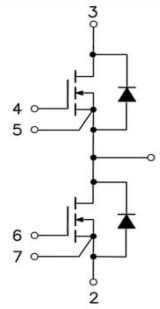


### 62mm Half Bridge SiC Module

Parameter	Value	Unit
$V_{DS}$	1200	V
$I_D$	500	A
$R_{DS(ON)}$	3.2	m $\Omega$
$Q_G$	1190	nC



#### Features:

- Low Switching Losses
- High-frequency Operation
- Zero Reverse Recovery from Diodes
- Zero Turn-off Tail Current from MOSFET

#### Applications:

- DC/DC Converter
- Solar and Wind Inverters
- Uninterruptible Power Supply(UPS)
- Switched Mode Power Supply(SMPS)

#### Absolute Maximum Ratings ( $T_C=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Value	Unit
$V_{DS}$	Drain-source Voltage	1200	V
$V_{GS}$	Gate-source Voltage	-10/+22	V
$I_D$	Drain Current (continuous) ( $T_C=25^\circ\text{C}$ )	500	A
$I_{DM}$	Drain Current (pulsed)	1000	A
$T_{op}; T_{stg}$	Operating and Storage Temperature Range	-40 to +150	$^\circ\text{C}$
$T_J$	Junction Temperature	175	$^\circ\text{C}$
$R_{th(j-c)}$	Thermal Resistance, Junction-to- heatsink	0.12	$^\circ\text{C/W}$

#### MOSFET Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
Static characteristics (at $T_C=25^\circ\text{C}$ unless otherwise specified)						
$B_{VDS}$	Drain-source Breakdown Voltage	1200	-	-	V	$V_{GS}=0\text{V}$
$I_{DSS}$	Zero Gate Voltage Drain Current	-	-	50	$\mu\text{A}$	$V_{DS}=1200\text{V}; V_{GS}=0\text{V}$
$I_{GSS}$	Gate-body Leakage Current	-	-	2.5	$\mu\text{A}$	$V_{GS}=-10/20\text{V}; V_{DS}=0\text{V}$
$V_{GS(th)}$	Gate Threshold Voltage	2.0	-	4.0	V	$V_{DS}=V_{GS}; I_D=50\text{mA}$
$R_{DS(on)}$	Static Drain-source on Resistance	-	3.2	4.4	m $\Omega$	$V_{GS}=18\text{V}; I_D=250\text{A}; T_J=25^\circ\text{C}$
$V_{GS(on)}$	Recommended Turn-on Voltage	-	18	-	V	Static
$V_{GS(off)}$	Recommended Turn-off Voltage	-	-5	-	V	
$R_G$	Gate Resistance	-	0.64	-	$\Omega$	$V_{GS}=0\text{V}; f=1\text{MHz}$
Dynamic characteristics (at $T_C=25^\circ\text{C}$ unless otherwise specified)						

$C_{iss}$	Input Capacitance	-	34.4	-	nF	$V_{DS}=1000V$ ; $f=100kHz$ $V_{AC};=25mV$
$C_{oss}$	Output Capacitance	-	1.4	-		
$C_{rSS}$	Reverse Transfer Capacitance	-	65	-	pF	
$E_{on}$	Turn-on Switching Energy	-	25.7	-	mJ	$V_{DD}=900V$ ; $V_{GS}=-5/+18V$ $I_D=300A$ ; Load=100 $\mu$ H
$E_{off}$	Turn-off Switching Energy	-	15.8	-		
$Q_{GS}$	Gate-Source Charge	-	383	-	nC	$V_{DD}=800V$ ; $V_{GS}=-5/+18V$ $I_D=250A$
$Q_{GD}$	Gate-drain Charge	-	391	-		
$Q_G$	Total Gate Charge	-	1190	-		
$t_{d(on)}$	Turn-on Delay Time	-	105	-	ns	$V_{DD}=900V$ ; $V_{GS}=-5/+18V$ $I_D=300A$ ; $R_{G(ext)}=5\Omega$ Load=100 $\mu$ H
$t_r$	Rise Time	-	82	-		
$t_{d(off)}$	Turn-off Delay Time	-	343	-		
$t_f$	Fall Time	-	62	-		

