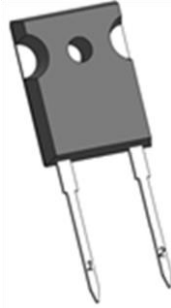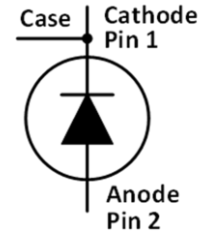# IV1D06010T2 – 650V 10A SiC Schottky Diode

Features

- Max Junction Temperature 175°C
- High Surge Current Capacity
- Extremely Fast Reverse Recovery Time
- Reduced Losses in Associated MOSFET
- High-Frequency Operation
- Temperature Independent Switching Behavior
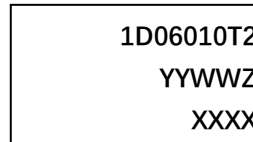- Positive Temperature Coefficient on V_F

Outline

TO247-2

Applications

- PV Micro Inverter
- Adaptor
- TV Power
- Power Factor Correction
- Telecom / Server SMPS

Marking Diagram

1D06010T2	
YYWWZ	
XXXX	

1D06010T2 = 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)	650	V
V_{DC}	DC blocking voltage	650	V
I_F	Forward current (continuous) @Tc=25°C	29.5	A
	Forward current (continuous) @Tc=135°C	14.2	A
	Forward current (continuous) @Tc=152°C	10	A
I_{FSM}	Surge non-repetitive forward current sine halfwave @Tc=25°C tp=10ms	60	A
I_{FRM}	Surge repetitive forward current (Freq=0.1Hz, 100cycles) sine halfwave @T$_{amb}$=25°C tp=10ms	48	A
P_{tot}	Total power dissipation @ Tc=25°C	115.3	W
	Total power dissipation @ Tc=150°C	19.2	
$\int i^2 dt$	I^{2}t value @Tc=25°C tp=10ms	18	$A^2 s$
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_F	Forward Voltage	1.42	1.65	V	I_F = 10 A T_J=25°C	Fig. 1
		1.82	2.2		I_F = 10 A T_J=175°C	
I_R	Reverse Current	1	10	µA	V_R = 650 V T_J=25°C	Fig. 2
		10	100		V_R = 650 V T_J=175°C	
C	Total Capacitance	398		pF	V_R = 1 V, T_J = 25°C, f = 1 MHz	Fig. 3
		47.6			V_R = 200 V, T_J = 25°C, f = 1 MHz	
		41.9			V_R = 400 V, T_J = 25°C, f = 1 MHz	
Q_C	Total Capacitive Charge	25.5		nC	V_R = 400 V, T_J = 25°C, $Q_c = \int_0^{VR} C(V)dV$	Fig. 4
E_C	Capacitance Stored Energy	3.80		µJ	V_R = 400 V, T_J = 25°C, $E_c = \int_0^{VR} C(V) \cdot V dV$	Fig. 5

Thermal Characteristics

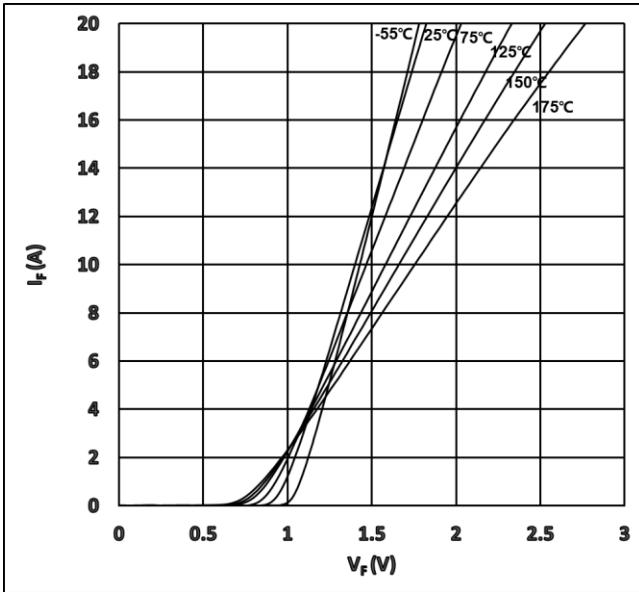| Symbol	Parameter	Typ.	Unit	Note
$R_{th(j-c)}$	Thermal Resistance from Junction to Case	1.3	°C/W	Fig.7

