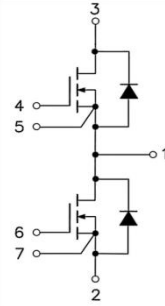


34mm Half-Bridge SiC MOSFET Module

Parameter	Value	Unit
V_{DS}	1200	V
I_D	82	A
$R_{DS(ON)}$	22.5	m Ω
Q_G	250	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	1200	V
V_{GS}	Gate-source Voltage	-10/+22	V
I_D	Drain Current (continuous) ($T_C=25^\circ\text{C}$)	120	A
I_D	Drain Current (continuous) ($T_C=90^\circ\text{C}$)	82	A
I_{DM}	Drain Current (pulsed)	200	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	$^\circ\text{C/W}$

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	-	2	200	μA	$V_{DS}=1200\text{V}; V_{GS}=0\text{V}$
I_{GSS}	Gate-body Leakage Current	-	-	500	nA	$V_{GS}=-10/+18\text{V}; V_{DS}=0\text{V}$
$V_{GS(th)}$	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	-	22.5	26	m Ω	$V_{GS}=18\text{V}; I_D=50\text{A}; T_J=25^\circ\text{C}$
		-	38.2	-	m Ω	$V_{GS}=18\text{V}; I_D=50\text{A}; T_J=175^\circ\text{C}$
$V_{GS(on)}$	Recommended Turn-on Voltage	-	18	-	V	Static
$V_{GS(off)}$	Recommended Turn-off Voltage	-	-5	-	V	
R_G	Gate Resistance	-	2.6	-	Ω	$V_{GS}=0\text{V}; f=1\text{MHz}$

Dynamic characteristics (at TC=25°C unless otherwise specified)						
C _{iss}	Input Capacitance	-	5130	-	pF	V _{DS} =1000V; f=1MHz; V _{AC} =25mV
C _{oss}	Output Capacitance	-	218	-		
C _{rss}	Reverse Transfer Capacitance	-	8	-	pF	
E _{on}	Turn-on Switching Energy	-	3.52	-	mJ	V _{DD} =800V; V _{GS} =-5/+18V I _D =80A; R _{G(ext)} =5Ω Load=35μH
E _{off}	Turn-off Switching Energy	-	0.32	-		
Q _{GS}	Gate-Source Charge	-	64	-	nC	V _{DD} =800V; V _{GS} =-5/+18V I _D =50A
Q _{GD}	Gate-drain Charge	-	66	-		
Q _G	Total Gate Charge	-	250	-		
t _{d(on)}	Turn-on Delay Time	-	21.2	-	ns	V _{DD} =800V; V _{GS} =-5/+18V I _D =80A; R _{G(ext)} =5Ω Load=35μH
t _r	Rise Time	-	15.2	-		
t _{d(off)}	Turn-off Delay Time	-	62	-		
t _f	Fall Time	-	12	-		

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

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
V _{FSD}	Forward Voltage	-	4.2	6	V	V _{GS} =0V; I _F =50A
I _S	Continuous Diode Forward Current	-	55	-	A	V _{GS} =0V; T _C =25°C
T _{RR}	Reverse Recovery Time	-	50	-	ns	V _{GS} =-5/+18V; I _F =50A V _R =800V
Q _{RR}	Reverse Recovery Charge	-	1424	-	nC	
I _{RRM}	Peak Reverse Recovery Current	-	38	-	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

