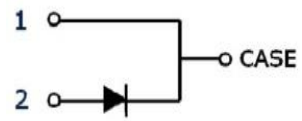
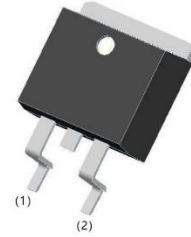


$V_{RRM} = 650\text{ V}$   
 $I_F(T_c=145^\circ\text{C}) = 8.3\text{ A}$   
 $Q_c = 24\text{ nC}$

### 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
B1D08065F	B1D08065F	TO-263-2L

**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	$T_c=25^\circ\text{C}$ $T_c=135^\circ\text{C}$ $T_c=145^\circ\text{C}$	21 10 8.3	A
$I_{FSM}$	Non-Repetitive Forward Surge Current	$T_c=25^\circ\text{C}$ , $t_p=10\text{ms}$ , sine halfwave	56	A
$\int i^2 dt$	$i^2t$ Value	$T_c=25^\circ\text{C}$ , $t_p=10\text{ms}$	15.68	$\text{A}^2\text{S}$
$P_{tot}$	Power Dissipation	$T_c=25^\circ\text{C}$ $T_c=110^\circ\text{C}$	112 48	W
$T_j$	Operating junction temperature		-55~175	$^\circ\text{C}$
$T_{stg}$	Storage temperature		-55~135	$^\circ\text{C}$

**Thermal Characteristics**

Symbol	Parameter	Value			Unit
		Min.	Typ.	Max.	
$R_{th(jc)}$	Thermal resistance from junction to case		1.339		K/W
$R_{th(ja)}$	Thermal resistance from junction to ambient		71.6		K/W

**Electrical Characteristics**
**Static Characteristics (T<sub>j</sub>=25°C unless otherwise specified)**

Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
V <sub>DC</sub>	DC blocking voltage	T <sub>j</sub> =25°C	650			V
V <sub>F</sub>	Diode forward voltage	I <sub>F</sub> =8A T <sub>j</sub> =25°C I <sub>F</sub> =8A T <sub>j</sub> =175°C		1.45 1.9		V
I <sub>R</sub>	Reverse current	V <sub>R</sub> =650V T <sub>j</sub> =25°C V <sub>R</sub> =650V T <sub>j</sub> =175°C		0.05 3		μA

**Dynamic Characteristics (T<sub>j</sub>=25°C unless otherwise specified)**

Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
Q <sub>C</sub>	Total capacitive charge	V <sub>R</sub> =400V T <sub>j</sub> =25°C $Q_c = \int_0^{V_R} C(V)dV$		24		nC
C	Total Capacitance	V <sub>R</sub> =1V f=1MHz V <sub>R</sub> =300V f=1MHz V <sub>R</sub> =600V f=1MHz		380 42.9 42.4		pF