Typical Performance
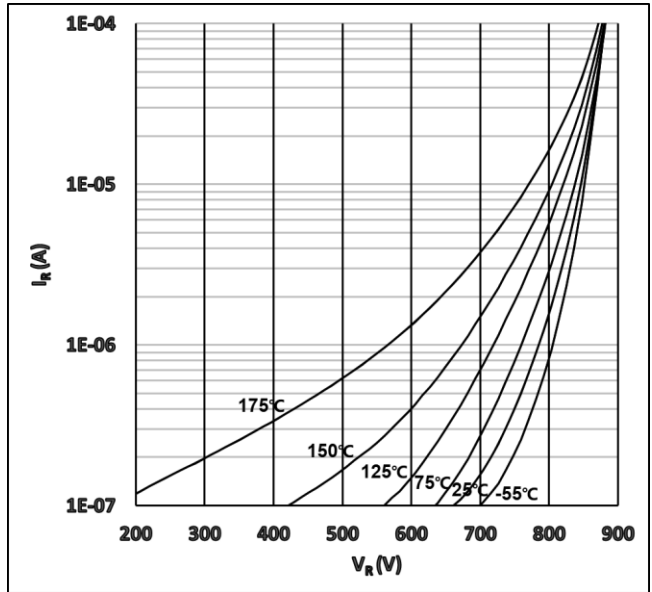

Figure 1. Typical Forward Characteristics

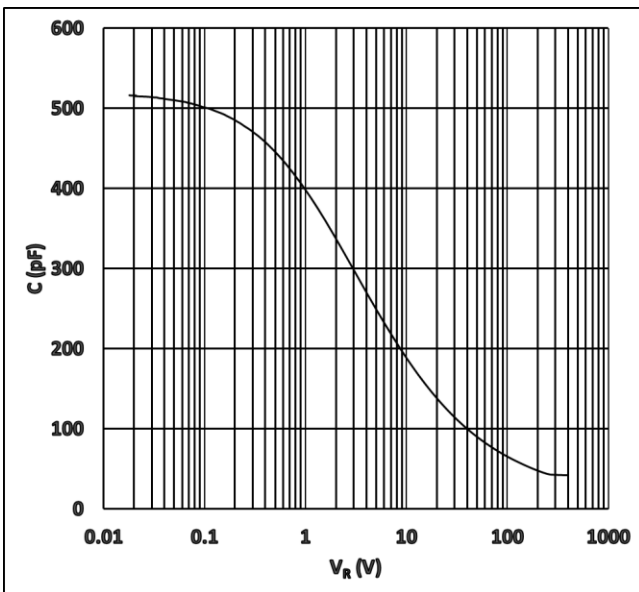Figure 2. Typical Reverse Characteristics
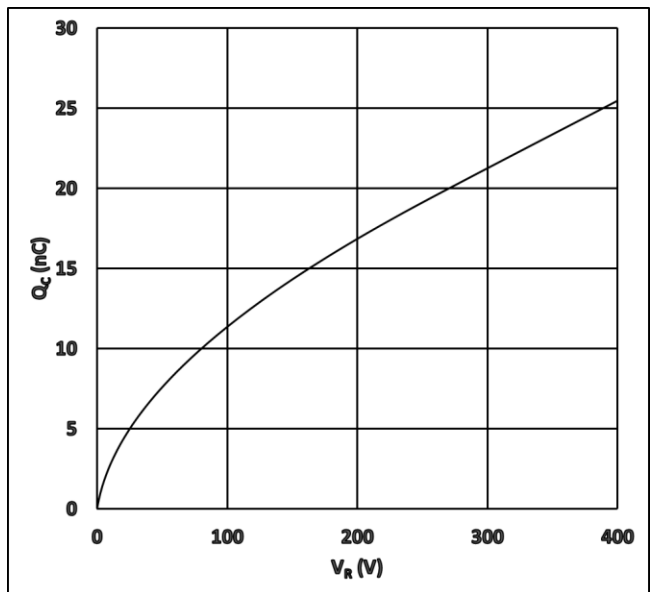

