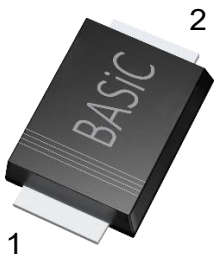
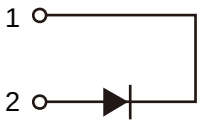
B2D04065V

SiC Schottky Diode

V_{RRM}	=	**650 V**
I_F (T_C=135°C)	=	**4 A**
Q_C	=	**12 nC**

SMBF





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

RoHS

Halogen

Applications

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

Package Pin Definitions

- Pin1- Cathode
- Pin2- Anode

Package Parameters

Part Number	Marking	Package
B2D04065V	2465	SMBF

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°C T_C=135°C	9 4	A
I_{FSM}	Non-Repetitive forward surge current	T_C=25°C , t_p=10ms, Half Sine Wave	32	A
$\int i^2dt$	i^2t value	T_C=25°C ,t_p=10ms	5.12	A^2S
P_{tot}	Power dissipation	T_C=25°C T_C=110°C	25 10	W
T_j	Operating junction temperature		-55~150	°C
T_{stg}	Storage temperature		-55~150	°C

Thermal Characteristics

Symbol	Parameter	Value			Unit
		Min.	Typ.	Max.	
$R_{th(jl)}$	Thermal resistance from junction to leg		6		K/W

Electrical Characteristics

Static Characteristics

Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
V_{DC}	DC blocking voltage	T_j=25°C	650			V
V_F	Diode forward voltage	I_F=4A T_j=25°C I_F=4A T_j=175°C		1.35 1.65		V
I_R	Reverse current	V_R=650V T_j=25°C V_R=650V T_j=175°C		1 5		μA

AC Characteristics

Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
Q_C	Total capacitive charge	V_R=400V T_j=25°C $Q_C = \int_0^{VR} C(V)dV$		12		nC
C	Total capacitance	V_R=1V f=1MHz V_R=300V f=1MHz V_R=600V f=1MHz		181 21.6 21.3		pF
E_C	Capacitance stored energy	V_R=400V		3		μJ

