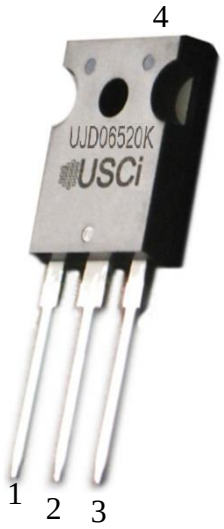
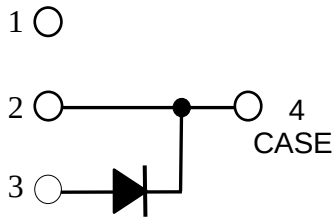
Features

- 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°C	V_{RRM}		650	V
Surge Peak Reverse Voltage	V_{RSM}		650	V
Maximum DC Forward Current	I_F	T_C = 125°C	20	A
Non-Repetitive Forward Surge Current	I_{FSM}	T_C = 25°C, 8.3ms Half Sine Pulse	90	A
Non-Repetitive Peak Forward Current	$I_{F,max}$	T_C = 25°C, 10µs	910	A
Non-Repetitive Avalanche Energy	E_{AS}	T_j = 25°C, L = 5mH, Ipk=7.8A	168	mJ
Power Dissipation	P_{Tot}	T_C = 25°C T_C = 125°C	136 45	W
Maximum Junction Temperature	$T_{J,max}$		175	°C
Operating and Storage Temperature	T_j, T_{STG}		-55 to 175	°C

Electrical Characteristics

T_J = +25°C unless otherwise specified

Parameter	Symbol	Test Conditions	Value			Units
			Min	Typ	Max	
Forward Voltage	V_F	I_F = 20A, T_J = 25°C	-	1.5	1.7	V
		I_F = 20A, T_J =150°C	-	1.8	2.1	
		I_F = 20A, T_J =175°C	-	1.95	2.25	
Reverse Current	I_R	V_R=650V, T_j=25°C	-	50	500	µA
		V_R=650V, T_J=175°C	-	100	1600	
Total Capacitive Charge	Q_C	V_R=400V, I_F=20A, di/dt=250A/µs		32		nC
Total Capacitance	C	V_R=1V, f=1MHz		580		pF
		V_R=300V, f=1MHz		62		
		V_R=600V, f=1MHz		56		