Figure 3. Capacitance vs. Reverse Voltage

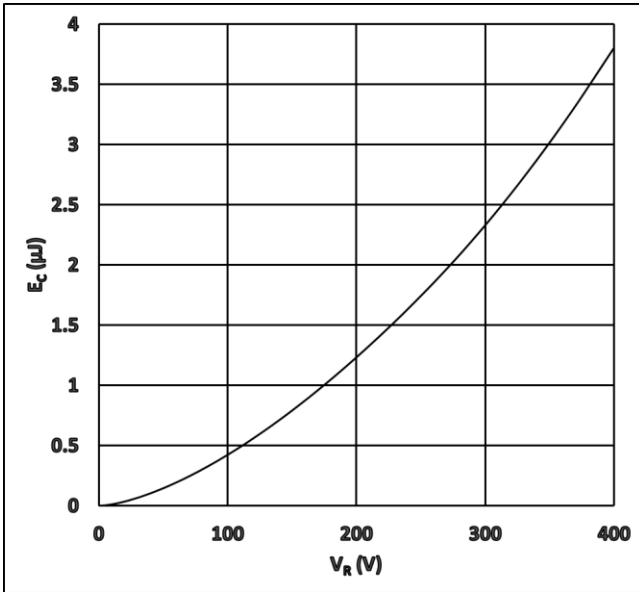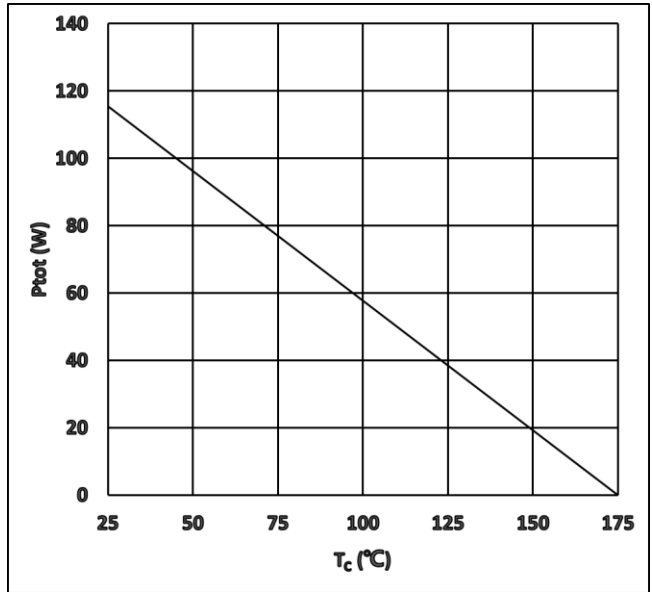Figure 4. Recovery Charge vs. Reverse Voltage
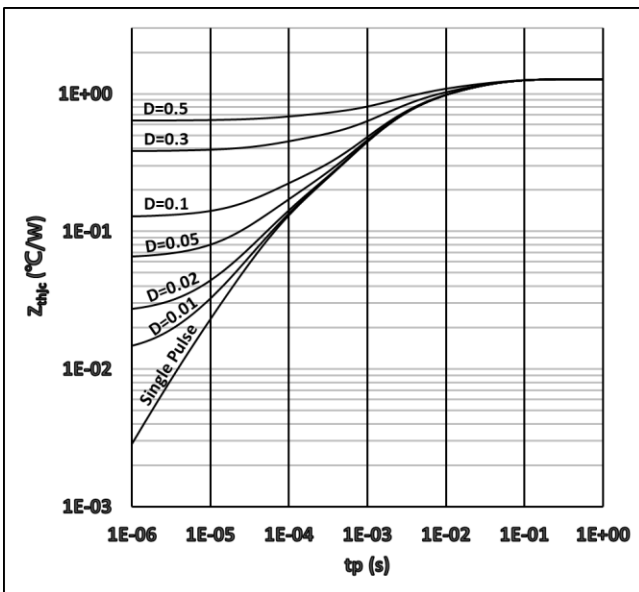
Figure 5. Capacitance Stored Energy

