基本半导体
BASiC Semiconductor

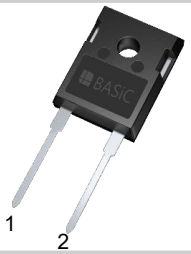
B1D10065H

SiC Schottky Diode

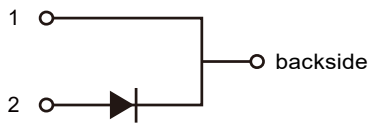
Product Summary

V_{RRM}	650 V
I_F (T_C=155°C)	10 A
Q_C	29 nC

Package: TO-247-2



Electrical Connection



Features

- Extremely low reverse current
- No reverse recovery current
- Temperature independent switching
- Positive temperature coefficient on V_F
- Excellent surge current capability
- Low capacitive charge

Benefits

- Essentially no switching losses
- System efficiency improvement over Si diodes
- Increased power density
- Enabling higher switching frequency
- Reduction of heat sink requirements
- System cost savings due to smaller magnetics
- Reduced EMI

Applications

- Switch mode power supplies (SMPS)
- Uninterruptible power supplies
- Motor drivers
- Power factor correction

Package Pin Definitions

- Pin1 and backside - Cathode
- Pin2- Anode

Package Parameters

Part Number	Marking	Package
B1D10065H	B1D10065H	TO-247-2

Maximum Ratings (T_c=25℃ unless otherwise specified)

Symbol	Parameter	Test conditions	Value	Unit
V_{RRM}	Repetitive peak reverse voltage		650	V
V_{RSM}	Non-repetitive peak reverse voltage		650	V
I_F	Continuous forward current	T_C=25℃ T_C=155℃	36 10	A
I_{FSM}	Non-repetitive forward surge current	T_C=25℃, t_p=10ms Half sine wave	75	A
$\int i^2dt$	i²t value	T_C=25℃, t_p=10ms	28.12	A²S
P_{tot}	Power dissipation	T_C=25℃ T_C=110℃	158 68	W
T_j	Operating junction temperature		-55~175	°C
T_{stg}	Storage temperature		-55~175	°C
	TO-247 mounting torque	M3 Screw	0.7	Nm

Thermal Characteristics

Symbol	Parameter	Value			Unit
		Min.	Typ.	Max.	
$R_{th(jc)}$	Thermal resistance from junction to case		0.946		K/W

Electrical Characteristics
Static Characteristics

Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
V_{DC}	DC blocking voltage	T_j=25℃	650			V
V_F	Diode forward voltage	I_F=10A T_j=25℃ I_F=10A T_j=175℃		1.43 1.75		V
I_R	Reverse current	V_R=650V T_j=25℃ V_R=650V T_j=175℃		1 20		μA

AC Characteristics

Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
Q_C	Total capacitive charge	V_R=400V T_j=25°C $Q_C=\int_0^{V_R} C(V)dV$		29		nC
C	Total capacitance	V_R=1V f=1MHz V_R=300V f=1MHz V_R=600V f=1MHz		457 49.7 49.3		pF
E_C	Capacitance stored energy	V_R=400V		4.5		μJ

