H3D10065D

650V Silicon Carbide Schottky Diode

V_{RRM} = 650 V

I_F (T_c=150℃) = 10 A

Q_c = 28 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 alt ernatives
- Reduction of Heat Sink Requirements
- Parallel Devices Without Thermal Runaway
- Essentialy No Switching Losses

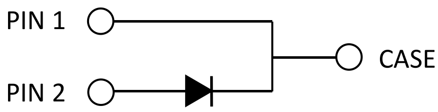
Applications

- 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-263-2L

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	10	A	T_C=150˚C	Fig. 7
I_{FRM}	Repetitive Peak Forward Surge Current	80	A	T_C=25˚C, t_P=10 ms, Half Sine Wave,	
I_{FSM}	Non-Repetitive Peak Forward Surge Current	105	A	T_C=25˚C, t_P=10ms, Half Sine Wave	
$I_{F,Max}$	Non-Repetitive Peak Forward Surge Current	840	A	T_C=25˚C, t_P= 10 μs, Pulse	
P_{tot}	Power Dissipation	138 60	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 = 10 A T_J=25°C I_F = 10 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	28		nC	V_R = 400 V, I_F = 10 A, T_J = 25°C $Qc=\int_0^{V_R} C(V)dV$	Fig. 4
C	Total Capacitance	550 53 48		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	7.0		μJ	V_R = 400 V	Fig. 5

Thermal Characteristics

Symbol	Parameter	Typ.	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	1.09	°C/W	Fig. 8

