

$V_{RRM}$  = 1200 V  
 $I_F(T_c=150^\circ\text{C})$  = 10 A  
 $Q_c$  = 63 nC

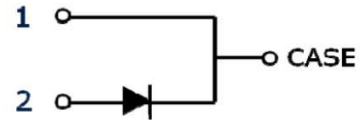
**Features:**

- 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
B1D10120H	B1D10120H	TO-247-2L

**Maximum ratings**

Symbol	Parameter	Test conditions	Value	Unit
$V_{RRM}$	Repetitive Peak Reverse Voltage		1200	V
$V_{RSM}$	Surge Peak Reverse Voltage		1200	V
$I_F$	Continuous Forward Current	$T_c=25^\circ\text{C}$ $T_c=135^\circ\text{C}$ $T_c=150^\circ\text{C}$	35 16.5 10	A
$I_{FSM}$	Non-Repetitive Forward Surge Current	$T_c=25^\circ\text{C}$ , $t_p=10\text{ms}$ , sine halfwave	77	A
$\int i^2 dt$	$i^2t$ Value	$T_c=25^\circ\text{C}$ , $t_p=10\text{ms}$	29.6	$\text{A}^2\text{S}$
$P_{tot}$	Power Dissipation	$T_c=25^\circ\text{C}$ $T_c=110^\circ\text{C}$	197 85	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		0.76		K/W
$R_{th(ja)}$	Thermal resistance from junction to ambient		35.6		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	1200			V
V <sub>F</sub>	Diode forward voltage	I <sub>F</sub> =10A T <sub>j</sub> =25°C I <sub>F</sub> =10A T <sub>j</sub> =175°C		1.46 2.05		V
I <sub>R</sub>	Reverse current	V <sub>R</sub> =1200V T <sub>j</sub> =25°C V <sub>R</sub> =1200V T <sub>j</sub> =175°C		4.5 45		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> =800V T <sub>j</sub> =25°C $Q_c = \int_0^{V_R} C(V)dV$		63		nC
C	Total Capacitance	V <sub>R</sub> =1V f=1MHz V <sub>R</sub> =400V f=1MHz V <sub>R</sub> =800V f=1MHz		614 62 51		pF

