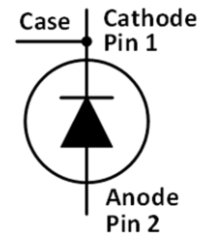
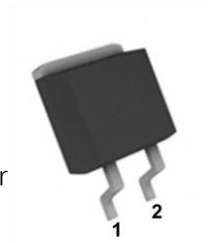


## IV2D12020D2Z – 1200V 20A Automotive SiC Schottky Diode

### 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

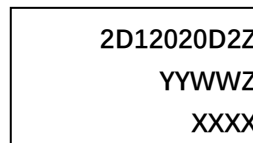


TO263-2

### Applications

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

### Marking Diagram



2D12020D2Z= 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	43.0	A
	Forward current (continuous) @Tc=135°C	20.3	A
	Forward current (continuous) @Tc=135.4°C	20	A
$I_{FSM}$	Surge non-repetitive forward current sine halfwave @Tc=25°C tp=10ms	155	A
$I_{FRM}$	Surge repetitive forward current (Freq=0.1Hz, 100cycles) sine halfwave @Tamb=25°C tp=10ms	125	A
$P_{tot}$	Total power dissipation @ Tc=25°C	166	W
	Total power dissipation @ Tc=150°C	27.7	
$\int i^2 dt$	$i^2t$ value @Tc=25°C tp=10ms	120	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	1.80	V	I <sub>F</sub> = 20 A T <sub>J</sub> =25°C	Fig. 1
		2.20	3.00		I <sub>F</sub> = 20 A T <sub>J</sub> =175°C	
I <sub>R</sub>	Reverse Current	8	150	μA	V <sub>R</sub> = 1200 V T <sub>J</sub> =25°C	Fig. 2
		50	800		V <sub>R</sub> = 1200 V T <sub>J</sub> =175°C	
C	Total Capacitance	1000		pF	V <sub>R</sub> = 1 V, T <sub>J</sub> = 25°C, f = 1 MHz	Fig. 3
		89			V <sub>R</sub> = 400 V, T <sub>J</sub> = 25°C, f = 1 MHz	
		66			V <sub>R</sub> = 800 V, T <sub>J</sub> = 25°C, f = 1 MHz	
Q <sub>C</sub>	Total Capacitive Charge	94		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	27		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	0.9	°C/W	Fig.7

