H3D06065B2

650V Silicon Carbide Schottky Diode

V_{RRM} = 650 V

I_F (T_c=150℃) = 6 A

Q_c = 17 nC

Features

- 650Volt Schottky Rectifier
- Shorter recovery time
- Highspeed switching possible
- HighFrequency Operation
- TemperatureIndependent Switching Behavior
- Extremely Fast Switching
- Positive Temperature Coefficient on VF

Benefits

- Higher safety margin against overvoltage
- Improved efficiency all load conditions
- Increased efficiency compared to Silicon Diode alternatives
- Reduction of Heat Sink Requirements
- Parallel Devices Without Thermal Runaway
- Essentialy No Switching Losses

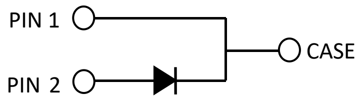
Applications

- HVAC
- Switch Mode Power Supplies (SMPS)
- Boost diodes in PFC or DC/DC stages
- Free Wheeling Diodes in Inverter Stages
- AC/DC converters

Package

Type ： TO-220-2L

1、Cathode 2、Anode



Maximum Ratings (T_c = 25°C unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions	Note
V_{RRM}	Repetitive Peak Reverse Voltage	650	V		
V_{RSM}	Surge Peak Reverse Voltage	650	V		
V_{DC}	DC Blocking Voltage	650	V		
I_F	Continuous Forward Current	6	A	T_C=150°C	Fig. 7
I_{FRM}	Repetitive Peak Forward Surge Current	40	A	T_C=25°C, t_P=10 ms, Half Sine Wave,	
I_{FSM}	Non-Repetitive Peak Forward Surge Current	65	A	T_C=25°C, t_P=10ms, Half Sine Wave	
$I_{F,Max}$	Non-Repetitive Peak Forward Surge Current	520	A	T_C=25°C, t_P= 10 μs, Pulse	
P_{tot}	Power Dissipation	111 48	W	T_C=25°C T_C=110°C	Fig. 6
T_J, T_{stg}	Operating Junction and Storage Temperature	-55 to +175	°C		

Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_F	Forward Voltage	1.45 1.75	1.70 2.00	V	I_F= 6 A T_J=25°C I_F= 6 A T_J=175°C	Fig. 1
I_R	Reverse Current	2 40	20 200	μA	V_R= 650 V T_J=25°C V_R= 650 V T_J=175°C	Fig. 2
Q_C	Total Capacitive Charge	17		nC	V_R= 400 V, T_J= 25°C $Qc=\int_0^{V_R} C(V)dV$	Fig. 4
C	Total Capacitance	332 33 28		pF	V_R= 0 V, T_J= 25°C, f = 1 MHz V_R= 200 V, T_J= 25°C, f = 1 MHz V_R= 400 V, T_J= 25°C, f = 1 MHz	Fig. 3
E_C	Capacitance Stored Energy	4.3		μJ	V_R= 400 V	Fig. 5

Thermal Characteristics

Symbol	Parameter	Typ.	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	1.35	°C/W	Fig. 8

