

V_{RRM} = 650 V
 $I_F(T_C=150^{\circ}C)$ = 20 A
 Q_C = 66 nC

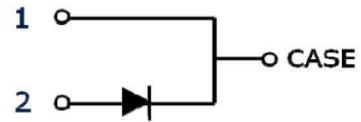
Features:

- 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



Applications

- Switch Mode Power Supplies (SMPS)
- Uninterruptable power supplies
- Motor Drivers
- Power Factor Correction

Package Pin definitions

- Pin1-Cathode
- Pin2-Anode

Package Parameters

Part Number	Marking	Package
B1D20065K	B1D20065K	TO-220-2L

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	$T_C=25^{\circ}C$ $T_C=135^{\circ}C$ $T_C=150^{\circ}C$	62 30 20	A
I_{FSM}	Non-Repetitive Forward Surge Current	$T_C=25^{\circ}C$, $t_p=10ms$, sine halfwave	140	A
$\int i^2 dt$	i^2t Value	$T_C=25^{\circ}C$, $t_p=10ms$	98	A ² S
P_{tot}	Power Dissipation	$T_C=25^{\circ}C$ $T_C=110^{\circ}C$	267 116	W
T_j	Operating junction temperature		-55~175	$^{\circ}C$
T_{stg}	Storage temperature		-55~135	$^{\circ}C$

Thermal Characteristics

Symbol	Parameter	Value			Unit
		Min.	Typ.	Max.	
$R_{th(jc)}$	Thermal resistance from junction to case		0.56		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 =20A T _j =25°C I _F =20A T _j =175°C		1.48 1.87		V
I _R	Reverse current	V _R =650V T _j =25°C V _R =650V T _j =175°C		0.7 6		μA

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

Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
Q _C	Total capacitive charge	V _R =400V T _j =25°C $Q_c = \int_0^{V_R} C(V)dV$		66		nC
C	Total Capacitance	V _R =1V f=1MHz V _R =300V f=1MHz V _R =600V f=1MHz		945 109 107		pF