Typical Performance

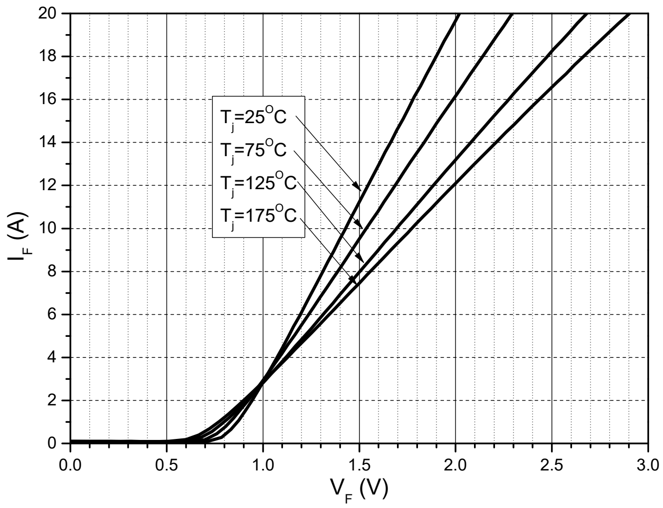


Figure 1.Forward Characteristics

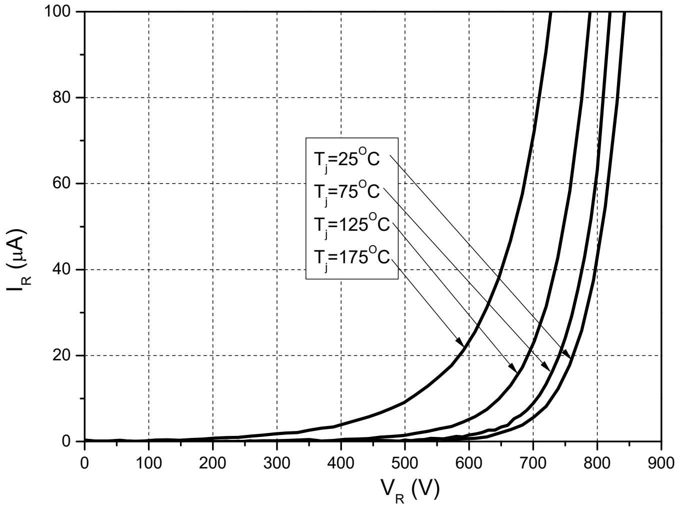


Figure 2. Reverse Characteristics

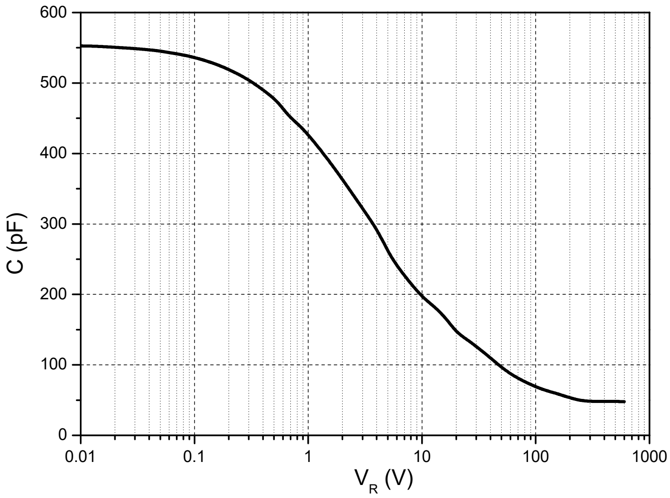


Figure 3.Capacitance vs. Reverse Voltage

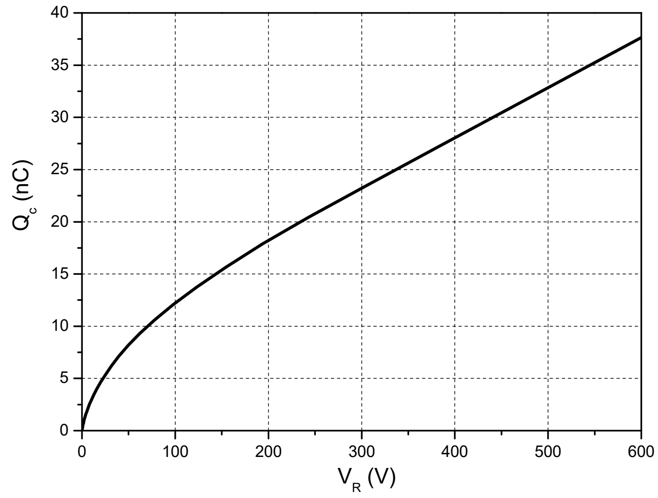


Figure 4. Total Capacitance Charge vs. Reverse Voltage

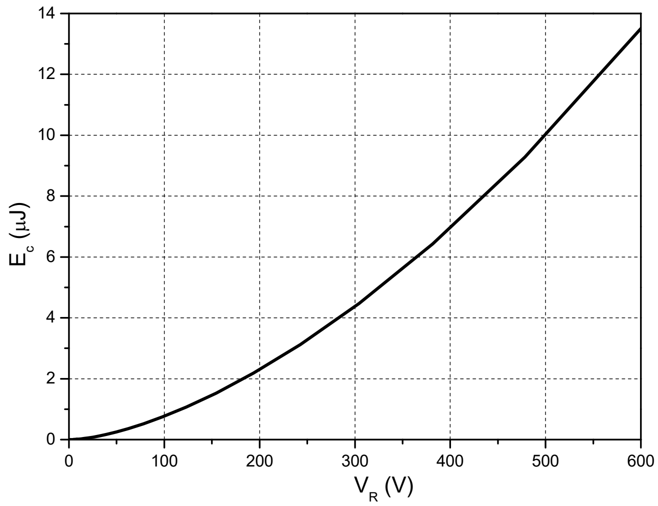


Figure 5. Capacitance Stored Energy

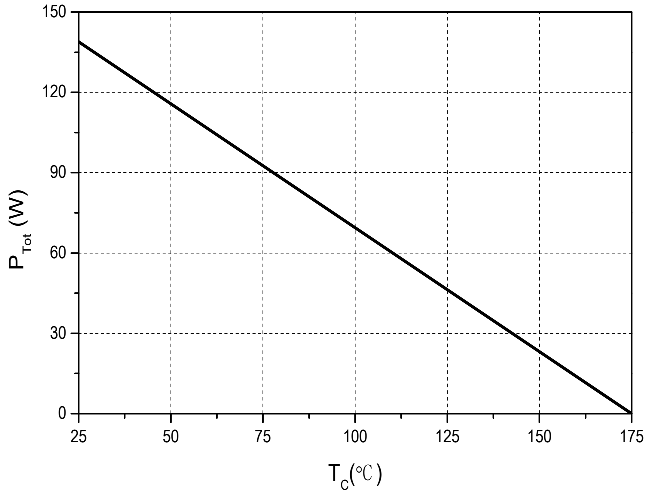


Figure 6. Power Derating

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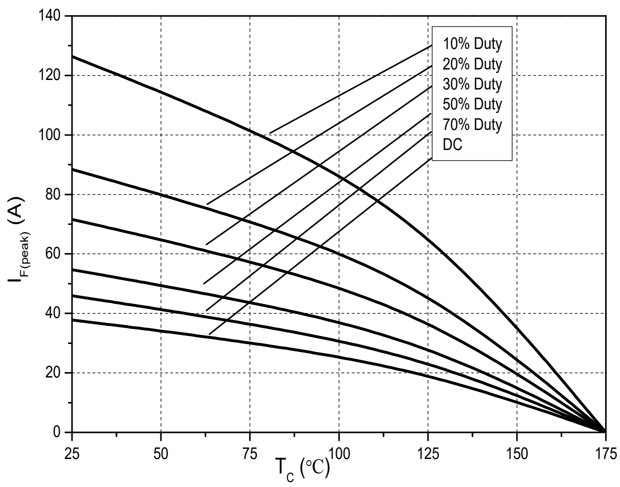


