

**Product Summary**

$V_{RRM}$	<b>650 V</b>
$I_F (T_C=150^\circ\text{C})$	<b>4 A</b>
$Q_C$	<b>14 nC</b>

**Features**

- Low leakage current ( $I_R$ )
- Zero reverse recovery current
- Temperature independent switching behavior
- Positive temperature coefficient on  $V_F$
- High surge current capacity
- Low capacitive charge

**Benefits**

- System cost savings due to smaller magnetics
- System efficiency improvement over Si diodes
- Reduction of heat sink requirements
- Enabling higher frequency
- Reduced EMI

**Applications**

- Switch mode power supplies (SMPS)
- Uninterruptible power supplies
- Server/telecom power supplies
- Power factor correction
- Solar

**Package Pin Definitions**

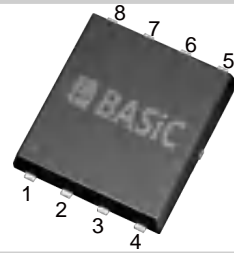
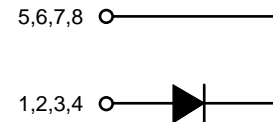
- Pin 1,2,3,4 - Anode
- Pin 5,6,7,8 - Cathod

**Package Parameters**

Part Number	Marking	Package
B2D04065D1	B2D04065D1	DFN 5*6

**Packing Quantities**

Tape & Reel Packing	PCS/Reel	Reels/Box	PCS/Box
DFN 5*6	4000	2	8000

**Package: DFN 5\*6**

**Electrical Connection**


**Maximum Ratings ( $T_c=25^\circ\text{C}$  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	$T_c=25^\circ\text{C}$	13	A
		$T_c=135^\circ\text{C}$	6	
		$T_c=150^\circ\text{C}$	4	
$I_{FSM}$	Non-repetitive forward surge current	$T_c=25^\circ\text{C}$ , $t_p=10\text{ms}$ Half sine wave	33	A
$\int i^2 dt$	$i^2t$ value	$T_c=25^\circ\text{C}$ , $t_p=10\text{ms}$	5.4	A <sup>2</sup> S
$P_{tot}$	Power dissipation	$T_c=25^\circ\text{C}$	45	W
		$T_c=110^\circ\text{C}$	19	
$T_j$	Operating junction temperature		-55~175	$^\circ\text{C}$
$T_{slg}$	Storage temperature		-55~175	$^\circ\text{C}$

**Thermal Characteristics**

Symbol	Parameter	Value			Unit
		Min.	Typ.	Max.	
$R_{th(jc)}$	Thermal resistance from junction to case		3.3		K/W

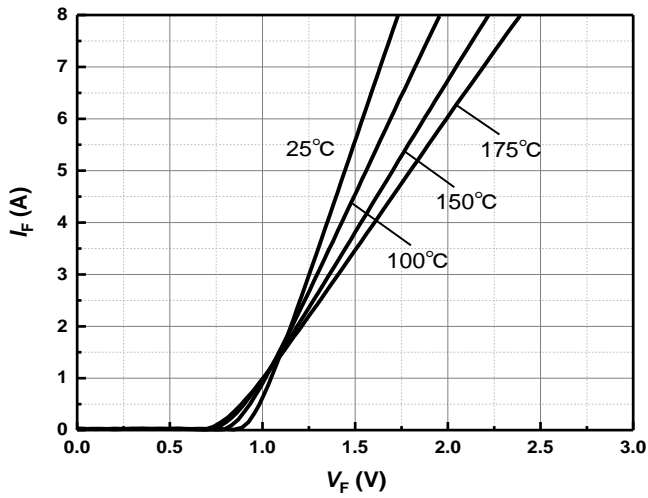
**Electrical Characteristics**  
**Static Characteristics**

Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
$V_{DC}$	DC blocking voltage	$T_j=25^{\circ}C$	650			V
$V_F$	Diode forward voltage	$I_F=4A$ $T_j=25^{\circ}C$ $I_F=4A$ $T_j=175^{\circ}C$		1.3 1.6	1.6 2.2	V
$I_R$	Reverse current	$V_R=650V$ $T_j=25^{\circ}C$ $V_R=650V$ $T_j=175^{\circ}C$		1 20	70 200	$\mu A$