Thermal characteristics

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

Typical Performance

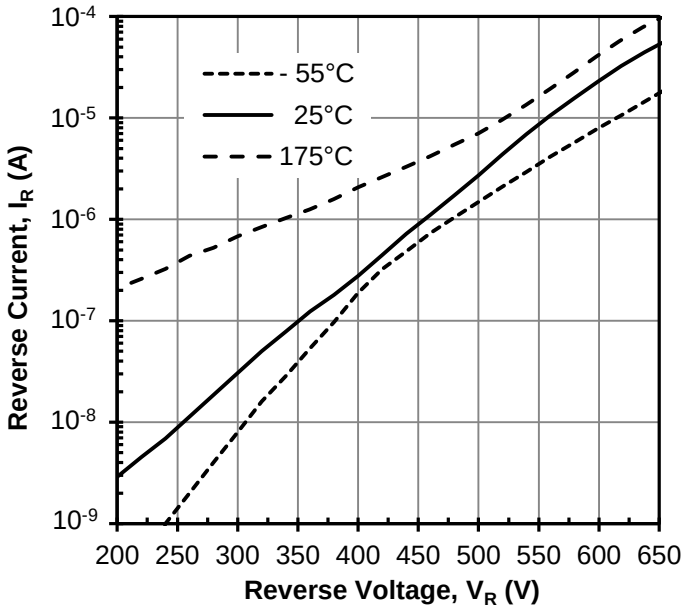


Figure 1 Typical reverse characteristics

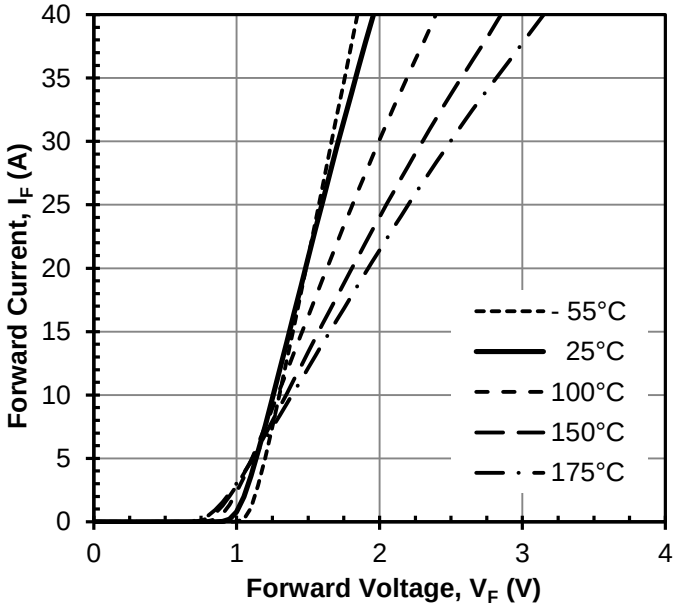


Figure 2 Typical forward characteristics

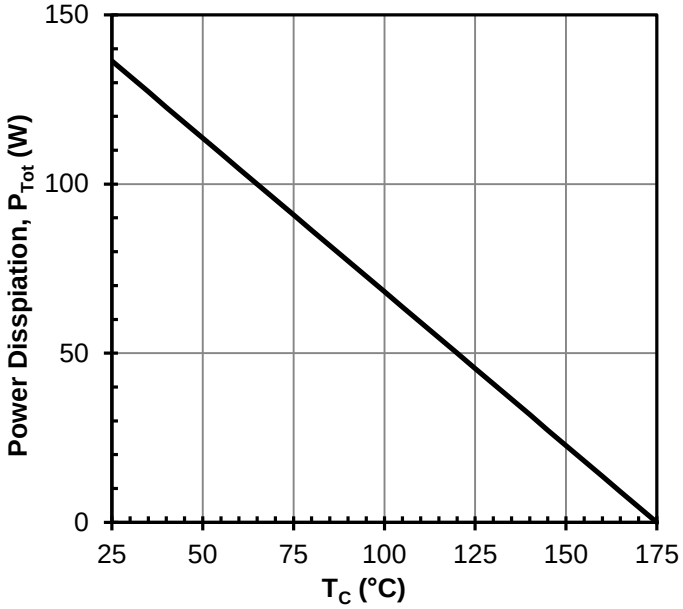


Figure 3 Power dissipation

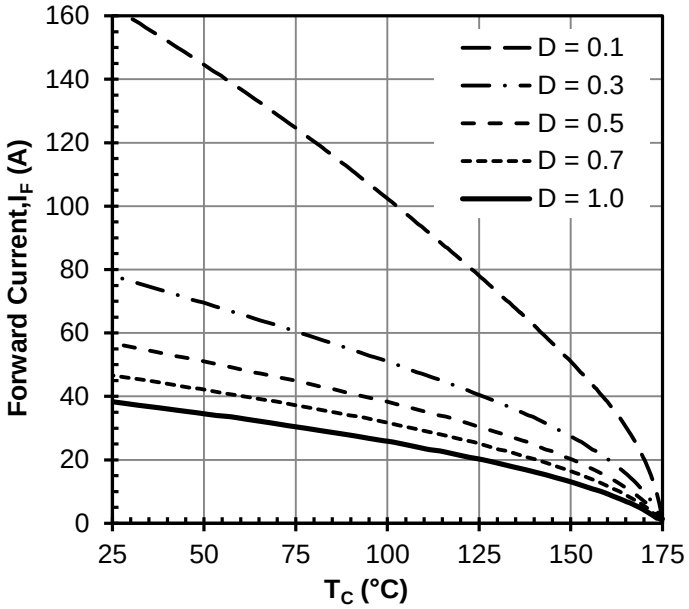


