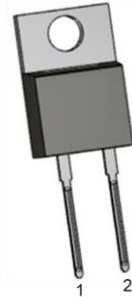


IV1D12005O2 – 1200V 5A SiC Schottky Diode

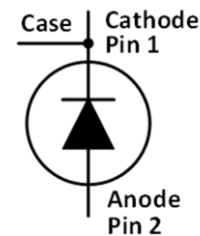
Features

- 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



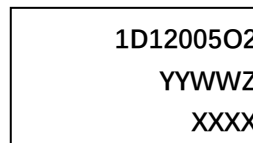
TO220-2



Applications

- Solar Power Boost
- Inverter Free Wheeling Diodes
- Vienna 3-Phase PFC
- EV Charger Piles
- Switch Mode Power Supplies

Marking Diagram



1D12005O2 = 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	17	A
	Forward current (continuous) @Tc=135°C	8	A
	Forward current (continuous) @Tc=155°C	5	A
I_{FSM}	Surge non-repetitive forward current sine halfwave @Tc=25°C tp=10ms	35	A
I_{FRM}	Surge repetitive forward current (Freq=0.1Hz, 100cycles) sine halfwave @Tamb=25°C tp=10ms	28	A
P_{tot}	Total power dissipation @ Tc=25°C	110	W
	Total power dissipation @ Tc=150°C	18	
$\int i^2 dt$	I^2t value @Tc=25°C tp=10ms	6.1	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	1.44	1.8	V	$I_F = 5\text{ A } T_J = 25^\circ\text{C}$	Fig. 1
		1.90	3.0		$I_F = 5\text{ A } T_J = 175^\circ\text{C}$	
I_R	Reverse Current	2.5	30	μA	$V_R = 1200\text{ V } T_J = 25^\circ\text{C}$	Fig. 2
		10	150		$V_R = 1200\text{ V } T_J = 175^\circ\text{C}$	
C	Total Capacitance	320		pF	$V_R = 1\text{ V}, T_J = 25^\circ\text{C}, f = 1\text{ MHz}$	Fig. 3
		32			$V_R = 400\text{ V}, T_J = 25^\circ\text{C}, f = 1\text{ MHz}$	
		22			$V_R = 800\text{ V}, T_J = 25^\circ\text{C}, f = 1\text{ MHz}$	
Q_c	Total Capacitive Charge	34		nC	$V_R = 800\text{ V}, T_J = 25^\circ\text{C},$ $Q_c = \int_0^{V_R} C(V) dV$	Fig. 4
E_c	Capacitance Stored Energy	9.5		μJ	$V_R = 800\text{ V}, T_J = 25^\circ\text{C},$ $E_c = \int_0^{V_R} C(V) \cdot V dV$	Fig. 5

Thermal Characteristics

Symbol	Parameter	Typ.	Unit	Note
$R_{th(j-c)}$	Thermal Resistance from Junction to Case	1.36	$^\circ\text{C/W}$	Fig.7

