

# 1200V SiC Schottky Diode

## FEATURES

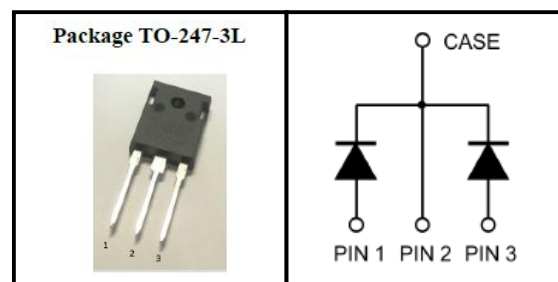
- Low Conduction and Switch Loss
- Positive Temperature Coefficient on VF
- Temperature Independent Switching Behavior
- Fast Reverse Recovery
- High Surge Current Capability
- Pb-free lead plating

## BENEFITS

- Higher System Efficiency
- Parallel Device Convenience
- High Temperature Application
- High Frequency Operation
- Hard Switching & High Reliability
- Environmental Protection

## APPLICATIONS

- Switch Mode Power Supply (SMPS)
- Uninterruptible Power Supply (UPS)
- Power Factor Correction (PFC)
- Solar/ Wind Renewable Energy
- Power Inverters
- Motor Drives



### Device Marking and Package Information

Device	Package	Marking
C2S120E020B	TO-247-3L	C2S120E020B

### Absolute Maximum Ratings $T_C = 25^\circ\text{C}$ , unless otherwise noted

Parameter	Symbol	Test Conditions	Value	Unit
Peak Repetitive Reverse Voltage	$V_{RRM}$	$T_J = 25^\circ\text{C}$	1200	V
Peak Reverse Surge Voltage	$V_{RSM}$	$T_J = 25^\circ\text{C}$	1200	V
DC Blocking Voltage	$V_R$	$T_J = 25^\circ\text{C}$	1200	V
Continuous Forward Current (Per leg/Device)	$I_F$	$T_J \leq 135^\circ\text{C}$	10/20	A
Repetitive Peak Forward Surge Current	$I_{FRM}$	$T_C = 25^\circ\text{C}, T_P = 8.3\text{ms Half Sine Wave}$	95*	A
Maximum Case Temperature	$T_C$		149	$^\circ\text{C}$
Operating Junction and Storage Temperature	$T_J, T_{stg}$		-55~175	$^\circ\text{C}$

### Thermal Resistance

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case	$R_{thJC}$	1* 0.5**	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Ambient	$R_{thJA}$	80	$^\circ\text{C}/\text{W}$

\*Per Leg, \*\*Per Device

<b>Specifications</b> $T_J = 25^\circ\text{C}$ , unless otherwise noted					
Parameter	Symbol	Test Conditions	Value		Unit
			Typ.	Max.	
Forward Voltage	$V_F$	$I_F = 10\text{A}, T_J = 25^\circ\text{C}$	1.55	1.8	V
		$I_F = 10\text{A}, T_J = 175^\circ\text{C}$	2.2	2.5	V
Reverse Current	$I_R$	$V_R = 1200\text{V}, T_J = 25^\circ\text{C}$	2	20	$\mu\text{A}$
		$V_R = 1200\text{V}, T_J = 175^\circ\text{C}$	10	200	$\mu\text{A}$
Total Capacitive Charge	$Q_C$	$I_F = 10\text{A}, di/dt = 200\text{A}/\mu\text{s}$ $V_R = 800\text{V}, T_J = 25^\circ\text{C}$	29	--	nC
Total Capacitance	C	$V_R = 0\text{V}, T_J = 25^\circ\text{C}, f = 1\text{ MHz}$	650	--	pF
		$V_R = 400\text{V}, T_J = 25^\circ\text{C}, f = 1\text{ MHz}$	49	--	
		$V_R = 800\text{V}, T_J = 25^\circ\text{C}, f = 1\text{ MHz}$	40	--	

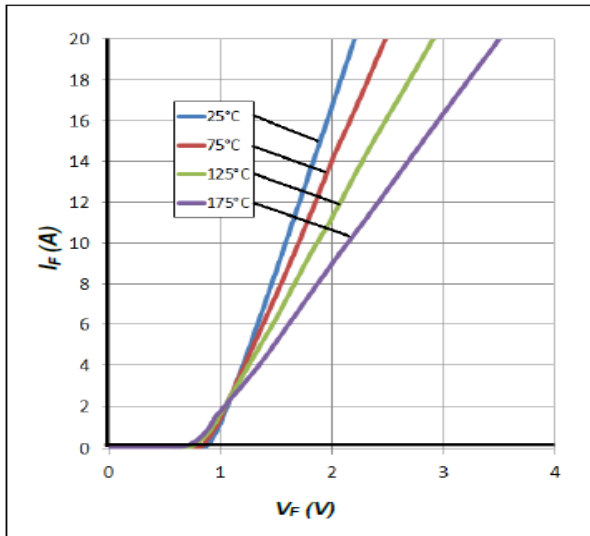
**Typical Characteristics**  $T_J = 25^{\circ}\text{C}$ , unless otherwise noted