Typical Performance

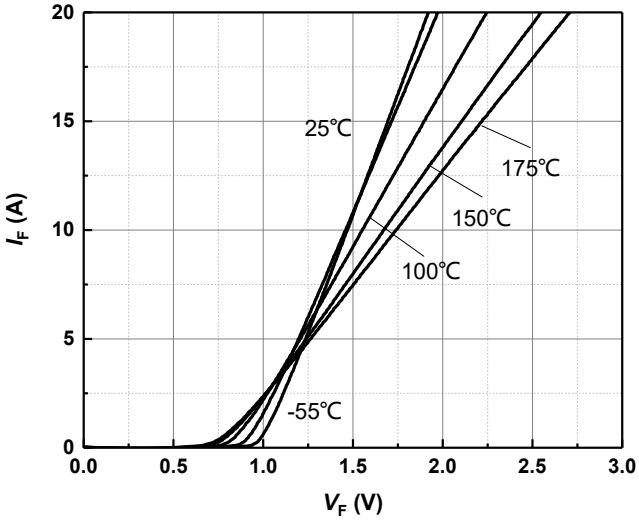


Figure 1 Typical forward characteristics

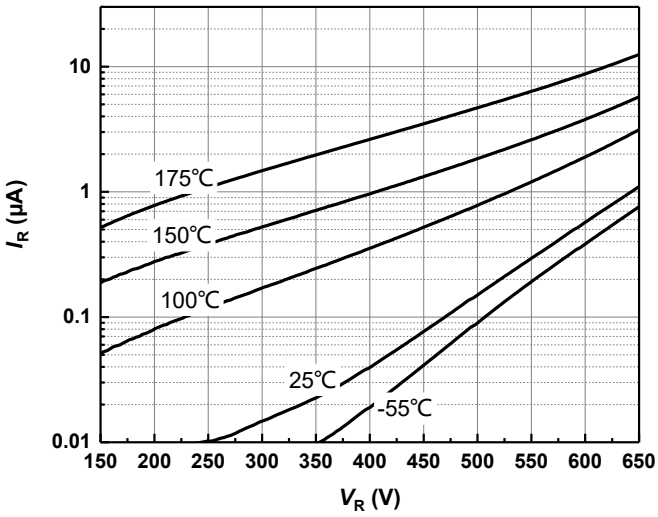


Figure 2 Typical reverse current as function of reverse voltage

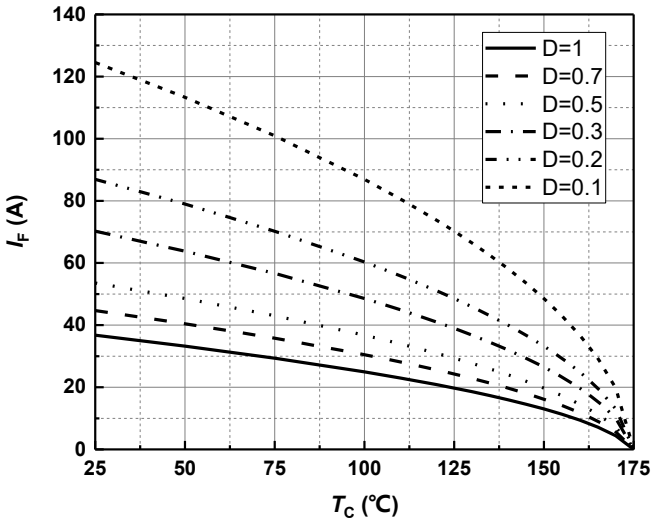


Figure 3 Diode forward current as function of temperature, D=duty cycle

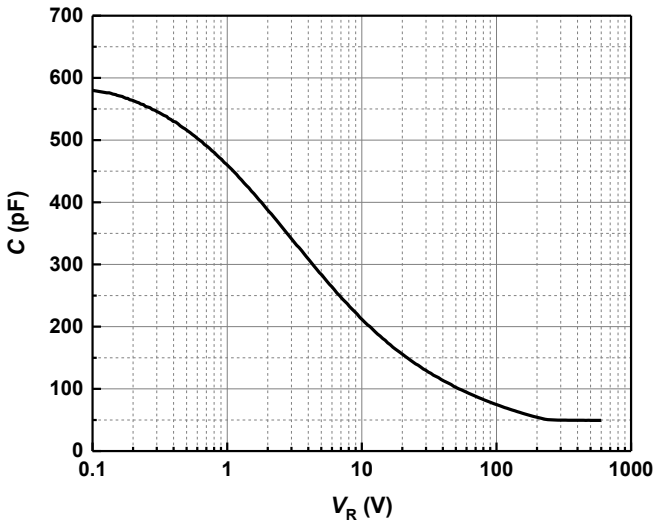


Figure 4 Typical capacitance as function of reverse voltage, C=f(V_R); T_j=25°C; f=1 MHz

