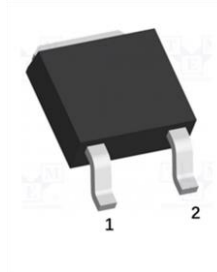


IV1D12010P2Z – 1200V 10A Automotive SiC Schottky Diode

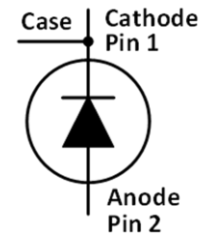
Features

- 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
- AEC-Q101 qualified

Outline



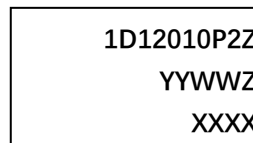
TO252-2



Applications

- Solar Power Boost
- Inverter Free Wheeling Diodes
- OBC and DC/DC
- AC/DC Converters
- Switch Mode Power Supplies

Marking Diagram



1D12010P2Z= 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	34	A
	Forward current (continuous) @Tc=135°C	16.5	A
	Forward current (continuous) @Tc=158°C	10	A
I_{FSM}	Surge non-repetitive forward current sine halfwave @Tc=25°C tp=10ms	90	A
I_{FRM}	Surge repetitive forward current (Freq=0.1Hz, 100cycles) sine halfwave @Tamb=25°C tp=10ms	72	A
P_{tot}	Total power dissipation @ Tc=25°C	187	W
	Total power dissipation @ Tc=150°C	31.2	
$\int i^2 dt$	I^2t value @Tc=25°C tp=10ms	40.5	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	1.48	1.70	V	$I_F = 10\text{ A } T_J = 25^\circ\text{C}$	Fig. 1
		2.10	3.00		$I_F = 10\text{ A } T_J = 175^\circ\text{C}$	
I_R	Reverse Current	1	100	μA	$V_R = 1200\text{ V } T_J = 25^\circ\text{C}$	Fig. 2
		10	250		$V_R = 1200\text{ V } T_J = 175^\circ\text{C}$	
C	Total Capacitance	595		pF	$V_R = 1\text{ V}, T_J = 25^\circ\text{C}, f = 1\text{ MHz}$	Fig. 3
		58			$V_R = 400\text{ V}, T_J = 25^\circ\text{C}, f = 1\text{ MHz}$	
		42			$V_R = 800\text{ V}, T_J = 25^\circ\text{C}, f = 1\text{ MHz}$	
Q_c	Total Capacitive Charge	59		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	17.1		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	0.80	$^\circ\text{C/W}$	Fig.7

