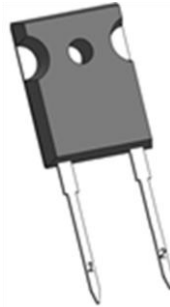


## IV1D12010T2 – 1200V 10A SiC Schottky Diode

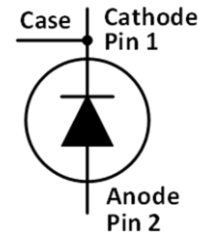
### Features

- Max Junction Temperature 175°C
- High Surge Current Capacity
- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- High-Frequency Operation
- Temperature independent switching behavior
- Positive Temperature Coefficient on  $V_F$

### Outline



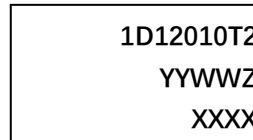
TO247-2



### Applications

- Solar Power Boost
- Inverter Free Wheeling Diodes
- Vienna 3-Phase PFC
- AC/DC Converters
- Switch Mode Power Supplies

### Marking Diagram



1D12010T2 = Specific Device Code  
 YY = Year  
 WW = Work Week  
 Z = Assembly Location  
 XXXX = Lot Traceability

### Absolute Maximum Ratings (Tc=25°C unless otherwise specified)

Symbol	Parameter	Value	Unit
$V_{RRM}$	Reverse voltage (repetitive peak)	1200	V
$V_{DC}$	DC blocking voltage	1200	V
$I_F$	Forward current (continuous) @Tc=25°C	30	A
	Forward current (continuous) @Tc=135°C	15.2	A
	Forward current (continuous) @Tc=155°C	10	A
$I_{FSM}$	Surge non-repetitive forward current sine halfwave @Tc=25°C tp=10ms	72	A
$I_{FRM}$	Surge repetitive forward current (Freq=0.1Hz, 100cycles) sine halfwave @Tamb=25°C tp=10ms	56	A
$P_{tot}$	Total power dissipation @ Tc=25°C	176	W
	Total power dissipation @ Tc=150°C	29	
$\int i^2 dt$	$I^2t$ value @Tc=25°C tp=10ms	26	A <sup>2</sup> s
Tstg	Storage temperature range	-55 to 175	°C
Tj	Operating junction temperature range	-55 to 175	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

## Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V <sub>F</sub>	Forward Voltage	1.48	1.7	V	I <sub>F</sub> = 10 A T <sub>J</sub> =25°C	Fig. 1
		2.0	3.0		I <sub>F</sub> = 10 A T <sub>J</sub> =175°C	
I <sub>R</sub>	Reverse Current	1	100	μA	V <sub>R</sub> = 1200 V T <sub>J</sub> =25°C	Fig. 2
		10	250		V <sub>R</sub> = 1200 V T <sub>J</sub> =175°C	
C	Total Capacitance	575		pF	V <sub>R</sub> = 1 V, T <sub>J</sub> = 25°C, f = 1 MHz	Fig. 3
		59			V <sub>R</sub> = 400 V, T <sub>J</sub> = 25°C, f = 1 MHz	
		42.5			V <sub>R</sub> = 800 V, T <sub>J</sub> = 25°C, f = 1 MHz	
Q <sub>C</sub>	Total Capacitive Charge	62		nC	V <sub>R</sub> = 800 V, T <sub>J</sub> = 25°C, $Q_C = \int_0^{V_R} C(V) dV$	Fig. 4
E <sub>C</sub>	Capacitance Stored Energy	16.8		μJ	V <sub>R</sub> = 800 V, T <sub>J</sub> = 25°C, $E_C = \int_0^{V_R} C(V) \cdot V dV$	Fig. 5

## Thermal Characteristics

Symbol	Parameter	Typ.	Unit	Note
R <sub>th(j-c)</sub>	Thermal Resistance from Junction to Case	0.85	°C/W	Fig.7