Typical Performance

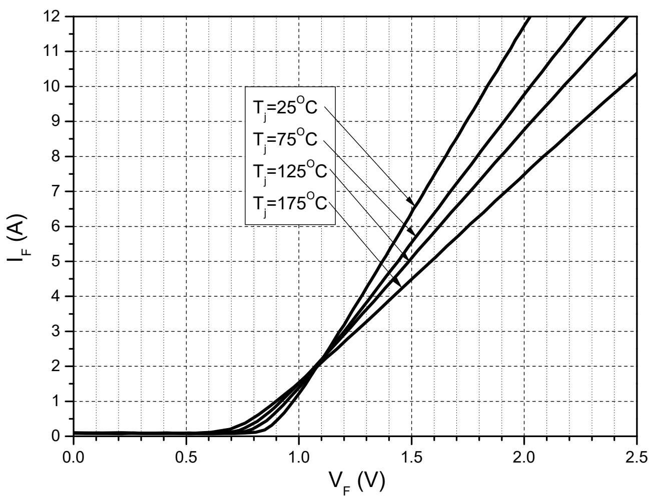


Figure 1.Forward Characteristics

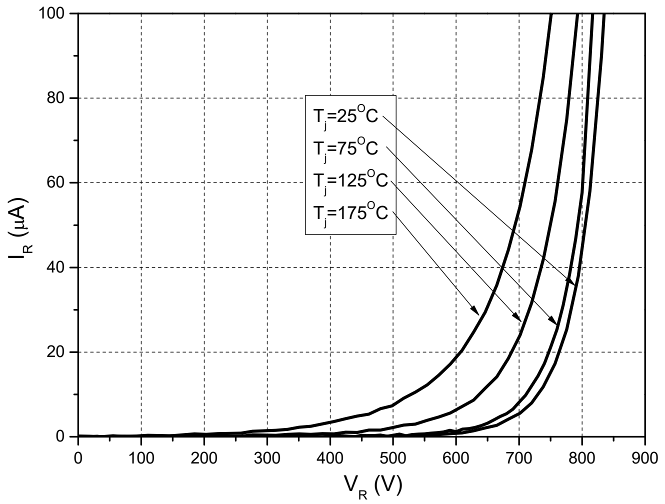
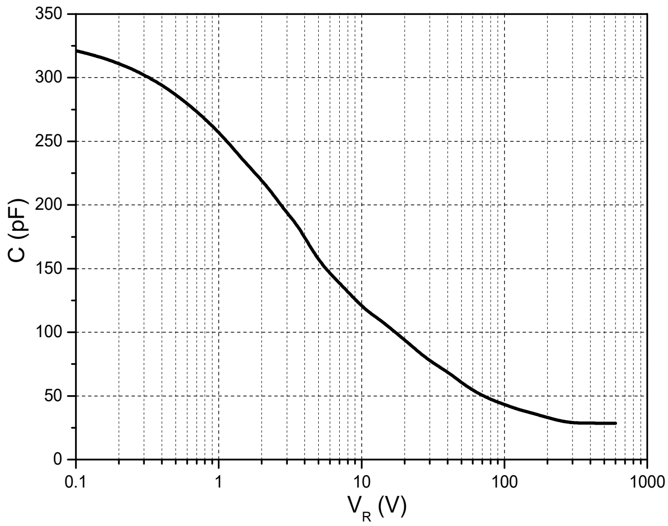


Figure2. Reverse Characteristics



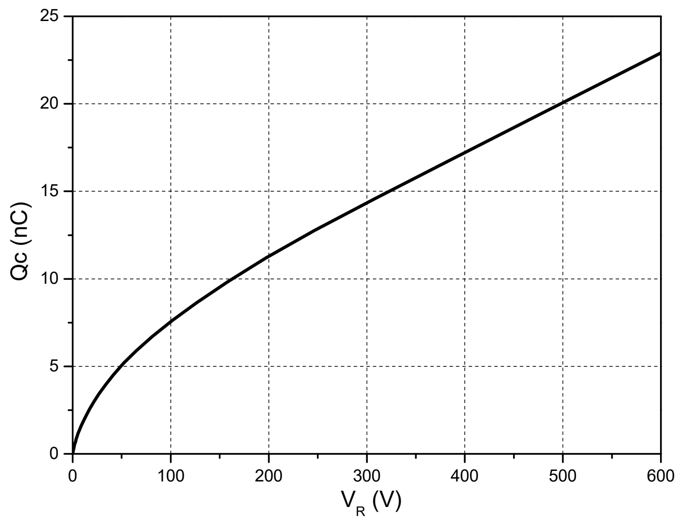
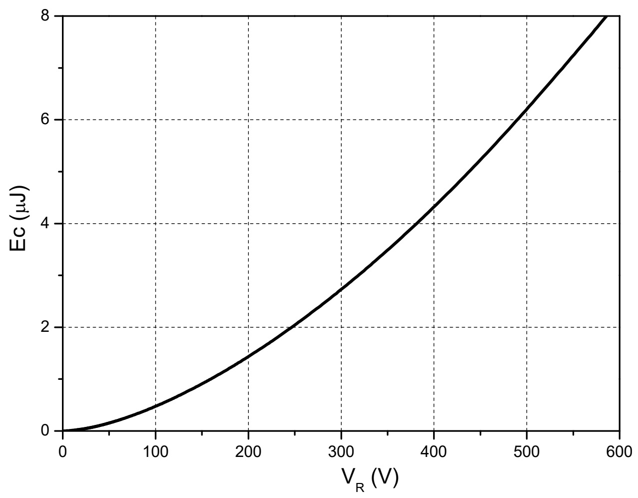