Typical Performance

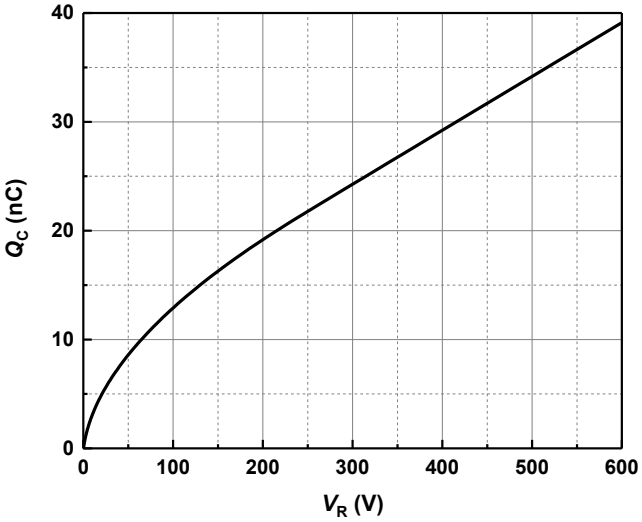


Figure 5 Typical reverse charge as function of reverse voltage

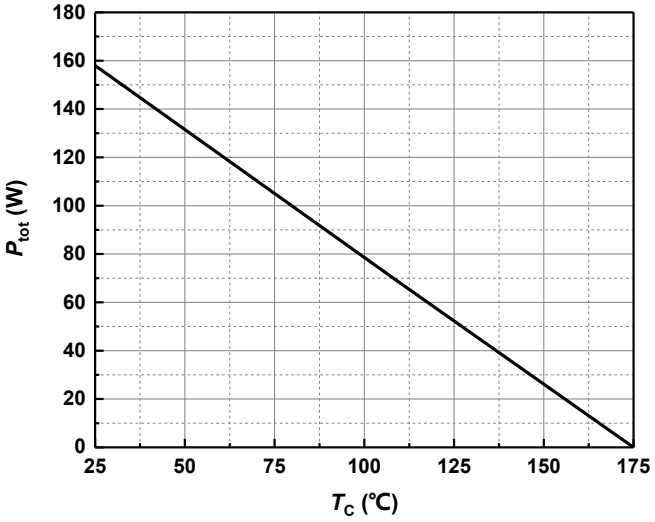


Figure 6 Power dissipation as function of case temperature

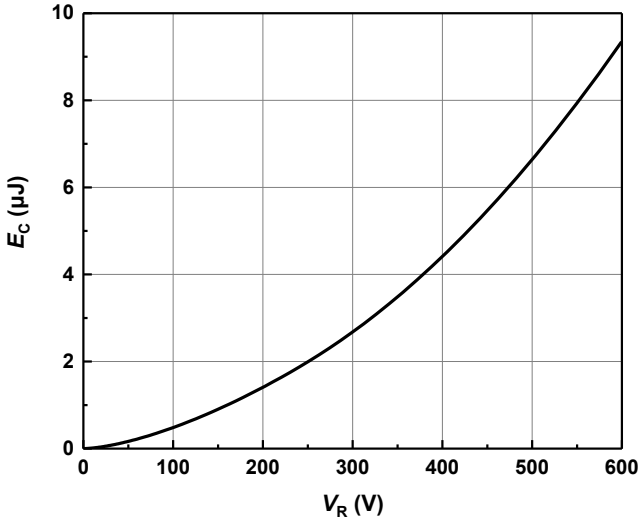


Figure 7 Capacitance stored energy

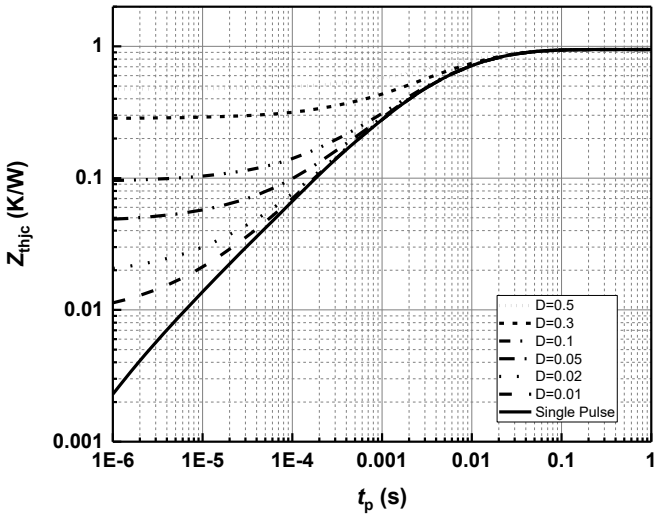
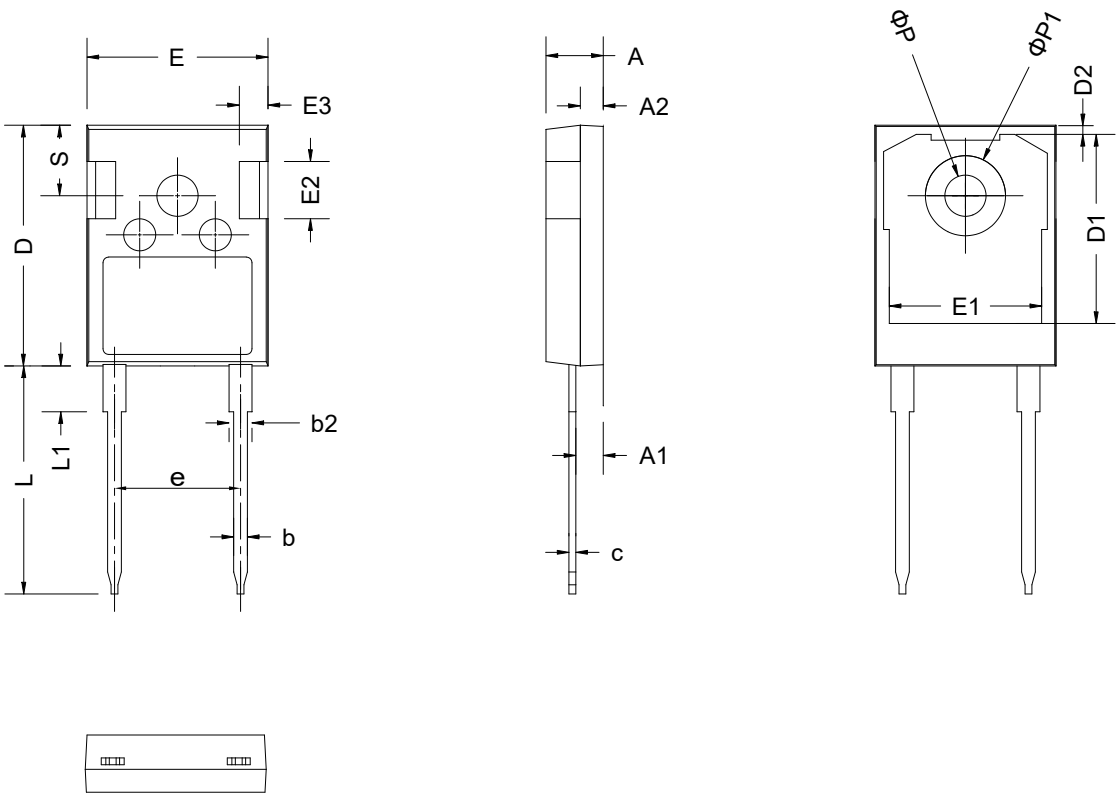


Figure 8 Max. transient thermal impedance, Z_{thjc}= f(t), parameter: $D = t / T$

Package Dimensions



SYMBOL	mm		
	MIN	NOM	MAX
A	4.80	5.00	5.20
A1	2.21	2.41	2.61
A2	1.85	2.00	2.15
b	1.11	1.21	1.36
b2	1.91	2.01	2.21
c	0.51	0.61	0.75
D	20.70	21.00	21.30
D1	16.25	16.55	16.85
D2	1.05	1.17	1.35
E	15.50	15.80	16.10
E1	13.00	13.30	13.60
E2	4.80	5.00	5.20
E3	2.30	2.50	2.70
e	10.88 BSC		
L	19.62	19.92	20.22
L1	-	-	4.30
ϕ P	3.40	3.60	3.80
ϕ P1	-	-	7.30
S	6.15 BSC		

Revision History

Document Version	Date of Release	Description of Changes
Rev. 1.0	2019-10-08	Release of the datasheet.
Rev. 2.0	2020-07-06	Characteristics updated.
Rev. 2.1	2021-12-06	Characteristics updated.

Information

For further information on technology, delivery terms and conditions and prices, please contact the nearest BASiC Semiconductor Office

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