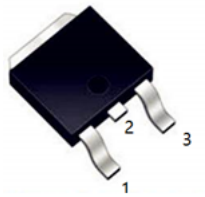
B1D10065E

SiC Schottky Diode

V_{RRM} = **650 V**

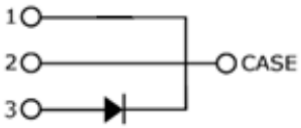
I_F(Tc=150°C) = **10 A**

Q_C = **32 nC**



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)
- Uninterruptable power supplies
- Motor Drivers
- Power Factor Correction

Pacakge Pin definitions

- Pin1-Cathode
- Pin2-Anode

Package Parameters

Part Number	Marking	Package
B1D10065E	B1D10065E	TO-252-3L

Maximum ratings

Symbol	Parameter	Test conditions	Value	Unit
V_{RRM}	Repetitive Peak Reverse Voltage		650	V
V_{RSM}	Surge Peak Reverse Voltage		650	V
I_F	Continuous Forward Current	Tc=25°C Tc=135°C Tc=150°C	29 13.5 10	A
I_{FSM}	Non-Repetitive Forward Surge Current	Tc=25°C , t_p=10ms, sine halfwave	70	A
$\int i^2dt$	i^2t Value	Tc=25°C ,t_p=10ms	24.5	A^2S
P_{tot}	Power Dissipation	Tc=25°C Tc=110°C	115 49.8	W
T_j	Operating temperature		-55~175	°C
T_{stg}	Storage temperature		-55~135	°C

Thermal Characteristics

Symbol	Parameter	Value			Unit
		Min.	Typ.	Max.	
$R_{th(jc)}$	Thermal resistance from junction to case		1.304		K/W
$R_{th(ja)}$	Thermal resistance from junction to ambient		103.1		K/W

Electrical Characteristics

Static Characteristics（Tj=25°C unless otherwise specified）

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=10A T_j=25°C I_F=10A T_j=175°C		1.44 1.83		V
I_R	Reverse current	V_R=650V T_j=25°C V_R=650V T_j=175°C		0.07 3.5		μA

Dynamic Characteristics（Tj=25°C unless otherwise specified）

Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
Q_C	Total capactive charge	V_R=400V T_j=25°C $Q_C = \int_0^{VR} C(V)dV$		32		nC
C	Total Capacitance	V_R=1V f=1MHz V_R=300V f=1MHz V_R=600V f=1MHz		475 55 54		pF