## Typical Performance

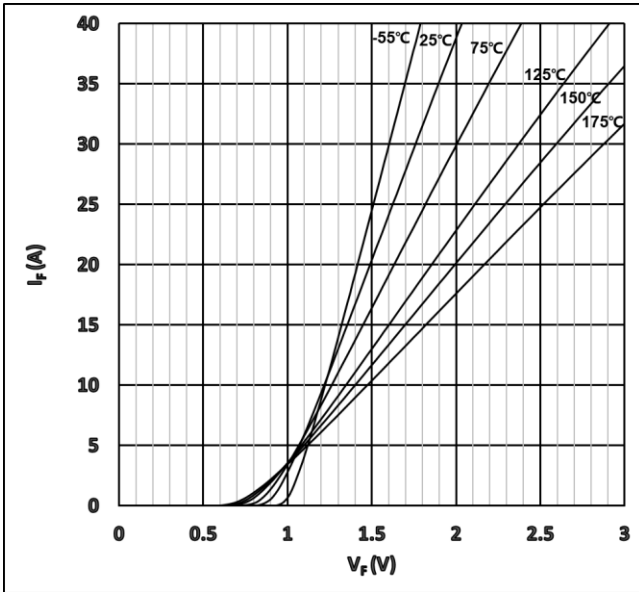


Figure 1. Typical Forward Characteristics

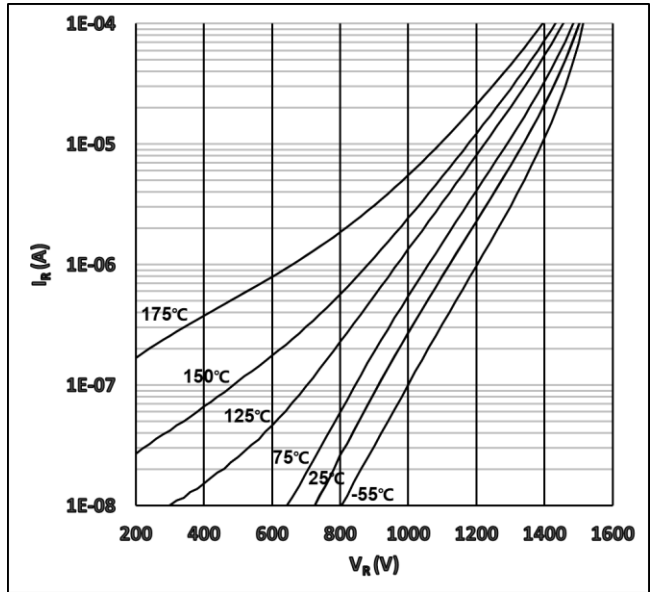


Figure 2. Typical Reverse Characteristics

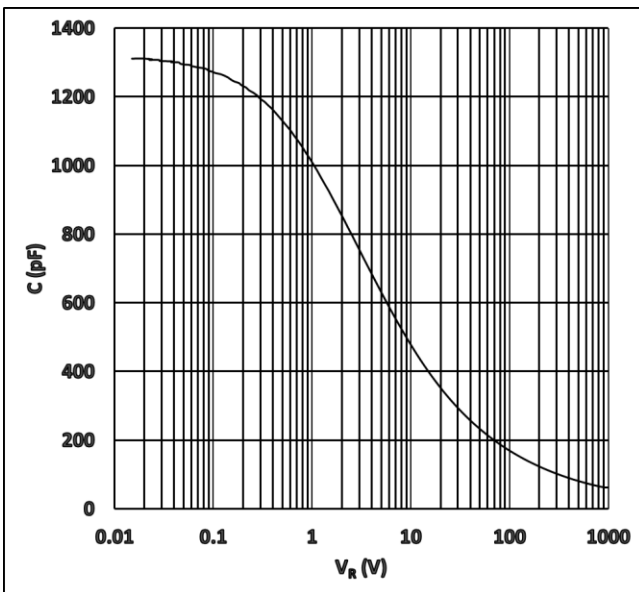


Figure 3. Capacitance vs. Reverse Voltage

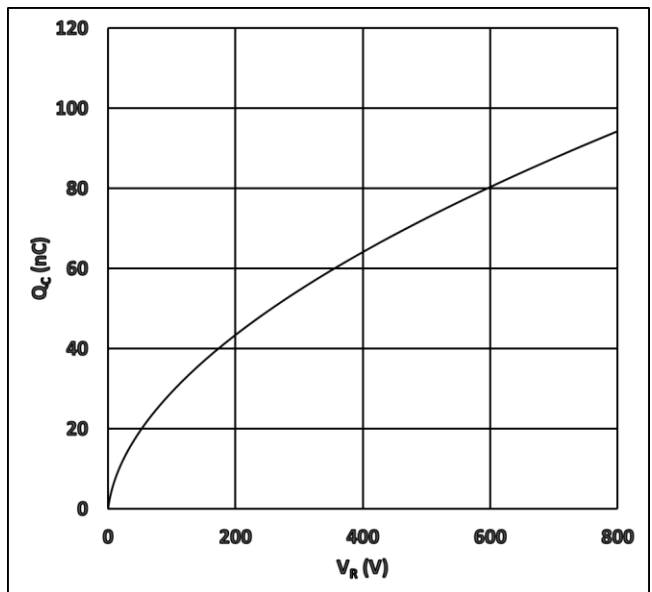


Figure 4. Recovery Charge vs. Reverse Voltage

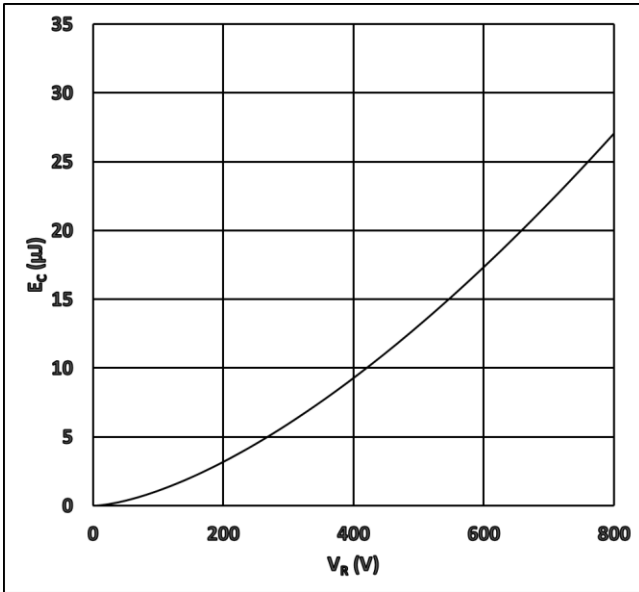


Figure 5. Capacitance Stored Energy

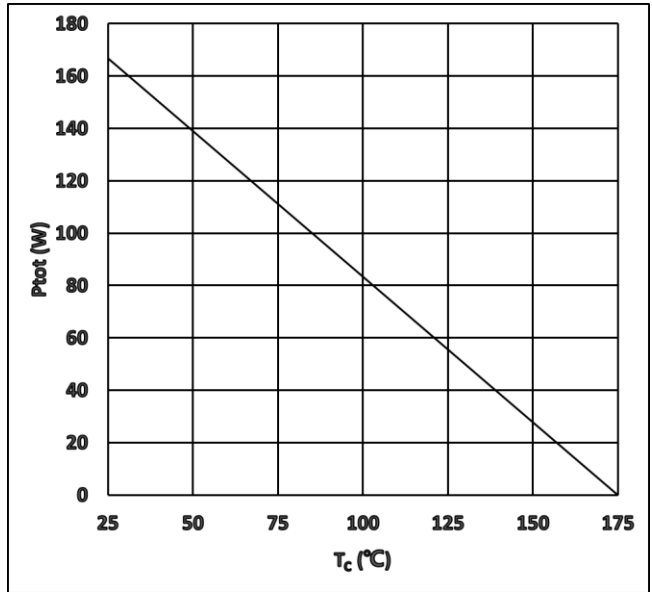