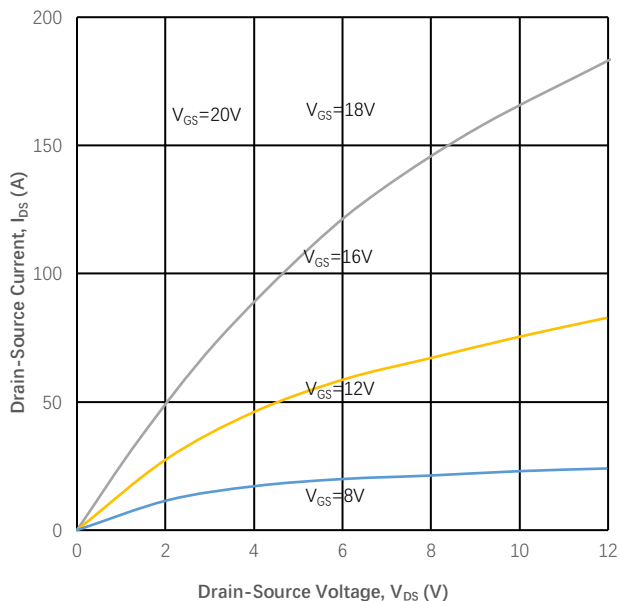


Figure 1
Output Characteristics ($T_J = 25^\circ\text{C}$)