Fig. 1 Forward Characteristics

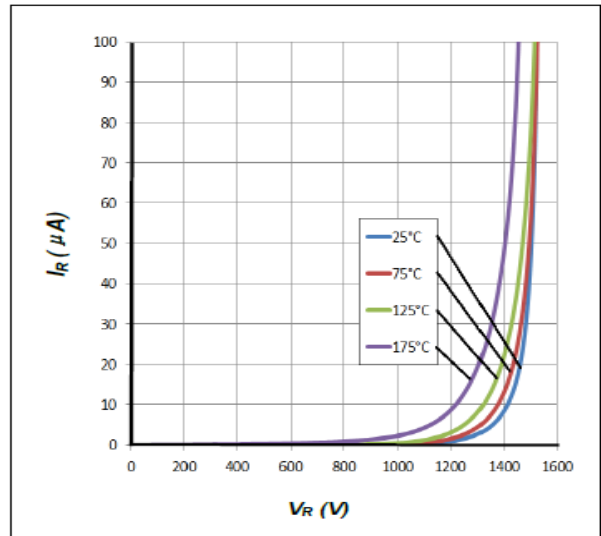


Fig. 2 Reverse Characteristics

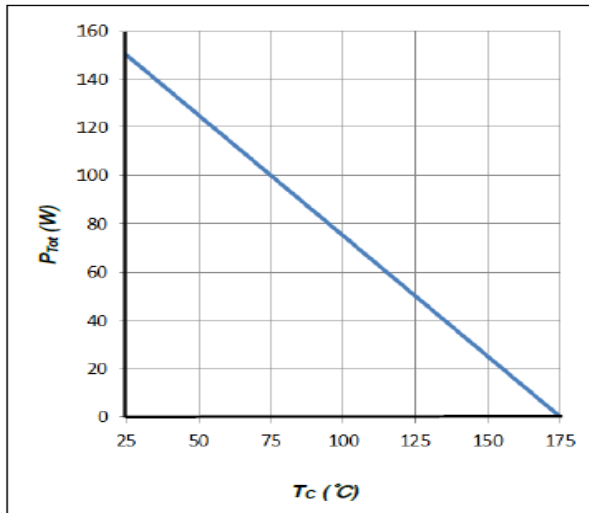


Fig. 3 Power Derating

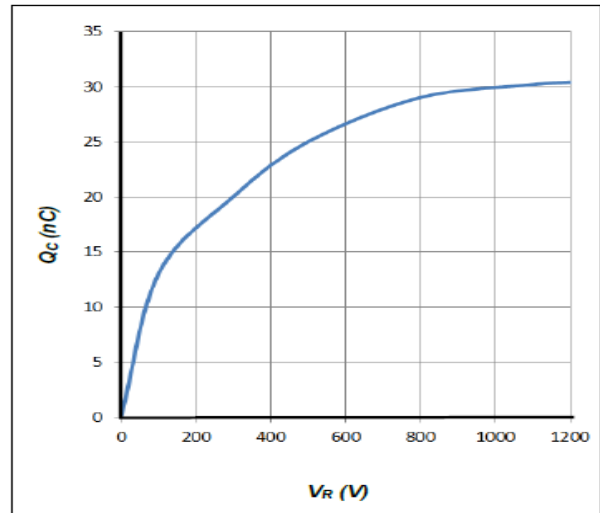


Fig. 4 Total Capacitance Charge vs.