Typical Performance

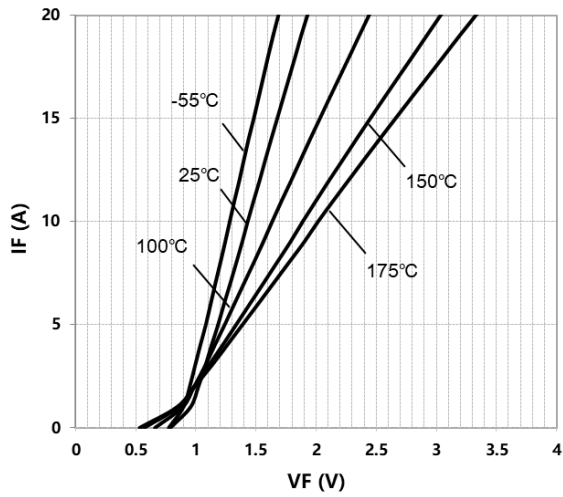


Figure 1. Typical forward characteristics

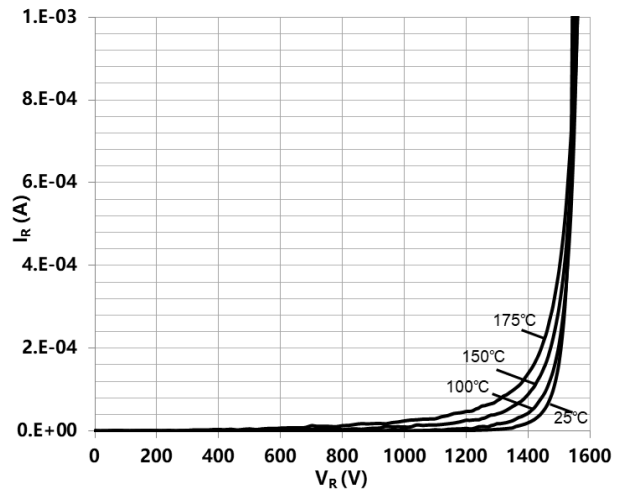


Figure 2. Typical reverse current as function of reverse voltage

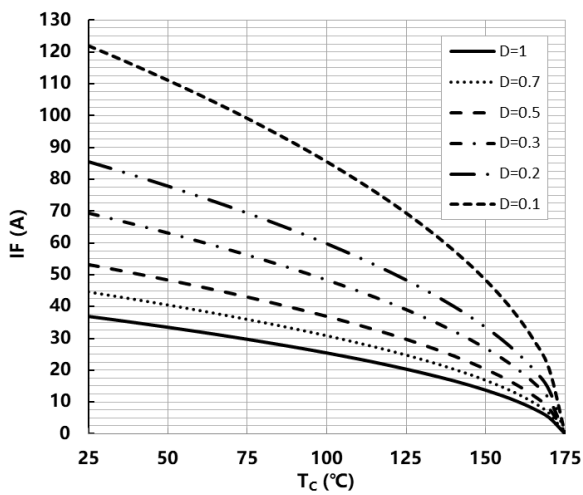


Figure 3. Diode forward current as function of temperature, D=duty cycle

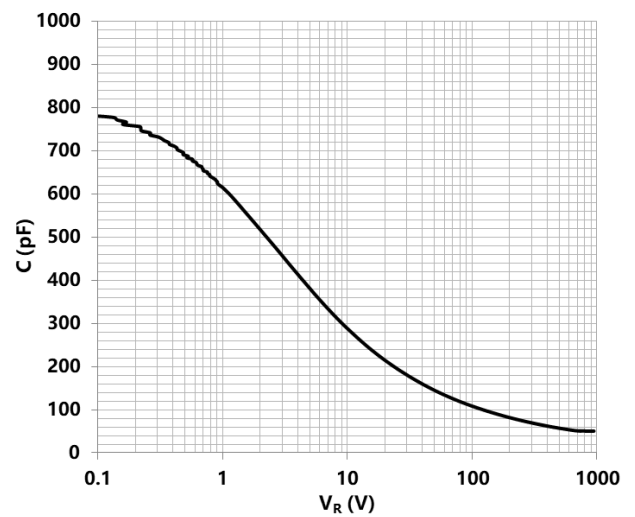


Figure 4. Typical capacitance as function of reverse voltage,  $C=f(V_R)$ ;  $T_j=25^\circ\text{C}$ ;  $f=1\text{ MHz}$

