1200V 10A N-Channel SiC MOSFET

Features

- Low On-Resistance
- Low Capacitance
- Avalanche Ruggedness
- Halogen Free, RoHS Compliant

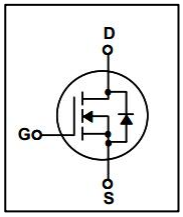
BENEFITS

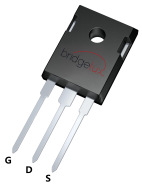
- Higher System Efficiency
- Parallel Device Convenience
- High Temperature Application
- High Frequency Operation

Application

- Switch Mode Power Supply (SMPS)
- Power Factor Correction (PFC)
- Uninterruptible Power Supply (UPS)
- EV Charging station & Motor Drives
- Solar/ Wind Renewable Energy
- Power Inverters & DC/DC Converters

SYMBOL





TO-247

ASSEMBLY MESSAGE

Product Name	Package	Packaging
BXW10M1K2H	TO-247	Tube

ABSOLUTE MAXIMUM RATINGS (T_C=25°C unless otherwise noted)

Parameter		Symbol	Rating	Unit
			TO-247	
Drain-Source Voltage		V_{DSS}	1200	V
Continuous Drain Current	T_C = 25°C，VGS=20V	I_D	10	A
Single Pulse Avalanche Energy	L=10mH	E_{AS}	88	mJ
	L=10mH	I_{AS}	4.2	A
Pulsed Drain Current		I_{DM}	40	A
Recommend Gate Source Voltage(Static)		$V_{GS,op}$	-3/+20	V
Maximum Gate Source Voltage(AC (f > 1Hz))		$V_{GS,max}$	-5/+25	V
Power Dissipation	T_C =25°C	P_D	80.6	W
Soldering Temperature		T_L	260	°C
Operating Junction and Storage Temperature Range		T_J,T_{STG}	150,-55~150	°C
Thermal Resistance, Junction to Case		$R_{\theta JC}$	1.55	°C / W

ELECTRICAL CHARACTERISTICS（T_J=25℃,unless otherwise Noted）

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	VGS=0V, ID=250μA	1200			V
Zero Gate Voltage Drain Current	I_{DSS}	VDS=1200V, VGS=0V			10	uA
Gate-Body Leakage Current, Forward	I_{GSS}	VGS=20V,VDS = 0V			250	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	VDS=10V, ID=5mA	2.5		4.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	VGS=20V, ID=5A		320	380	mΩ
		VGS=18V, ID=5A		390	460	
		VGS=15V, ID=5A		530	640	
		VGS=20V, ID=5A, TJ=150℃		610		
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	VDS=800V,VGS=0V, f=1MHz,VAC=25mV		330		pF
Output Capacitance	C_{OSS}			23.5		pF
Reverse Transfer Capacitance	C_{RSS}			4.2		pF
SWITCHING PARAMETERS						
Total Gate Charge(Note2)	Q_G	VDD =800V, VGS =-3/+20 V, ID=10A		29		nC
Gate Source Charge	Q_{GS}			2.5		nC
Gate Drain Charge	Q_{GD}			12		nC
Gate plateau voltage	V_{pl}			6		V
Turn-ON Delay Time	$t_{D(ON)}$	VDS=400V, ID=10A, VGS = -3/+20 V ,RG=25Ω		31		ns
Turn-ON Rise Time	t_R			29		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			41		ns
Turn-OFF Fall-Time	t_F			18		ns
Internal Gate Resistance	$R_{G(int.)}$	f =1MHz, VAC=25mV		2.6		Ω
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V_{SD}	IS=5A, VGS=-3V		5.5		V
Continuous Diode Forward Current	I_S	VGS = -3V		10		A
Reverse Recovery Time	t_{rr}	VGS = -3/+20V,IF = 10A, VDS=400V, di/dt =200A /μs		26		ns
Reverse Recovery Charge	Q_{rr}			35		nC
Peak Reverse Recovery Current	I_{rrm}			2.1		A