Figure 3.Capacitance vs. Reverse Voltage

Figure 4. Total Capacitance Charge vs. Reverse Voltage



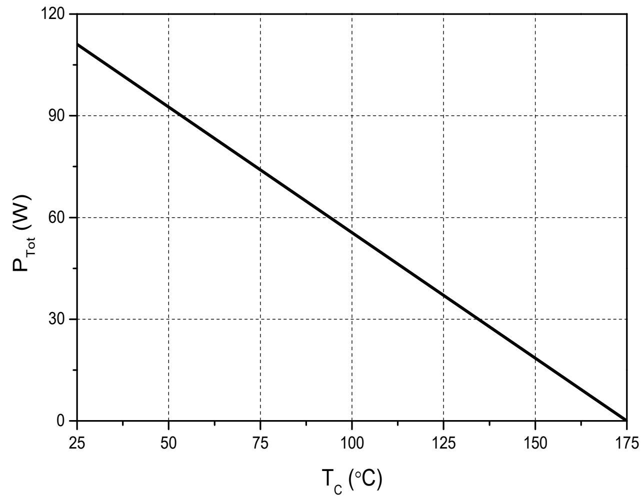
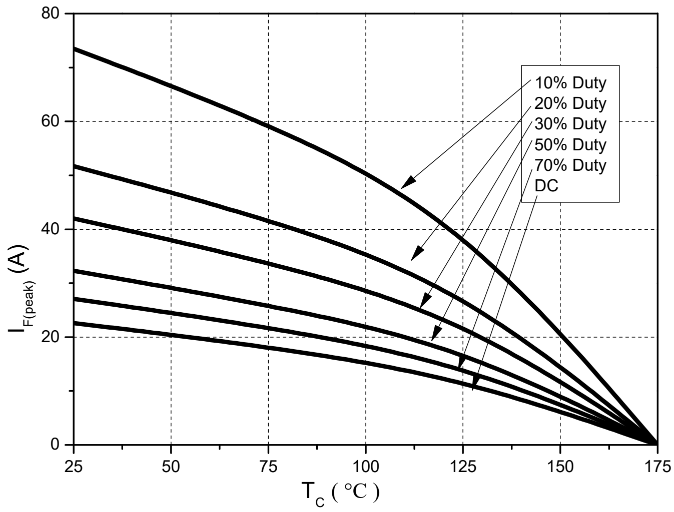


