基本半导体
BASiC Semiconductor

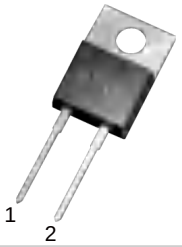
B2D15065K

SiC Schottky Diode

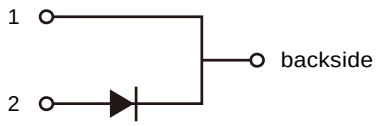
Product Summary

V_{RRM}	650 V
I_F (T_C=155°C)	15 A
Q_C	46 nC

Package: TO-220-2



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
B2D15065K	B2D15065K	TO-220-2

Maximum Ratings (T_C=25°C 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=155°C	57 15	A
I_{FSM}	Non-repetitive forward surge current	T_C=25°C, t_p=10ms Half sine wave	120	A
$\int i^2dt$	i²t value	T_C=25°C, t_p=10ms	72	A^2S
P_{tot}	Power dissipation	T_C=25°C T_C=110°C	211 91	W
T_j	Operating junction temperature		-55~175	°C
T_{stg}	Storage temperature		-55~175	°C
	TO-220 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		0.71		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=15A T_j=25°C I_F=15A T_j=175°C		1.29 1.54	1.52 2.0	V
I_R	Reverse current	V_R=650V T_j=25°C V_R=650V T_j=175°C		1 15	100 150	μA

AC Characteristics

Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
Q_C	Total capacitive charge	V_R=400V T_j=25°C $Q_C=\int_0^{VR} C(V)dV$		46		nC
C	Total capacitance	V_R=1V f=1MHz V_R=300V f=1MHz V_R=600V f=1MHz		713 79.7 79		pF
E_C	Capacitance stored energy	V_R=400V		12		μJ

