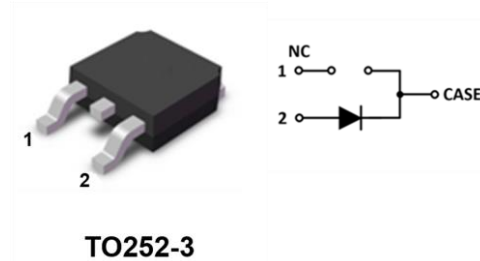


IV1D06006P3 – 650V 6A SiC Schottky Diode

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

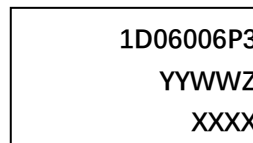
Outline



Applications

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

Marking Diagram



1D06006P3 = 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	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 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	1.45	1.65	V	$I_F = 6\text{ A } T_J = 25^\circ\text{C}$	Fig. 1
		1.85	2.2		$I_F = 6\text{ A } T_J = 175^\circ\text{C}$	
I_R	Reverse Current	1	10	μA	$V_R = 650\text{ V } T_J = 25^\circ\text{C}$	Fig. 2
		5	50		$V_R = 650\text{ V } T_J = 175^\circ\text{C}$	
C	Total Capacitance	224		pF	$V_R = 1\text{ V}, T_J = 25^\circ\text{C}, f = 1\text{ MHz}$	Fig. 3
		28.4			$V_R = 200\text{ V}, T_J = 25^\circ\text{C}, f = 1\text{ MHz}$	
		23.2			$V_R = 400\text{ V}, T_J = 25^\circ\text{C}, f = 1\text{ MHz}$	
Q_c	Total Capacitive Charge	14.8		nC	$V_R = 400\text{ V}, T_J = 25^\circ\text{C},$ $Q_c = \int_0^{V_R} C(V) dV$	Fig. 4
E_c	Capacitance Stored Energy	2.20		μJ	$V_R = 400\text{ V}, T_J = 25^\circ\text{C},$ $E_c = \int_0^{V_R} C(V) \cdot V dV$	Fig. 5

Thermal Characteristics

Symbol	Parameter	Typ.	Unit	Note
$R_{th(j-c)}$	Thermal Resistance from Junction to Case	2.2	$^\circ\text{C/W}$	Fig.7