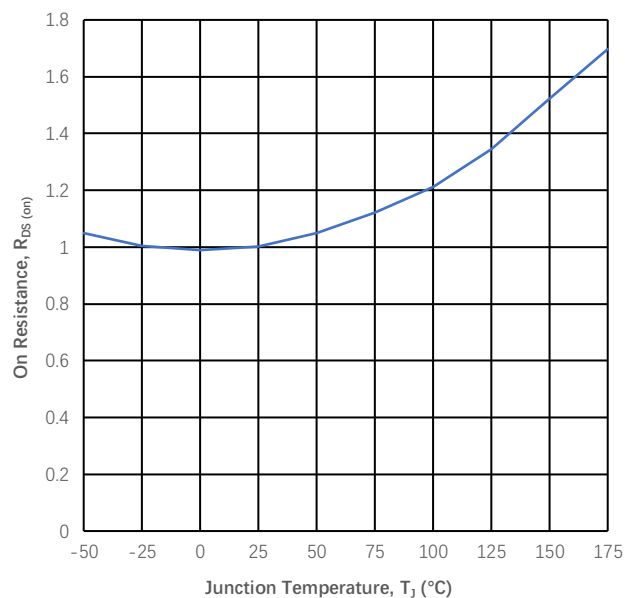


Figure 2
Normalized On-Resistance vs. Temperature

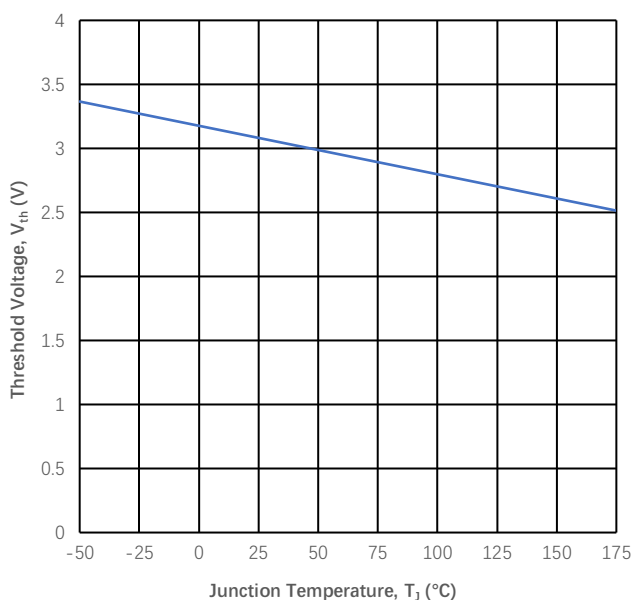


Figure 3
Threshold Voltage vs. Temperature

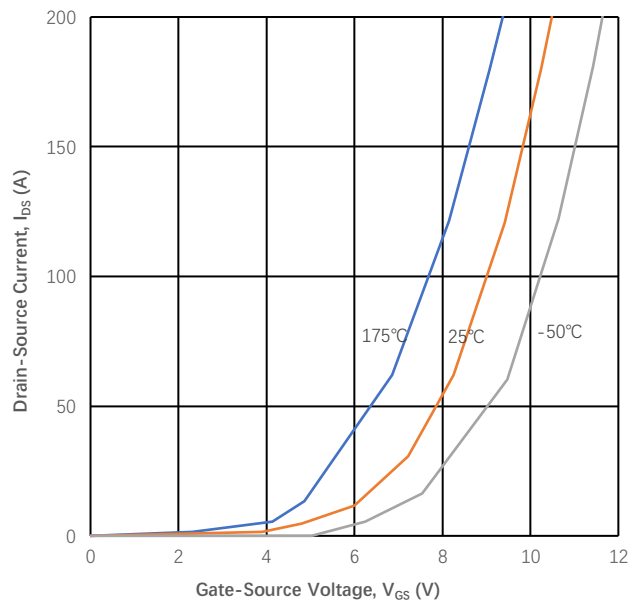


Figure 4
Transfer Characteristic for Various T_J

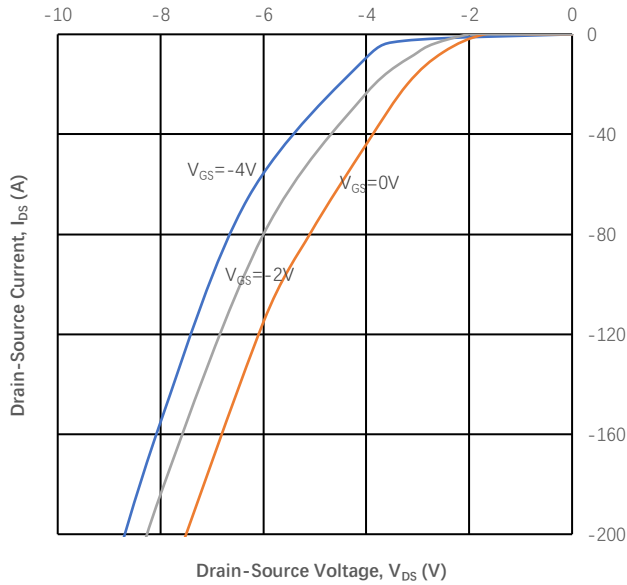


Figure 5
Body Diode Characteristic