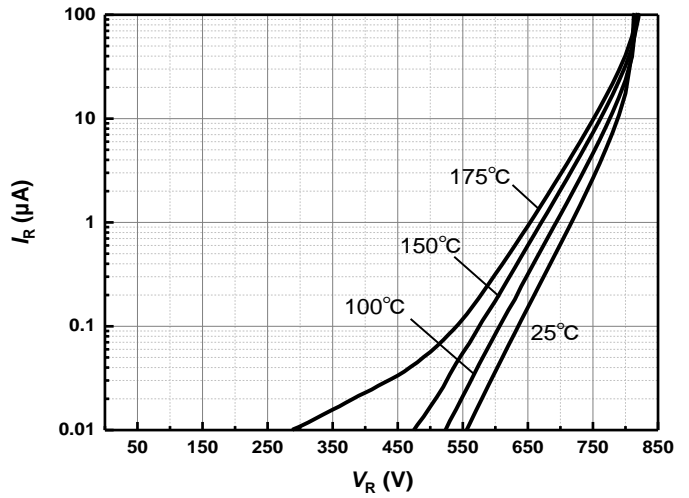
**AC Characteristics**

Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
$Q_C$	Total capacitive charge	$V_R=400V$ $T_j=25^{\circ}C$ $Q_C=\int_0^{t_{VR}} C(V)dV$		14		nC
$C$	Total capacitance	$V_R=1V$ $f=1MHz$ $V_R=300V$ $f=1MHz$ $V_R=600V$ $f=1MHz$		195 23 22		pF
$E_C$	Capacitance stored energy	$V_R=400V$		3.3		$\mu J$

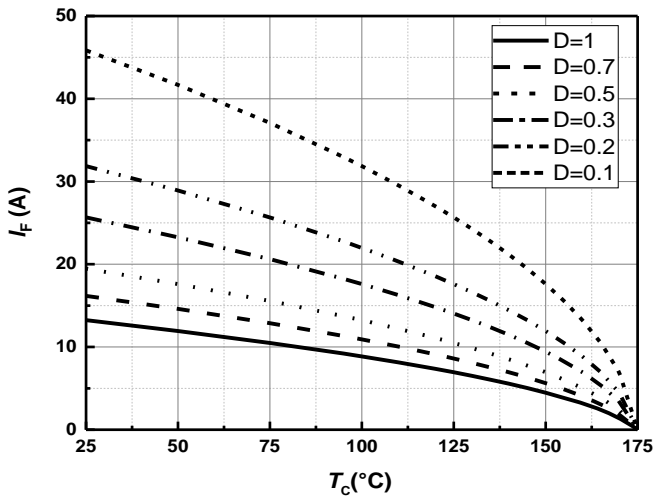
**Typical Performance**



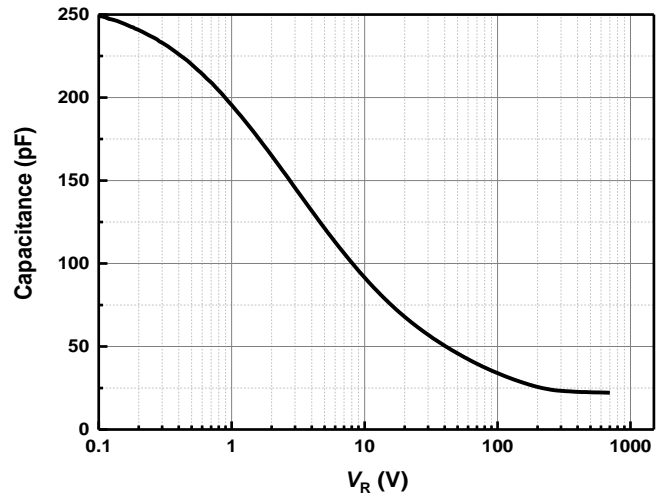
**Figure 1** Typical forward characteristics