Typical Performance

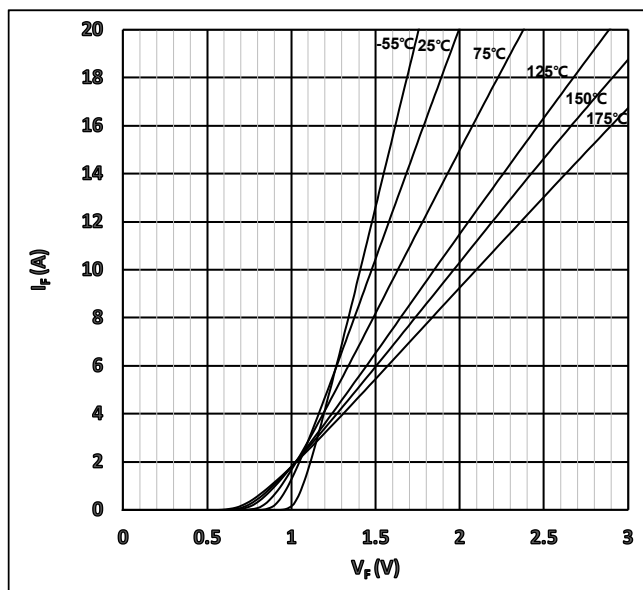


Figure 1. Typical Forward Characteristics

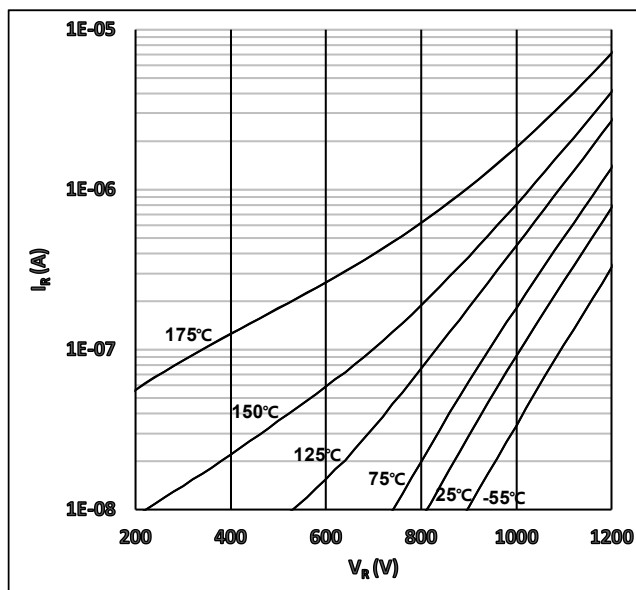


Figure 2. Typical Reverse Characteristics

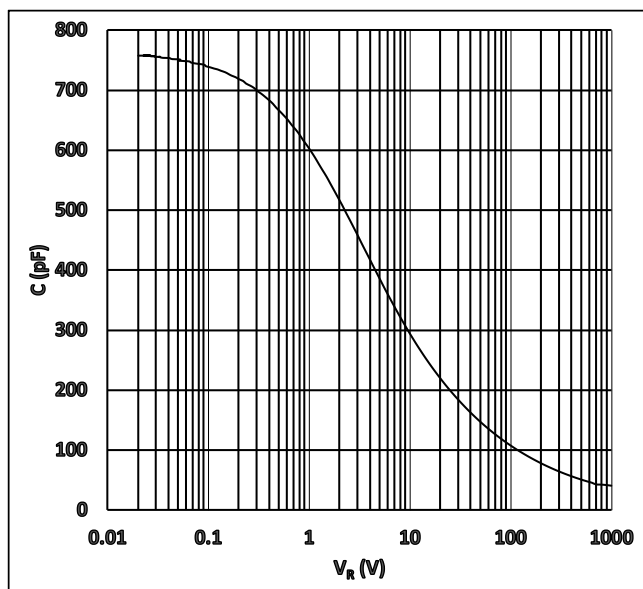


Figure 3. Capacitance vs. Reverse Voltage

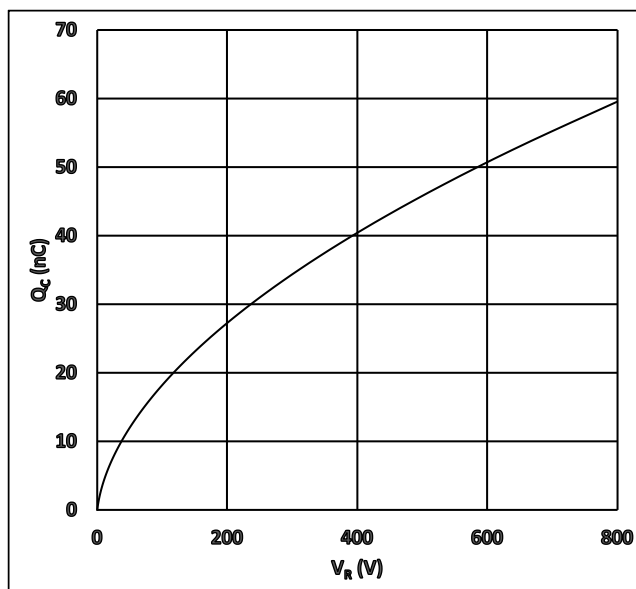


Figure 4. Recovery Charge vs. Reverse Voltage

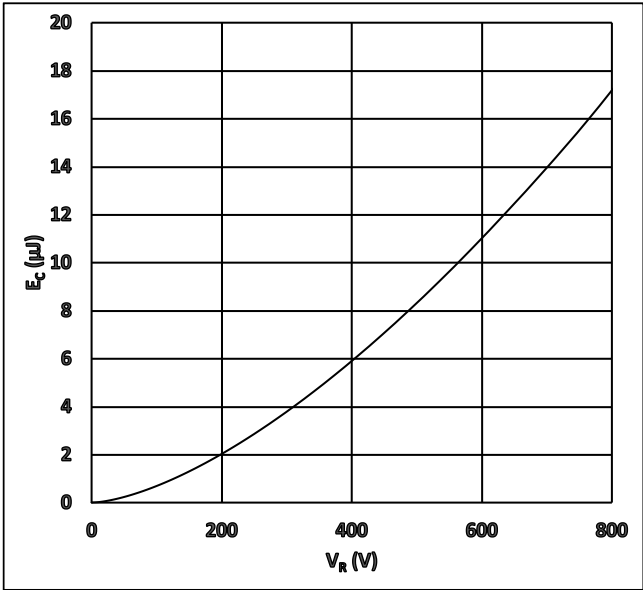