Typical Performance

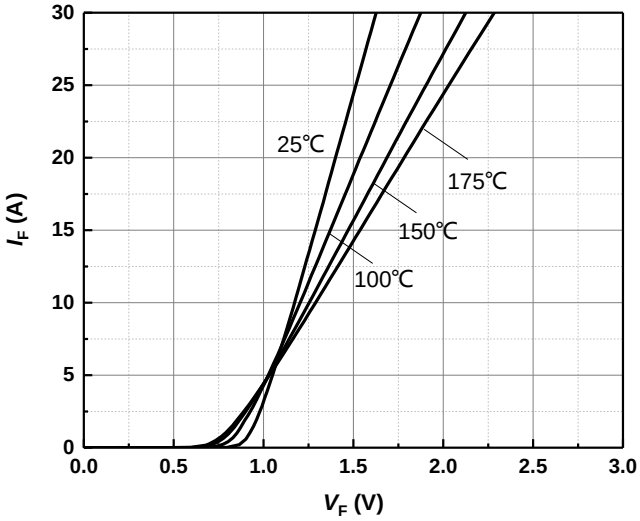


Figure 1 **Typical forward characteristics**

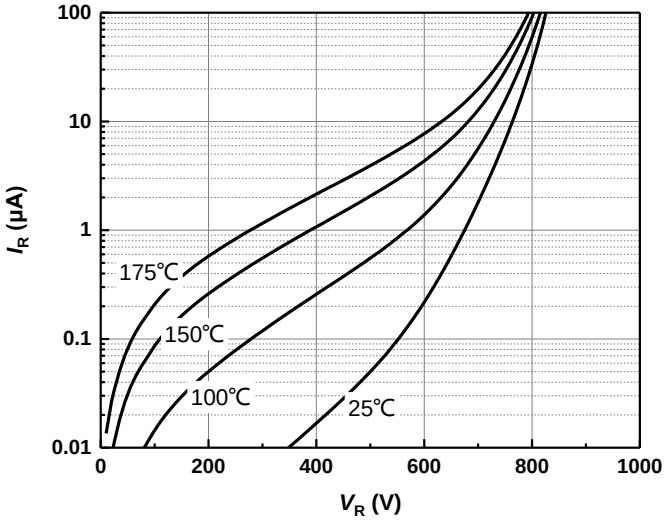


Figure 2 **Typical reverse current as function of reverse voltage**

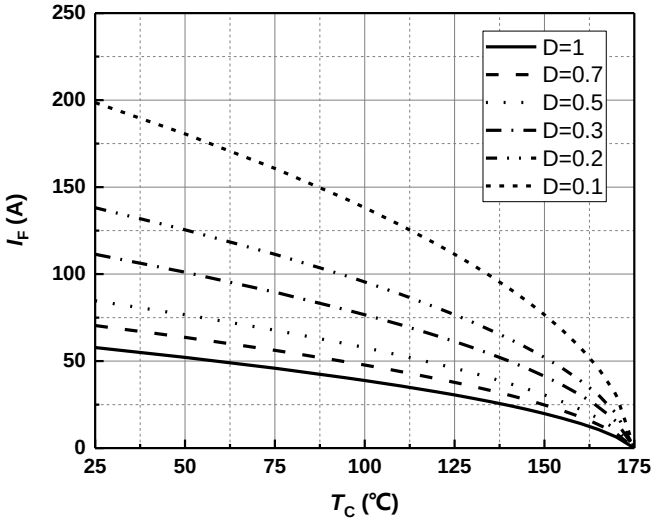


Figure 3 **Diode forward current as function of temperature, D=duty cycle**

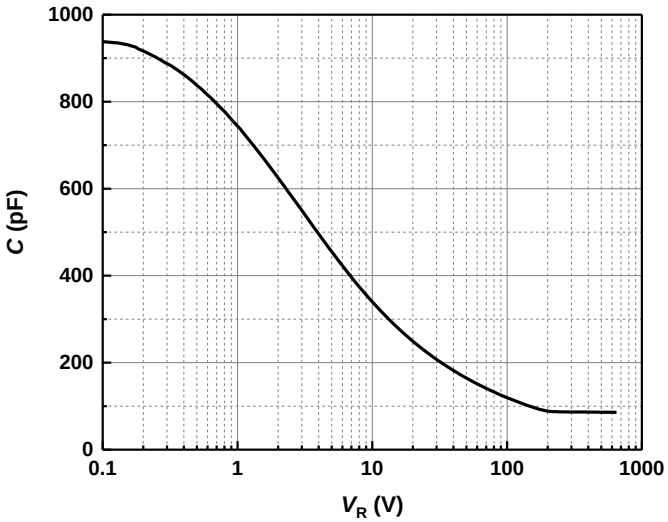


Figure 4 **Typical capacitance as function of reverse voltage, C=f(V_R); T_j=25°C; f=1 MHz**