TYPICAL CHARACTERISTICS

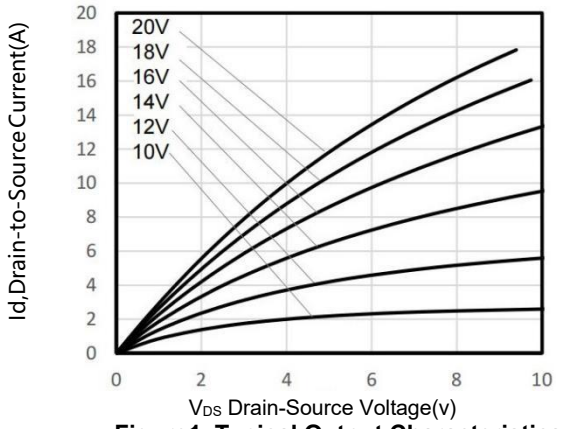


Figure1. Typical Output Characteristics

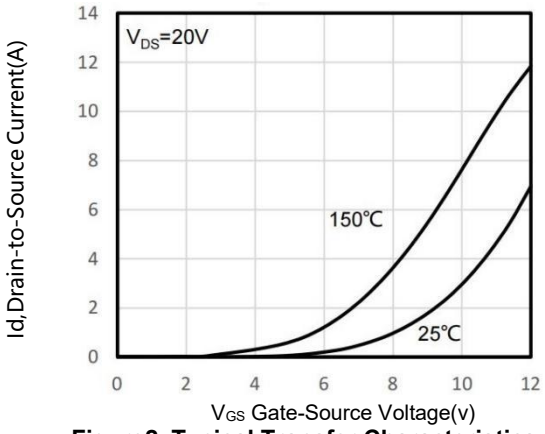


Figure2. Typical Transfer Characteristics

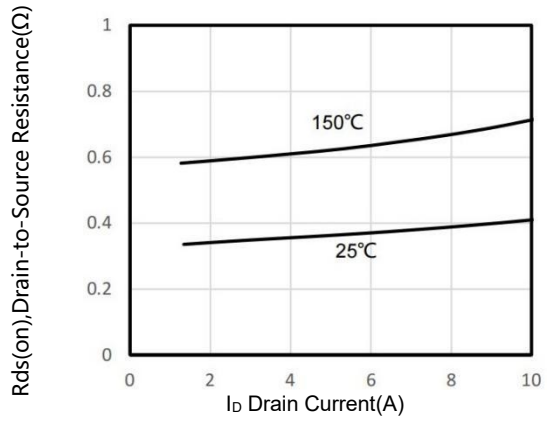


Figure3. On-Resistance versus Drain Current

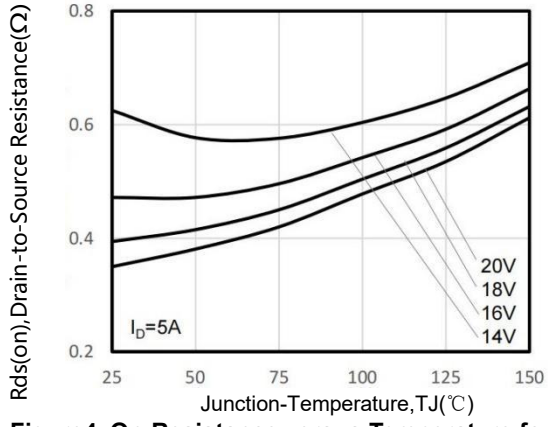


Figure4. On-Resistance versus Temperature for Various Gate Voltage

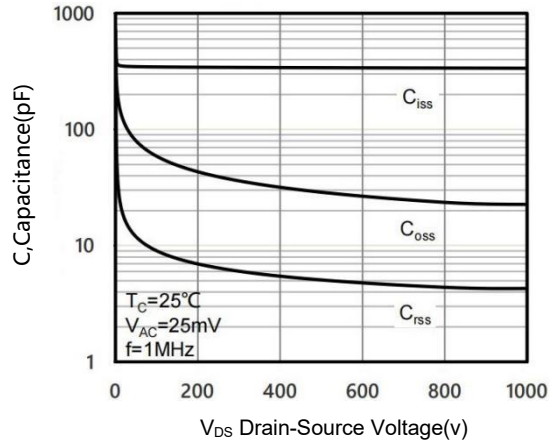


Figure5. Typical Capacitance versus V_{DS}

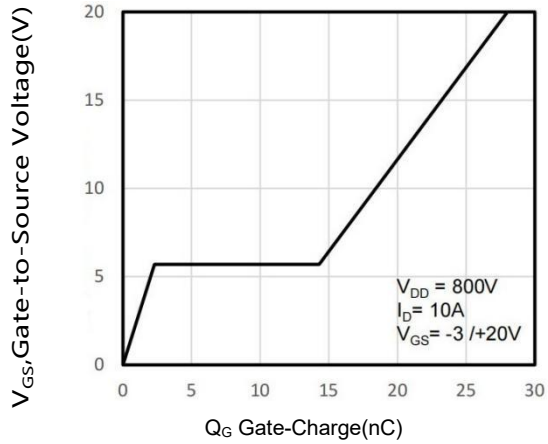


Figure6. Typical Gate Charge versus V_{GS}

TYPICAL CHARACTERISTICS(Cont.)

