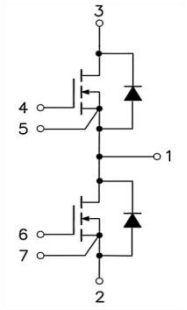
34mm Half Bridge SiC Module

Parameter	Value	Unit
V_{DS}	1200	V
I_D	300	A
$R_{DS(ON)}$	5.2	mΩ
Q_G	716	nC





Features:

- High Current Density
- Low Switching Losses
- Low Inductive Design
- High-frequency Operation range
- Zero Turn-off Tail Current from MOSFET

Applications:

- High Frequency Switching Application
- Motor Drives
- UPS Systems
- Solar and Wind Inverters
- DC/DC Converter

Absolute Maximum Ratings (T_C=25°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)	300	A
I_{DM}	Drain Current (pulsed)	600	A
T_{op};T_{stg}	Operating and Storage Temperature Range	-40 to +150	°C
T_J	Junction Temperature	175	°C
L_{Stray}	Stray Inductance	28	nH
V_{isol}	Isolation Test Voltage (f=50Hz; t=1min)	3.0	kV
M	Terminal Connection Torque (M5)	2.5-5.0	Nm
W	Weight	162	g

MOSFET Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
Static characteristics (at TC=25°C unless otherwise specified)						
B_{VDS}	Drain-source Breakdown Voltage	1200	-	-	V	V_{GS}=0V
I_{DSS}	Zero Gate Voltage Drain Current	-	-	300	μA	V_{DS}=1200V; V_{GS}=0V
I_{GSS}	Gate-body Leakage Current	-	-	3	μA	V_{GS}=-10/+20V; V_{DS}=0V
$V_{GS(th)}$	Gate Threshold Voltage	2	-	4	V	V_{DS}=V_{GS} ; I_D=30mA
$R_{DS(on)}$	Static Drain-source on Resistance	-	5.2	7.5	mΩ	V_{GS}=18V; I_D=150A; T_J=25°C
$V_{GS(on)}$	Recommended Turn-on Voltage	-	18	-	V	Static
$V_{GS(off)}$	Recommended Turn-off Voltage	-	-5	-	V	

R_G	Gate Resistance	-	1.1	-	Ω	V_{GS}=0V; f=1MHz
Dynamic characteristics (at TC=25°C unless otherwise specified)						
C_{iss}	Input Capacitance	-	20.4	-	nF	V_{DS}=1000V; f=1MHz; V_{AC}=25mV
C_{oss}	Output Capacitance	-	0.88	-		
C_{rss}	Reverse Transfer Capacitance	-	41	-	pF	
E_{on}	Turn-on Switching Energy	-	22.5	-	mJ	V_{DD}=900V; V_{GS}=-5/+18V; I_D=300A; Load=100μH
E_{off}	Turn-off Switching Energy	-	16.7	-		
Q_{GS}	Gate-Source Charge	-	230.2	-	nC	V_{DD}=800V; V_{GS}=-5/+18V; I_D=150A
Q_{GD}	Gate-drain Charge	-	234.8	-		
Q_G	Total Gate Charge	-	716	-		
$t_{d(on)}$	Turn-on Delay Time	-	101.0	-	ns	V_{DD}=900V; V_{GS}=-5/+18V; I_D=300A; $R_{G(ext)}$=5Ω
t_r	Rise Time	-	93.4	-		
$t_{d(off)}$	Turn-off Delay Time	-	256.2	-		
t_f	Fall Time	-	54.5	-		
$R_{th(j-c)}$	Thermal Resistance, Junction-to- heat sink	-	0.13	-	°C/W	-

Body Diode Characteristics (T_J =25°C unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
V_{FSD}	Forward Voltage	-	-	6	V	V_{GS}=0V; I_F=150A
I_S	Continuous Diode Forward Current	-	150	-	A	V_{GS}=0V; T_C=25°C
T_{RR}	Reverse Recovery Time	-	32.8	-	ns	V_{GS}=-5/+18V; I_F=300A; V_R=900V
Q_{RR}	Reverse Recovery Charge	-	679	-	nC	
I_{RRM}	Peak Reverse Recovery Current	-	51.3	-	A	