Typical Performance

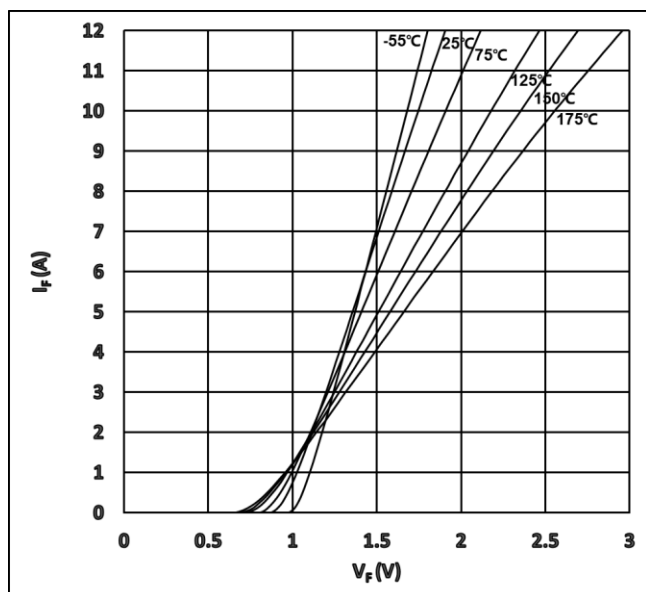


Figure 1. Typical Forward Characteristics

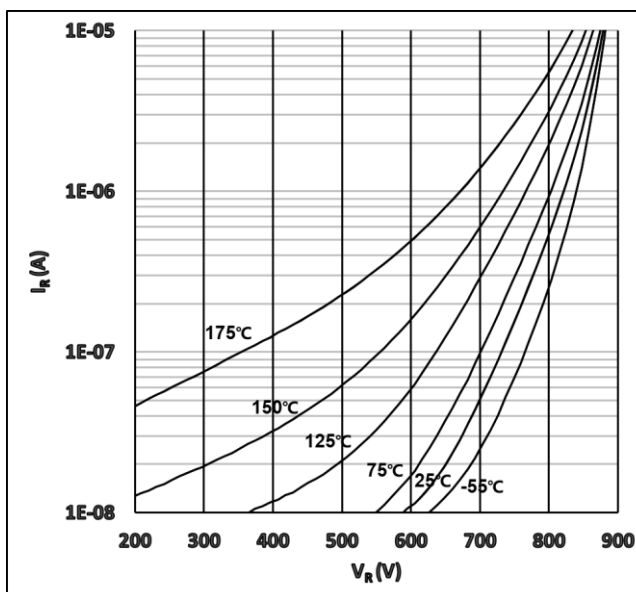


Figure 2. Typical Reverse Characteristics

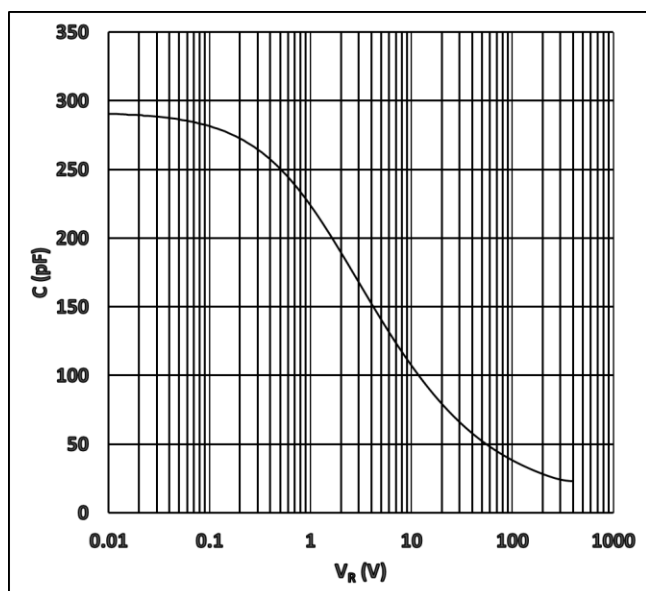


Figure 3. Capacitance vs. Reverse Voltage