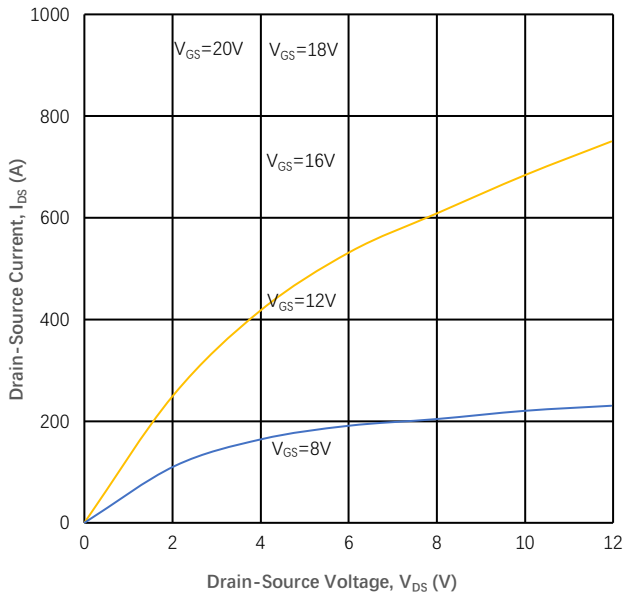
**Body Diode Characteristics** ( $T_J=25^\circ C$  unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$V_{FSD}$	Forward Voltage	-	-	6	V	$V_{GS}=0V$ ; $I_F=250A$
$I_S$	Continuous Diode Forward Current	-	250	-	A	$V_{GS}=0V$ ; $T_C=25^\circ C$
$T_{RR}$	Reverse Recovery Time	-	41	-	ns	$V_{GS}=-5/+18V$ ; $I_F=300A$ $V_R=900V$ ; Load=100 $\mu$ H
$Q_{RR}$	Reverse Recovery Charge	-	3065	-	nC	
$I_{RRM}$	Peak Reverse Recovery Current	-	77	-	A	

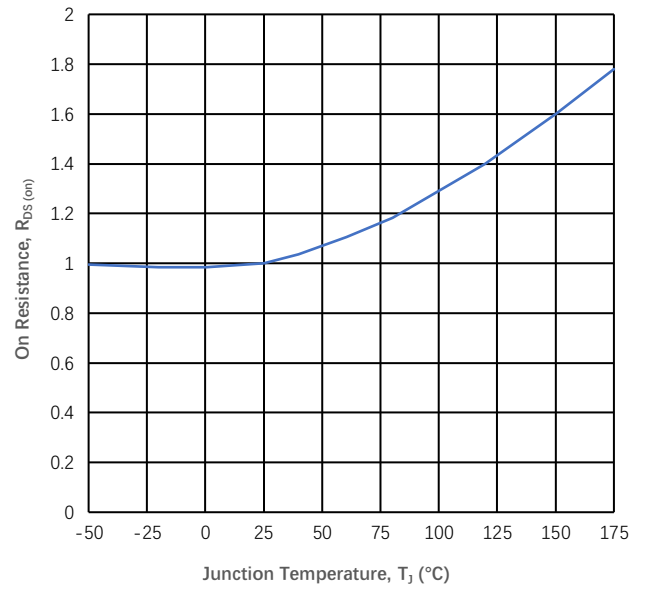
**Module Physical Characteristics**

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$L_{Stray}$	Stray Inductance	-	20	-	nH	
W	Weight	-	340	-	g	
M	Mounting Torque	4.0	-	5.5	N·m	M6
$V_{ISOL}$	Isolation Test Voltage	4.2	-	-	kV	
-	Clearance Distance	-	11	-	mm	Terminal to Terminal
		-	23	-	mm	Terminal to Baseplate
-	Creepage Distance	-	23	-	mm	Terminal to Terminal
		-	29	-	mm	Terminal to Baseplate

