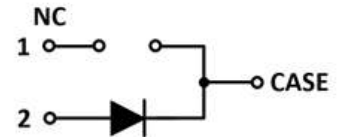


## IV1D06006P3 – 650V 6A SiC Schottky Diode

### 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  $V_F$

### Package



### Applications:

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

Part Number	Package
IV1D06006P3	TO252-3

### 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	16.7	A
	Forward current (continuous) @Tc=135°C	8.2	A
	Forward current (continuous) @Tc=150°C	6	A
$I_{FSM}$	Surge non-repetitive forward current sine halfwave @Tc=25°C tp=10ms	42	A
$I_{FRM}$	Surge repetitive forward current (Freq=0.1Hz, 100cycles) sine halfwave @Tamb=25°C tp=10ms	30	A
$P_{tot}$	Total power dissipation @ Tc=25°C	68.2	W
	Total power dissipation @ Tc=150°C	11.4	
$\int i^2 dt$	$i^2t$ value @Tc=25°C tp=10ms	8.8	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	1.45	1.65	V	I <sub>F</sub> = 6 A T <sub>J</sub> =25°C	Fig. 1
		1.85	2.2		I <sub>F</sub> = 6 A T <sub>J</sub> =175°C	
I <sub>R</sub>	Reverse Current	1	10	μA	V <sub>R</sub> = 650 V T <sub>J</sub> =25°C	Fig. 2
		5	50		V <sub>R</sub> = 650 V T <sub>J</sub> =175°C	
C	Total Capacitance	224		pF	V <sub>R</sub> = 1 V, T <sub>J</sub> = 25°C, f = 1 MHz	Fig. 3
		28.4			V <sub>R</sub> = 200 V, T <sub>J</sub> = 25°C, f = 1 MHz	
		23.2			V <sub>R</sub> = 400 V, T <sub>J</sub> = 25°C, f = 1 MHz	
Q <sub>C</sub>	Total Capacitive Charge	14.8		nC	V <sub>R</sub> = 400 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	2.20		μJ	V <sub>R</sub> = 400 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	2.2	°C/W	Fig.7