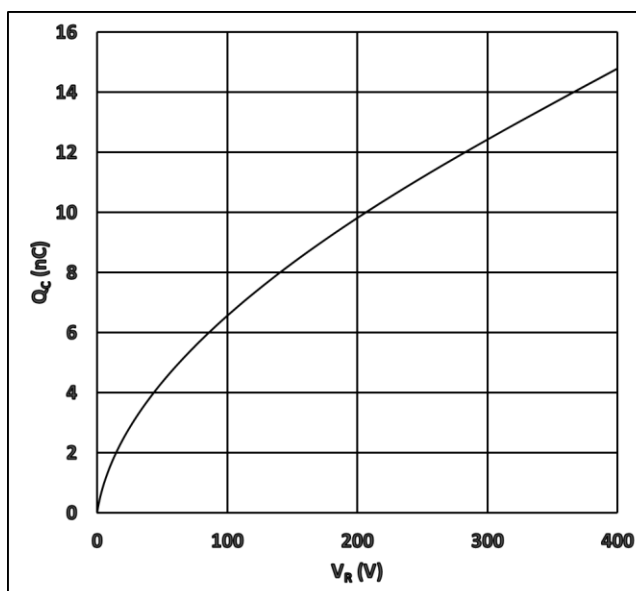


Figure 4. Recovery Charge vs. Reverse Voltage

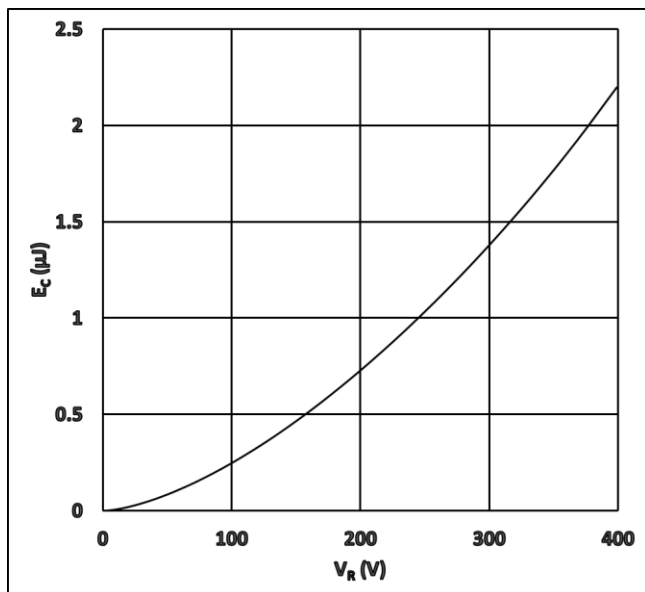


Figure 5. Capacitance Stored Energy

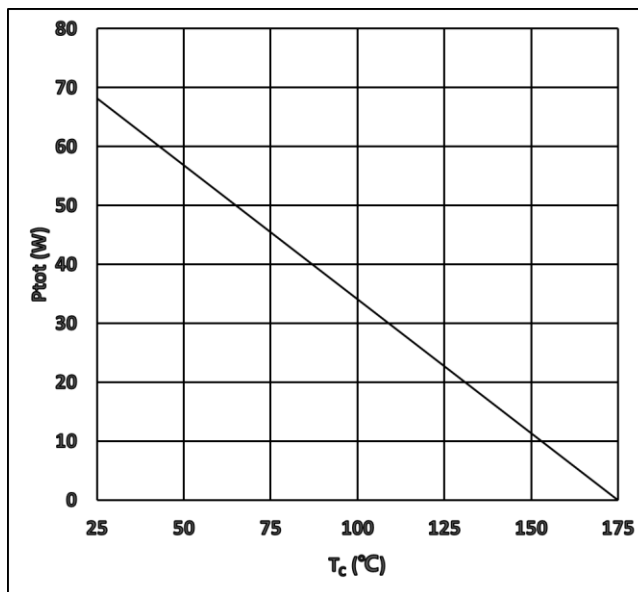


Figure 6. Power Derating

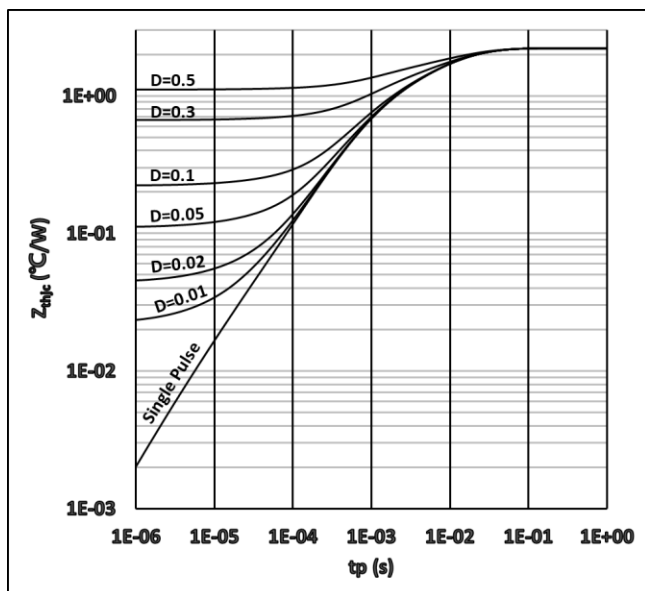