## Typical Performance

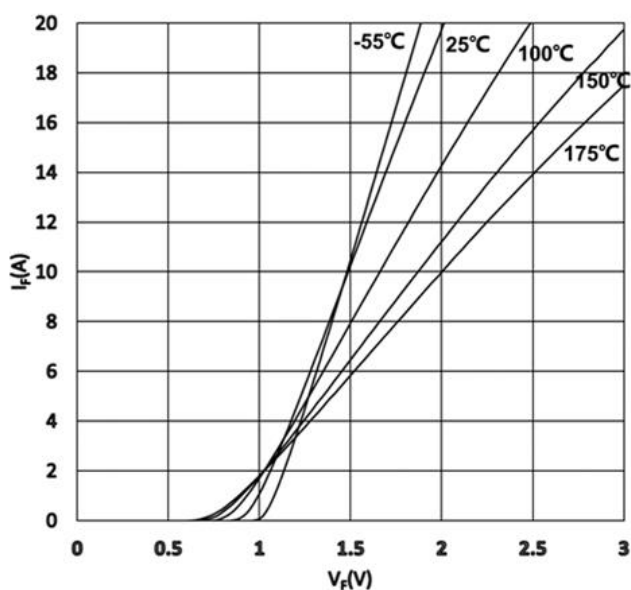


Figure 1. Typical Forward Characteristics

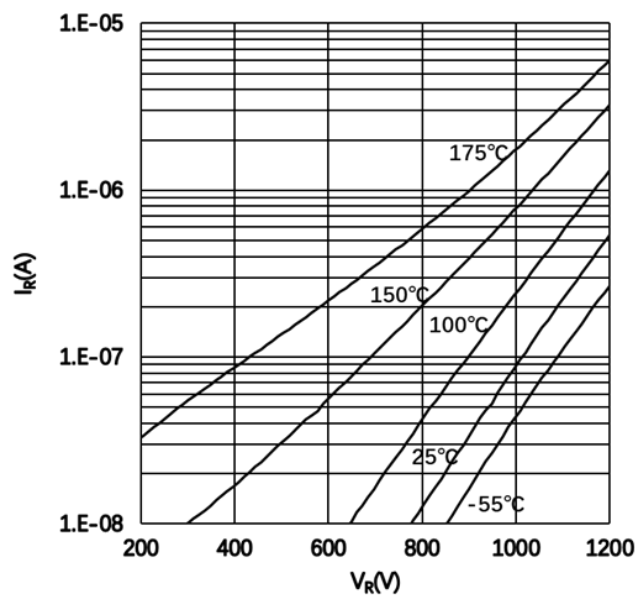


Figure 2. Typical Reverse Characteristics

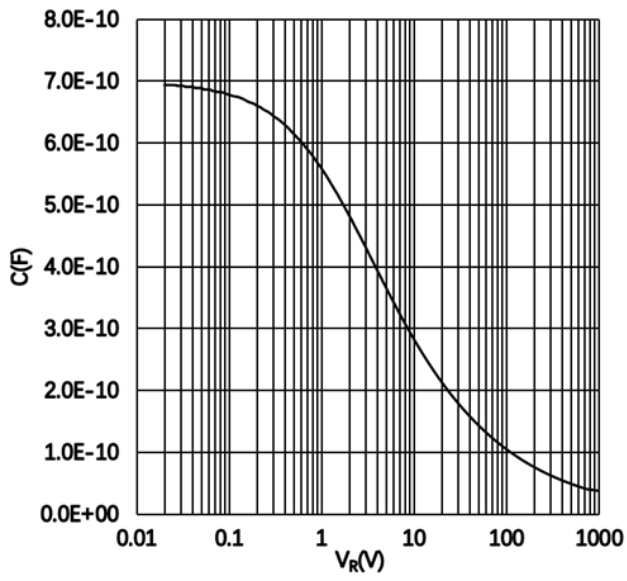


Figure 3. Capacitance vs. Reverse Voltage

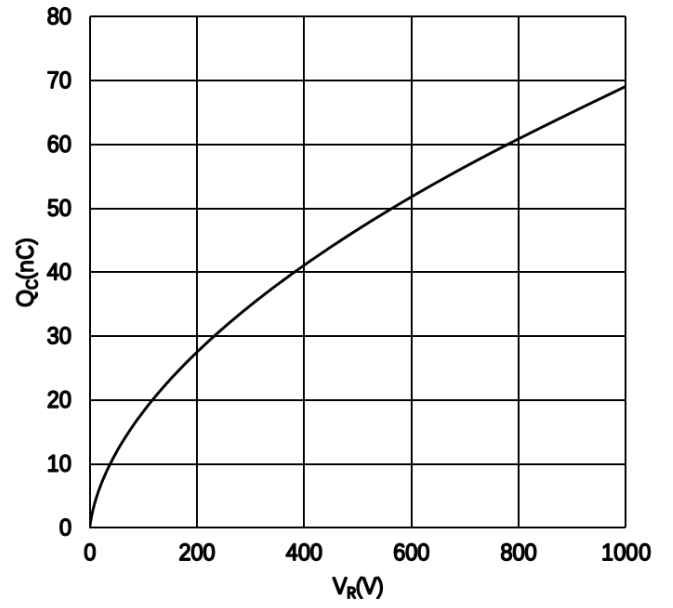


Figure 4. Recovery Charge vs. Reverse Voltage

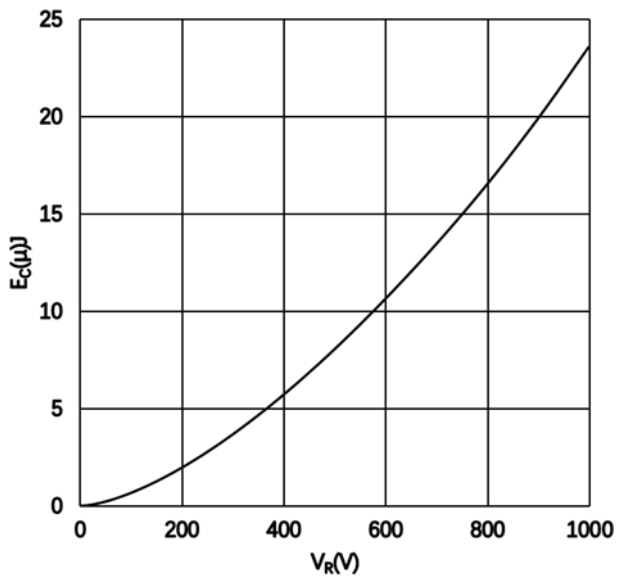


Figure 5. Capacitance Stored Energy

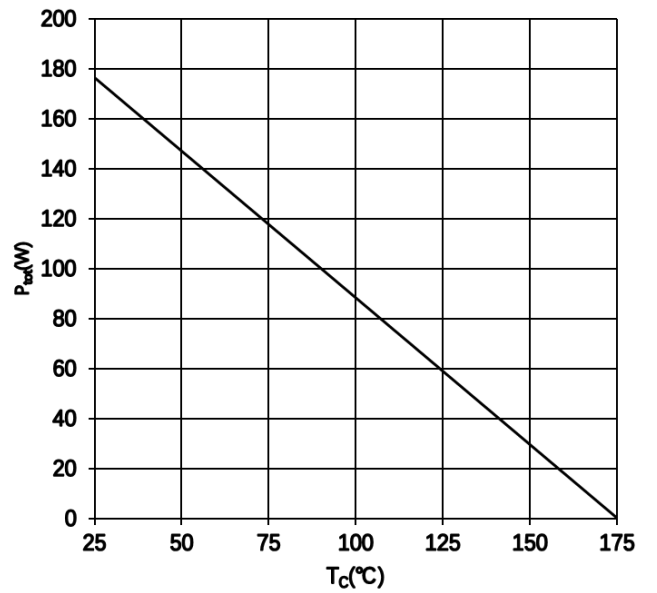


