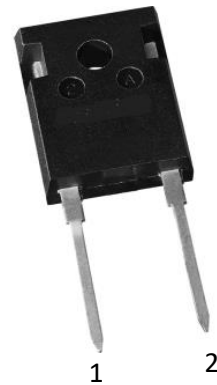
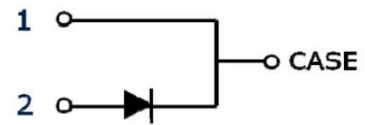


V_{RRM} = 1200 V
 $I_F(T_c=155^\circ\text{C})$ = 22 A
 Q_c = 110 nC



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
B1D20120H	B1D20120H	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	$T_c=25^{\circ}\text{C}$ $T_c=135^{\circ}\text{C}$ $T_c=155^{\circ}\text{C}$	70 33 22	A
I_{FSM}	Non-Repetitive Forward Surge Current	$T_c=25^{\circ}\text{C}$, $t_p=10\text{ms}$, sine halfwave	175	A
$\int i^2 dt$	i^2t Value	$T_c=25^{\circ}\text{C}$, $t_p=10\text{ms}$	136	A^2S
P_{tot}	Power Dissipation	$T_c=25^{\circ}\text{C}$ $T_c=110^{\circ}\text{C}$	223 71	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		0.56		K/W
$R_{th(ja)}$	Thermal resistance from junction to ambient		34.7		K/W

Electrical Characteristics
Static Characteristics (T_j=25°C unless otherwise specified)

Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
V _{DC}	DC blocking voltage	T _j =25°C	1200			V
V _F	Diode forward voltage	I _F =20A T _j =25°C I _F =20A T _j =175°C		1.46 2.05		V
I _R	Reverse current	V _R =1200V T _j =25°C V _R =1200V T _j =175°C		6.75 67.5		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 =800V T _j =25°C $Q_c = \int_0^{V_R} C(V)dV$		110		nC
C	Total Capacitance	V _R =1V f=1MHz V _R =400V f=1MHz V _R =800V f=1MHz		1191 105 79		pF