Figure 7. Transient Thermal Impedance

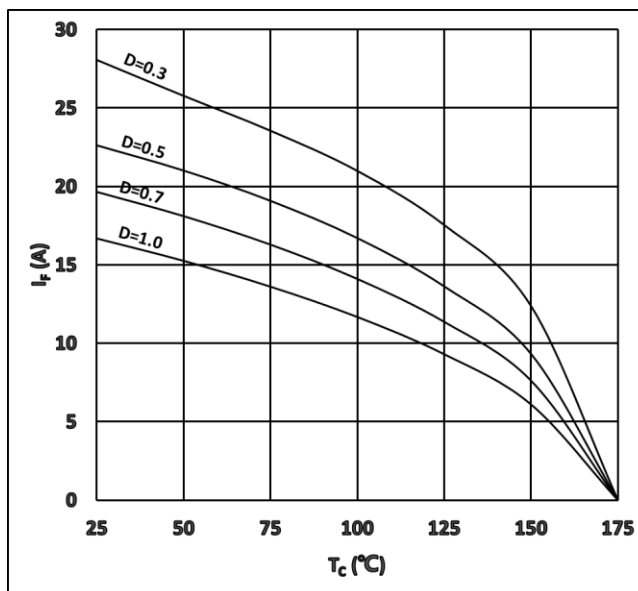
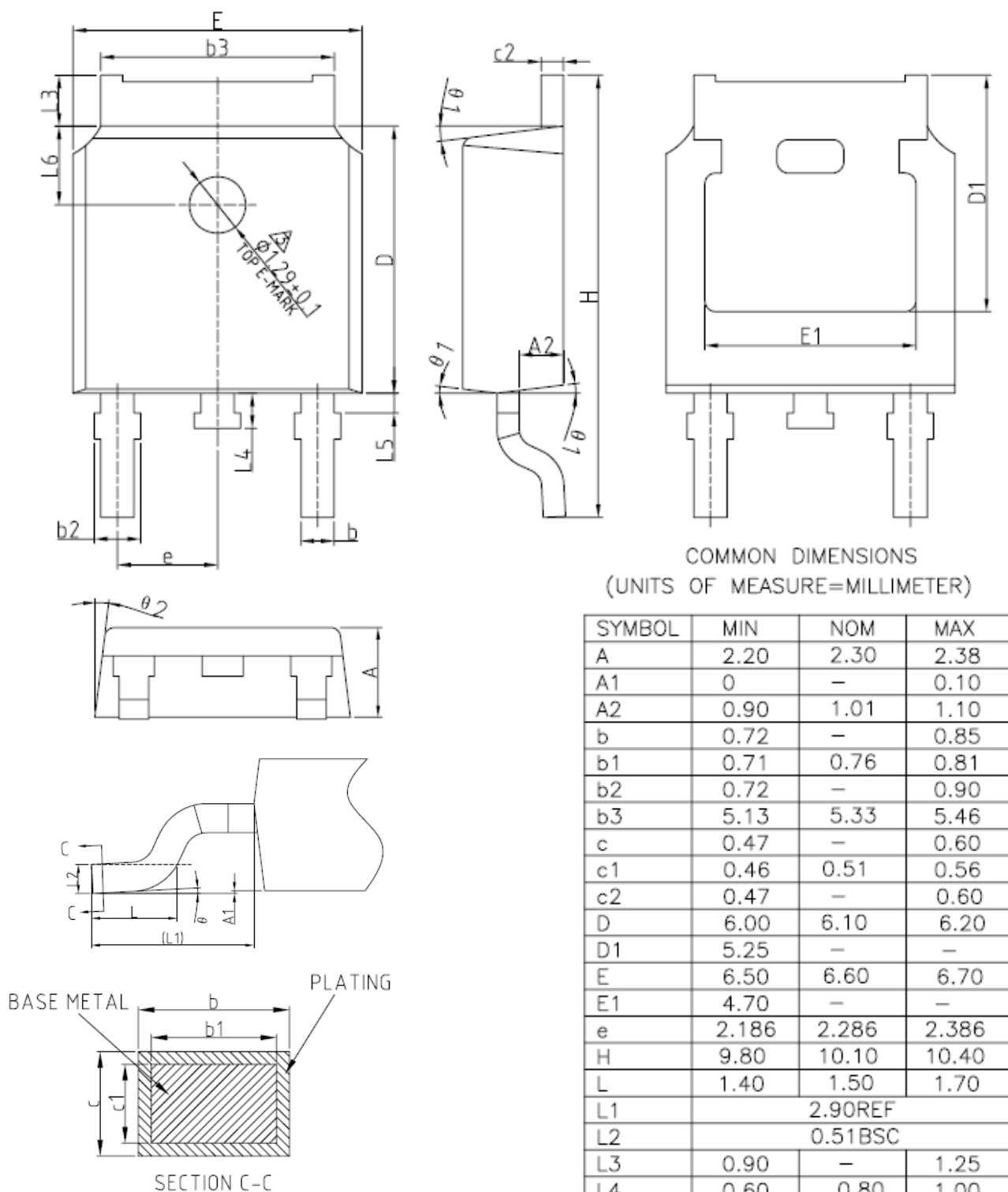


Figure 8. I_F as a Function of Temp.

Package Dimensions



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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