Typical Characteristics

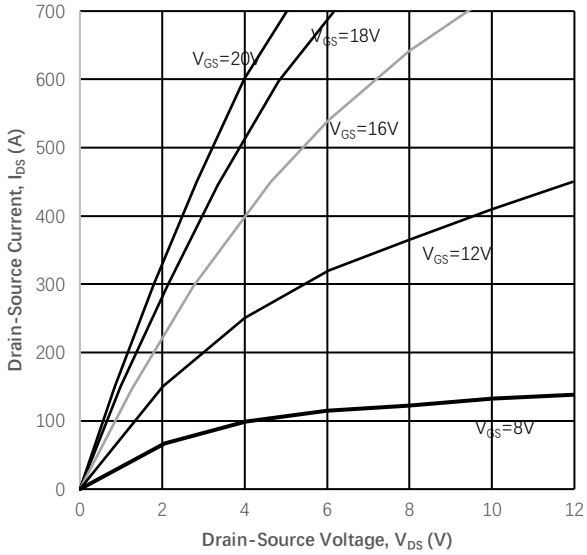


Figure 1
Output Characteristics (T_J=25 °C)

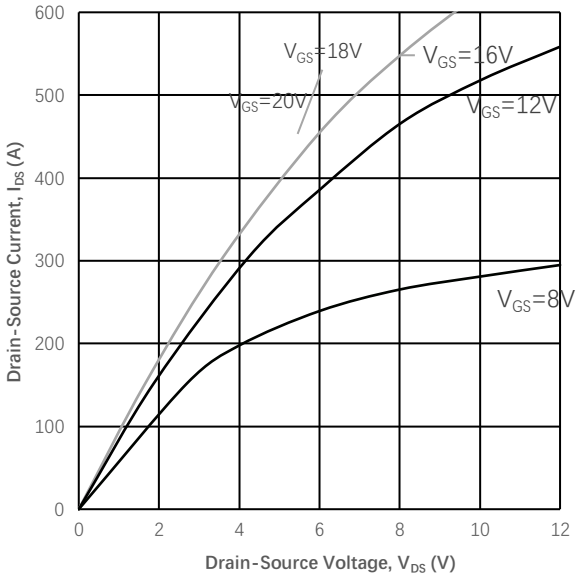


Figure 2
Typical Output Characteristics (T_J=150 °C)