Figure 6. Power Derating

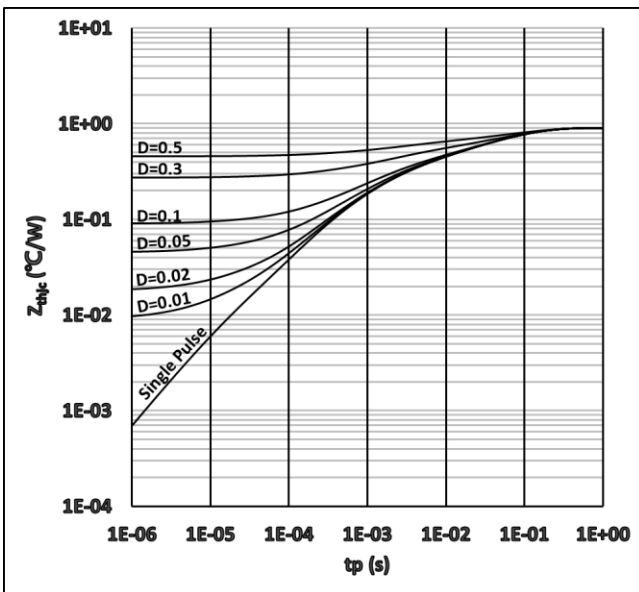


Figure 7. Transient Thermal Impedance

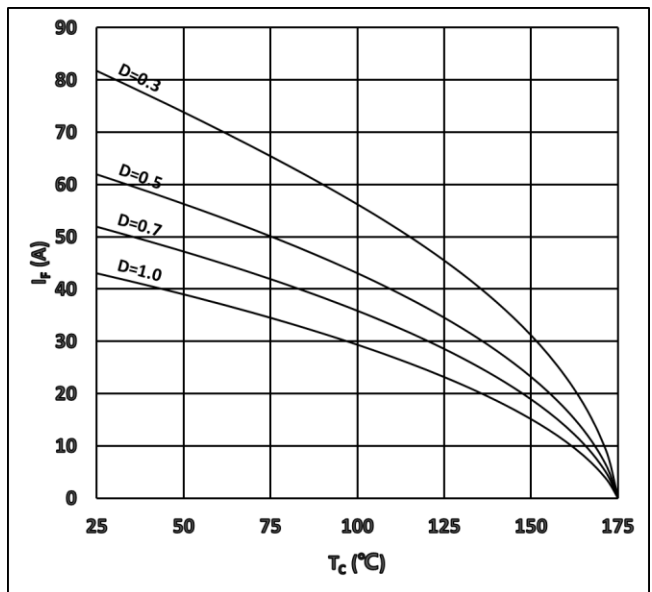
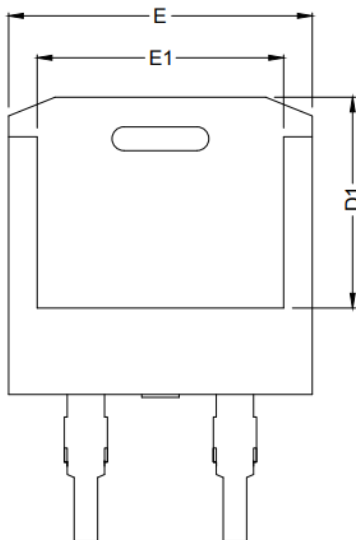
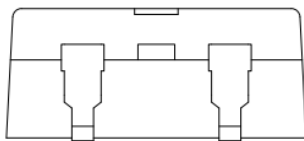
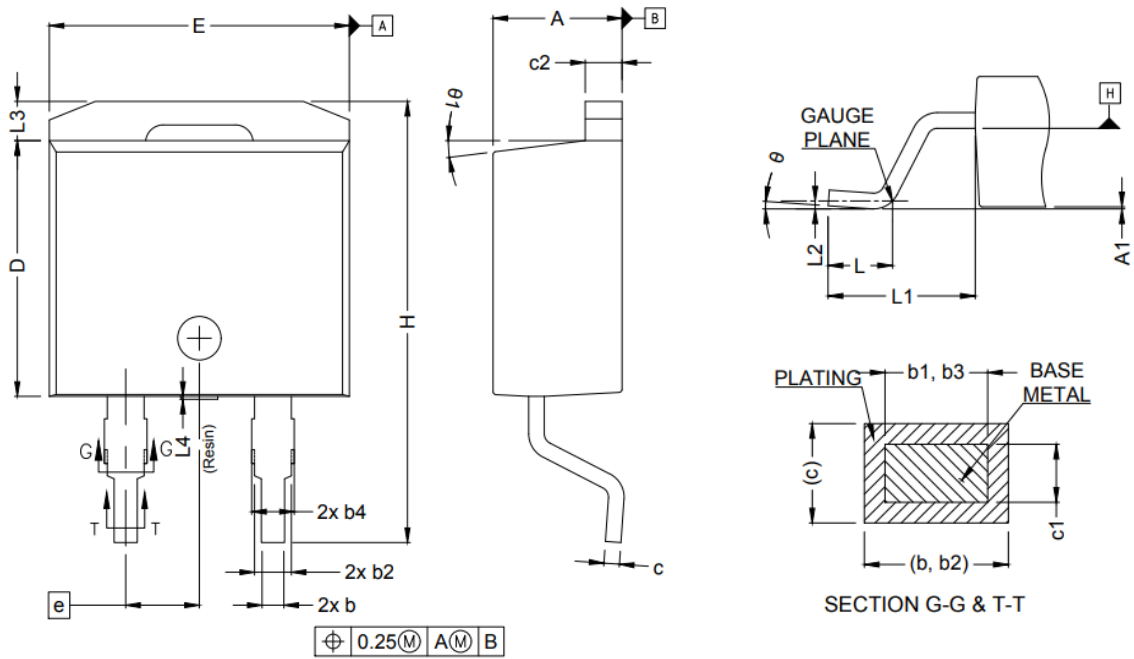


Figure 8.  $I_F$  as a Function of Temp.

## Package Dimensions



SYMBOL	MIN.	MAX.	SYMBOL	MIN.	MAX.
A	4.36	4.56	E	10.15	10.55
A1	0.00	0.25	E1	8.10	8.70
b	0.70	0.90	e	2.54 BSC	
b1	0.51	0.89	H	15.00	15.60
b2	1.20	1.46	L	1.90	2.50
b3	1.17	1.37	L1	4.78	5.28
b4	1.20	1.57	L2	0.25 TYP	
c	0.38	0.69	L3	1.05	1.65
c1	0.38	0.53	L4	0	0.50
c2	1.19	1.34	$\theta$	0°	10°
D	8.60	9.00	$\theta$ 1	0°	15°
D1	6.90	7.50			

### Note:

1. Dimensioning & Tolerancing Confirm to ASME Y14.5M-1994.
2. All Dimensions are in mm. Angles are in Degrees.
3. Radius on Terminal is Optional.
4. Subject to Change Without Notice.

## Notes

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