Figure 4 Diode forward current

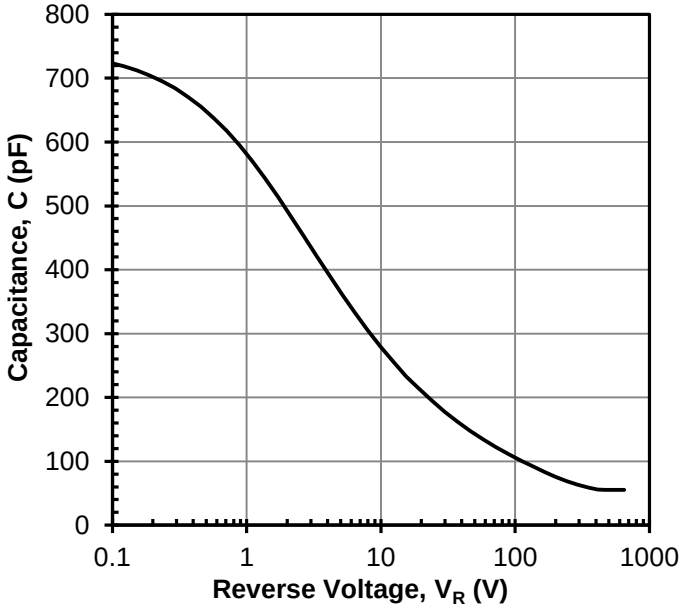


Figure 5 Capacitance vs. reverse voltage

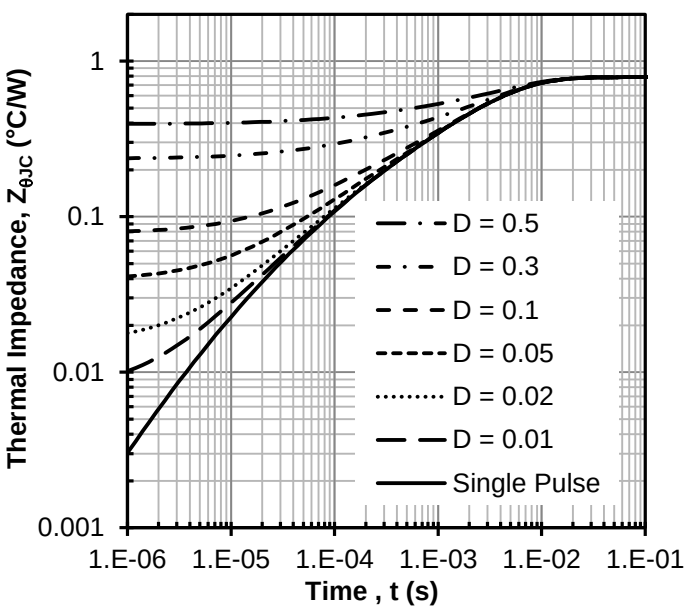
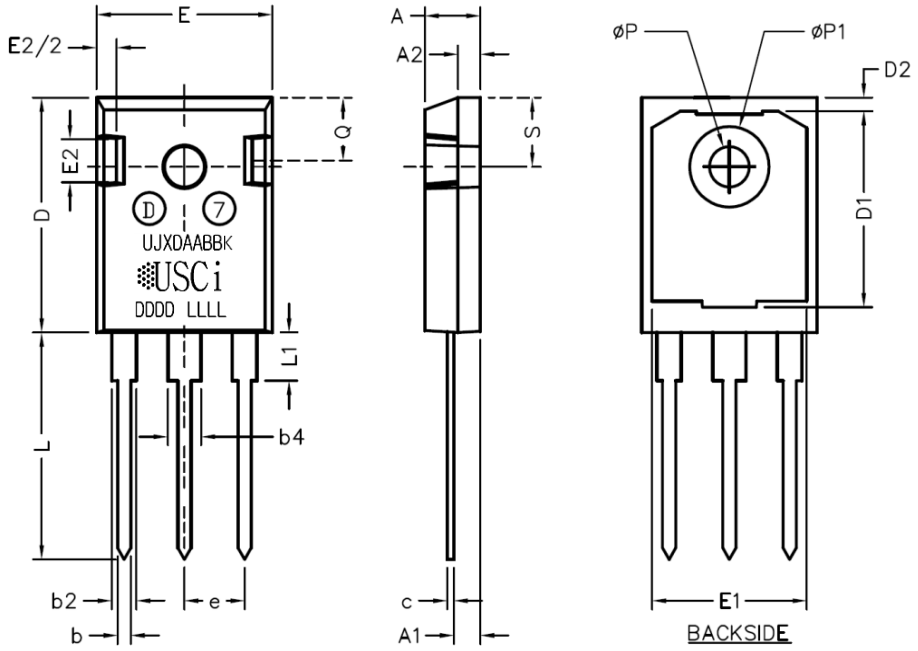


Figure 6 Transient thermal impedance

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	0.176
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

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