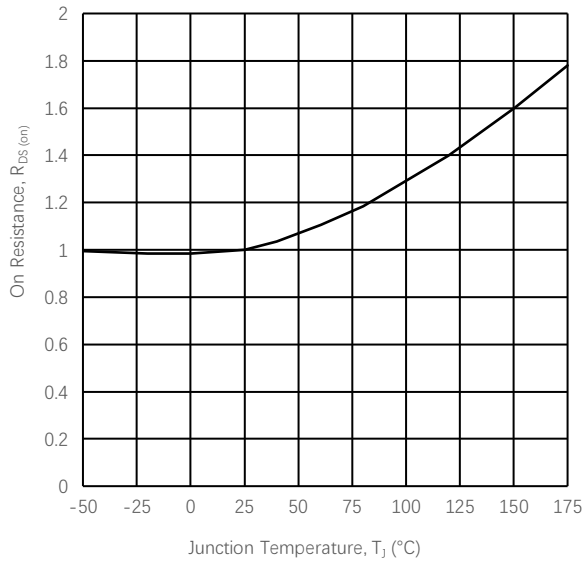


Figure 3
Normalized on-resistance vs. T_j

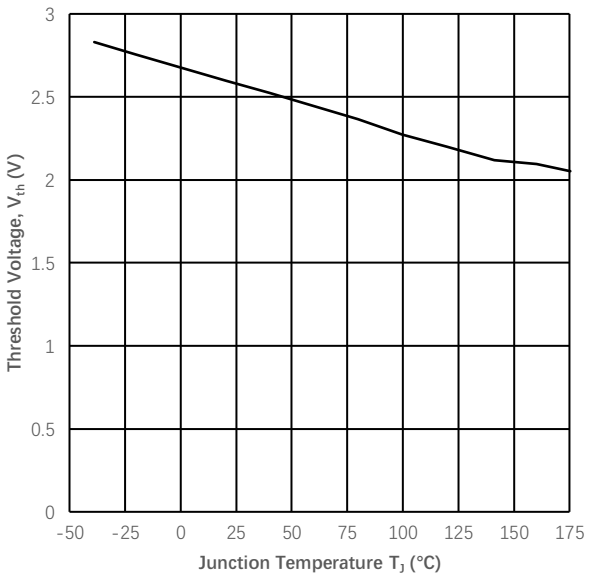


Figure 4
Threshold Voltage vs. Temperature

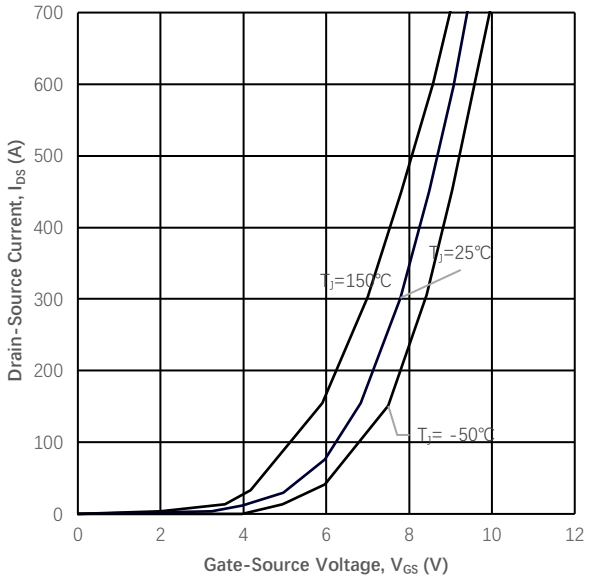


Figure 5

Transfer Characteristic for Various T_j