Typical Performance

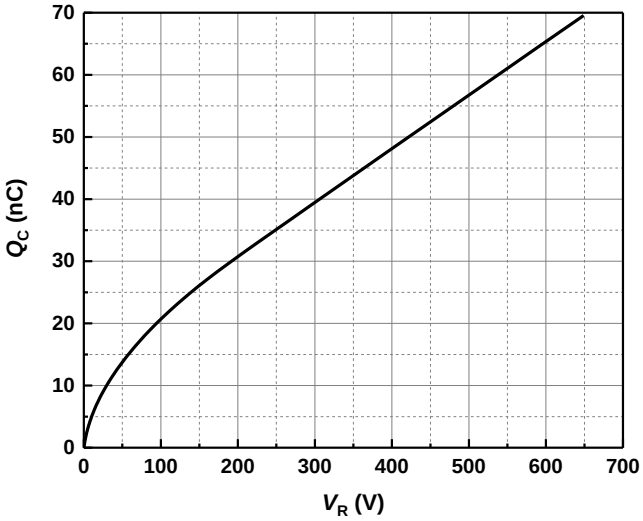


Figure 5 Typical reverse charge as function of reverse voltage

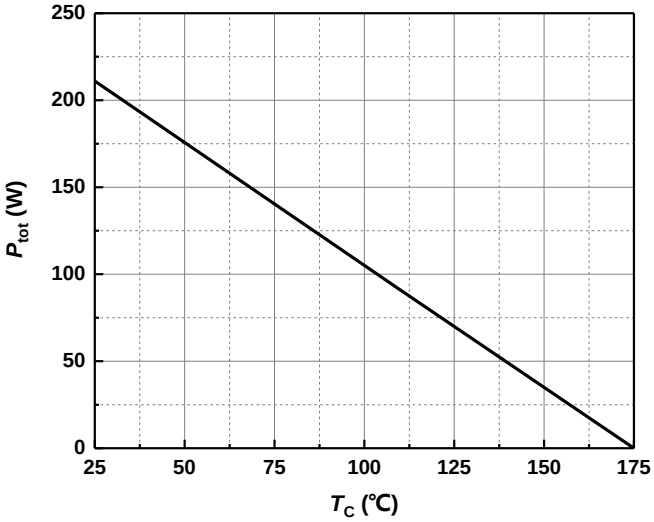


Figure 6 Power dissipation as function of case temperature

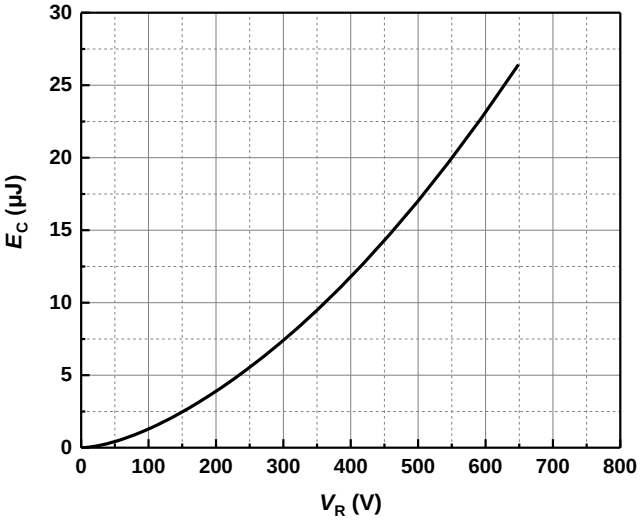


Figure 7 Capacitance stored energy

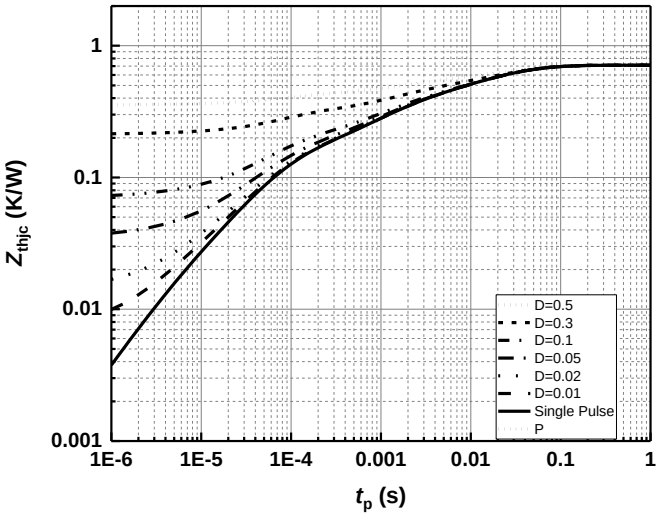
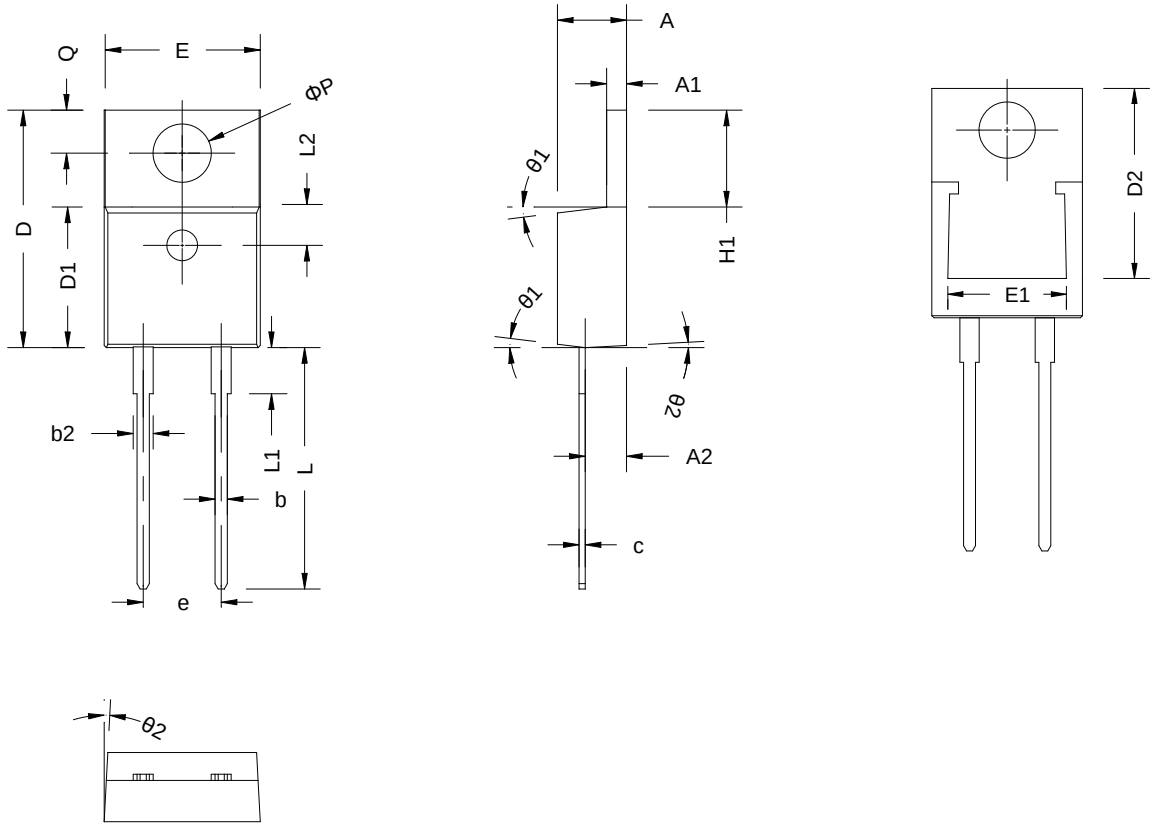


Figure 8 Max. transient thermal impedance, Z_{thjc}= f(t), parameter: $D = t / T$

Package Dimensions



SYMBOL	mm		
	MIN	NOM	MAX
A	4.37	4.57	4.77
A1	1.22	-	1.40
A2	2.49	2.69	2.89
b	0.75	-	0.96
b2	1.22	-	1.47
c	0.30	-	0.48
D	15.15	15.45	15.75
D1	9.05	9.15	9.25
D2	11.40	-	12.88
E	9.86	10.16	10.36
E1	6.86	-	8.89
e	4.98	5.08	5.18
H1	6.10	6.30	6.50
L	12.70	-	13.70
L1	-	-	4.10
L2	2.50 REF		
ϕP	3.70	3.84	3.99
Q	2.54	-	2.94
θ1	5°	7°	9°
θ2	1°	3°	5°

Revision History

Document Version	Date of Release	Description of Changes
Rev. 1.0	2021-01-26	Release of the datasheet.
Rev. 1.1	2021-12-06	Updated.
Rev. 1.2	2022-05-25	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.