## Typical Performance

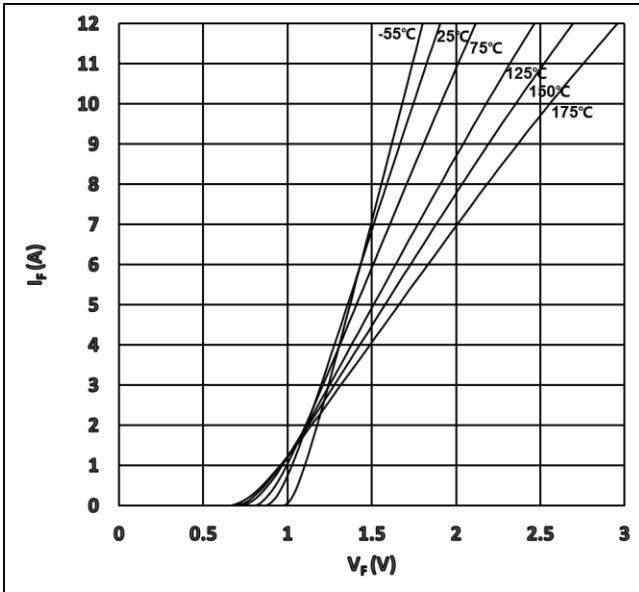


Figure 1. Typical Forward Characteristics

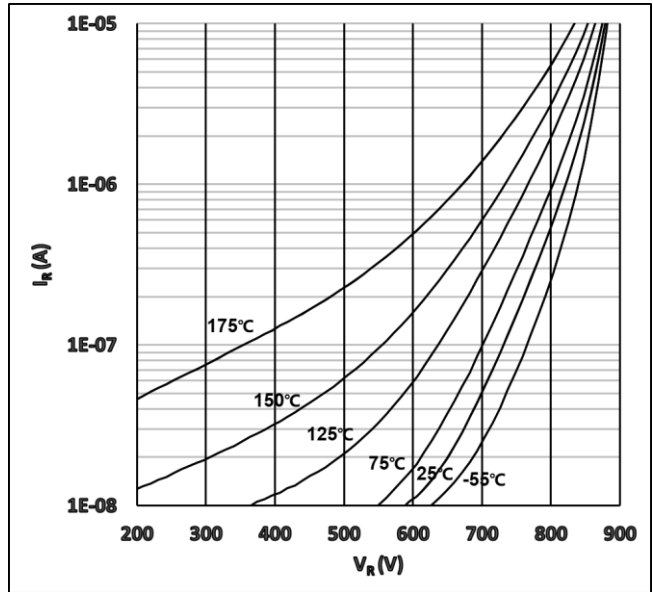


Figure 2. Typical Reverse Characteristics

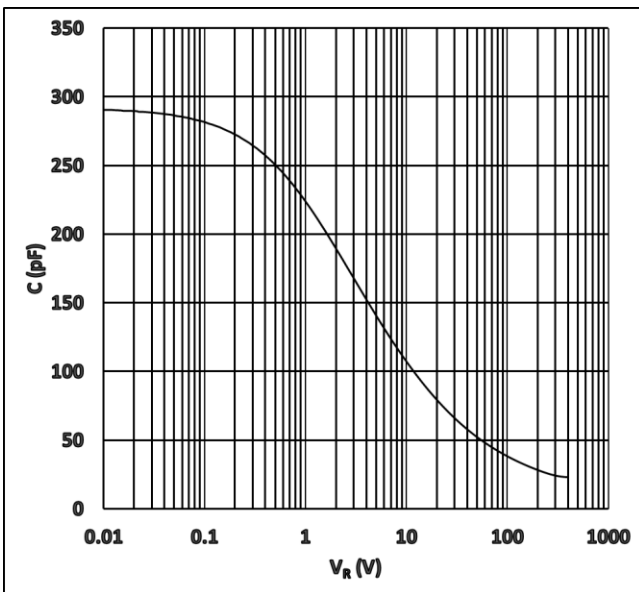


Figure 3. Capacitance vs. Reverse Voltage

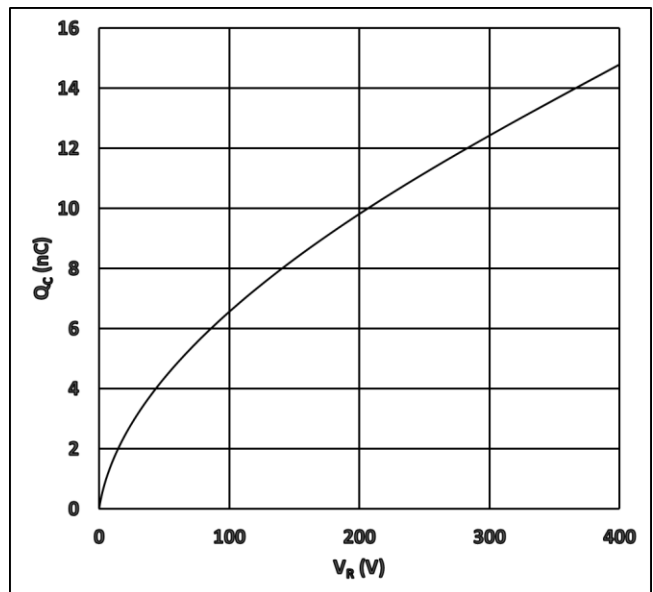


Figure 4. Recovery Charge vs. Reverse Voltage

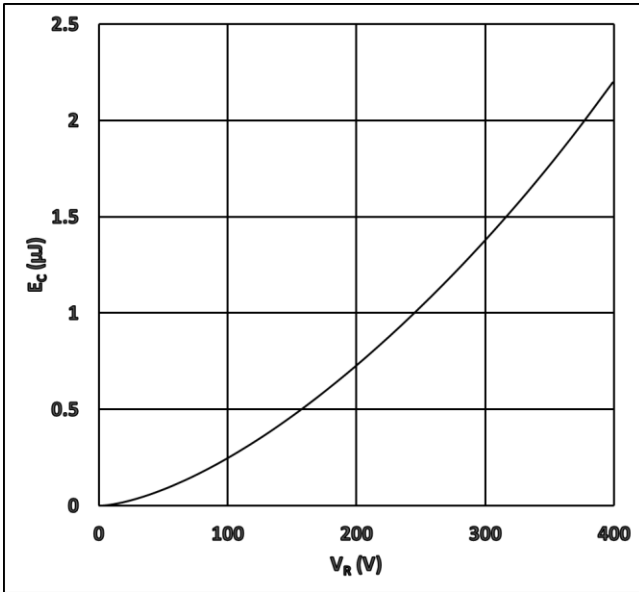


Figure 5. Capacitance Stored Energy

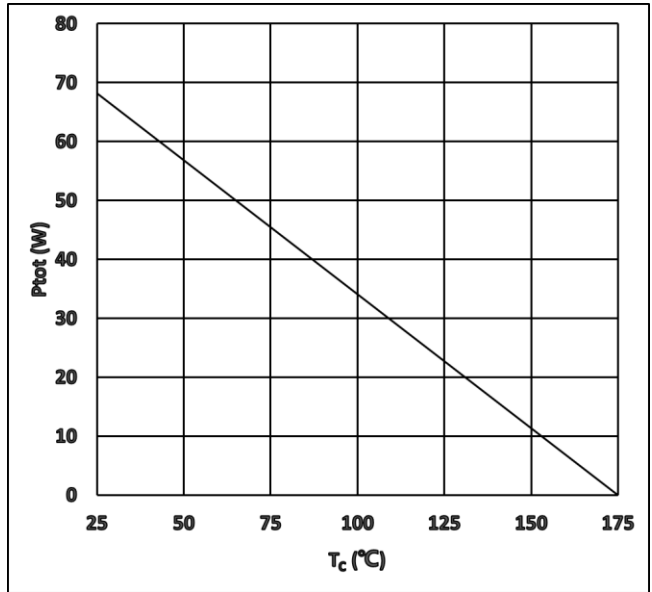


Figure 6. Power Derating