Typical Performance

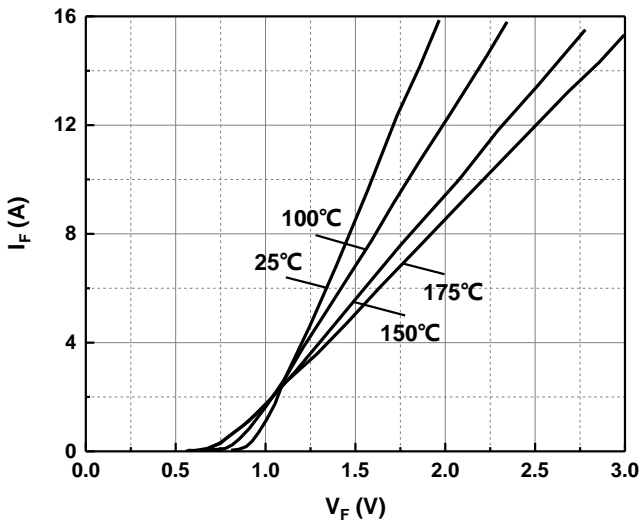


Figure 1. Typical forward characteristics

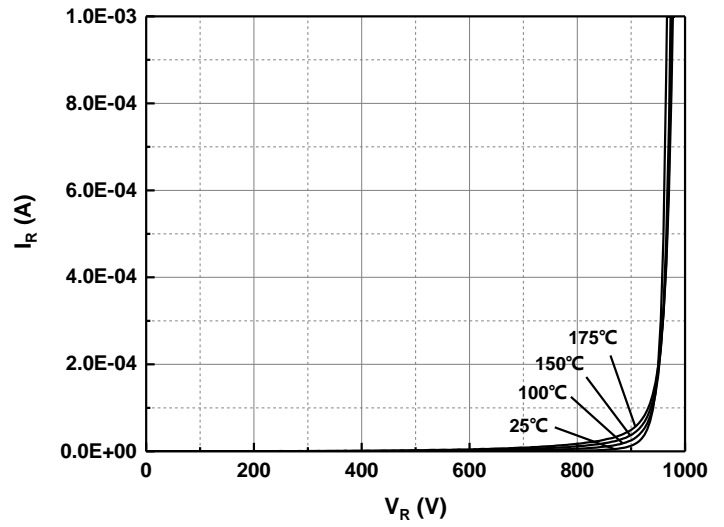


Figure 2. Typical reverse current as function of reverse voltage

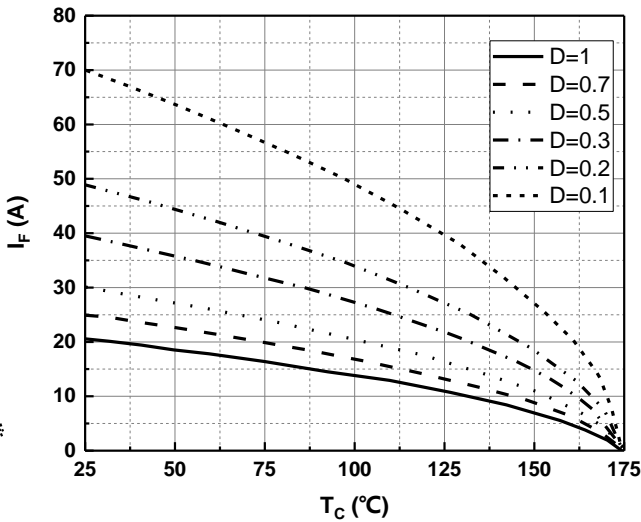


Figure 3. Diode forward current as function of temperature, D=duty cycle

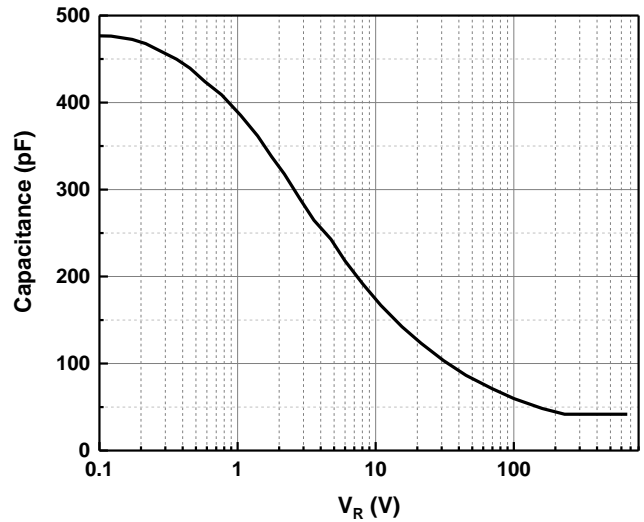


Figure 4. Typical capacitance as function of reverse voltage,  $C=f(V_R)$ ;  $T_j=25^\circ\text{C}$ ;  $f=1\text{ MHz}$