Figure 5. Capacitance Stored Energy

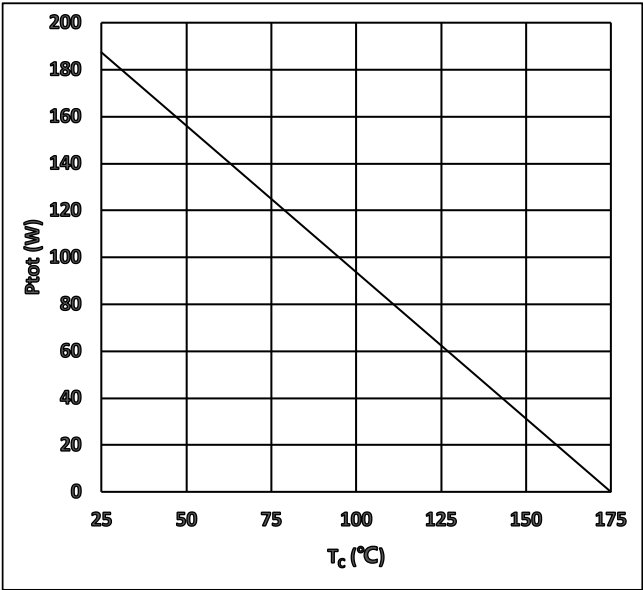


Figure 6. Power Derating

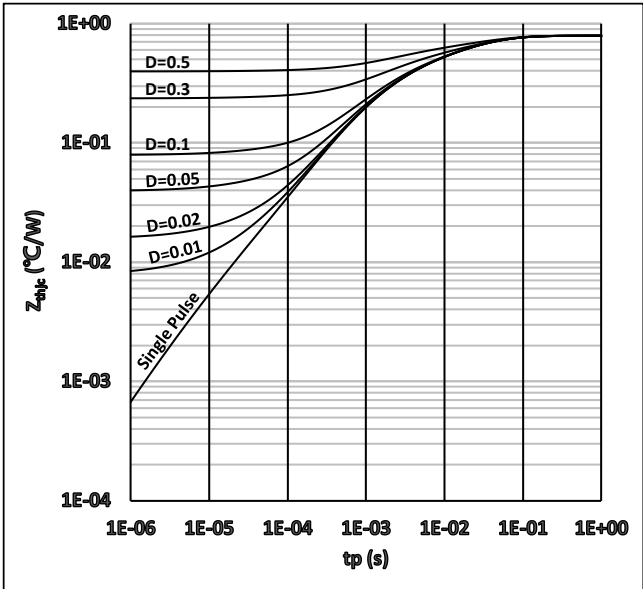


Figure 7. Transient Thermal Impedance

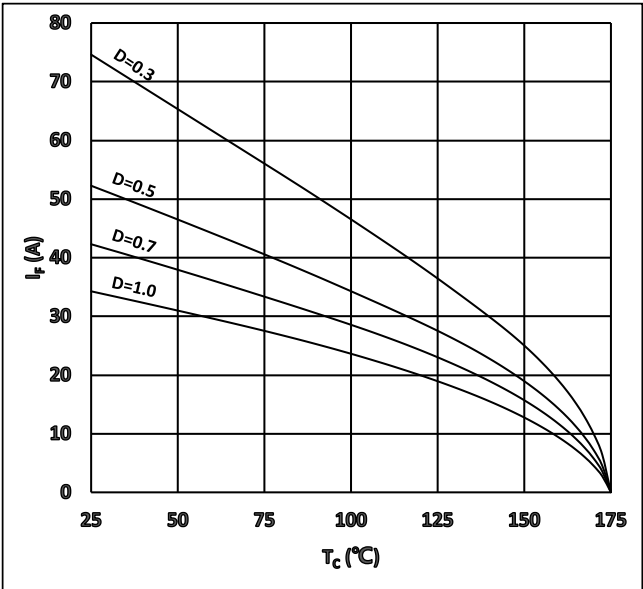
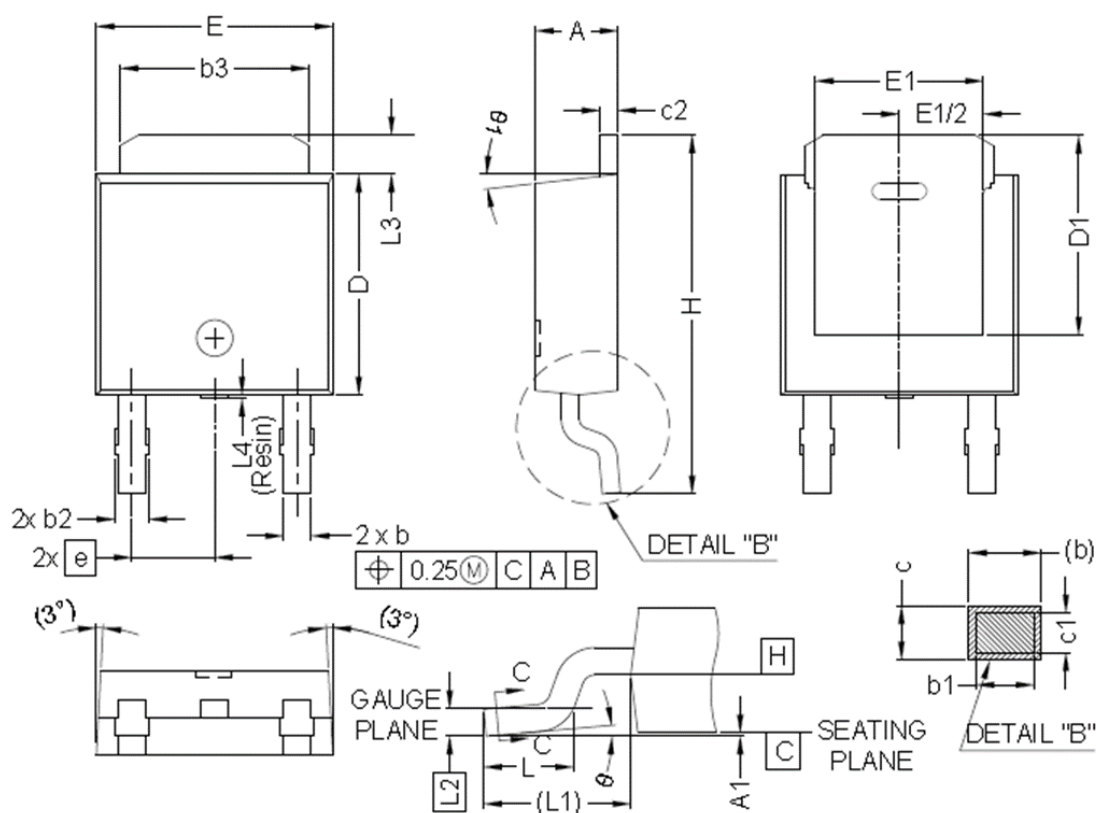


Figure 8. I_F as a Function of Temp.

Package Dimensions



SYMBOL	MIN.	MAX.	SYMBOL	MIN.	MAX.
A	2.18	2.39	E	6.35	6.73
A1	0.00	0.13	E1	4.32	4.80
b	0.65	0.89	e	2.29 BSC	
b1	0.64	0.84	H	9.94	10.34
b2	0.76	1.13	L	1.50	1.78
b3	4.95	5.46	L1	2.74 REF	
c	0.46	0.61	L2	0.51 BSC	
c1	0.41	0.56	L3	0.89	1.27
c2	0.46	0.60	L4	0.00	0.50
D	5.97	6.35	θ	0°	10°
D1	5.21	5.70	θ_1	0°	15°

Note:

1. All Dimensions Are In mm. Angles Are In Degrees.
2. Heat Sink Side Flash Is MAX. 0.8mm.
3. Radius On Terminal Is Optional.
4. Subject to Change Without Notice.

Notes

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