Typical Performance

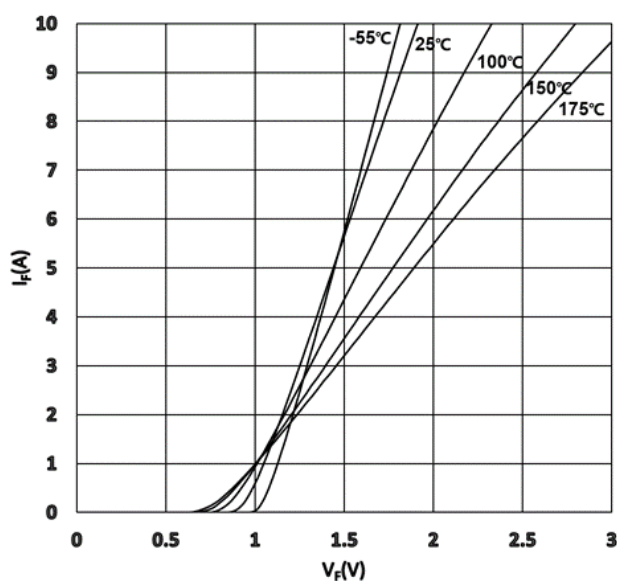


Figure 1. Typical Forward Characteristics

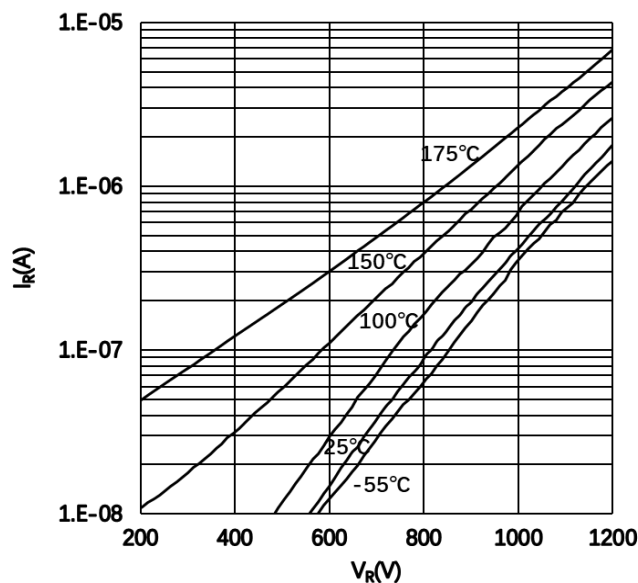


Figure 2. Typical Reverse Characteristics

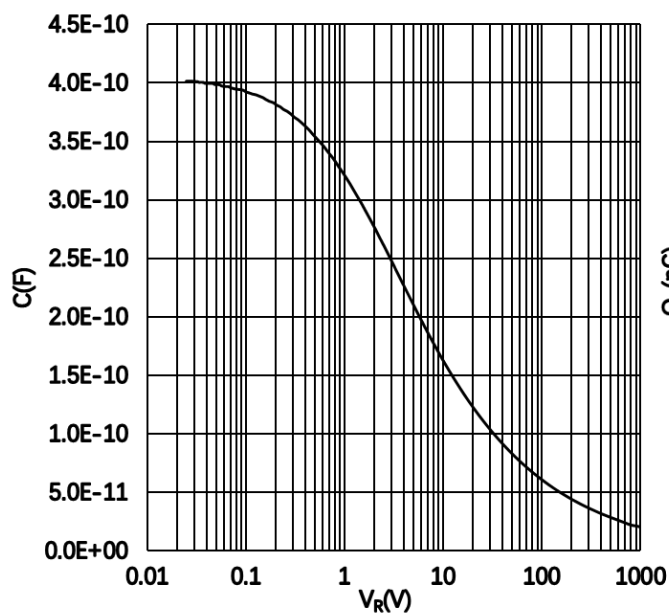


Figure 3. Capacitance vs. Reverse Voltage

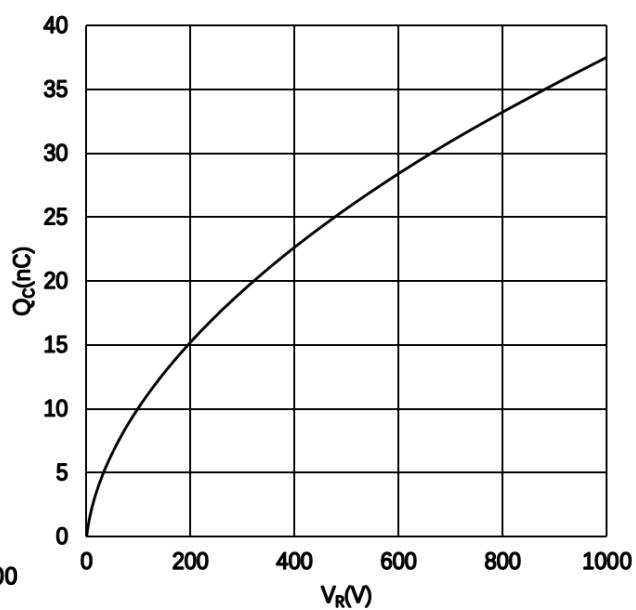


Figure 4. Recovery Charge vs. Reverse Voltage

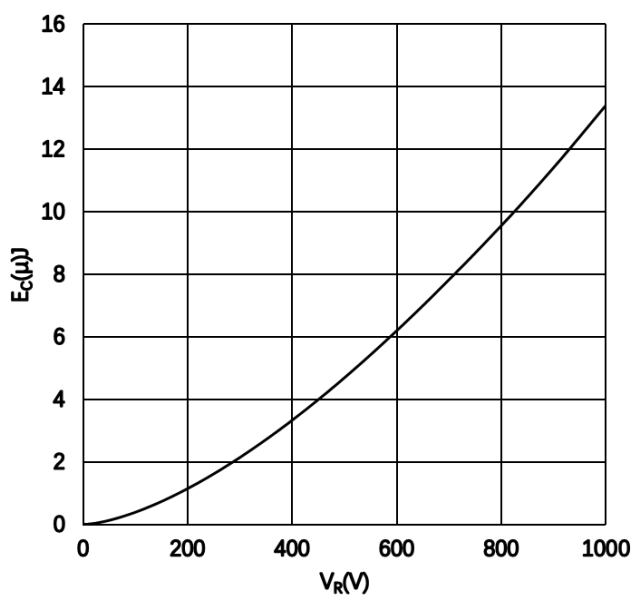