Typical Performance

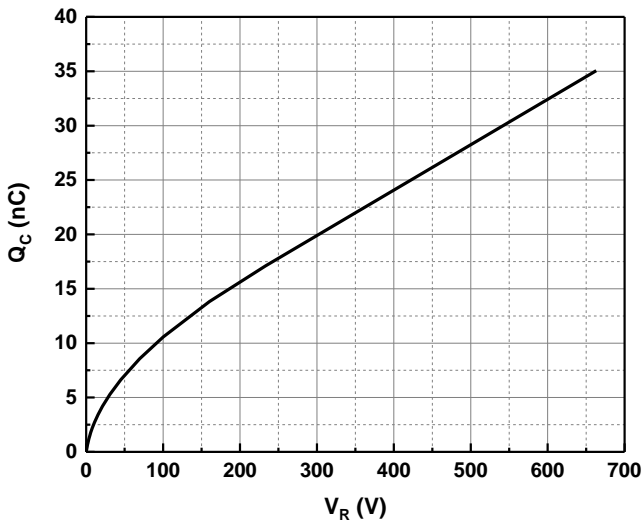


Figure 5. Typical reverse charge as function of reverse voltage

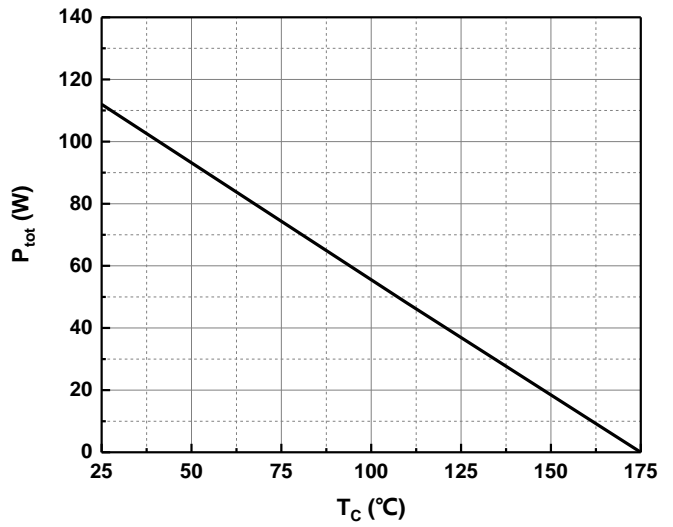


Figure 6. Power dissipation as function of case temperature

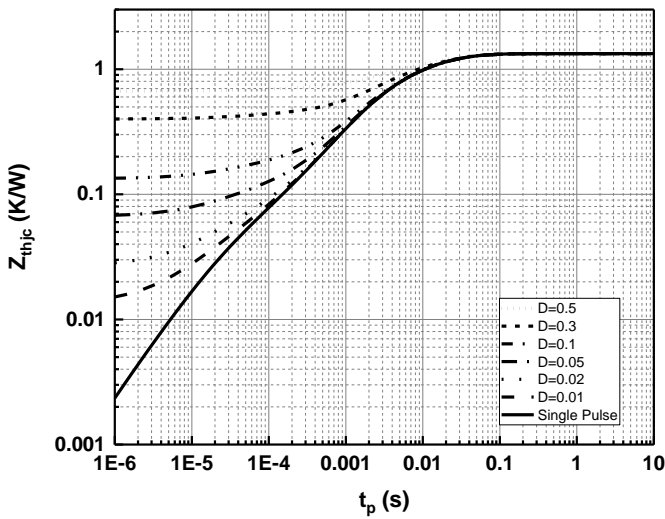
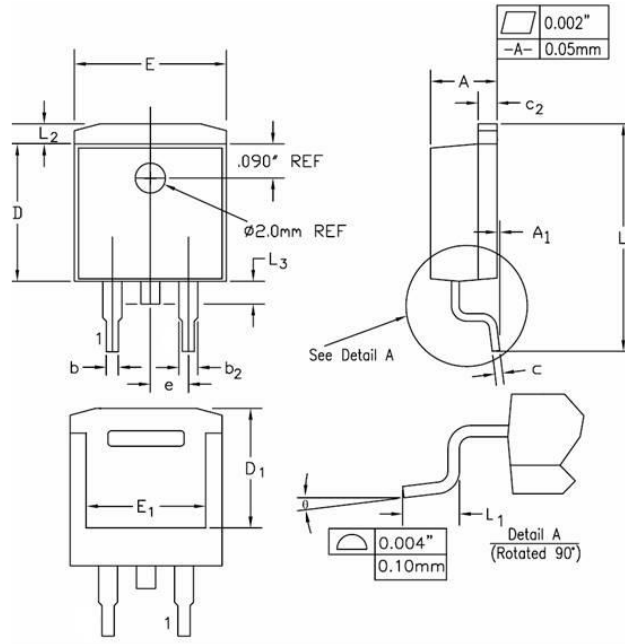


Figure 7. Max. transient thermal impedance,  $Z_{th,jc}=f(t)$ , parameter:  $D=t/T$

**Package Dimensions**


POS	Inches		Millimeters	
	Min	Max	Min	Max
A	0.17	0.18	4.32	4.57
A1	-	0.01	-	0.25
b	0.028	0.037	0.71	0.94
b2	0.045	0.055	1.15	1.4
c	0.014	0.025	0.356	0.635
c2	0.048	0.055	1.22	1.4
D	0.35	0.37	8.89	9.4
D1	0.255	0.324	6.48	8.23
E	0.395	0.405	10.04	10.28
E1	0.31	0.318	7.88	8.08
e	0.1	BSC.	2.54	BSC.
L	0.58	0.62	14.73	15.75
L1	0.09	0.11	2.29	2.79
L2	0.045	0.055	1.15	1.39
L3	0.05	0.07	1.27	1.77
θ	0°	8°	0°	8°

**Revision History****Preliminary Version****Previous Revision**

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