B1D10065K

SiC Schottky Diode

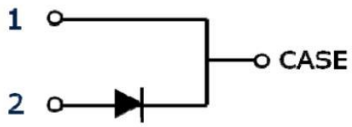
V_{RRM} = **650 V**

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
B1D10065K	B1D10065K	TO-220-2

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	30 14 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	118 51	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		1.265		K/W
$R_{th(ja)}$	Thermal resistance from junction to ambient		43		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		1.43 1.8		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

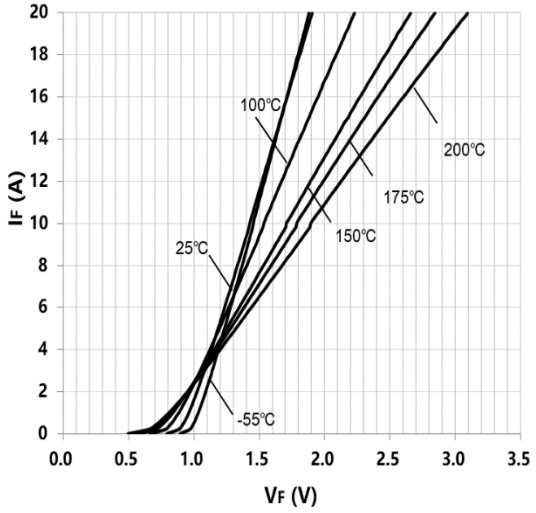


Figure 1. **Typical forward characteristics**

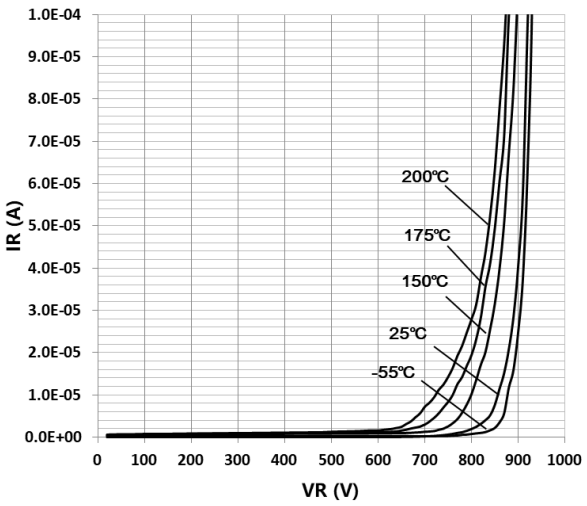


Figure 2. **Typical reverse current as function of reverse voltage**

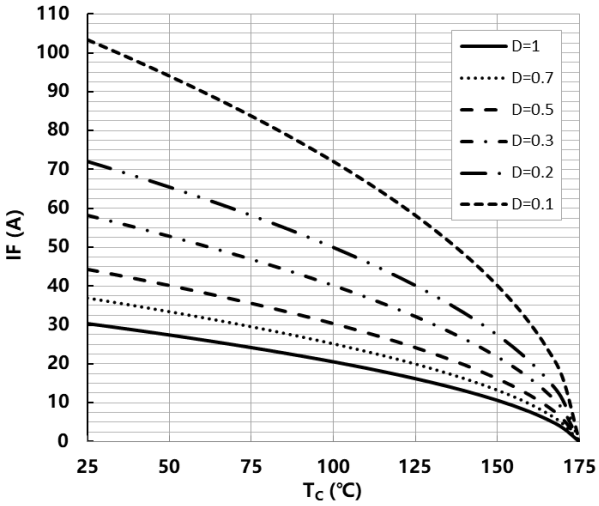


Figure 3. **Diode forward current as function of temperature,** D=duty cycle

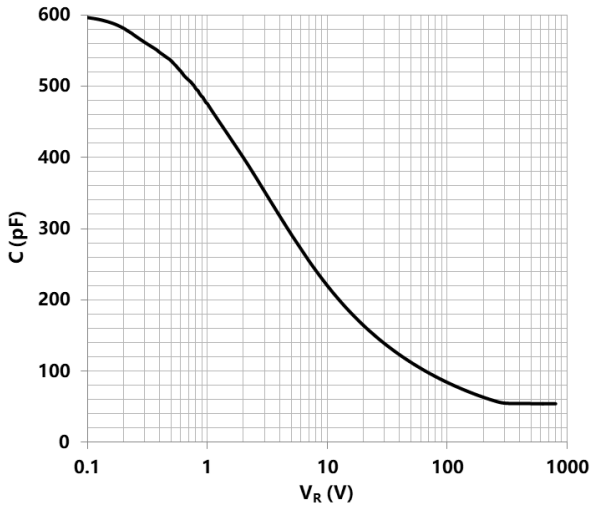


Figure 4. **Typical capacitance as function of reverse voltage,** C=f(V_R); T_j=25°C; f=1 MHz