Figure 6. Power Derating

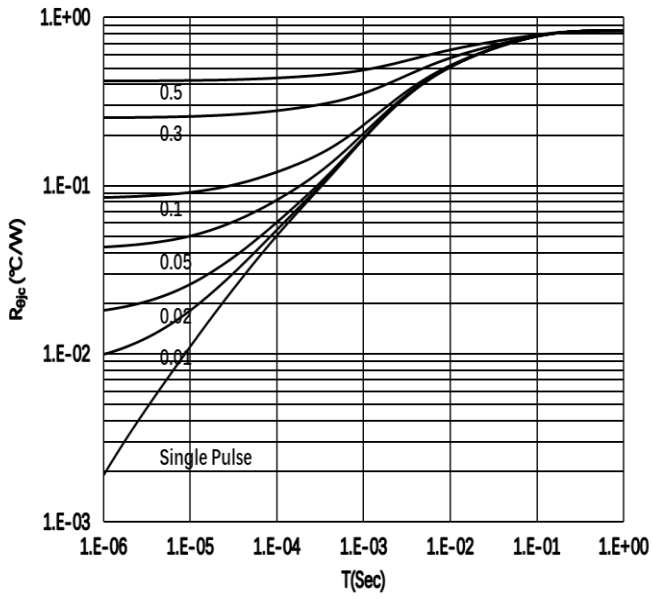


Figure 7. Transient Thermal Impedance

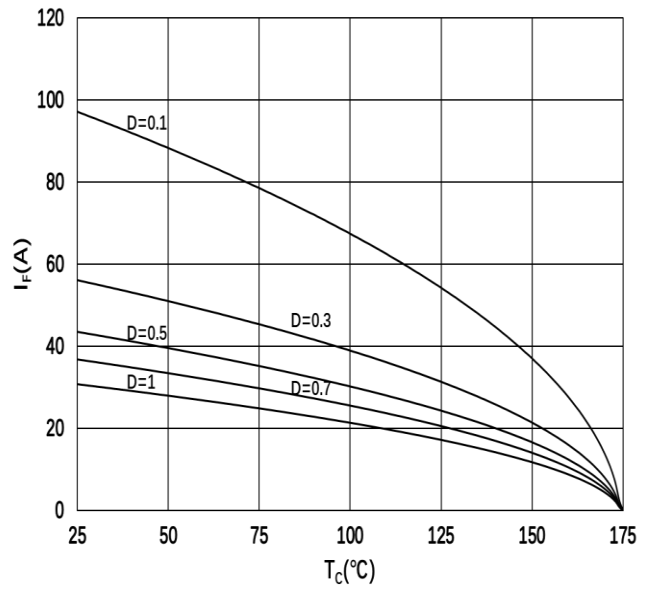
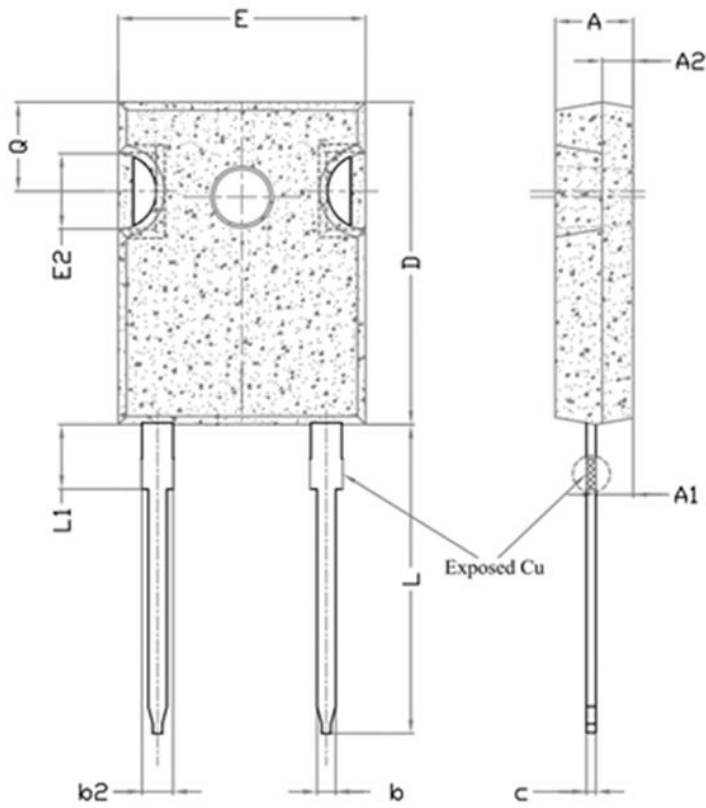
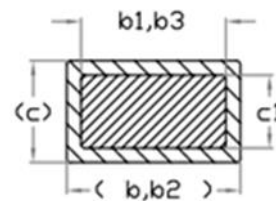
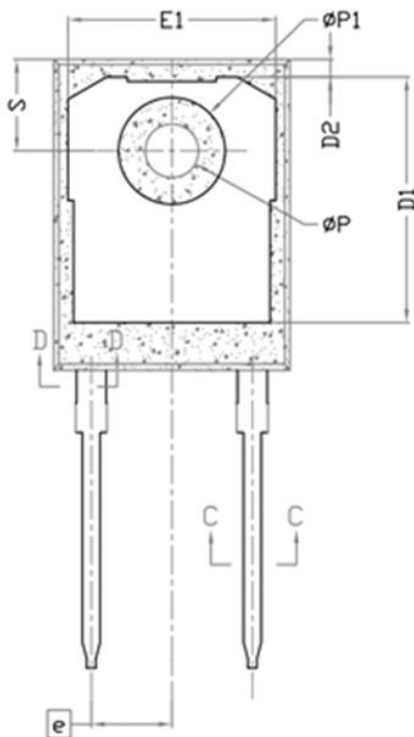


Figure 8. Forward Current as a Function of Temp.

## Package Dimensions



Dimensions In Millimeters		
SYMBOL	MIN.	MAX.
A	4.83	5.21
A1	2.20	2.60
A2	1.50	2.49
b	1.00	1.40
b1	0.99	1.35
b2	1.80	2.41
b3	1.65	2.39
c	0.50	0.70
c1	0.38	0.70
D	20.30	21.10
D1	13.08	-
D2	0.51	1.35
E	15.45	16.13
E1	13.10	-
E2	3.68	5.49
e	5.44 BSC	
L	19.80	21.00
L1	-	4.50
φP	3.50	3.70
φP1	-	7.40
Q	5.39	6.20
S	6.04	6.30



Section C--C,D--D

### Note:

1. Package Reference: JEDEC TO247, Variation AD
2. All Dimensions are in mm
3. Slot Required, Notch May Be Rounded or Rectangular
4. Dimension D&E Do Not Include Mold Flash
5. Subject to Change Without Notice

## Notes

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