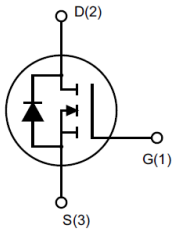
V_{DS}	**1200 V**
I_D(Tc=25°C)	**20 A**
$R_{DS(on)}$	**160 mΩ**

Features:

- Low On-Resistance with High Blocking Voltage
- Low Capacitance
- Avalanche Ruggedness
- Halogen Free, Rohs Compliant



Benefits

- High Frequency Operation
- Enabling higher switching frequency
- Increased power density
- Reduction of Heat Sink Requirements

Applications

- Switch Mode Power Supplies (SMPS)
- Power Inverter &Solar Inverter
- Motor Drivers & EV Charging station
- DC/DC Converter

Pacakge Pin definitions

- Pin1- Gate
- Pin2- Drain
- Pin3- Source

Package Parameters

Part Number	Marking	Package
B1M160120HC	B1M160120HC	TO-247-3L

Electrical Characteristics

Maximum ratings

Symbol	Parameter	Test conditions	Value	Unit
V_{DSmax}	Drain – Source Voltage	V_{GS}=0V I_D=100μA	1200	V
V_{GSmax}	Gate – Source Voltage		-10/25	V
V_{GSop}	Recommend Gate – Source Voltage		-5/20	V
I_D	Continuous Drain Current	V_{GS} = 20V Tc=25°C V_{GS} = 20V Tc=100°C	20 13	A
$I_{D,pulse}$	Pulsed Drain Current	Pulse with t_p limited by T_{jmax}	40	A
P_{tot}	Power Dissipation	Tc=25°C Tj=150°C	118	W
T_j	Operating junction temperature		-55~150	°C
T_{stg}	Storage temperature		-55~135	°C

Thermal Characteristics

Symbol	Parameter	Value			Unit
		Min.	Typ.	Max.	
$R_{th(jc)}$	Thermal resistance from junction to case			1.085	K/W

Static Characteristics（Tj=25°C unless otherwise specified）

Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
$V_{(BR)DSS}$	Drain-Source Breakdown voltage	V_{GS}=0V I_D=100μA	1200			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}= V_{DS} I_{DS}=2.5mA V_{GS}= V_{DS} I_{DS}=2.5mA T_j=150°C		2.7 2.1		V
I_{GSS}	Gate-Source leakage current	V_{GS}= 20V V_{DS}=0V			250	nA
I_{DSS}	Zero Gate Voltage Drain current	V_{DS}= 1200V V_{GS}=0V V_{DS}= 1200V V_{GS}=0V T_j=150°C		0.7 5	45 200	μA
$R_{DS(on)}$	Drain-Source On-state Resistance	V_{GS}= 20V I_{DS}=10A V_{GS}= 20V I_{DS}=10A T_j=150°C		160 244	189	mΩ
C_{iss}	Input Capacitance	V_{GS}= 0V V_{DS}=1000V f=1MHz V_{AC}=25mV		1100		pF
C_{oss}	Output Capacitance			73		pF
C_{rss}	Reverse Transfer Capacitance			18		pF
E_{on}	Tun-on Energy	V_{DS}= 800V V_{GS}=-5/20V I_{DS}=10A R_{G-ext}=5Ω L=600μH		85		μJ
E_{off}	Tun-off Energy			85		μJ
$R_{G(int)}$	Internal Gate Reistance	f=1MHz V_{AC}=25mV		2.8		Ω
Q_{gs}	Gate to Source Charge	V_{DS}= 800V V_{GS}=-5/20V I_{DS}=10A R_{G-ext}=5Ω L=600μH		12.5		nC
Q_{gd}	Gate to Drain Charge			31		nC
Q_g	Total Gate Charge			60		nC

Reverse Diode Characteristics

Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
V_{SD}	Diode Forward Voltage	V_{GS}=-5V I_{SD}=5A		5.1		V
Q_{rr}	Reverse Recovery Charge	V_{DS}= 800V V_{GS}=0V I_{SD}=10A di/dt=400A/μS		82		nC
I_{rrm}	Peak Reverse Recovery Current			2.45		A