Typical Performance

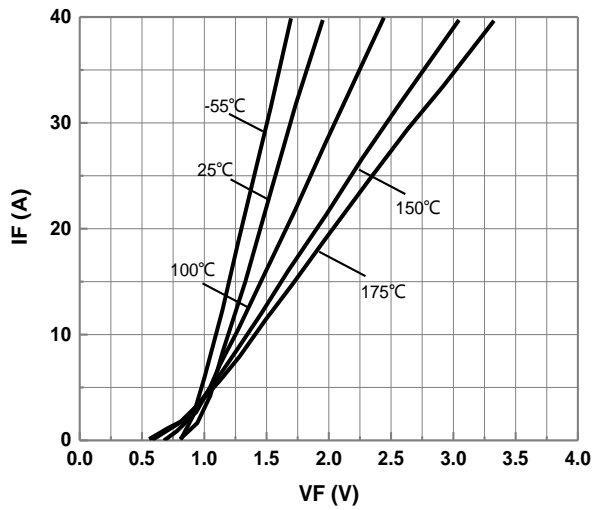


Figure 1. Typical forward characteristics

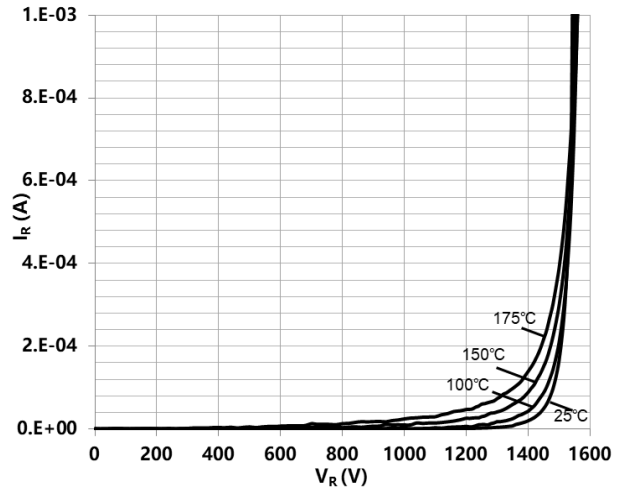


Figure 2. Typical reverse current as function of reverse voltage

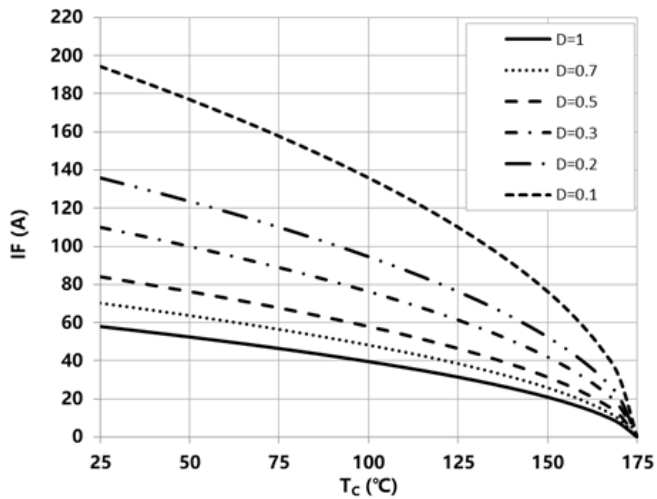


Figure 3. Diode forward current as function of temperature, D=duty cycle

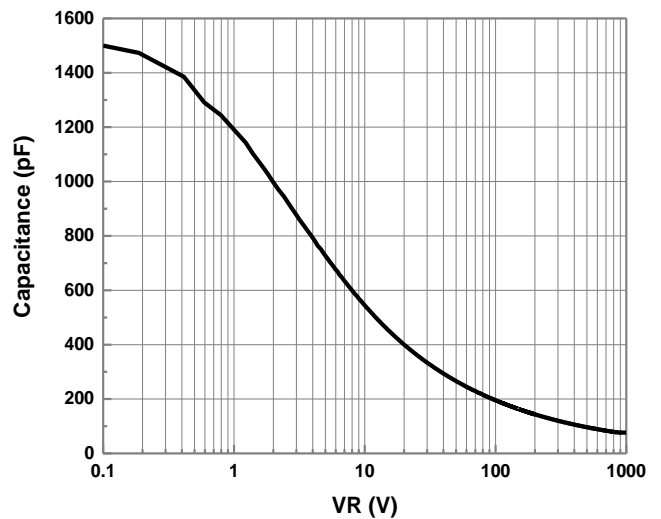


Figure 4. Typical capacitance as function of reverse voltage, $C=f(V_R)$; $T_j=25^\circ\text{C}$; $f=1\text{ MHz}$

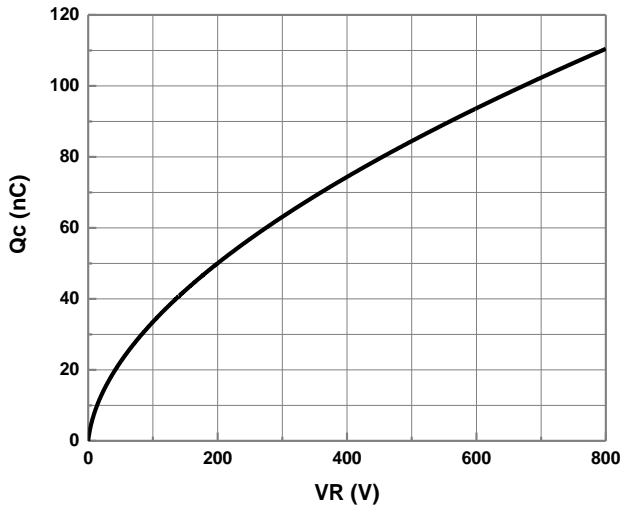


Figure 5. **Typical reverse charge as function of reverse voltage**

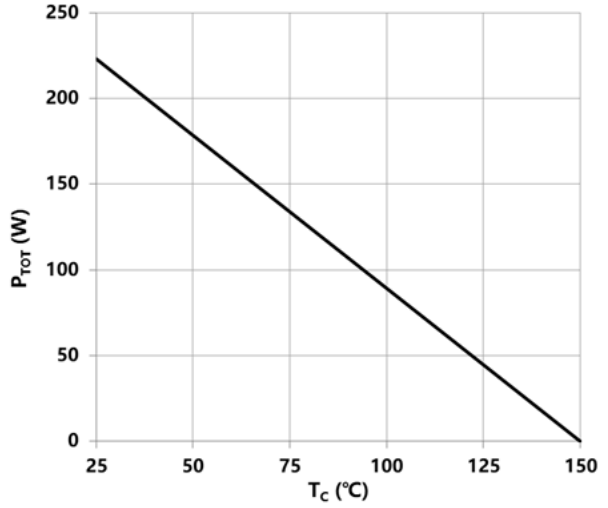


Figure 6. **Power dissipation as function of case temperature**

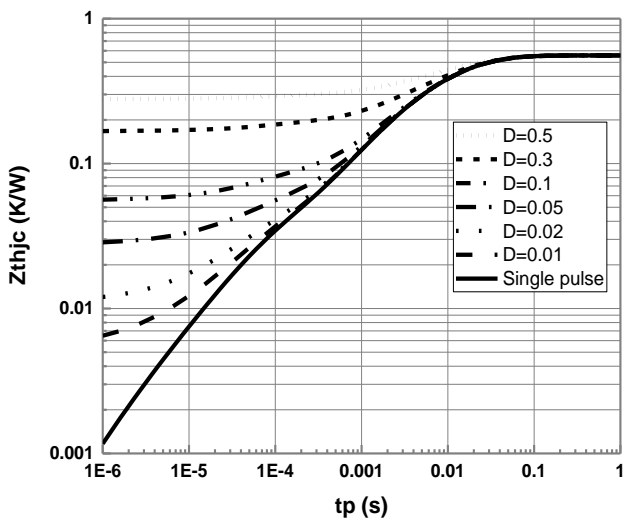
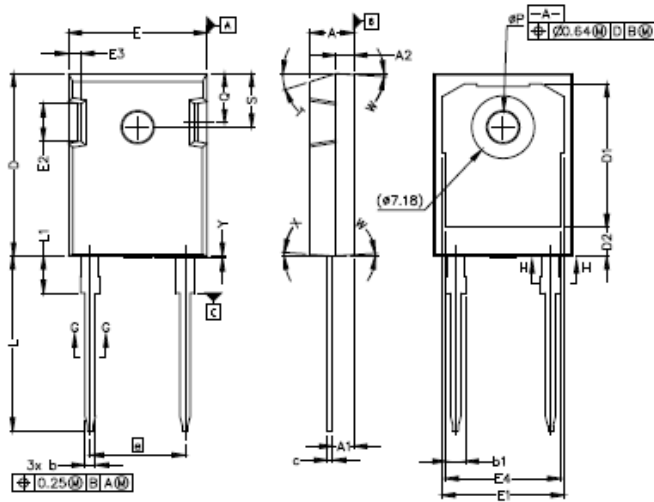


Figure 7. **Max. transient thermal impedance, $Z_{th,jc}=f(t)$, parameter: $D=t / T$**

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

Preliminary Version

Previous Revision:

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