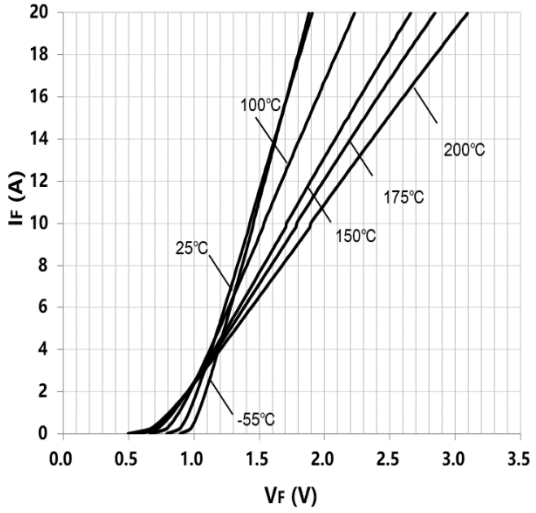


Figure 1. **Typical forward characteristics**

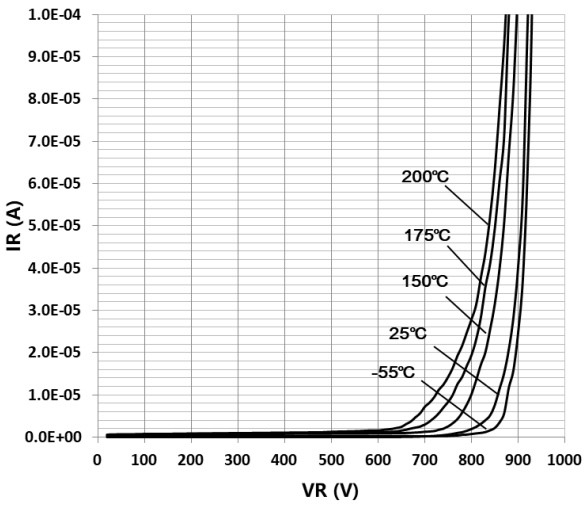


Figure 2. **Typical reverse current as function of reverse voltage**

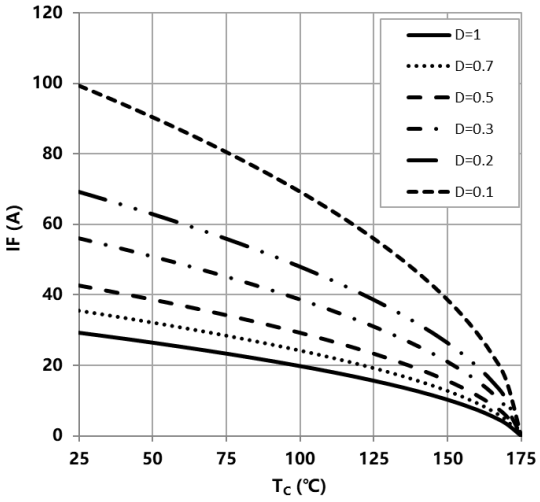


Figure 3. **Diode forward current as function of temperature,** D=duty cycle

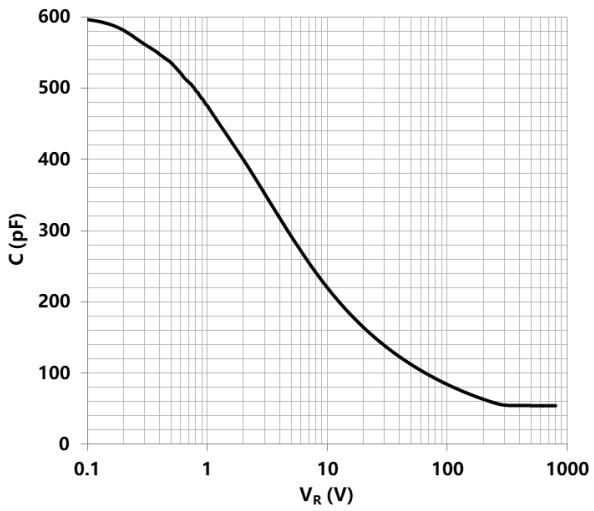


Figure 4. **Typical capacitance as function of reverse voltage,** C=f(V_R); T_j=25°C; f=1 MHz

