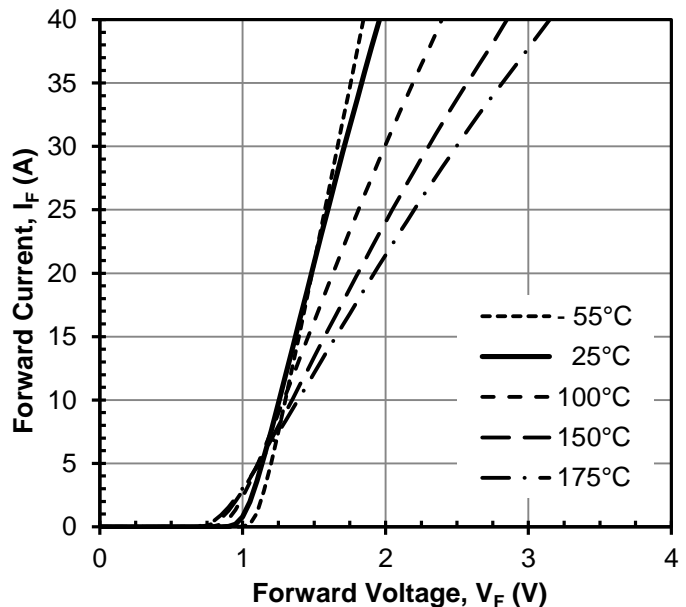
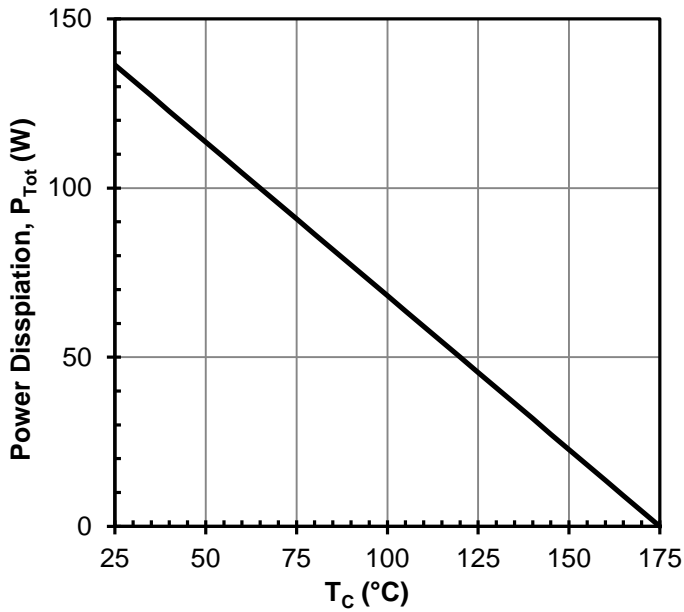
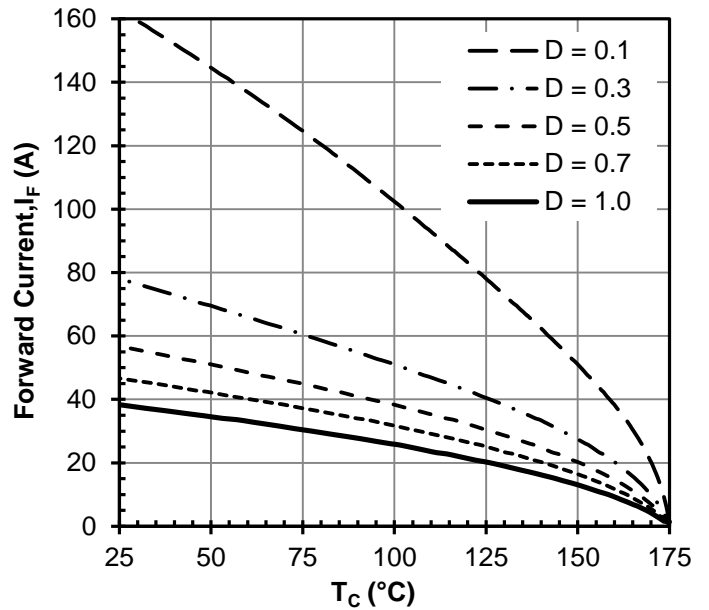