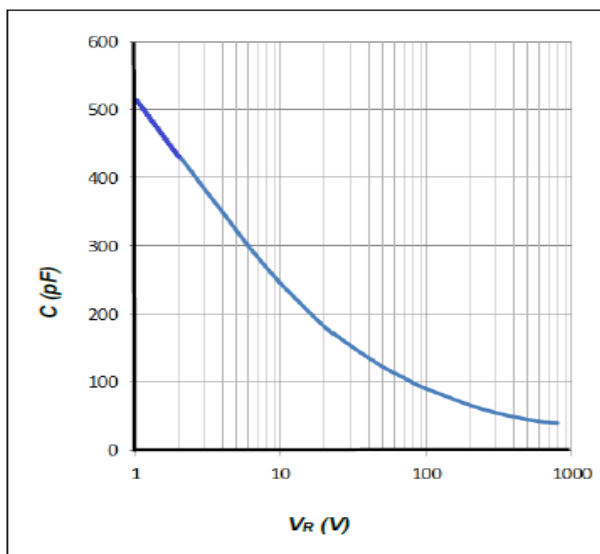


Fig. 5 Total Capacitance vs. Reverse Voltage

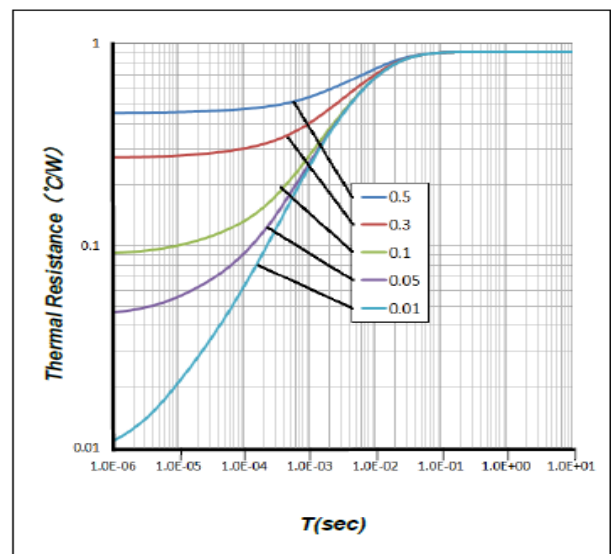
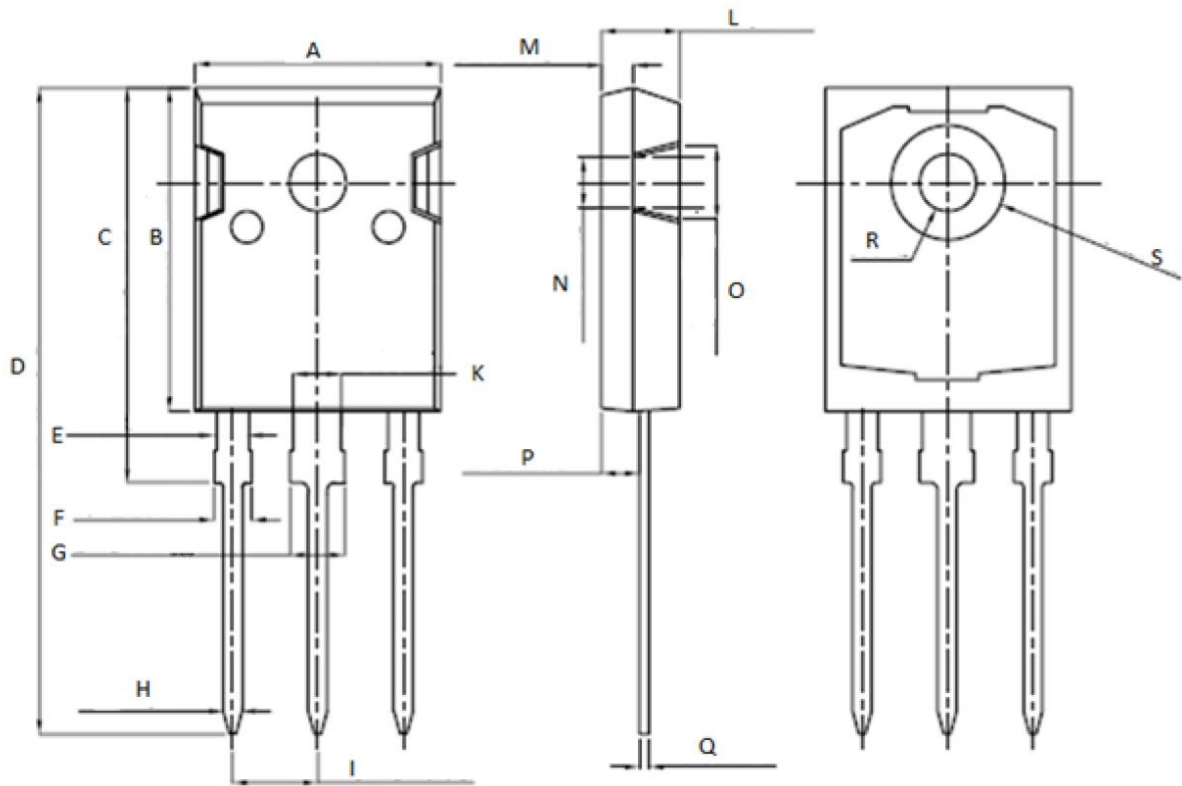


Figure 6. Transient Thermal Impedance

## TO-247



Unit: mm		
Symbol	Min.	Max.
A	15.95	16.25
B	20.85	21.25
C	20.95	21.35
D	40.5	40.9
E	1.9	2.1
F	2.1	2.25
G	3.1	3.25
H	1.1	1.3
I	5.40	5.50

Unit: mm		
Symbol	Min.	Max.
K	2.90	3.10
L	4.90	5.30
M	1.90	2.10
N	4.50	4.70
O	5.40	5.60
P	2.29	2.49
Q	0.51	0.71
R	φ 3.5	φ 3.7
S	φ 7.1	φ 7.3

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