Figure 5. Capacitance Stored Energy

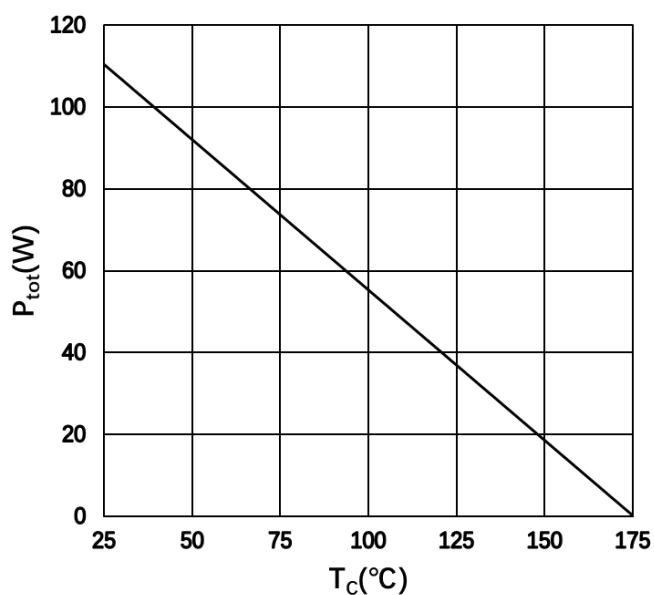


Figure 6. Power Derating

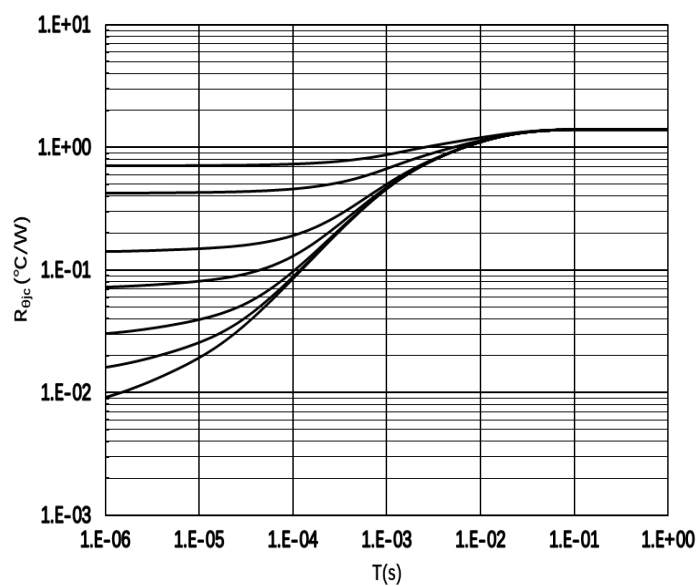


Figure 7. Transient Thermal Impedance

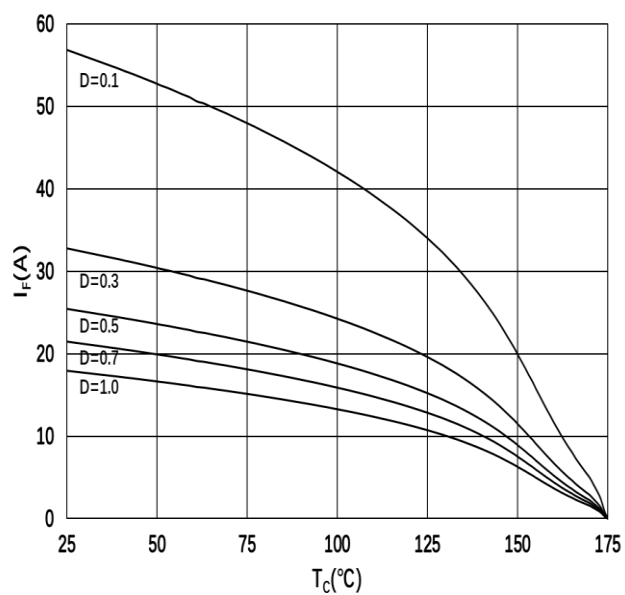
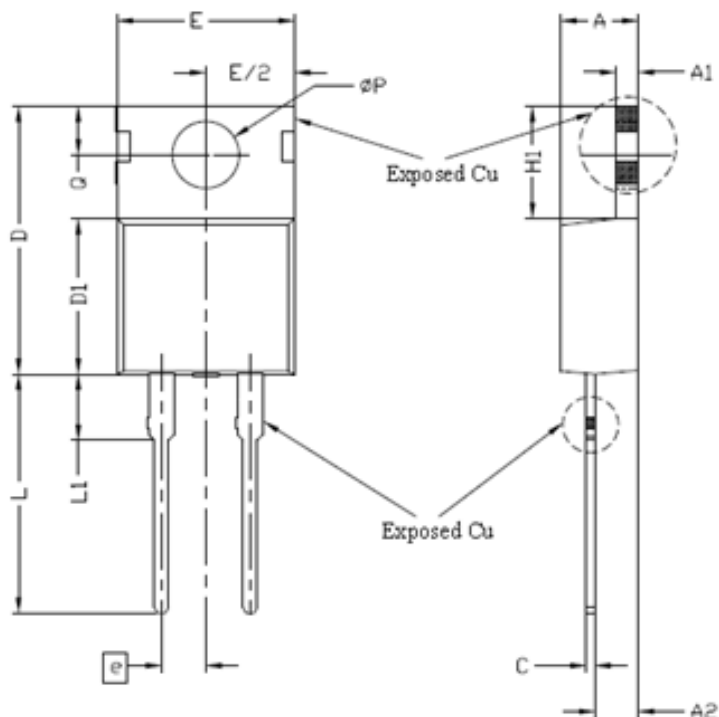
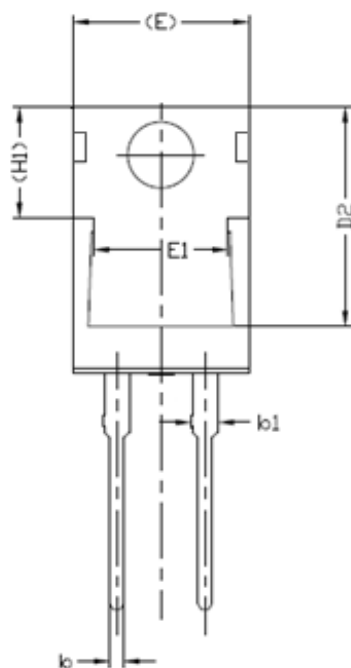


Figure 8. Forward Current as a Function of Temp.



Dimensions In Millimeters		
SYMBOL	MIN.	MAX.
A	4.24	4.64
A1	1.16	1.40
A2	2.25	2.70
b	0.70	0.91
b1	1.17	1.75
c	0.33	0.65
D	14.70	16.00
D1	8.82	9.45
D2	12.63	13.55
E	9.91	10.36
E1	6.86	8.89
e	2.54 BSC	
H1	6.30	6.65
L	12.90	13.97
L1	2.85	4.00
φ P	3.40	3.93
O	2.60	3.00



1. Package Reference: JEDEC TO220, Variation AB
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.

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