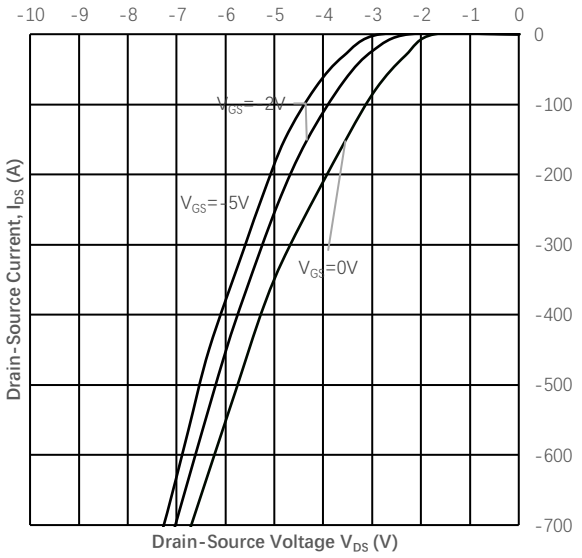


Figure 6

Body Diode Characteristic

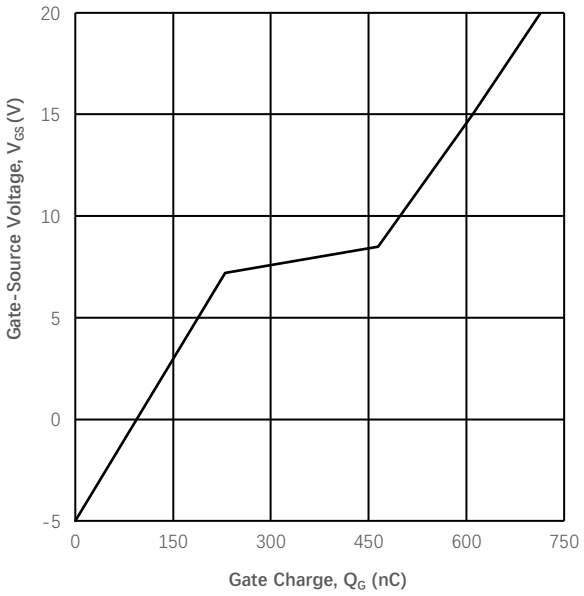


Figure 7

Gate Charge Characteristics

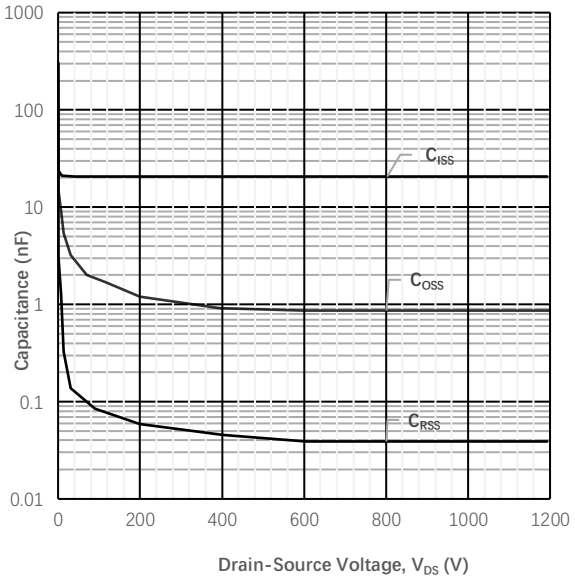


Figure 8

Capacitances vs. V_{DS}

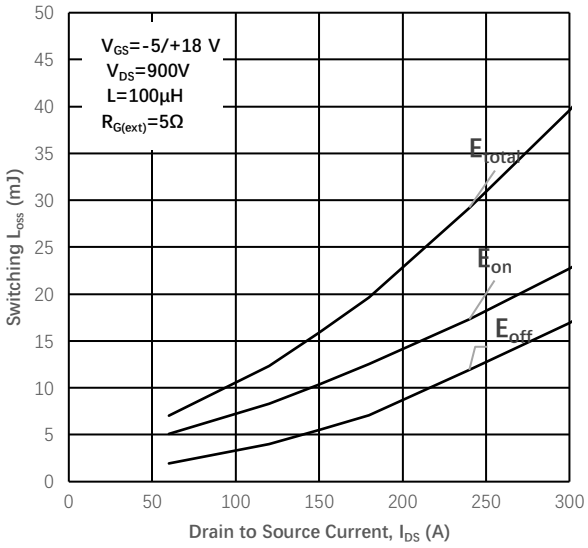


Figure 9