Typical Performance

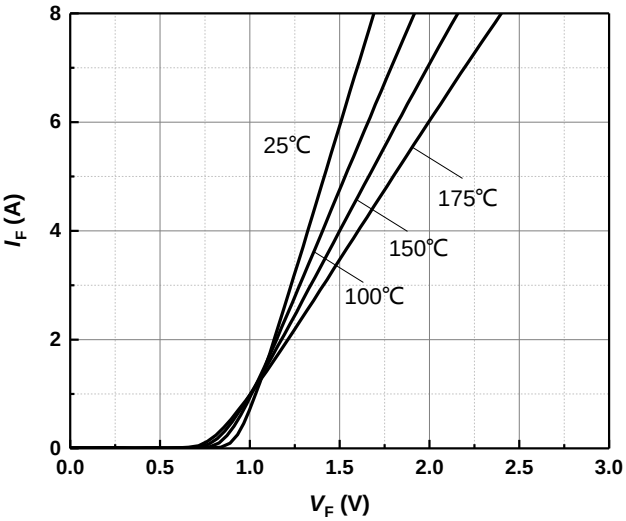


Figure 1. Typical forward characteristics

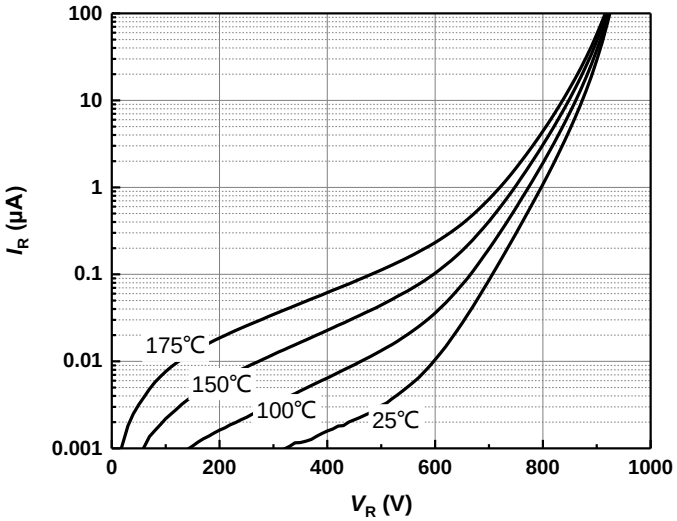


Figure 2. Typical reverse current as function of reverse voltage

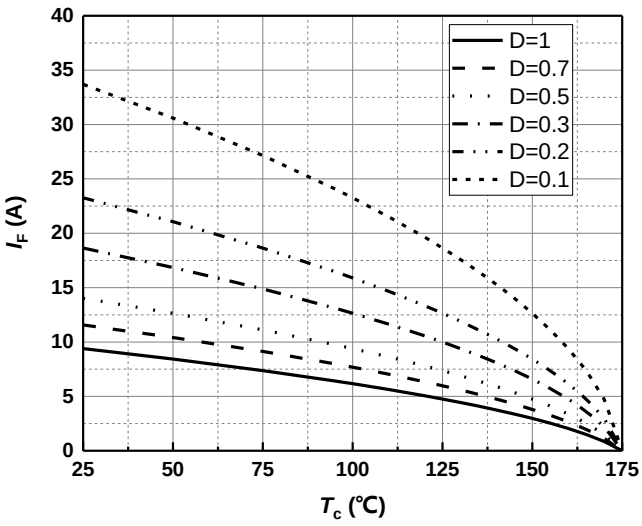


Figure 3. Diode forward current as function of temperature, D=duty cycle

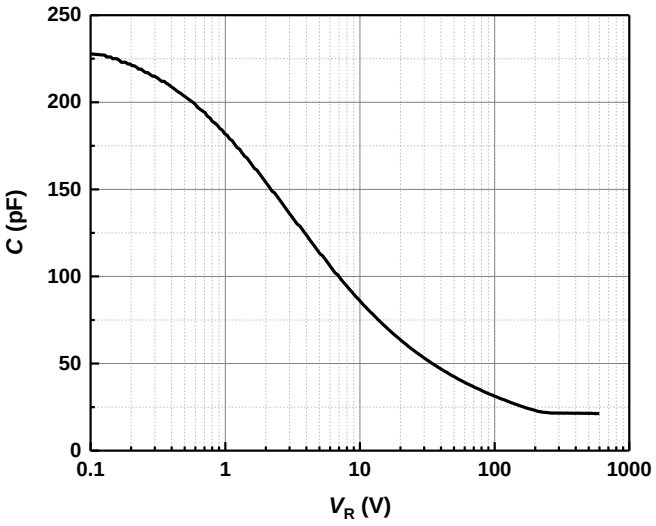


Figure 4. Typical capacitance as function of reverse voltage, C=f(V_R); T_j=25°C; f=1 MHz

