



## UCBD50120

**SiC-SBD DIODE**

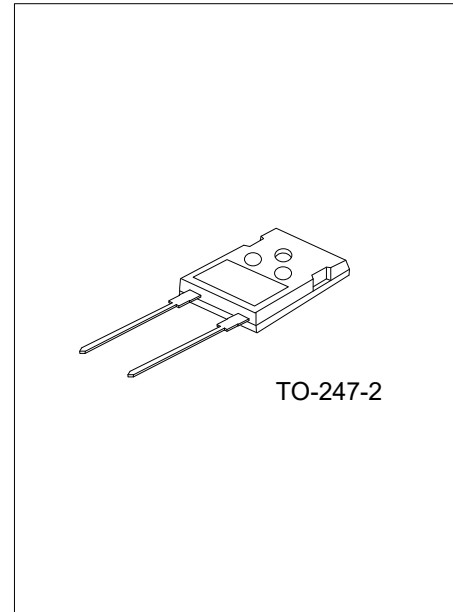
### SILICON CARBIDE SCHOTTKY BARRIER DIODES

#### DESCRIPTION

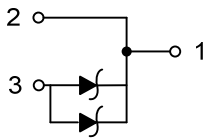
The **UCBD50120** is an SiC Schottky barrier diodes (SBDs) feature high reverse voltage ratings. In addition to SBDs with short reverse recovery time ( $t_{rr}$ ), provides 1200V SBDs with a junction barrier Schottky (JBS) structure that provide low leakage current ( $I_r$ ) and high surge current capability required for switched-mode power supplies. These devices help improve the efficiency of switched-mode power supplies.

#### FEATURES

- \* Zero Forward/Reverse Recovery Current
- \* High Blocking Voltage
- \* High Frequency Operation
- \* Positive Temperature Coefficient on  $V_F$
- \* Temperature Independent Switching Behavior
- \* High surge current capability



#### SYMBOL



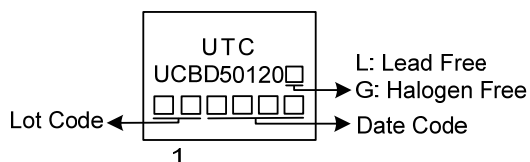
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UCBD50120L-T472-T	UCBD50120G-T472-T	TO-247-2	K	K	A	Tube

Note: Pin Assignment: K: Cathode A: Anode

<p>UCBD50120G-T472-T</p> <p>(1)Packing Type (2)Package Type (3)Green Package</p>	<p>(1) T: Tube (2) T472: TO-247-2 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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#### MARKING



■ ABSOLUTE MAXIMUM RATINGS ( $T_C=25^\circ\text{C}$ , unless otherwise specified)

Ratings at  $25^\circ\text{C}$  ambient temperature unless otherwise specified. Resistive or inductive load, 60Hz.

PARAMETER		SYMBOL	RATINGS	UNIT
Repetitive Peak Reverse Voltage		$V_{RRM}$	1200	V
Surge Peak Reverse Voltage		$V_{RSM}$	1200	V
DC Blocking Voltage		$V_R$	1200	V
Continuous Forward Current	$T_C=25^\circ\text{C}$	$I_F$	140	A
	$T_C=135^\circ\text{C}$		65	A
	$T_C=149^\circ\text{C}$		50	A
Repetitive Peak Forward Surge Current	$T_J=25^\circ\text{C}$ $t_p=10\text{ms}$ , Half Sine Wave	$I_{FRM}$	320	A
	$T_J=110^\circ\text{C}$ $t_p=10\text{ms}$ , Half Sine Wave		300	A
Non-Repetitive Peak Forward Surge Current	$T_J=25^\circ\text{C}$ $t_p=10\text{ms}$ , Half Sine Wave	$I_{FSM}$	300	A
	$T_J=110^\circ\text{C}$ $t_p=10\text{ms}$ , Half Sine Wave		260	A
Power Dissipation	$T_C=25^\circ\text{C}$	$P_D$	625	W
	$T_C=110^\circ\text{C}$		271	W
Operating Junction Temperature		$T_J$	-55 ~ +175	$^\circ\text{C}$
Storage Temperature Range		$T_{STG}$	-55 ~ +175	$^\circ\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL DATA