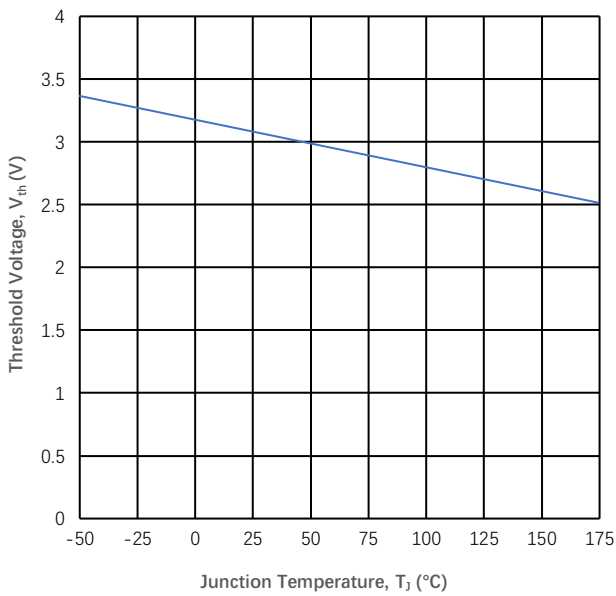
**Typical Characteristics**



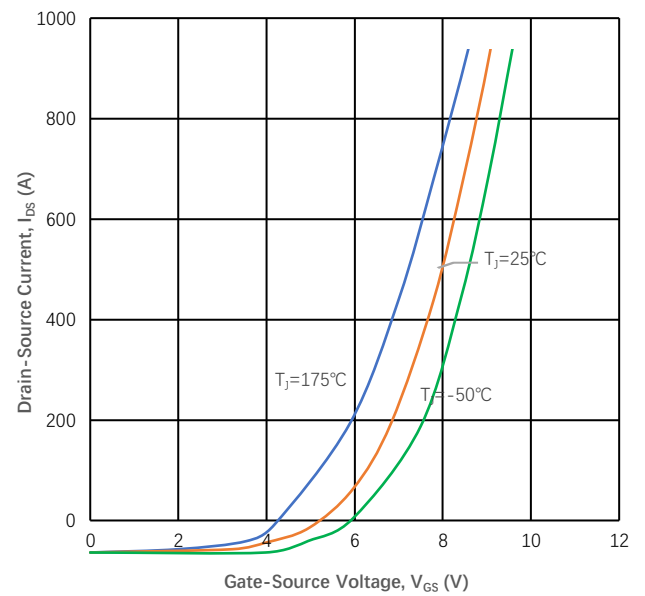
**Figure 1**  
 Output Characteristics ( $T_j=25\text{ }^\circ\text{C}$ )



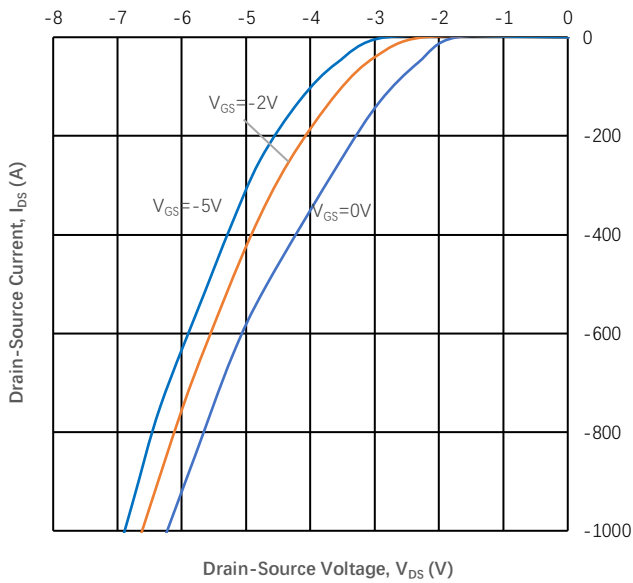
**Figure 2**  
 Normalized On-Resistance vs.  $T_j$