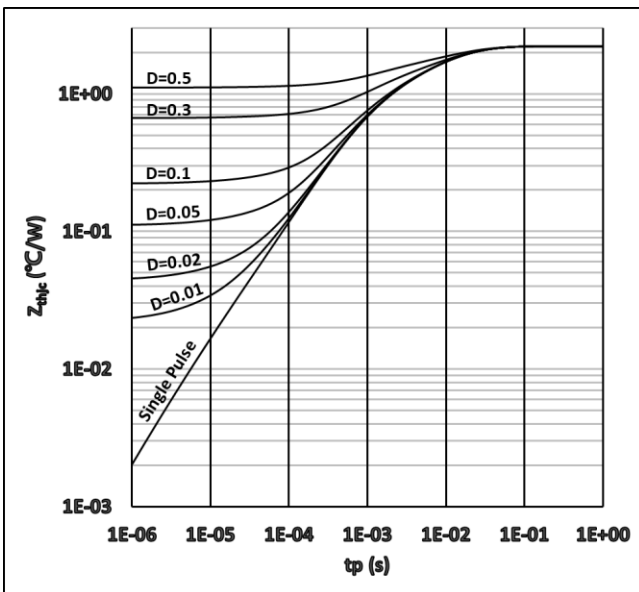


Figure 7. Transient Thermal Impedance

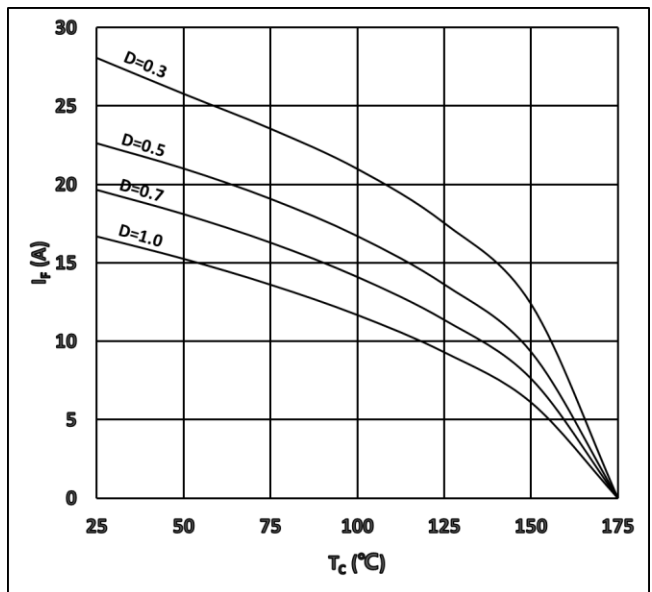
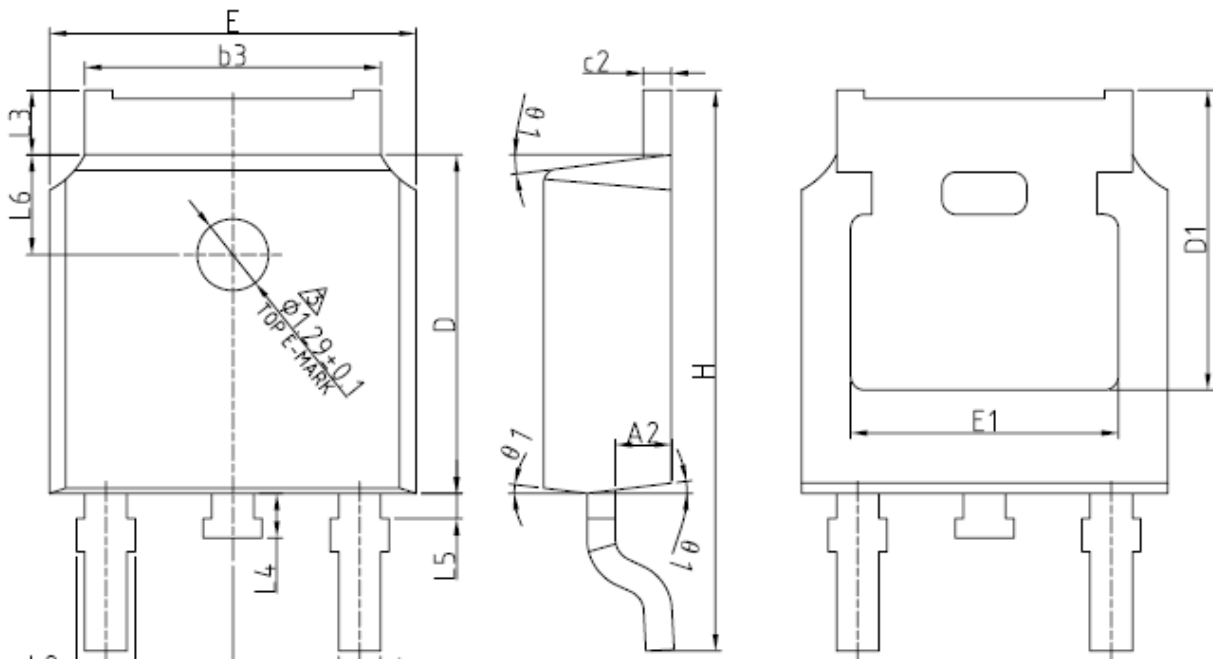


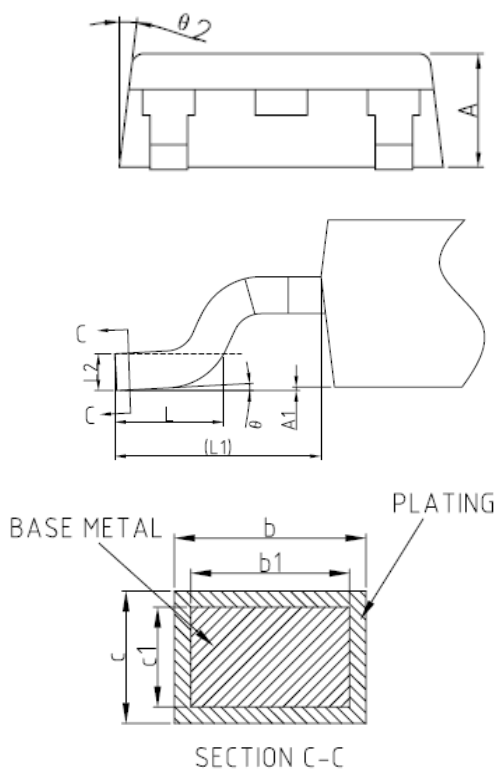
Figure 8.  $I_F$  as a Function of Temp.

## Package Dimensions



COMMON DIMENSIONS  
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	2.20	2.30	2.38
A1	0	—	0.10
A2	0.90	1.01	1.10
b	0.72	—	0.85
b1	0.71	0.76	0.81
b2	0.72	—	0.90
b3	5.13	5.33	5.46
c	0.47	—	0.60
c1	0.46	0.51	0.56
c2	0.47	—	0.60
D	6.00	6.10	6.20
D1	5.25	—	—
E	6.50	6.60	6.70
E1	4.70	—	—
e	2.186	2.286	2.386
H	9.80	10.10	10.40
L	1.40	1.50	1.70
L1	2.90REF		
L2	0.51BSC		
L3	0.90	—	1.25
L4	0.60	0.80	1.00
L5	0.15	—	0.75
L6	1.80REF		
$\theta$	0°	—	8°
$\theta_1$	5°	7°	9°
$\theta_2$	5°	7°	9°



**Note:**

1. Package Reference: JEDEC TO252 AA
2. All Dimensions Are In mm
3. Dimension Do Not Include Mold Flash or Protrusions

## Notes

For further information please contact IVCT's Sales Office.

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