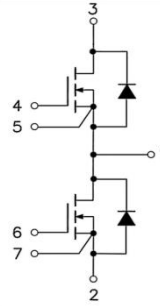


34mm Half Bridge SiC Module

Parameter	Value	Unit
V_{DS}	1700	V
I_D	200	A
$R_{DS(ON)}$	13	m Ω
Q_G	336	nC



Features:

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

Applications:

- High Power Converters
- Motor Drives
- UPS Systems

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

Symbol	Parameter	Value	Unit
V_{DS}	Drain-source Voltage	1700	V
V_{GS}	Gate-source Voltage	-10/+22	V
I_D	Drain Current (continuous) ($T_C=25^\circ\text{C}$)	200	A
I_{DM}	Drain Current (pulsed)	400	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- heat sink	0.14	$^\circ\text{C}/\text{W}$

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	1700	-	-	V	$V_{GS}=0\text{V}$
I_{DSS}	Zero Gate Voltage Drain Current	-	-	100	μA	$V_{DS}=1700\text{V}; V_{GS}=0\text{V}$
I_{GSS}	Gate-body Leakage Current	-	-	1.0	μA	$V_{GS}=20\text{V}; V_{DS}=0\text{V}$
$V_{GS(th)}$	Gate Threshold Voltage	2.0	-	4.0	V	$V_{DS}=V_{GS}; I_D=20\text{mA}$
$R_{DS(on)}$	Static Drain-source on Resistance	-	13	16	m Ω	$V_{GS}=18\text{V}; I_D=200\text{A}; T_J=25^\circ\text{C}$
$V_{GS(on)}$	Recommended Turn-on Voltage	-	18	-	V	Static
$V_{GS(off)}$	Recommended Turn-off Voltage	-	-5	-	V	
R_G	Gate Resistance	-	1.8	-	Ω	$V_{GS}=0\text{V}; f=1\text{MHz}$
Dynamic characteristics (at $T_C=25^\circ\text{C}$ unless otherwise specified)						

C_{iss}	Input Capacitance	-	12.9	-	nF	$V_{DS}=1200V$; $f=100KHz$ $V_{AC}=25mV$
C_{oss}	Output Capacitance	-	0.4	-		
C_{rSS}	Reverse Transfer Capacitance	-	0.032	-	pF	
E_{on}	Turn-on Switching Energy	-	10.3	-	mJ	$V_{DD}=1200V$; $V_{GS}=-5/+18V$ $I_D=100A$; $R_{G(ext)}=5\Omega$ Load=100 μ H
E_{off}	Turn-off Switching Energy	-	5.5	-		
Q_{GS}	Gate-Source Charge	-	104	-	nC	$V_{DD}=1200V$; $V_{GS}=-5/+18V$ $I_D=100A$
Q_{GD}	Gate-drain Charge	-	100	-		
Q_G	Total Gate Charge	-	336	-		
$t_{d(on)}$	Turn-on Delay Time	-	82	-	ns	$V_{DD}=1200V$; $V_{GS}=-5/+18V$ $I_D=100A$; $R_{G(ext)}=5\Omega$ Load=100 μ H
t_r	Rise Time	-	44	-		
$t_{d(off)}$	Turn-off Delay Time	-	218	-		
t_f	Fall Time	-	52	-		

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	$V_{GS}=0V$; $I_F=100A$
I_S	Continuous Diode Forward Current	-	100	-	A	$V_{GS}=0V$; $T_C=25^\circ C$
T_{RR}	Reverse Recovery Time	-	42	-	ns	$V_{GS}=-5/+18V$; $I_F=100A$ $V_R=1200V$
Q_{RR}	Reverse Recovery Charge	-	1836	-	nC	
I_{RRM}	Peak Reverse Recovery Current	-	70	-	A	

Module Physical Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
V_{ISOL}	Isolation Test Voltage	-	3.0	-	kV	$f=50Hz$; $t=1min$
L_{Stray}	Stray Inductance	-	30	-	nH	
W	Weight	-	160	-	g	
M	Mounting Torque	2.5	-	5.0	N·m	M5