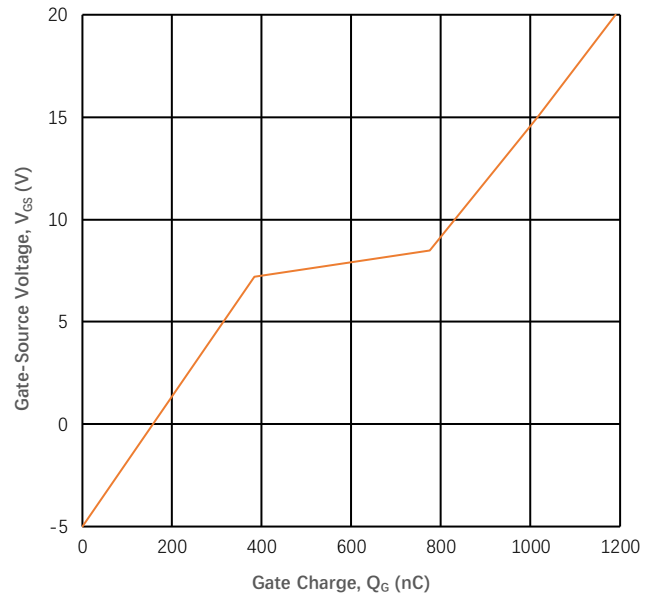
**Figure 3**  
 Threshold Voltage vs. Temperature



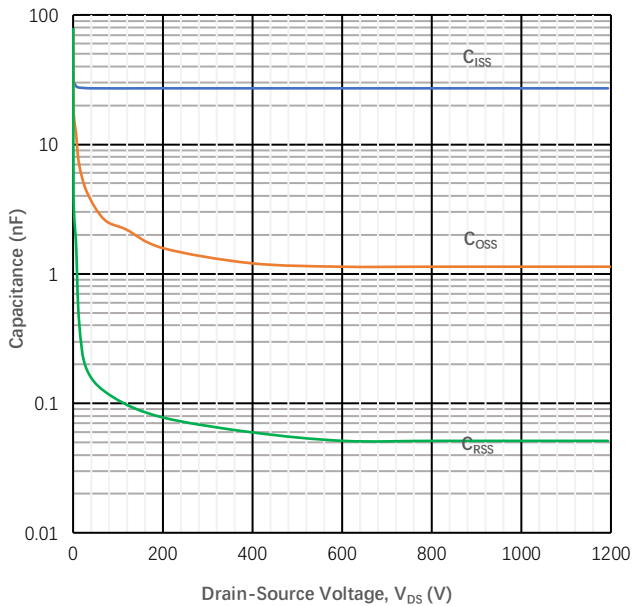
**Figure 4**  
 Transfer Characteristic for Various  $T_j$



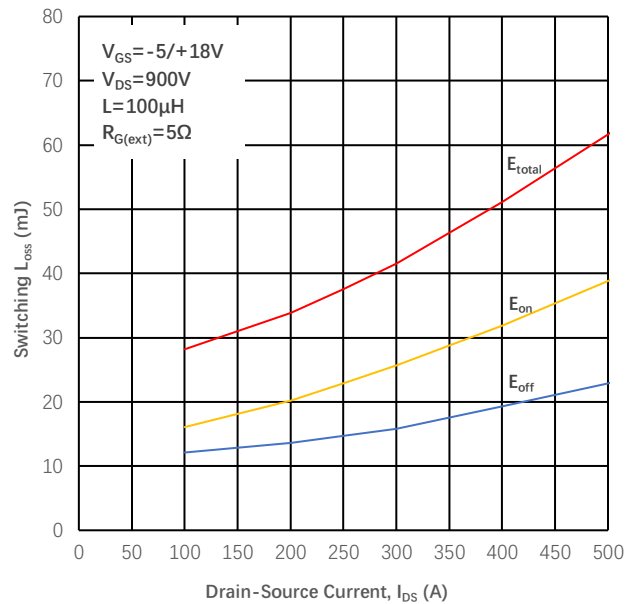
**Figure 5**  
 Body Diode Characteristic at 25°C