Figure 7. Current Derating

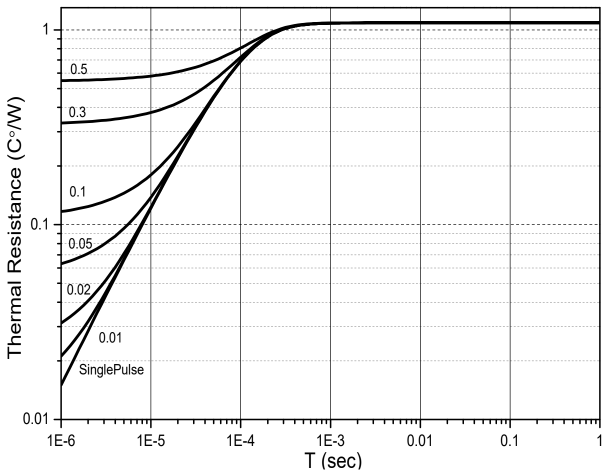
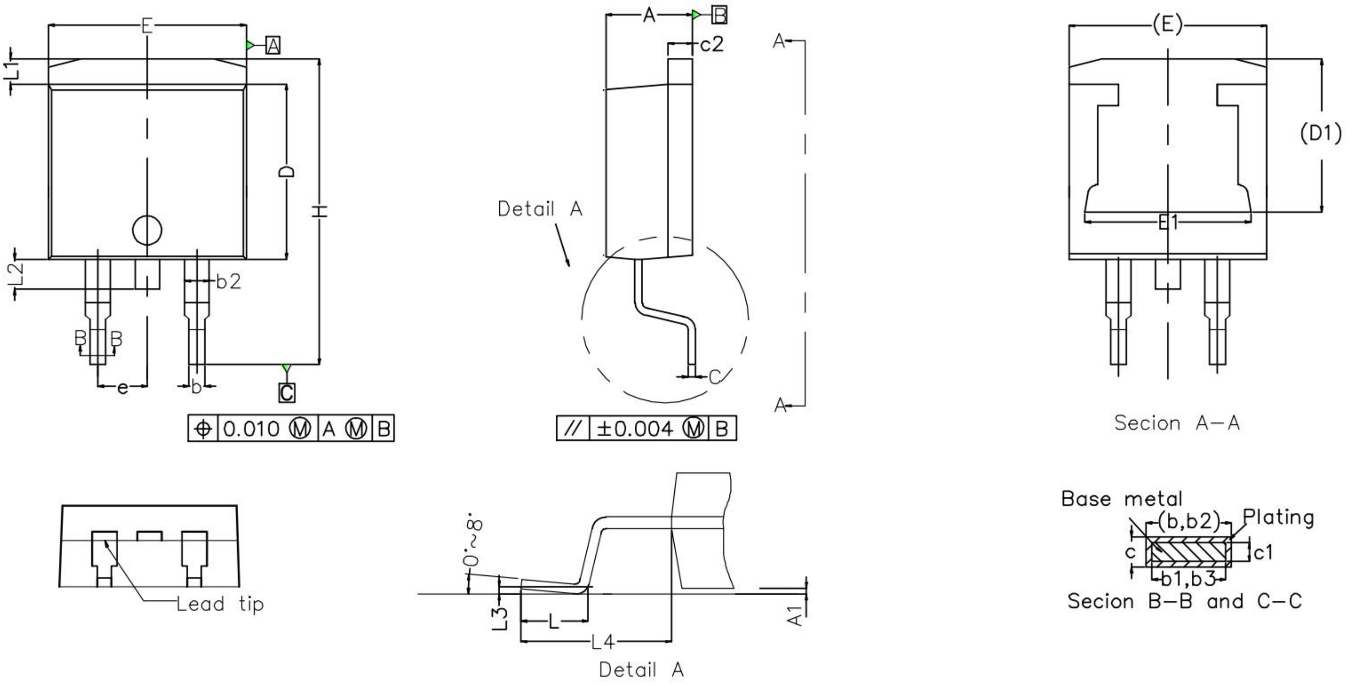


Figure 8. Transient Thermal Impendance

Package Dimensions:TO-263-2L



SYMBOL	MILLIMETERS			NOTES
	Normal	MIN.	MAX.	
A	4.55	4.35	4.75	
A1	0.12	0	0.25	
b	0.85	0.69	0.94	
b1	0.83	0.69	0.88	
b2	1.33	1.20	1.45	
b3	1.33	1.20	1.45	
c	0.50	0.38	0.53	
c1	0.48	0.38	0.56	
c2	1.27	1.14	1.40	
D	8.75	8.51	9.02	

SYMBOL	MILLIMETERS			NOTES
	Normal	MIN.	MAX.	
D1	7.75	7.50	8.0	
E	10.18	10.0	10.4	
E1	8.57	8.25	8.80	
e	2.54	2.54BSC		
H	15.20	15.00	15.60	
L	2.64	2.50	2.79	
L1	1.35	1.0	1.65	
L2	1.51	1.27	1.78	
L3	0.25	0.25BSC		
L4	5.03	4.78	5.28	

NOTES:

(1) Dimensioning and tolerancing per ASME Y14.5 M-1994
(2) Dimension D 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 outmost extremes of the plastic body
(3) Thermal pad contour optional within dimension E, L1, D1 and E1
(4) Dimension b1 and c1 apply to base metal only
(5) Datum A and B to be determined at datum plane H
(6) Controlling dimension: mm
(7) Outline conforms to JEDEC® outline TO-263AB