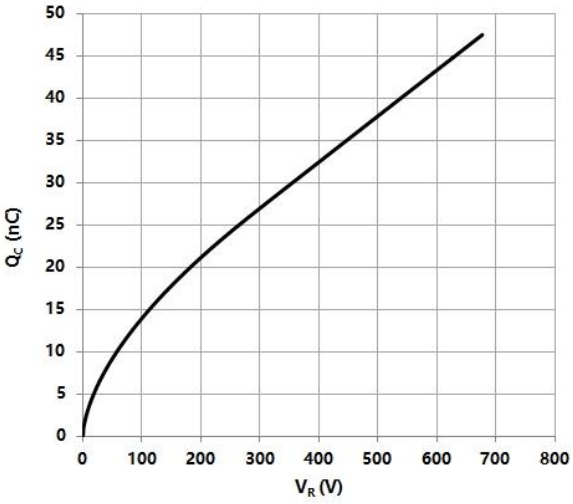


Figure 5. **Typical reverse charge as function of reverse voltage**

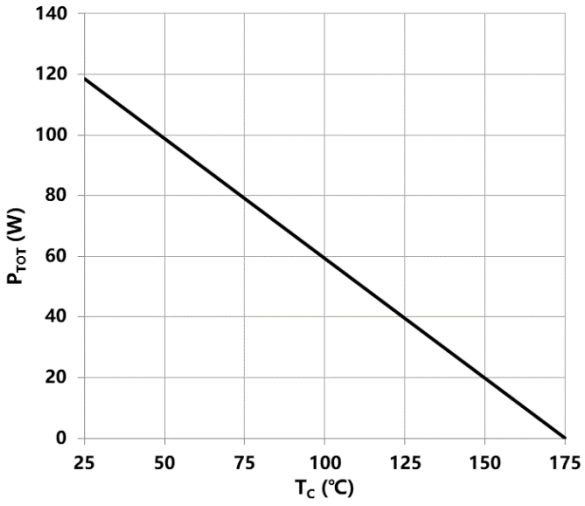


Figure 6. **Power dissipation as function of case temperature**

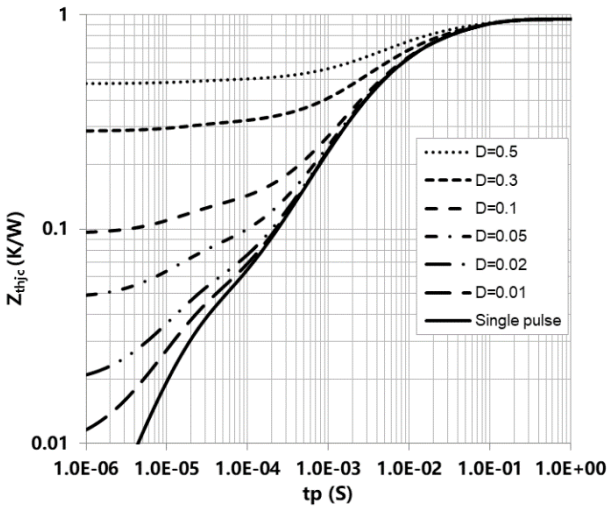
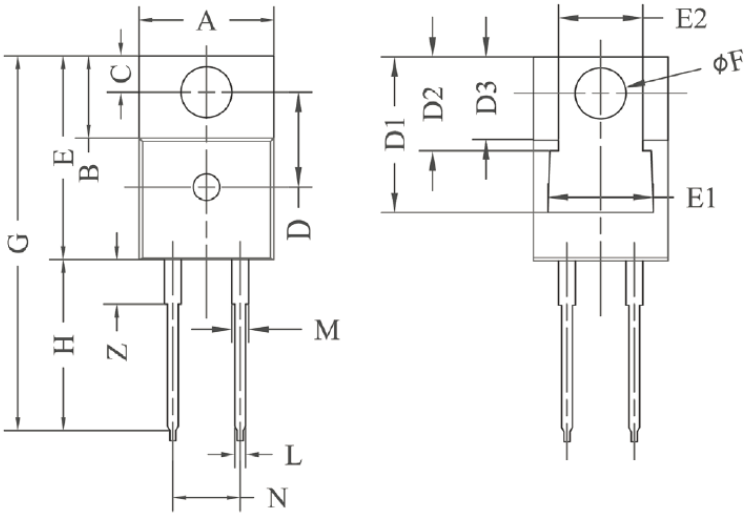


Figure 7. **Max. transient thermal impedance,** $Z_{th,jc}=f(t)$, parameter: $D=t/T$

Package Dimensions



POS	Inches		Millimeters	
	Min	Max	Min	Max
A	.381	.410	9.677	10.414
B	.235	.255	5.969	6.477
C	.100	.120	2.540	3.048
D	.223	.337	5.664	8.560
D1	.457-.490		11.60-12.45 typ	
D2	.277-.303 typ		7.04-7.70 typ	
D3	.244-.252 typ		6.22-6.4 typ	
E	.590	.615	14.986	15.621
E1	.302	.326	7.68	8.28
E2	.227	251	5.77	6.37
F	.143	.153	3.632	3.886
G	1.105	1.147	28.067	29.134
H	.500	.550	12.700	13.970
L	.025	.036	.635	.914
M	.045	.055	1.143	1.550
N	.195	.205	4.953	5.207
X	3°	5.5°	3°	5.5°
Y	.385	.410	9.779	10.414
z	.130	.150	3.302	3.810

Revision History:

2018-10-30,Rev.1.1

Previous Revision:

Rev.1.0 Release of datasheet
Rev.1.1 Surge current updated

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Information
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