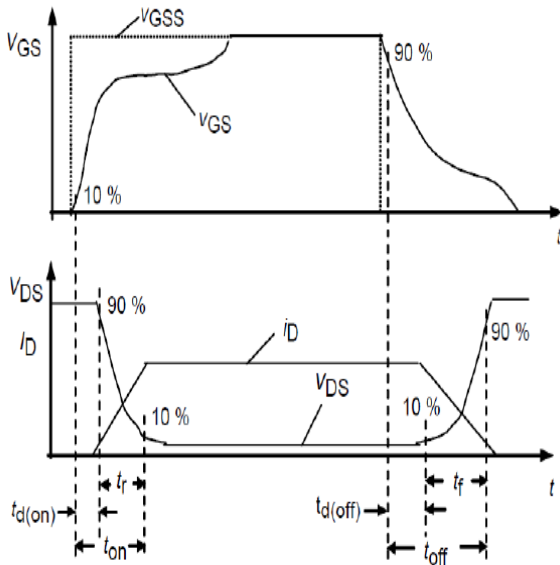
**Figure 6**  
 Typical Gate Charge Characteristics



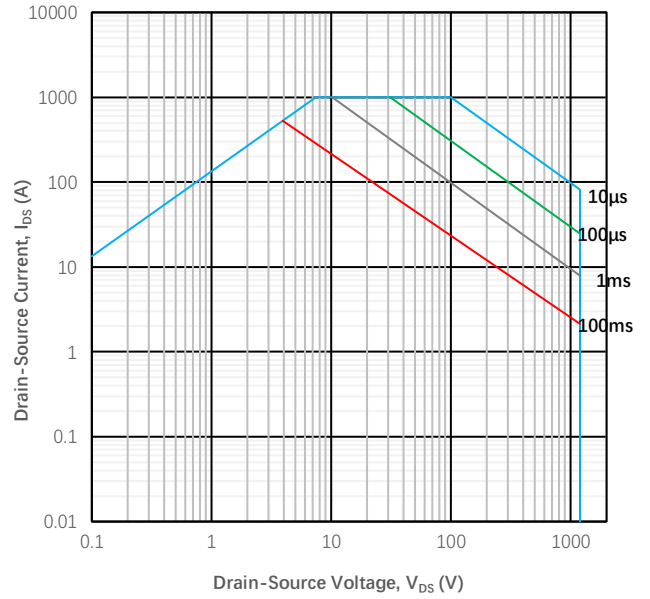
**Figure 7**  
 Typical Capacitances vs. Drain-Source Voltage



**Figure 8**  
 Inductive Switching Energy vs. Drain Current

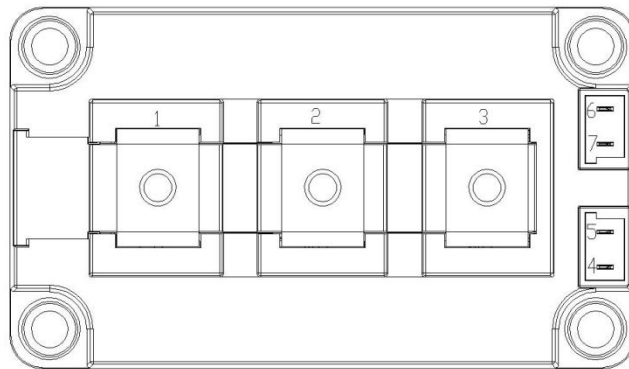
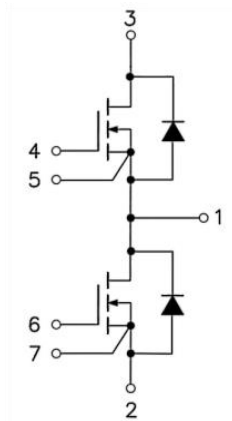