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

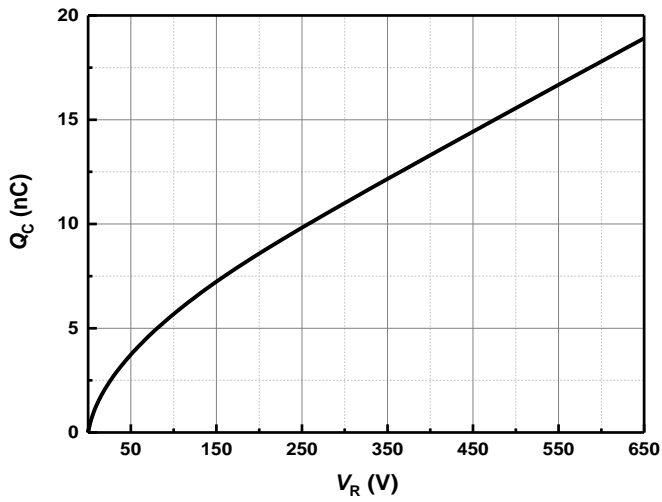


**Figure 3** Diode forward current as function of temperature, D=duty cycle

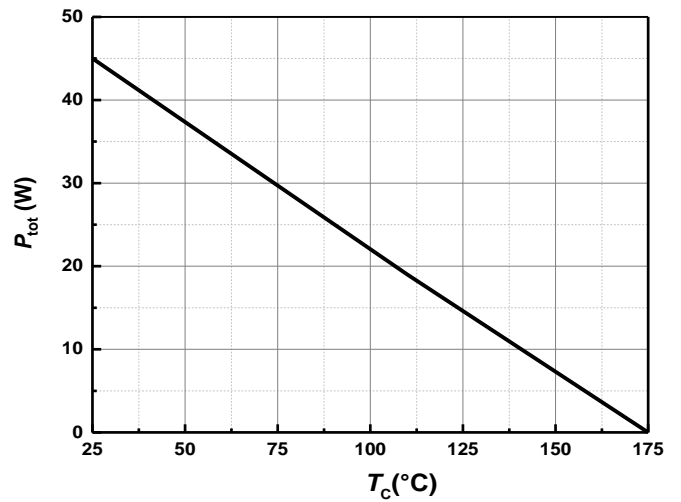


**Figure 4** Typical capacitance as function of reverse voltage,  $C=f(V_R)$ ;  $T_j=25^{\circ}$ C;  $f=1$  MHz

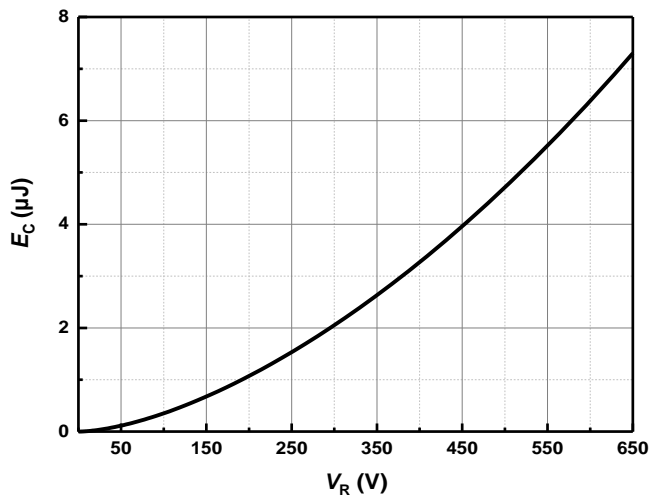
**Typical Performance**



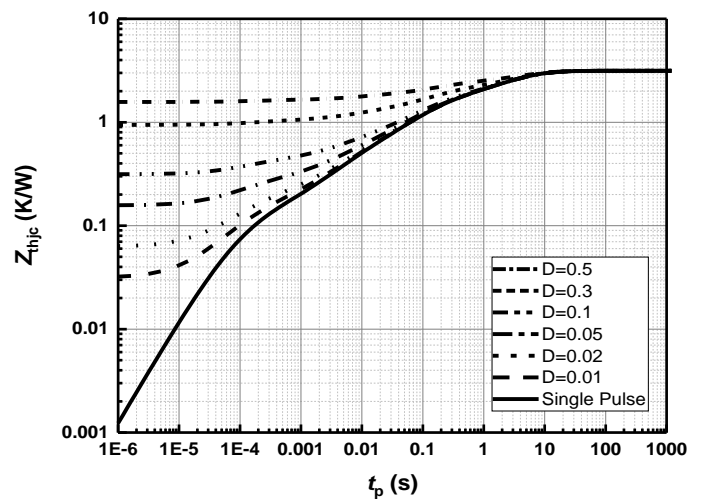
**Figure 5** Typical reverse charge as function of reverse voltage