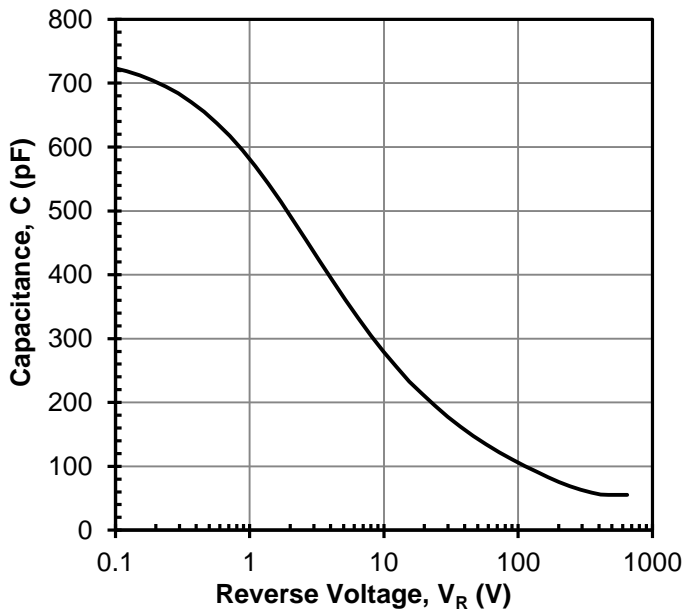
Figure 2 Typical forward characteristics



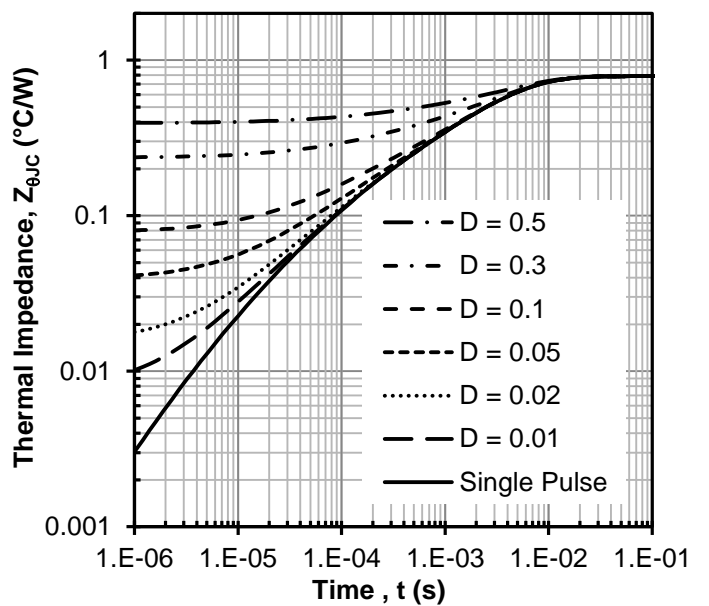
**Figure 3 Power dissipation**



**Figure 4 Diode forward current**

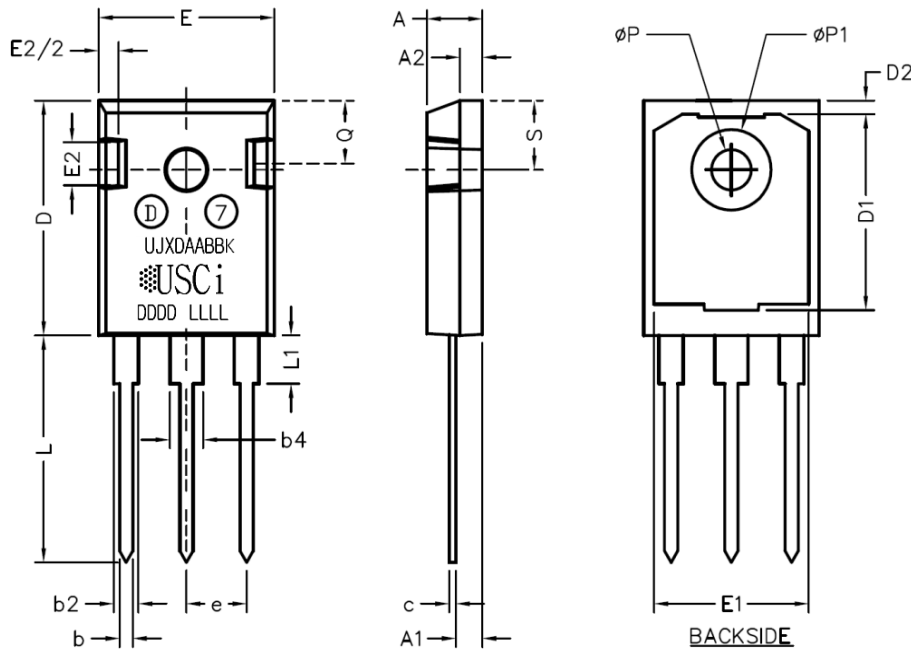


**Figure 5 Capacitance vs. reverse voltage**



**Figure 6 Transient thermal impedance**

**Mechanical Characteristics**



ALL DIMENSIONS IN INCH

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
ØP	.140	.142	.144
ØP1	.278	.283	.288
Q	.216	.221	.226
S	.238	.243	.248

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

**Disclaimer**

United Silicon Carbide, Inc. reserves the right to change or modify any of the products and their inherent physical and technical specifications without prior notice. United Silicon Carbide, Inc. 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.

United Silicon Carbide, Inc. assumes no liability whatsoever relating to the choice, selection or use of the United Silicon Carbide, Inc. products and services described herein.