Typical Characteristics

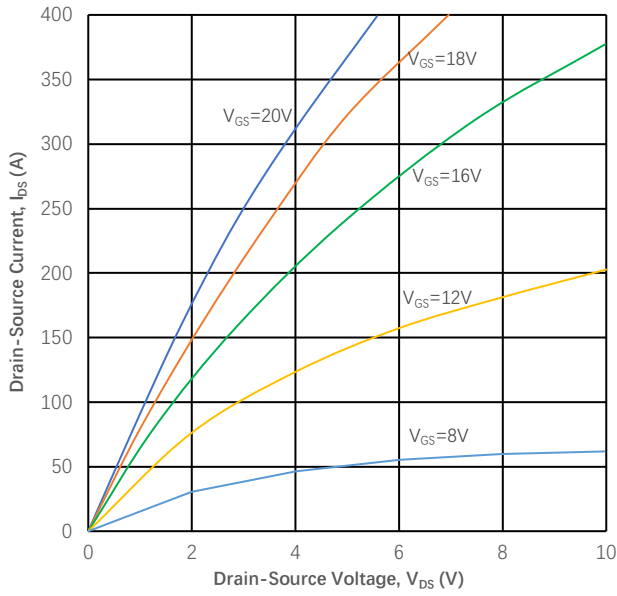


Figure 1
 Output Characteristics ($T_J=25\text{ }^\circ\text{C}$)