**Figure 9**  
 Switching Time Description

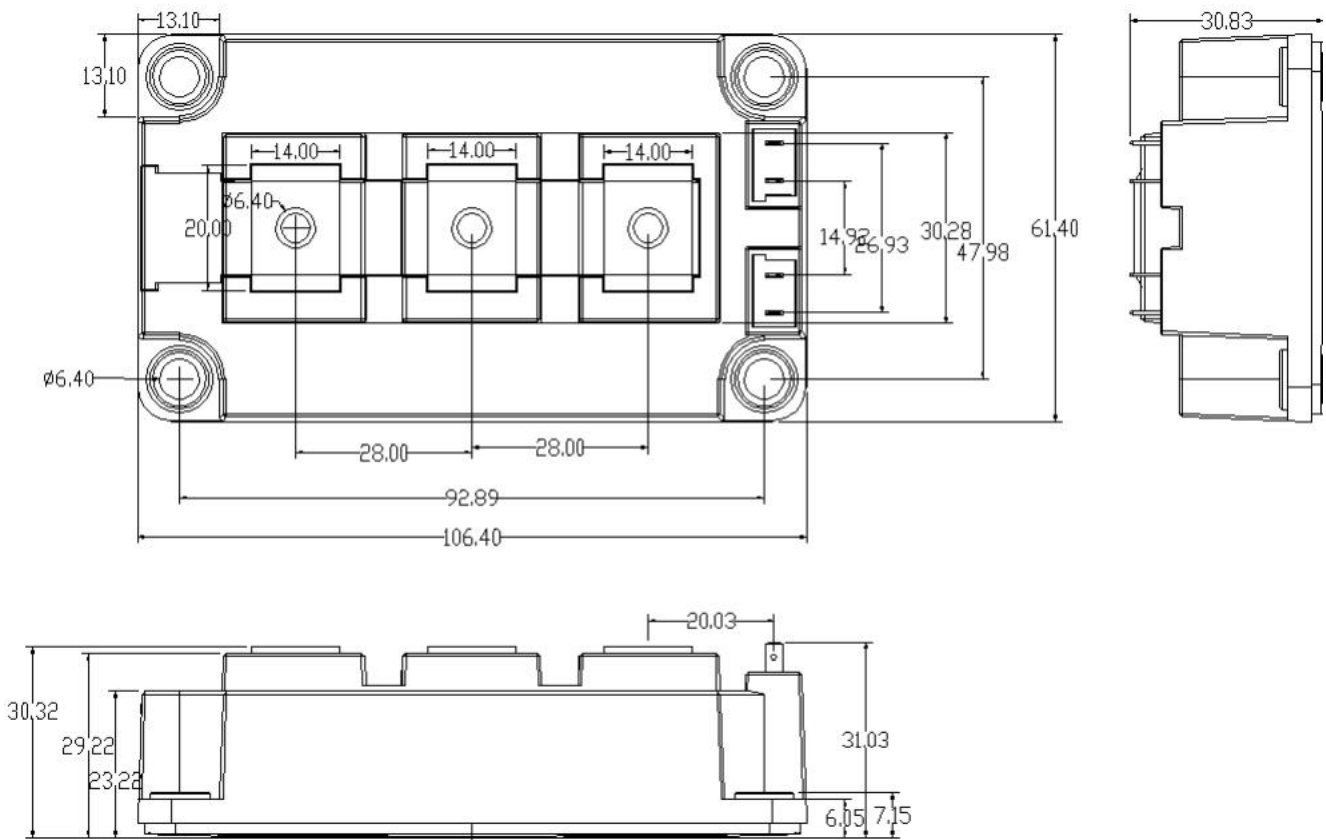


**Figure 10**  
 Safe Operating Area

**Circuit Diagram**



**Package Outlines(Unit: mm):**



**\*Important Usage Information and Disclaimer**

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