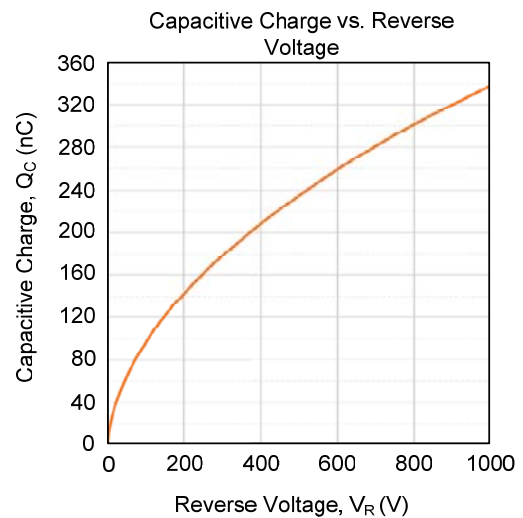
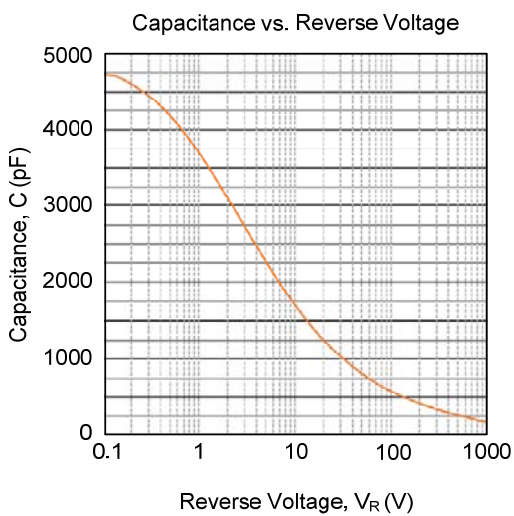
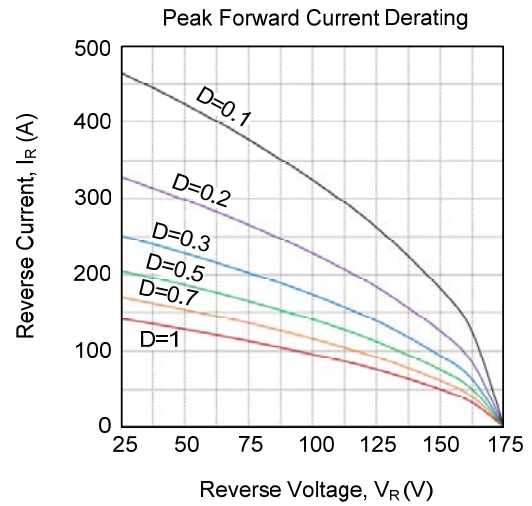
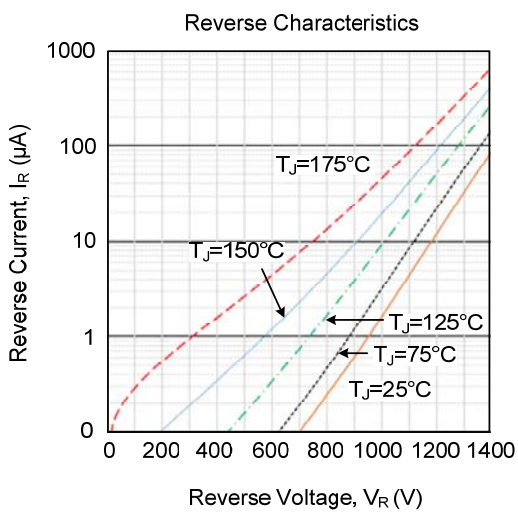
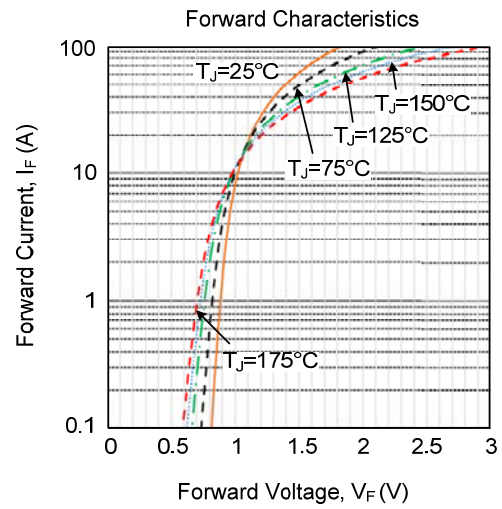
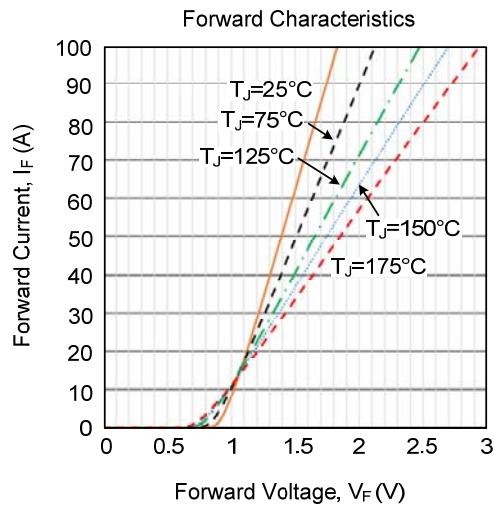
PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Junction to Case	$\theta_{JC}$		0.24	0.28	$^\circ\text{C/W}$