Figure 5. Capacitance Stored Energy

Figure 6. Power Derating



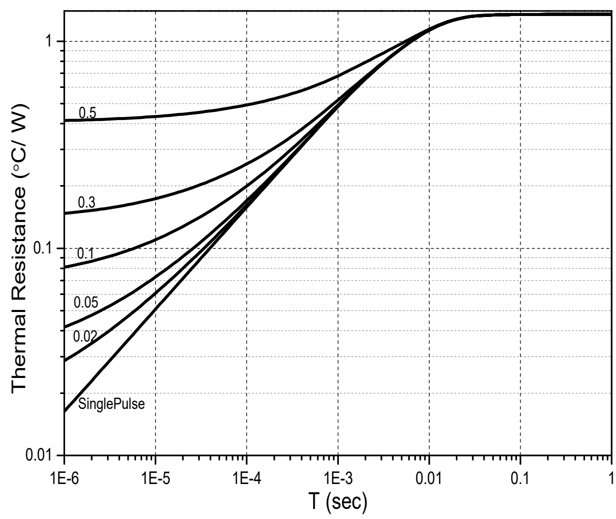
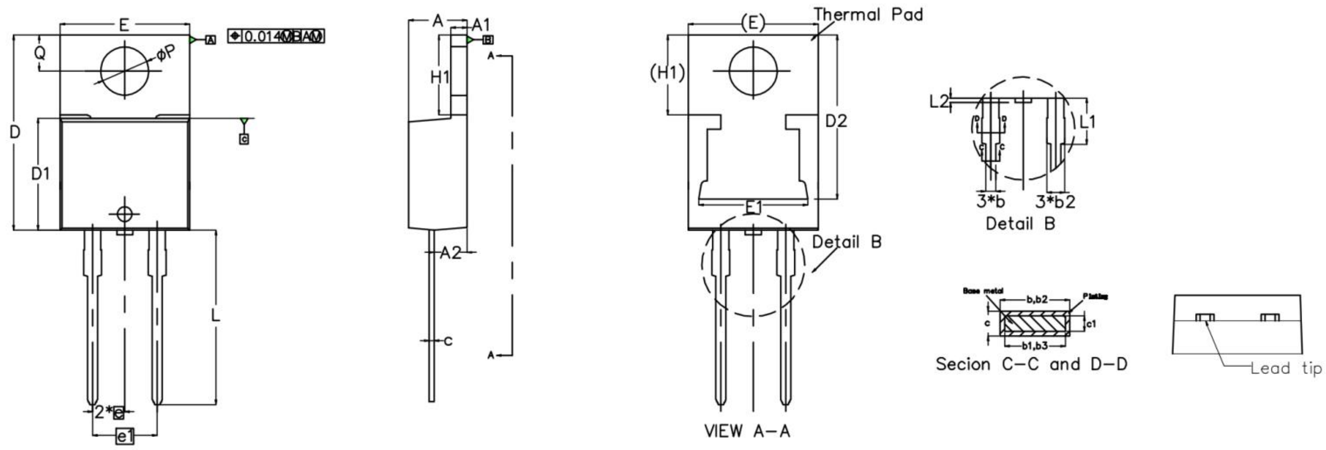


Figure 7. Current Derating

Figure 8. Transient Thermal Impedance

Package Dimensions: TO-220-2L



SYMBOL	MILLIMETERS			NOTES		SYMBOL	MILLIMETERS			NOTES
	Normal	MIN.	MAX.				Normal	MIN.	MAX.	
A	4.55	4.44	4.65			E1	8.57	8.25	8.89	
A1	1.27	1.14	1.39			e	2.54	2.41	2.67	
A2	2.60	2.54	2.79			e1	5.08	4.95	5.20	
b	0.85	0.69	0.94			H1	6.20	6.09	6.40	
b1	0.83	0.38	0.97			L	13.60	13.52	14.00	
b2	1.33	1.20	1.45			L1	3.60	3.56	3.80	
b3	1.33	1.20	1.45			L2	–	0	0.35	
c	0.50	0.36	0.56			ØP	3.80	3.70	3.91	
c1	0.48	0.36	0.56			Q	2.80	2.62	2.87	
D	15.25	14.95	15.32							
D1	8.75	8.50	8.89							
D2	12.85	12.20	12.88							
E	10.18	10.11	10.40							

NOTES:

(1) Dimensioning and tolerancing as per ASME Y14.5M-1994

(2) Lead dimension and finish uncontrolled in L1

(3) Dimension D, D1 and E do not include mold flash. Mold flash shall not exceed 0.127 mm (0.005") per side. These dimensions are measured at the outermost extremes of the plastic body

(4) Dimension b1, b3 and c1 apply to base metal only

(5) Controlling dimensions: mm

(6) Thermal pad contour optional within dimensions E, H1, D2 and E1

(7) Outline conforms to JEDEC TO-220, except D2 (minimum)