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

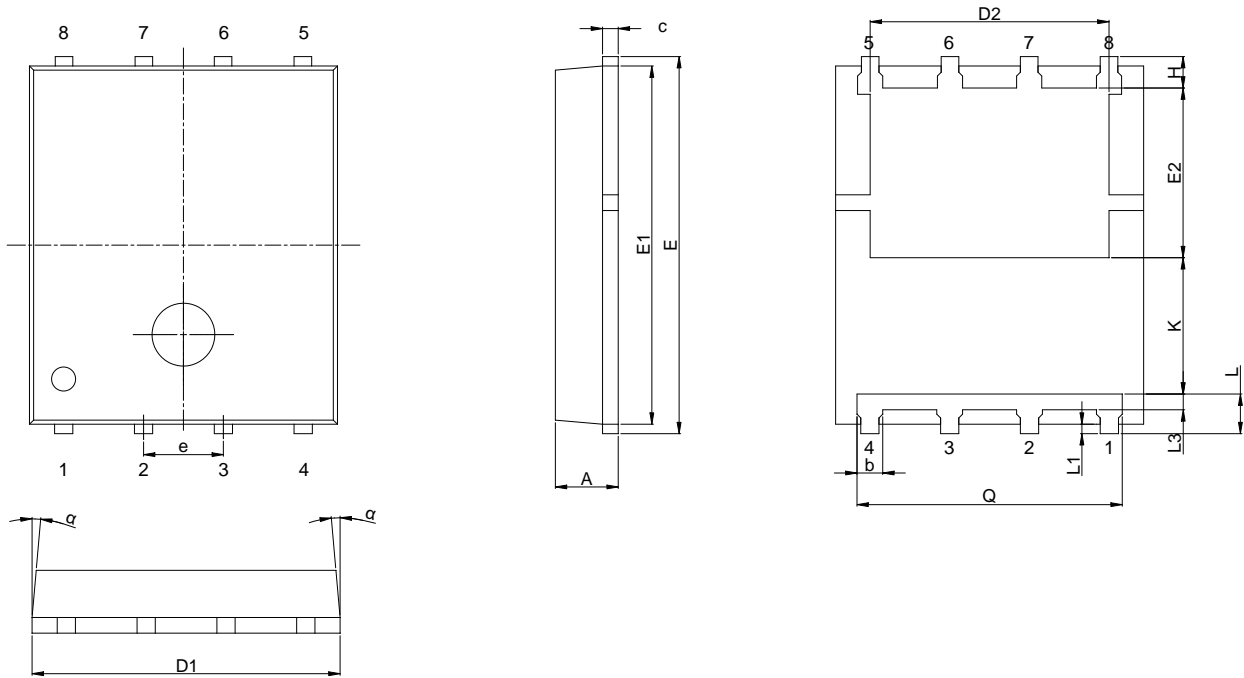


**Figure 7** Capacitance stored energy

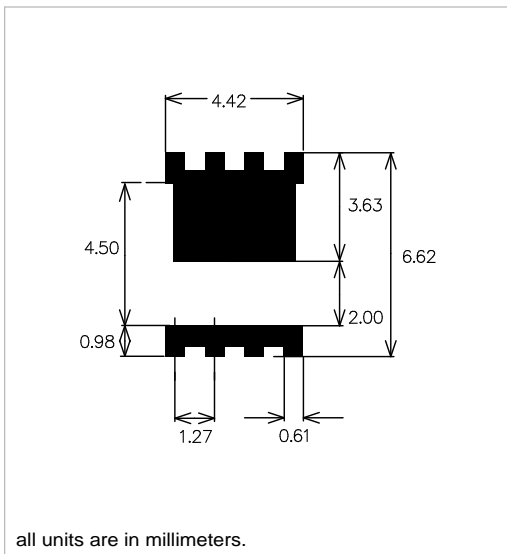


**Figure 8** Max. transient thermal impedance,  $Z_{thjc} = f(t)$ , parameter:  $D = t / T$

**Package Dimensions**



**Recommended Solder Pad Layout**



SYMBOL	mm		
	MIN	NOM	MAX
A	0.90	1.00	1.10
A1	0	-	0.05
b	0.33	0.41	0.51
c	0.20	0.25	0.30
D1	4.80	4.90	5.00
D2	3.61	3.81	3.96
E	5.90	6.00	6.10
E1	5.70	5.75	5.80
E2	2.66	2.76	2.86
e	1.27 BSC		
H	0.41	0.51	0.61
K	2.00	2.10	2.20
L	0.53	0.63	0.73
L1	0.06	0.13	0.20
L3	0.15	0.25	0.35
Q	4.12	4.22	4.32
α	0°	-	12°

**Revision History**

<b>Document Version</b>	<b>Date of Release</b>	<b>Description of Changes</b>
Rev. 0.0	2023-02-01	Release of the datasheet.

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**Shenzhen, China**  
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