■ ELECTRICAL CHARACTERISTICS

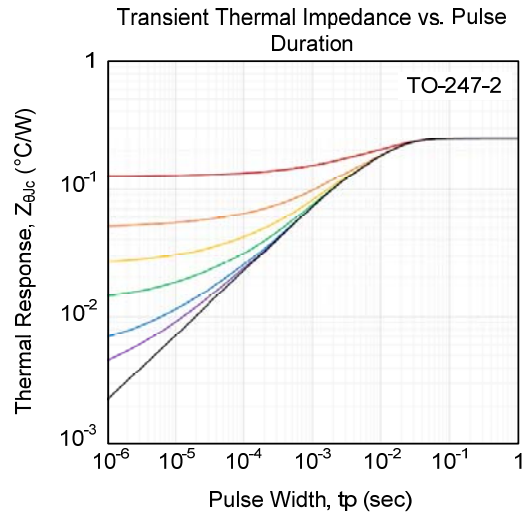
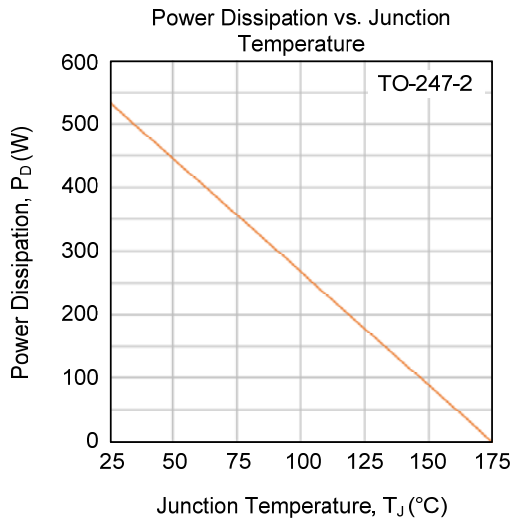
(Ratings at  $25^\circ\text{C}$  ambient temperature unless otherwise specified. Resistive or inductive load, 60Hz)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
DC Blocking Voltage	$V_{DC}$	$T_C=25^\circ\text{C}$	1200			V
Forward Voltage	$V_F$	$I_F=50\text{A}$ , $T_J=25^\circ\text{C}$		1.40	1.7	V
		$I_F=50\text{A}$ , $T_J=125^\circ\text{C}$		1.65		V
		$I_F=50\text{A}$ , $T_J=175^\circ\text{C}$		1.85		V
Reverse Current	$I_R$	$V_R=1200\text{V}$ , $T_J=25^\circ\text{C}$		12	200	$\mu\text{A}$
		$V_R=1200\text{V}$ , $T_J=125^\circ\text{C}$		51		$\mu\text{A}$
		$V_R=1200\text{V}$ , $T_J=175^\circ\text{C}$		170		$\mu\text{A}$
Total Capacitive Charge	$Q_C$	$V_R=800\text{V}$ , $T_J=25^\circ\text{C}$		310		nC
Total Capacitance	C	$V_R=1.0\text{V}$ , $T_J=25^\circ\text{C}$ , $f=1\text{MHz}$		3620		pF
		$V_R=400\text{V}$ , $T_J=25^\circ\text{C}$ , $f=1\text{MHz}$		293		pF
		$V_R=800\text{V}$ , $T_J=25^\circ\text{C}$ , $f=1\text{MHz}$		201		pF

## TYPICAL CHARACTERISTICS



## ■ TYPICAL CHARACTERISTICS



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