Typical Performance

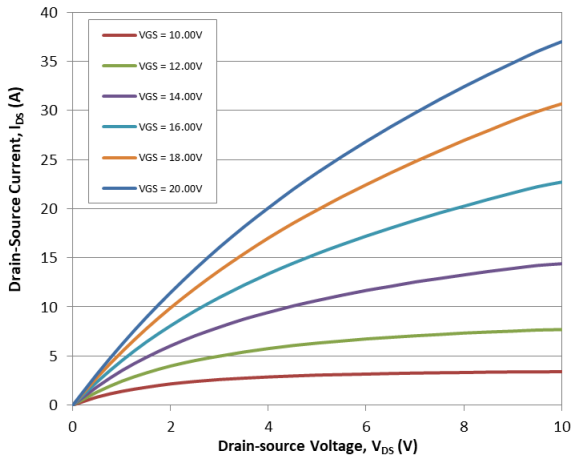


Figure 1. **Typical forward Output characteristics at Tj=25°C**

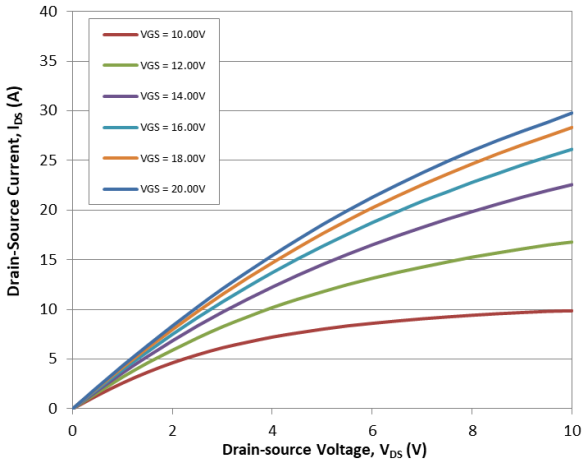


Figure 2. **Typical forward Output characteristics at Tj=150°C**

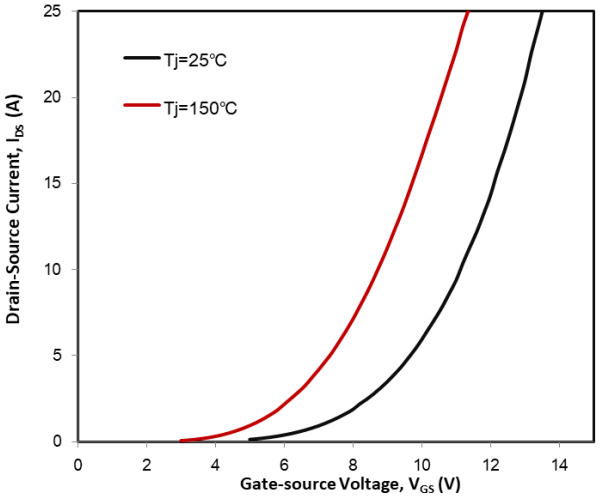


Figure 3. **Transfer Chracteristics for Various Tj**

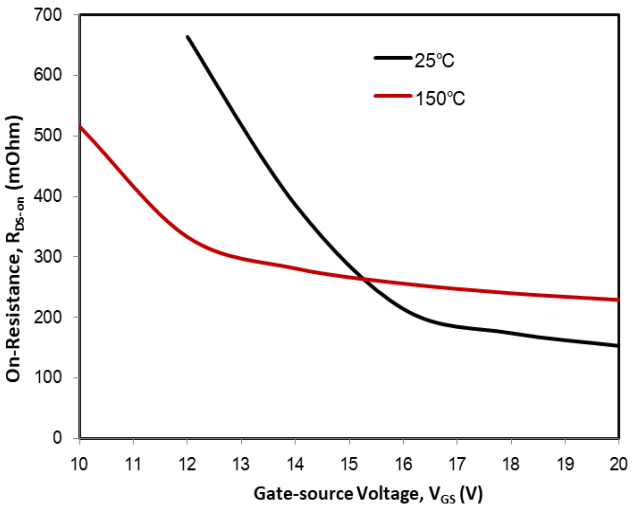


Figure 4. **On-Resistance vs. Gate Voltage for various Temperature**

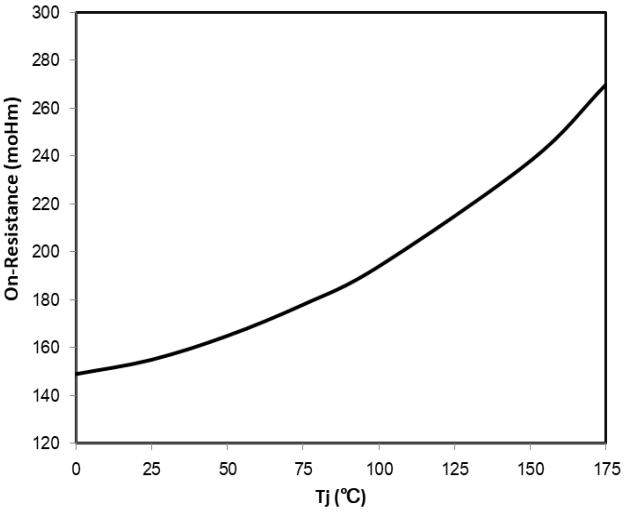


Figure 5. **On-Resistance vs. Temperature at V_{GS}=20V, I_{DS}=10A**

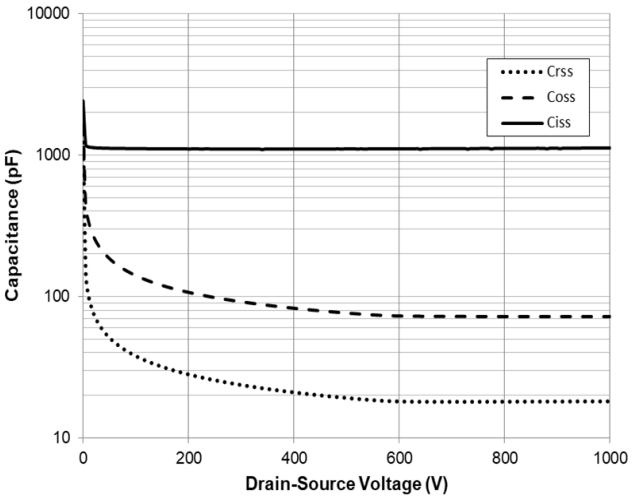


Figure 6. **Capacitance vs. Drain-Source Voltage (0 - 1000V)**

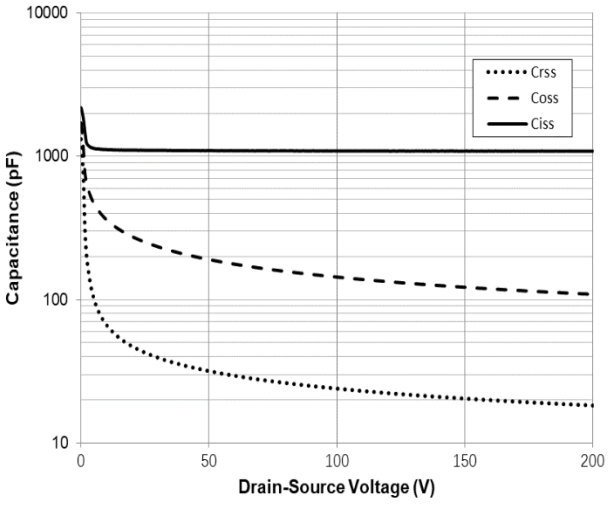


Figure 7. **Capacitance vs. Drain-Source Voltage (0-200V)**