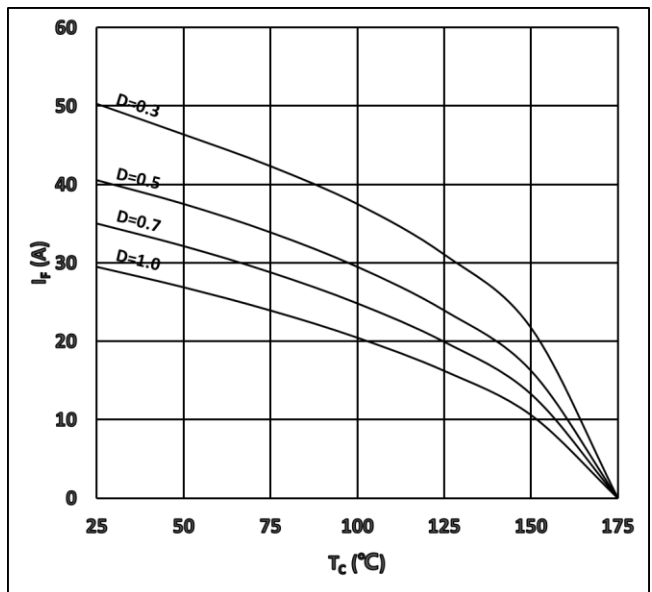Figure 6. Power Derating
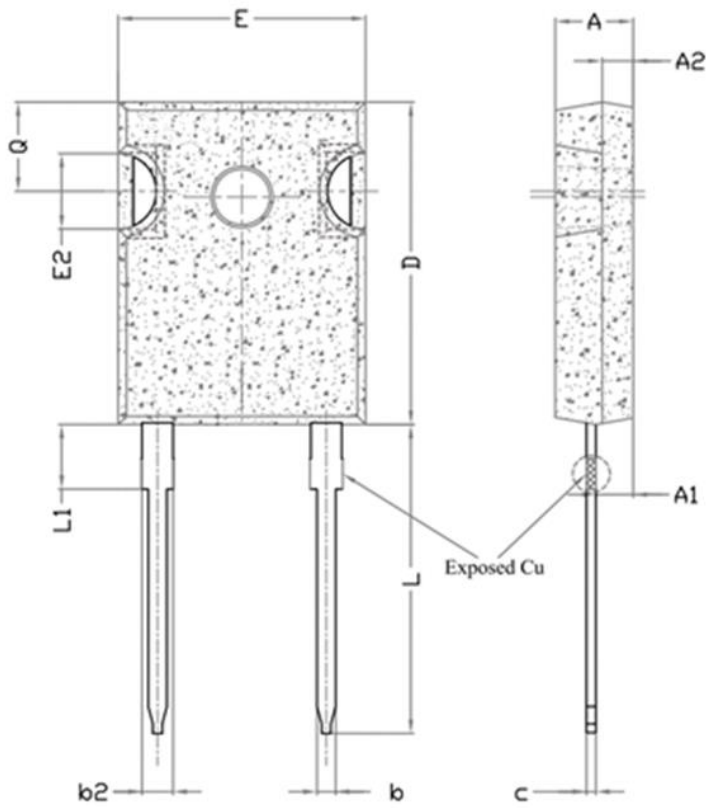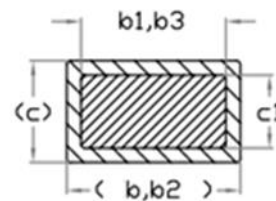

Figure 7. Transient Thermal Impedance

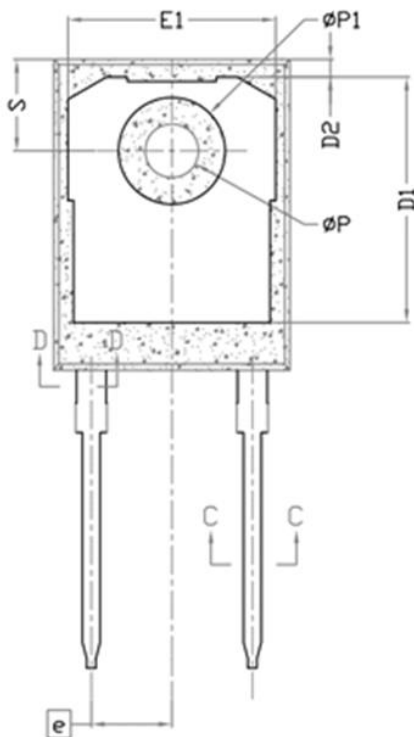Figure 8. I_F as a Function of Temp.

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

For further information please contact IVCT's Sales Office.

The information in this document is subject to change without notice.

Related Links

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