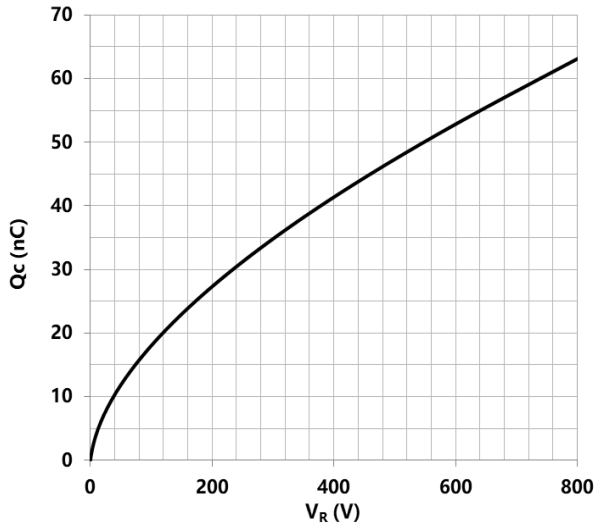


Figure 5. **Typical reverse charge as function of reverse voltage**

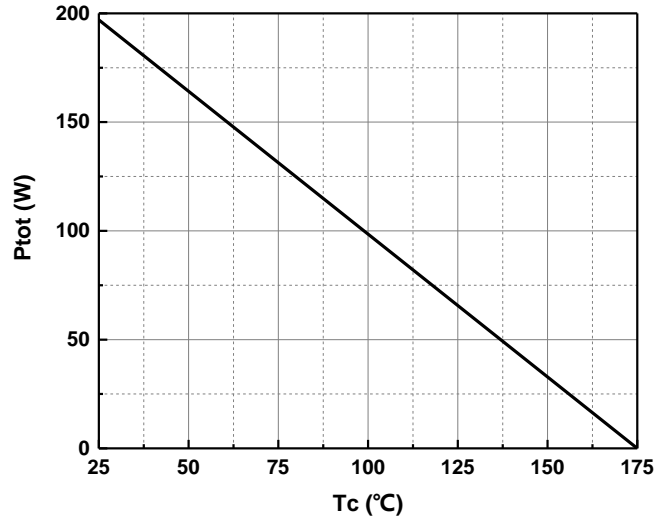


Figure 6. **Power dissipation as function of case temperature**

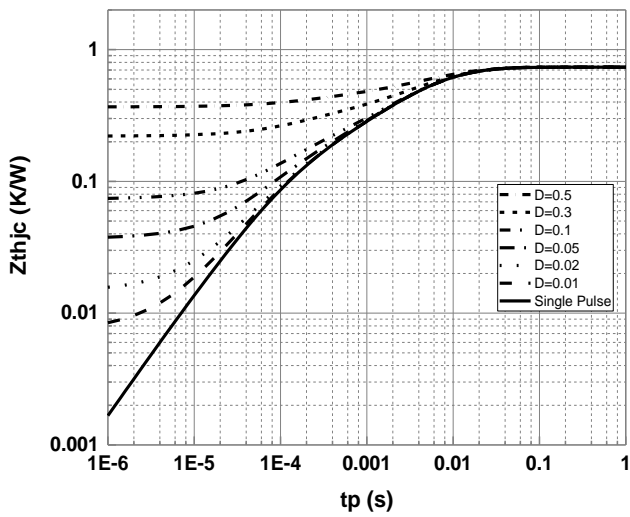
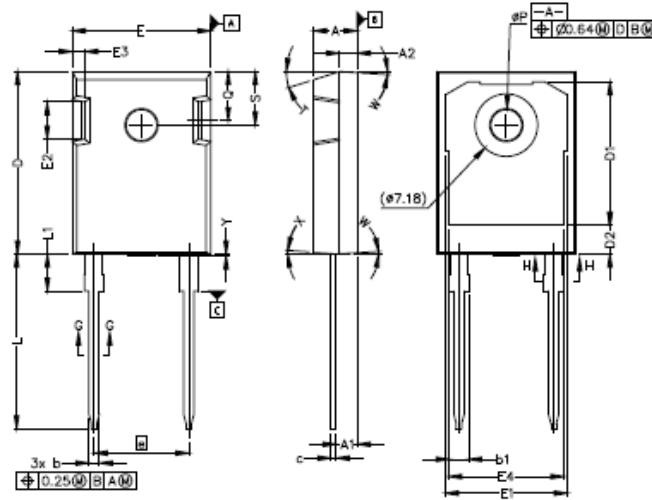


Figure 7. **Max. transient thermal impedance,  $Z_{th,jc}=f(t)$ , parameter:  $D=t/T$**

**Package Dimensions**


POS	Inches		Millimeters	
	Min	Max	Min	Max
A	0.190	0.205	4.70	5.31
A1	0.087	0.102	2.21	2.59
A2	0.059	0.098	1.50	2.49
b	0.039	0.055	0.99	1.40
b1	0.065	0.095	1.65	2.41
c	0.015	0.035	0.38	0.89
D	0.819	0.845	20.80	21.46
D1	0.640	0.683	16.25	17.35
D2	0.112	0.124	2.86	3.16
E	0.620	0.640	15.49	16.26
E1	0.516	0.557	13.10	14.15
E2	0.135	0.201	3.43	5.10
E3	0.039	0.075	1.00	1.90
E4	0.487	0.529	12.38	13.43
e	0.428 BSC		10.88 BSC	
L	0.78	0.80	19.81	20.32
L1	-	0.177	-	4.50
ØP	0.138	0.144	3.51	3.66
Q	0.212	0.244	5.38	6.20
S	0.238	0.248	6.04	6.3
T	17.5° REF.			
W	3.5° REF.			
X	4° REF.			
Y	0	0.5	0	0.02

## Revision History

Revision: **Preliminary Version**

Previous Revision:

**BASiC Semiconductor Ltd.**  
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## Information

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