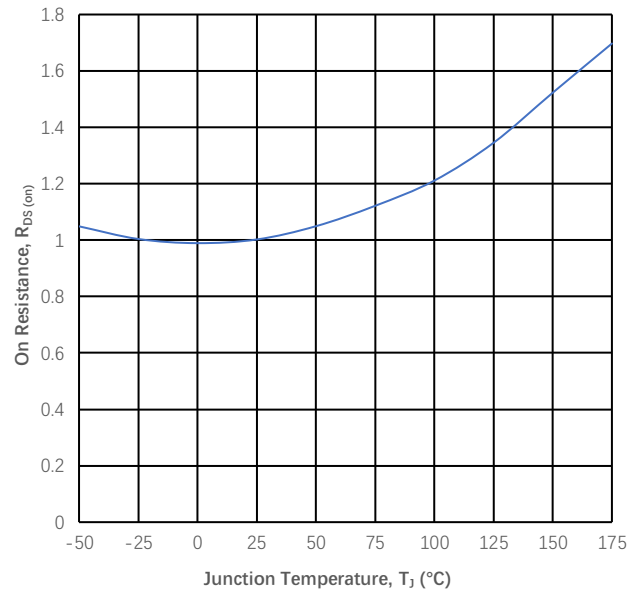


Figure 2
 Normalized On-Resistance vs. Temperature

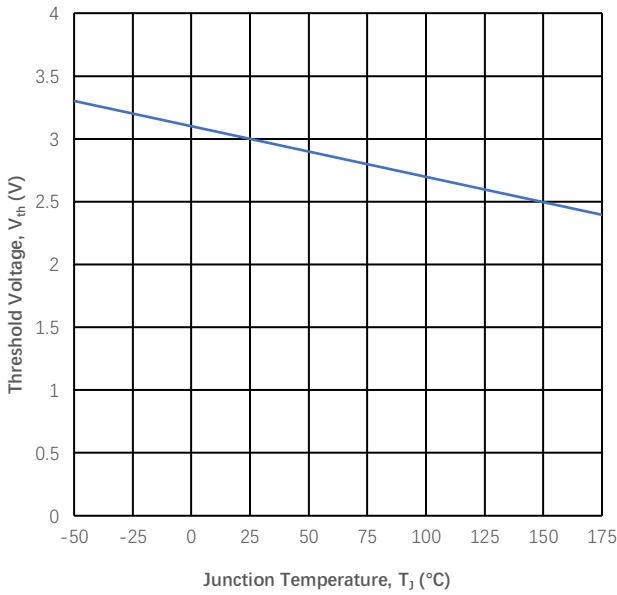


Figure 3
 Threshold Voltage vs. Temperature

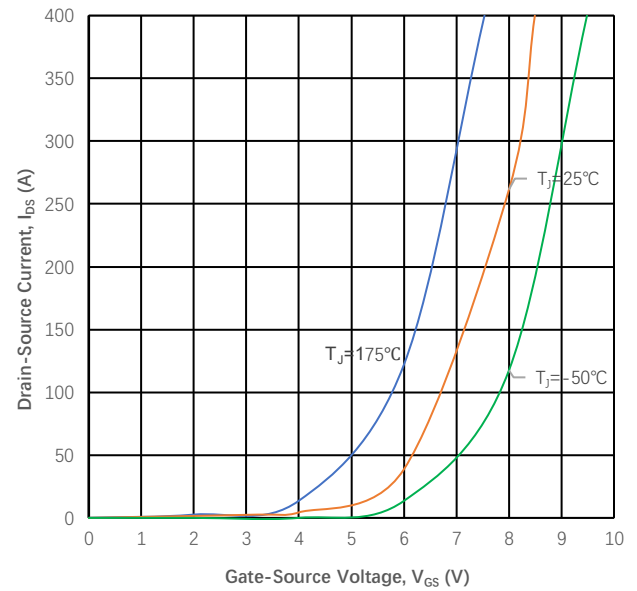


Figure 4
 Transfer Characteristic for Various T_J

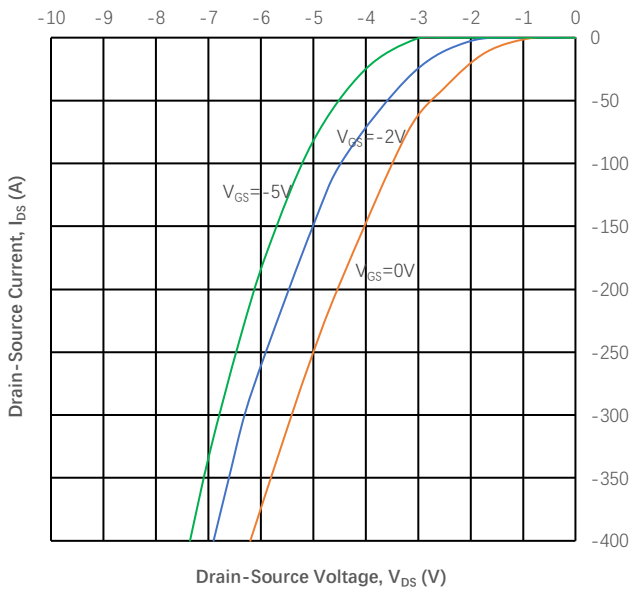


Figure 5