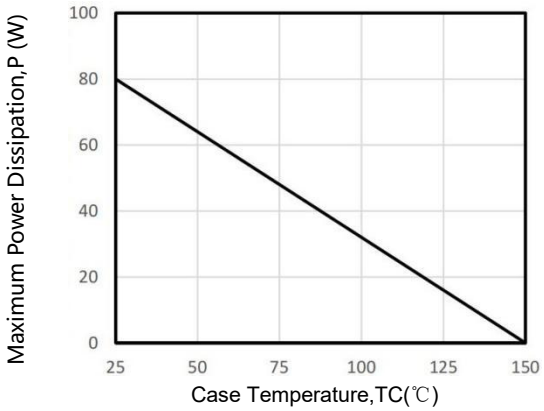


Figure7. Maximum Power Dissipation Derating versus Case Temperature

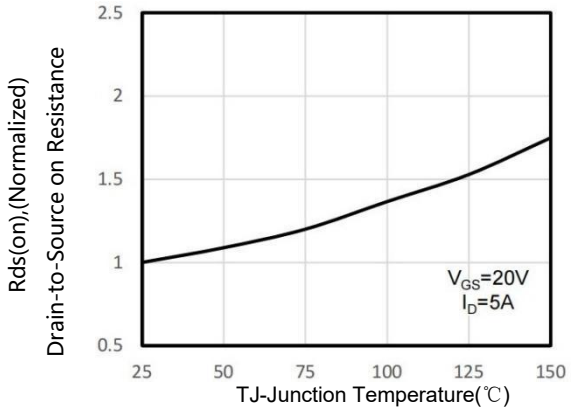


Figure8. On-Resistance Variation with Temperature

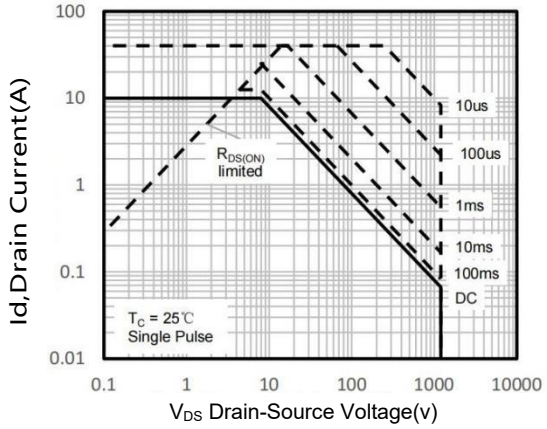


Figure9. Maximum Safe Operating Area

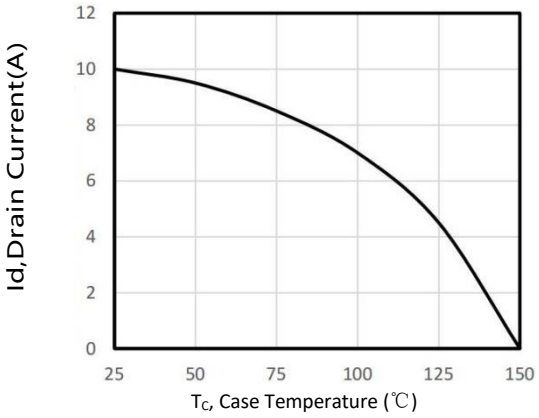


Figure10. Maximum Continuous Drain Current versus Case Temperature

Revision history

Document revision history

Date	Revision	Changes
15-Feb-2022	1.0	First release

Disclaimers:

Bridgelux WuXi has made reasonable commercial efforts to ensure that the information given in this data sheet is correct. However, it must clearly be understood that such information is for guidance only and does not constitute any representation or form part of any offer or contract.

For documents and material available from this data sheet, Bridgelux WuXi does not warrant or assume any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, product, technology or process disclosed hereunder.

Bridgelux WuXi reserves the rights to at its own discretion to make any changes or improvements to this data sheet. Unless said data sheet is incorporated into the formal contract, any customer should not rely on the information as any specification or product parameters duly committed by Bridgelux WuXi. Customers are hereby advised to verify that the information contained herein is current and complete before the entering of any contract or acknowledgement of any purchase order. Accordingly, all products specified hereunder shall be sold subject to Bridgelux WuXi's terms and conditions supplied at the time of order acknowledgement. Except where agreed upon by contractual agreement, testing of all parameters of each product is not necessarily performed.

Bridgelux WuXi does not warrant or convey any license either expressed or implied under its patent rights, nor the rights of others. Reproduction of information contained herein shall be only permissible if such reproduction is without any modification or alteration. Reproduction of this information with any alteration is an unfair and deceptive business practice. Bridgelux WuXi is not responsible or liable for such altered documentation.

Resale of Bridgelux WuXi's products with statements different from or beyond the parameters stated by Bridgelux WuXi for that product or service voids all express or implied warrantees for the associated Bridgelux WuXi's product or service and is unfair and deceptive business practice. Bridgelux WuXi is not responsible or liable for any such statements.

Bridgelux WuXi's products are not authorized for use as critical components in life support devices or systems without the express written approval of Bridgelux WuXi. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.