Typical Performance

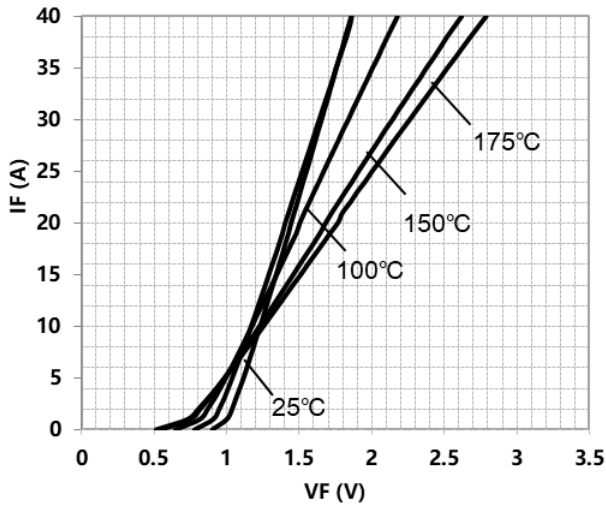


Figure 1. Typical forward characteristics

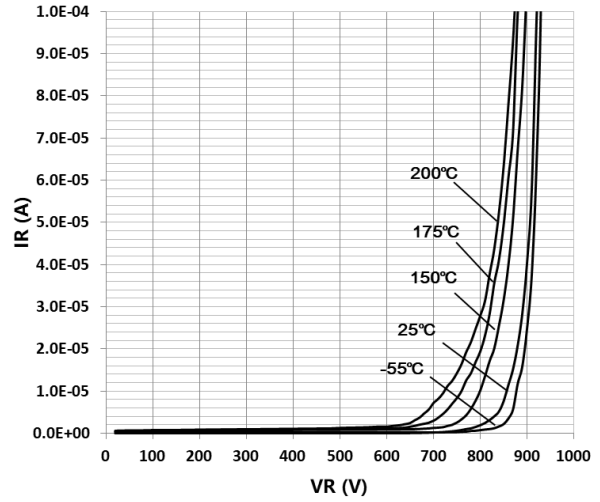


Figure 2. Typical reverse current as function of reverse voltage

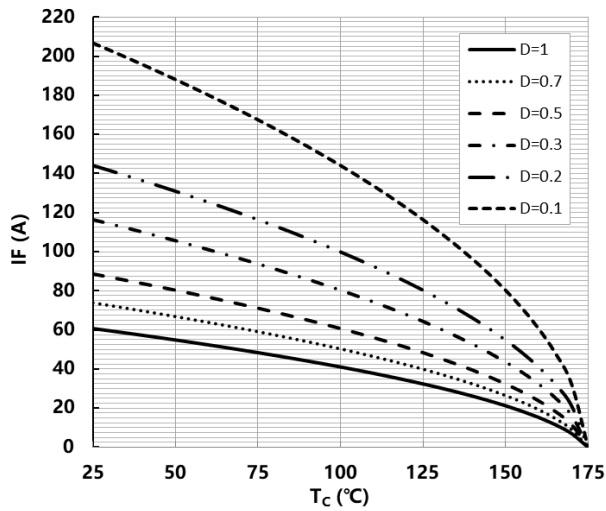


Figure 3. Diode forward current as function of temperature, D =duty cycle

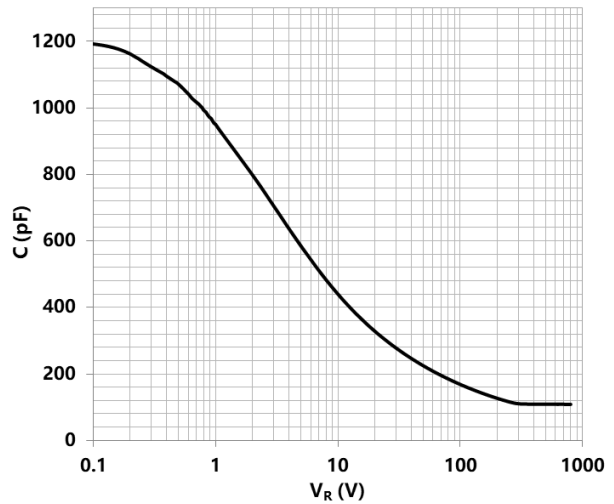


Figure 4. Typical capacitance as function of reverse voltage, $C=f(V_R)$; $T_J=25^\circ\text{C}$; $f=1\text{ MHz}$

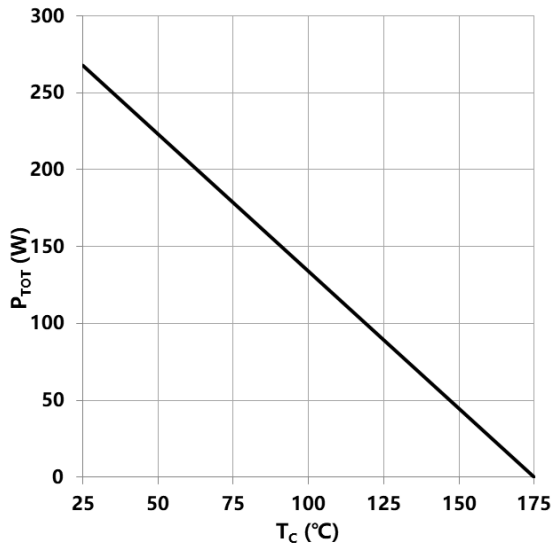
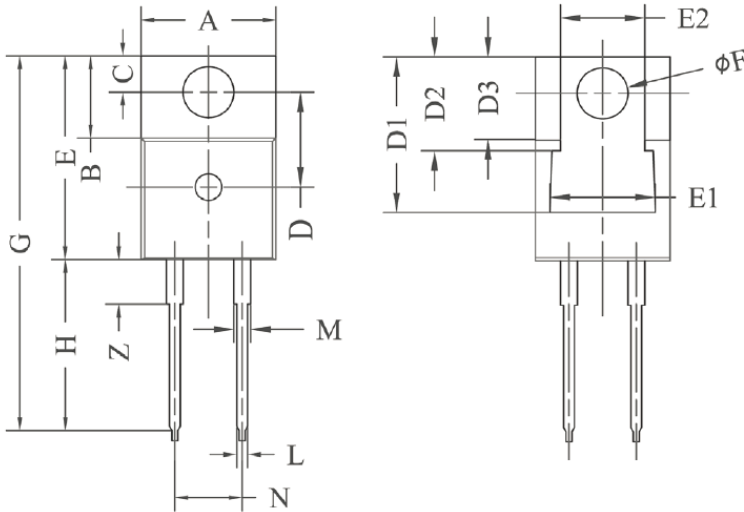


Figure 5. Power dissipation as function of case temperature

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:

Preliminary Version

Previous Revision:

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