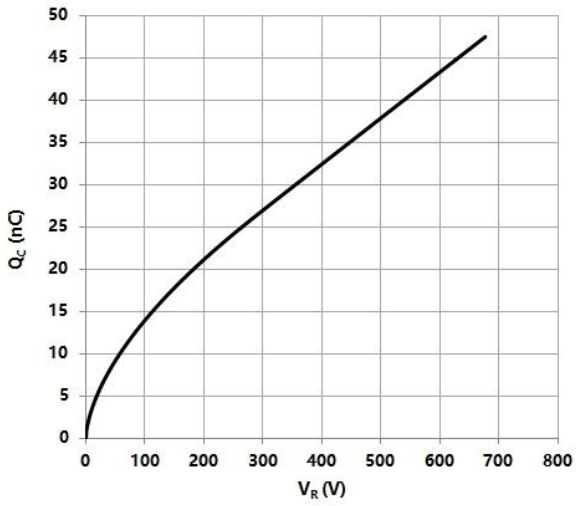


Figure 5. **Typical reverse charge as function of reverse voltage**

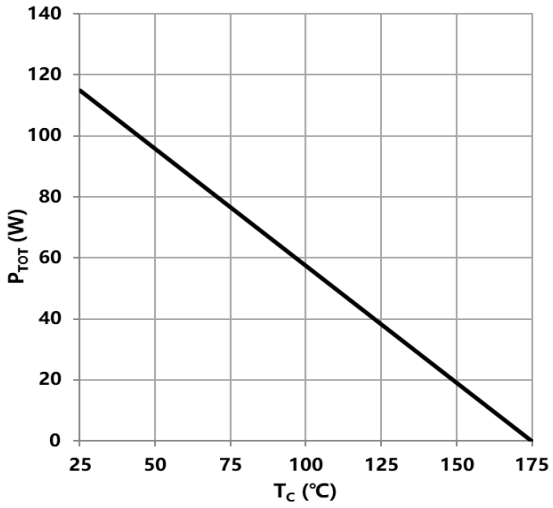


Figure 6. **Power dissipation as function of case temperature**

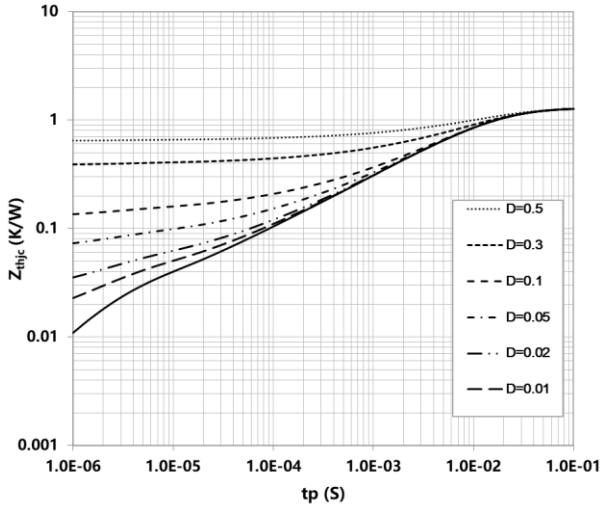
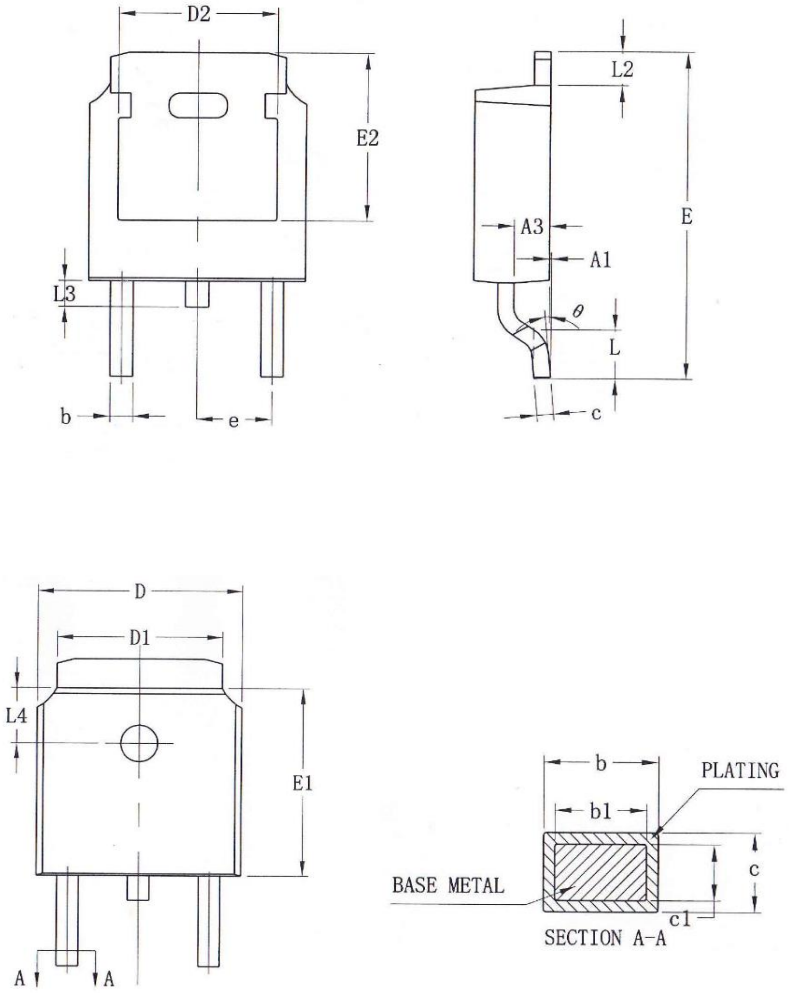


Figure 7. **Max. transient thermal impedance,** $Z_{th,jc}$=f(t), parameter: D=t /T

Package Dimensions



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A1	0.00	—	0.10
A2	2.20	2.30	2.40
A3	1.02	1.07	1.12
b	0.74	—	0.82
b1	0.73	0.76	0.79
c	0.51	—	0.55
c1	0.50	0.51	0.52
D	6.50	6.60	6.70
D1	5.33REF		
D2	4.83REF		
E	9.90	10.10	10.30
E1	6.00	6.10	6.20
E2	5.30REF		
e	2.286BSC		
L	1.40	1.50	1.60
L2	0.90	—	1.25
L3	0.60	0. 80	1.00
L4	1.70	1. 80	1.90
θ	0		8°

Revision History:

2019-05-30,Rev.1.0 Release of datasheet

Previous Revision:

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

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