Inductive Switching Energy vs. Drain Current

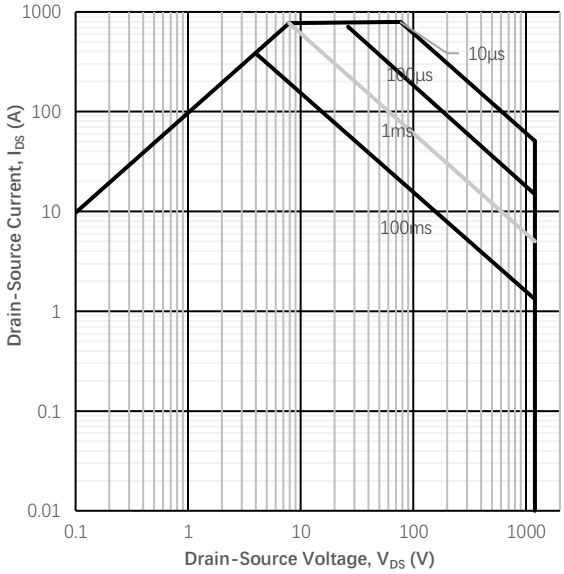
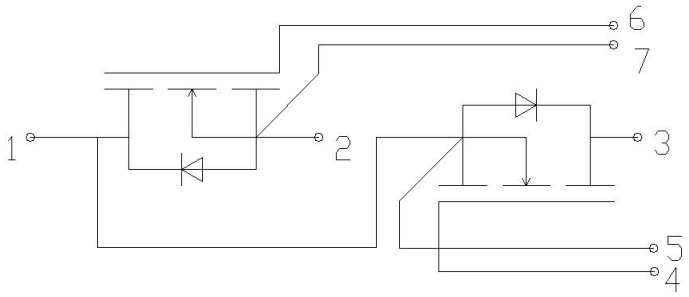
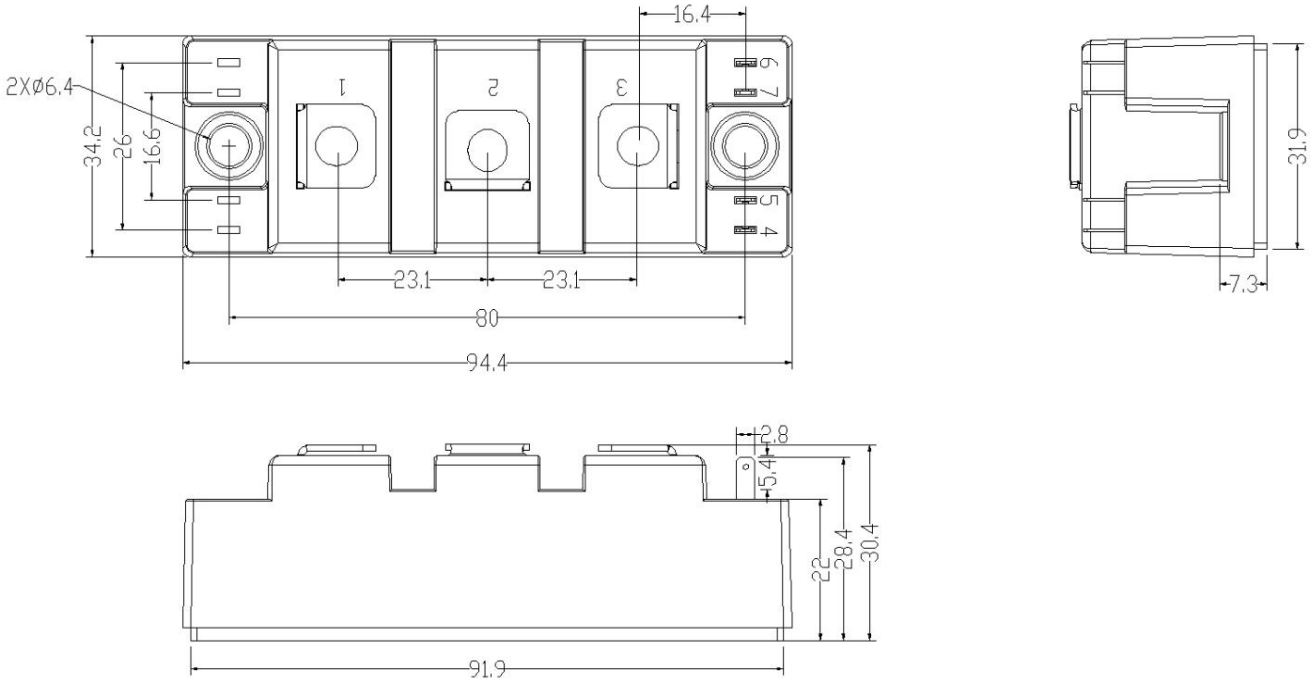


Figure 10
Safe Operating Area

Circuit Diagram



Package Outlines(Unit: mm):



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