Typical Performance

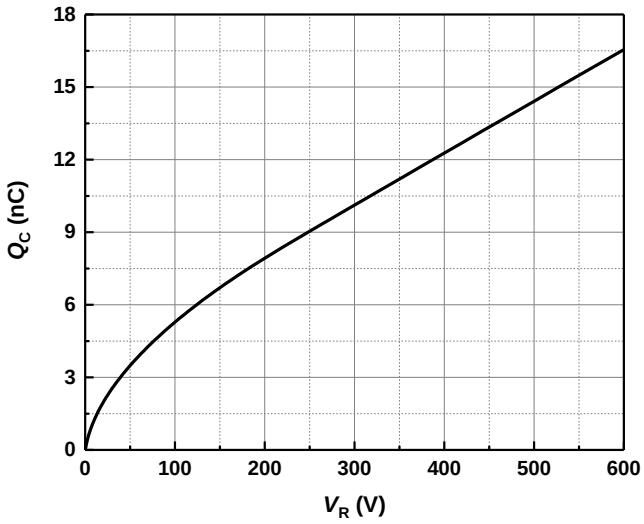


Figure 5. Typical reverse charge as function of reverse voltage

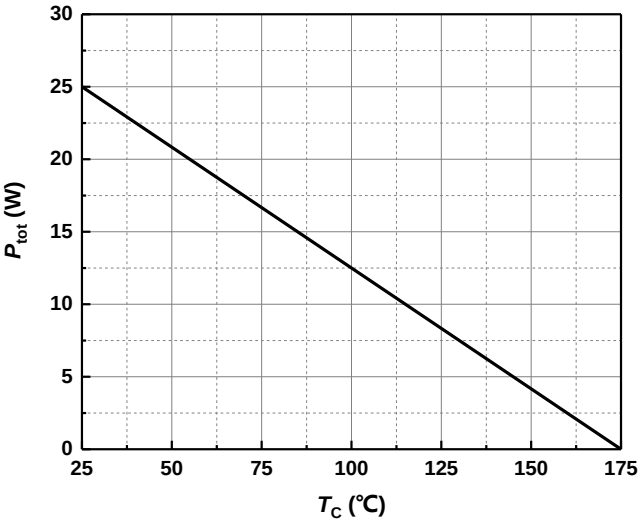


Figure 6. Power dissipation as function of case temperature

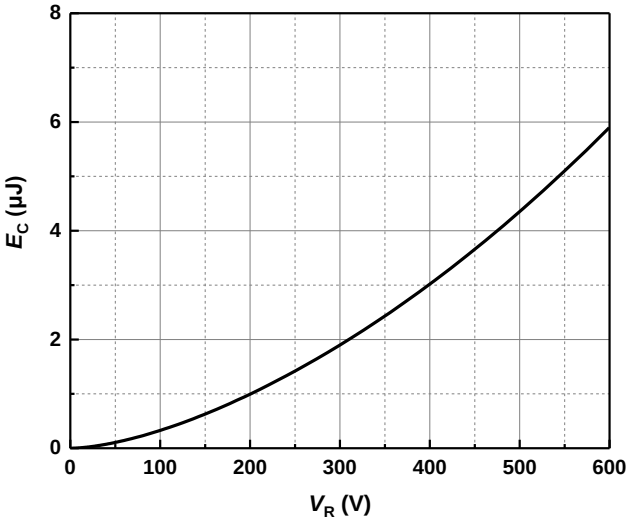
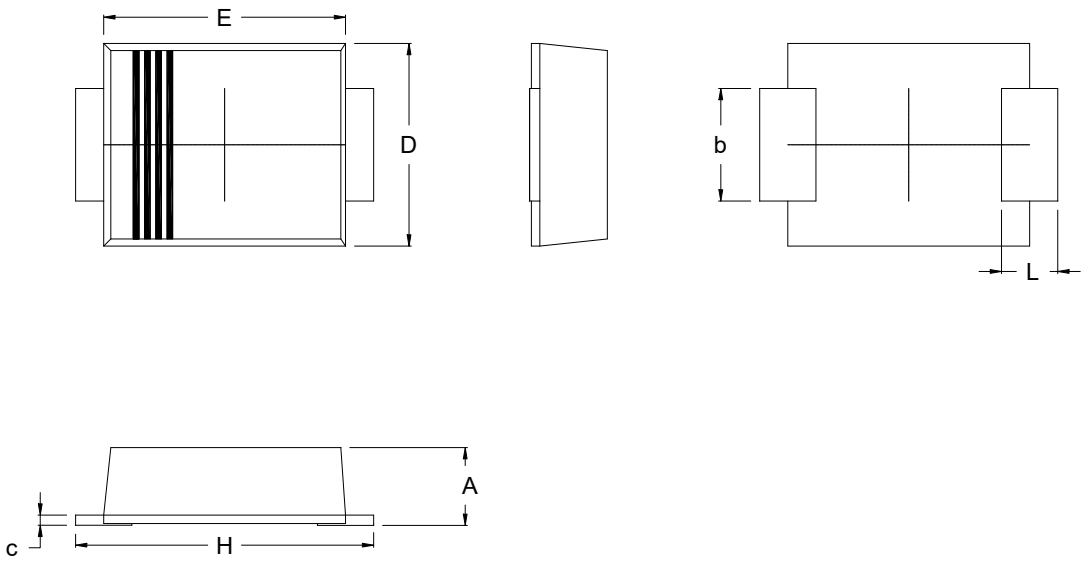


Figure 7.Capacitance stored energy

Package Dimensions



SYMBOL	mm		
	MIN	NOM	MAX
A	1.30	1.35	1.40
b	1.98	2.00	2.02
c	0.12	0.15	0.18
D	3.55	3.60	3.65
E	4.25	4.30	4.35
H	5.20	5.30	5.40
L	0.70	-	1.02

Revision History

Document Version	Date of Release	Description of Changes
Rev. 0.1	2021-03-18	Release of the preliminary datasheet.
Rev. 0.2	2021-04-02	Characteristics updated.
Rev. 0.3	2021-04-18	Characteristics updated.

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

Disclaimer
The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, BASiC semiconductor Ltd. hereby disclaims any and all warranties and liabilities of any kind, including without limitation, warranties of non-infringement of intellectual property rights of any third party.