 Diode Characteristic at 25 °C

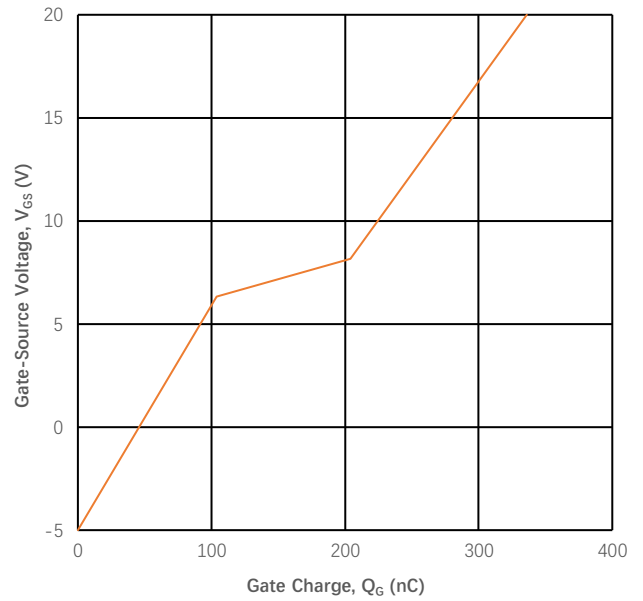


Figure 6
 Typical Gate Charge Characteristics

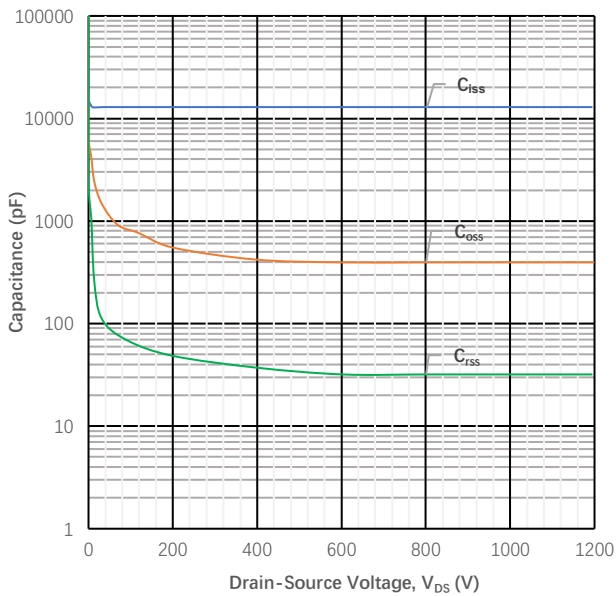


Figure 7
 Typical Capacitances vs. Drain-Source Voltage

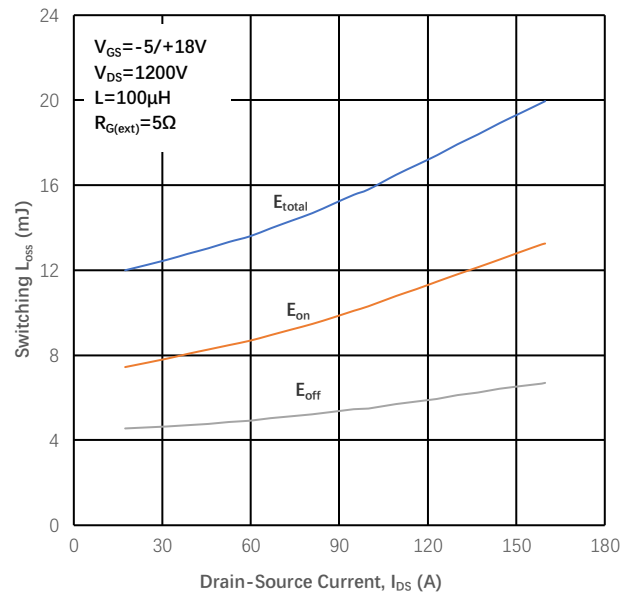


Figure 8
 Inductive Switching Energy vs. Drain Current