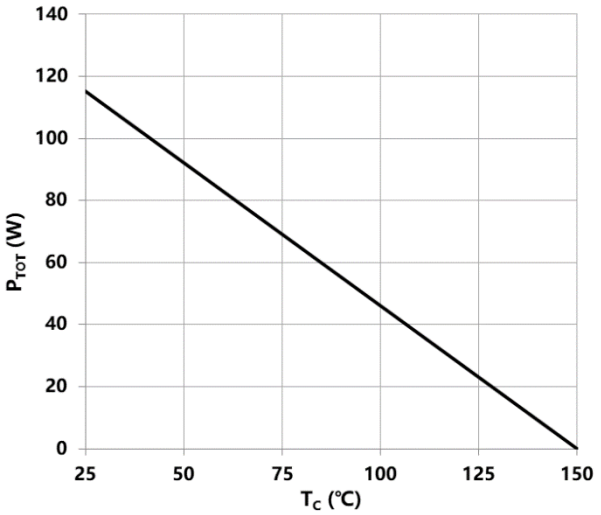


Figure 8. **Maximum Power Dissipation Derating vs.. Case Temperature**

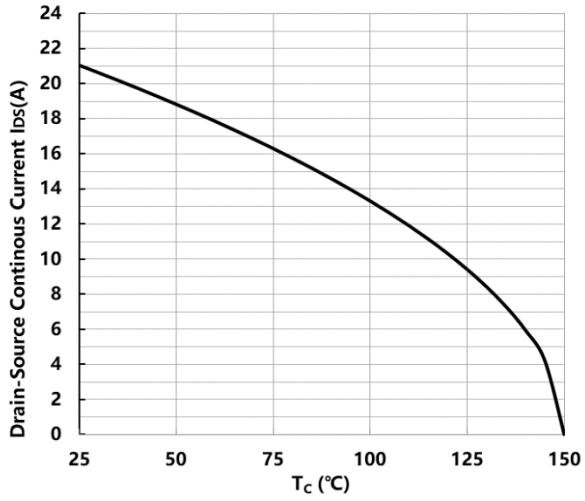


Figure 9. **Continuous Drain current Derating vs. Case Temperature**

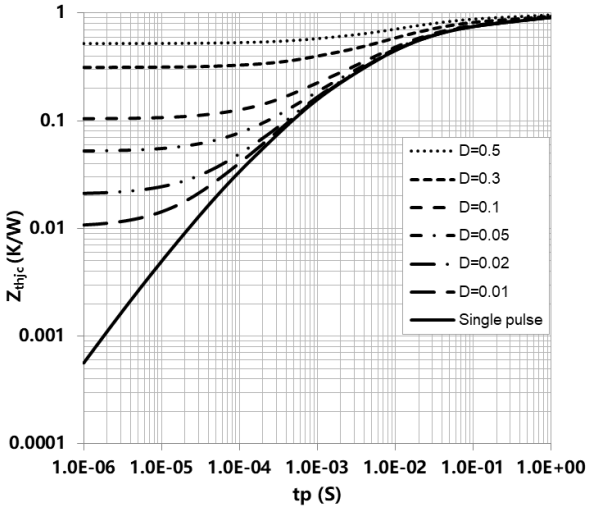


Figure 10. **Transient Thermal Impedance (Junction-Case)**

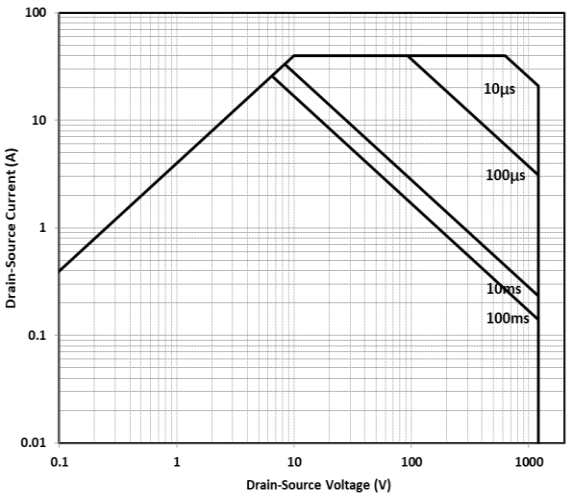
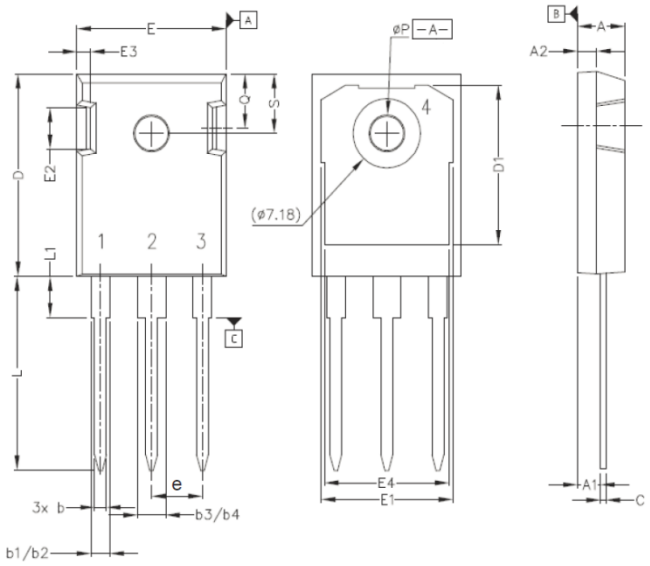


Figure 11. **Safe Operating Area**

Package Dimensions



POS	Inches		Millimeters	
	Min	Max	Min	Max
A	.190	.205	4.83	5.21
A1	.090	.100	2.29	2.54
A2	.075	.085	1.91	2.16
b	.042	.052	1.07	1.33
b1	.075	.095	1.91	2.41
b2	.075	.085	1.91	2.16
b3	.113	.133	2.87	3.38
b4	.113	.123	2.87	3.13
c	.022	.027	0.55	0.68
D	.819	.831	20.80	21.10
D1	.640	.695	16.25	17.65
D2	.037	.049	0.95	1.25
E	.620	.635	15.75	16.13
E1	.516	.557	13.10	14.15
E2	.145	.201	3.68	5.10
E3	.039	.075	1.00	1.90
E4	.487	.529	12.38	13.43
N	3		3	
L	.780	.800	19.81	20.32
L1	.161	.173	4.10	4.40
ØP	.138	.144	3.51	3.65
Q	.216	.236	5.49	6.00
S	.238	.248	6.04	6.30
e	.214 BSC		5.44 BSC	

Revision History

Revision: Preliminary version

Previous Revision:

Information

For further information on technology, delivery terms and conditions and prices, please contact the nearest BASiC Semiconductor Office

Disclaimer

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, BASiC semiconductor Ltd. hereby disclaims any and all warranties and liabilities of any kind, including without limitation, warranties of non-infringement of intellectual property rights of any third party.