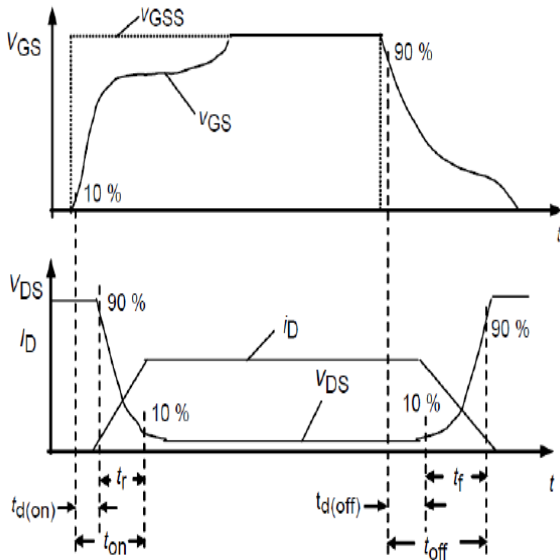


Figure 9
 Switching Time Description

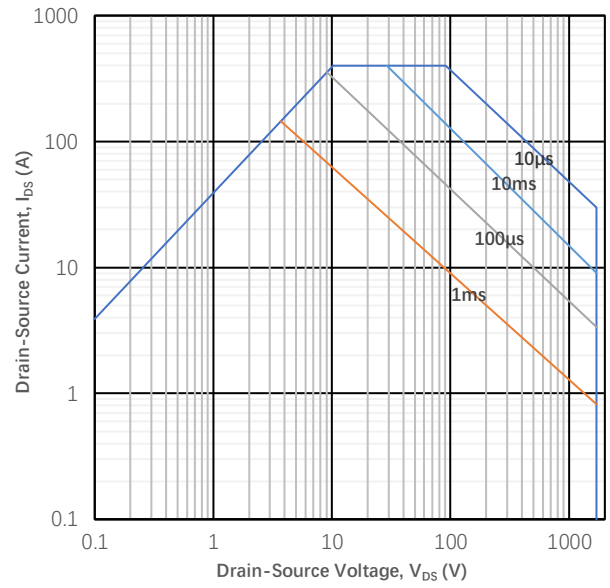
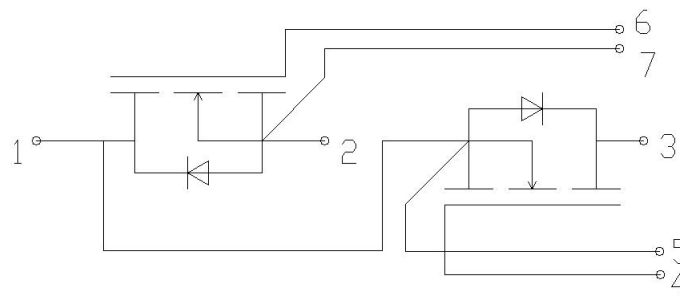
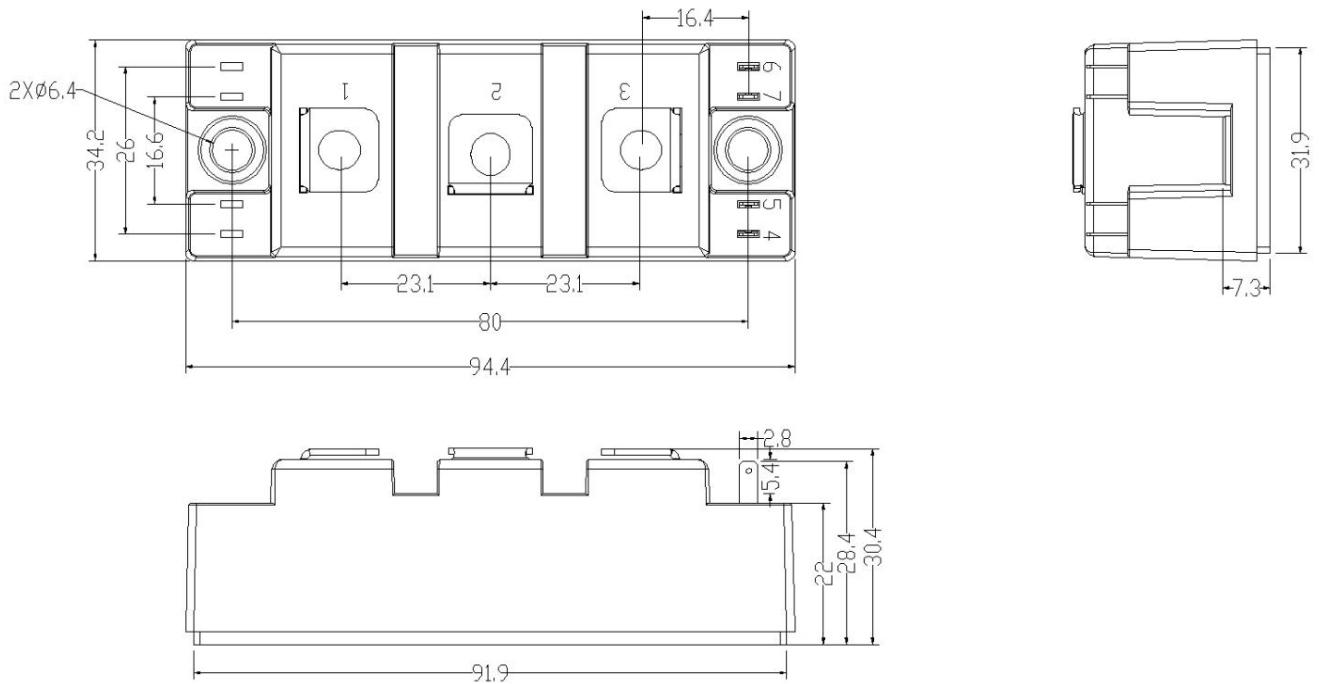


Figure 10
 Safe Operating Area

Circuit Diagram



Package Outlines(Unit: mm):



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