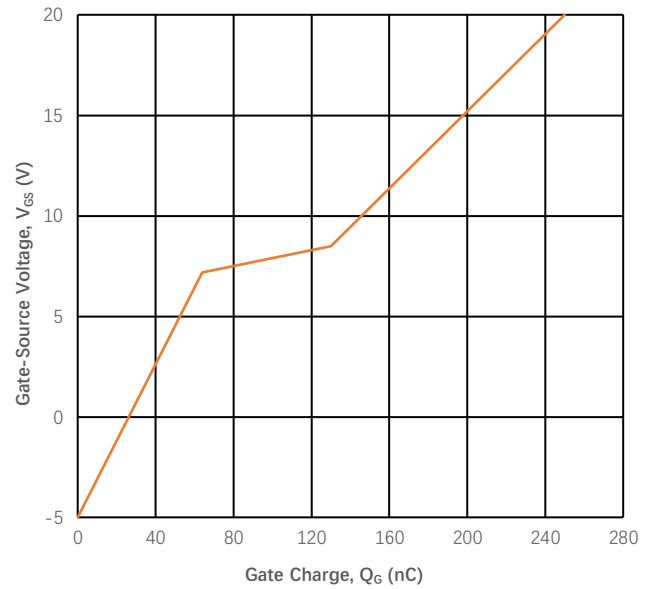


Figure 6
Typical Gate Charge Characteristics

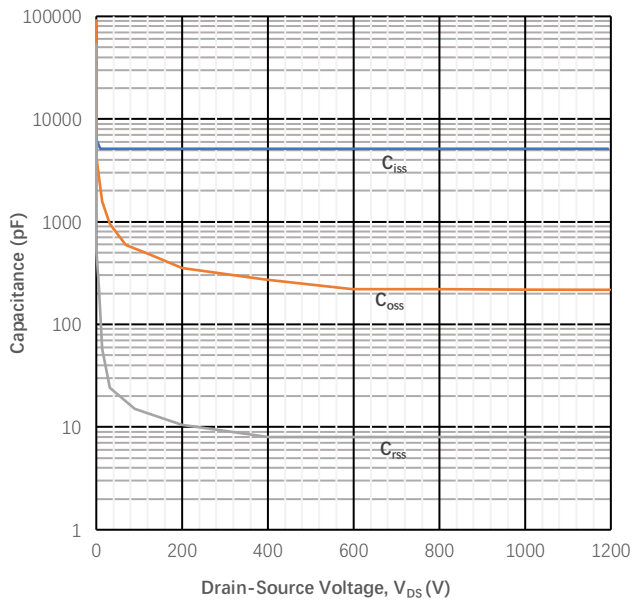


Figure 7
Typical Capacitances vs. Drain-Source Voltage

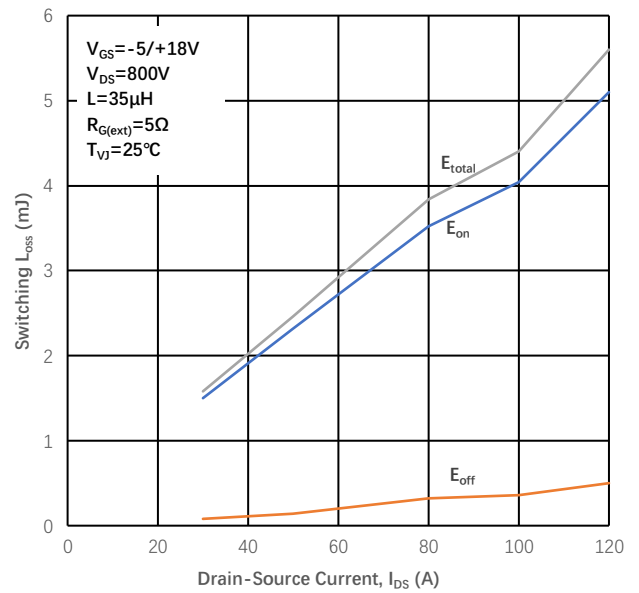


Figure 8
Inductive Switching Energy vs. Drain Current

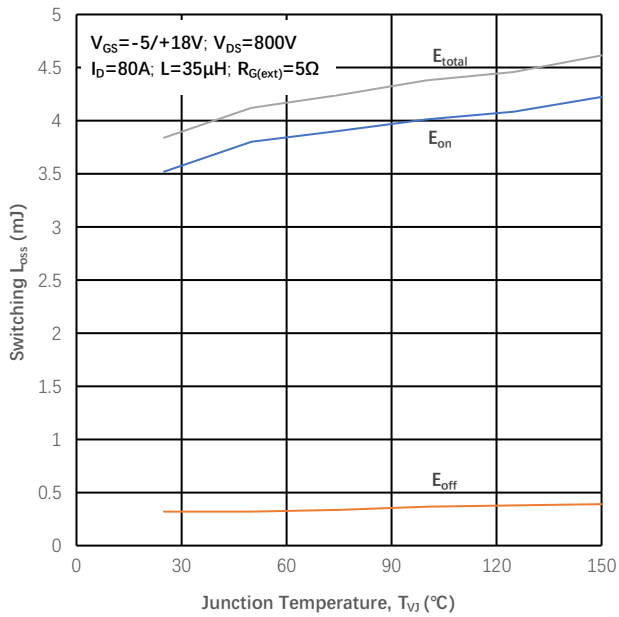


Figure 9

Switching Energy vs. Junction Temperature

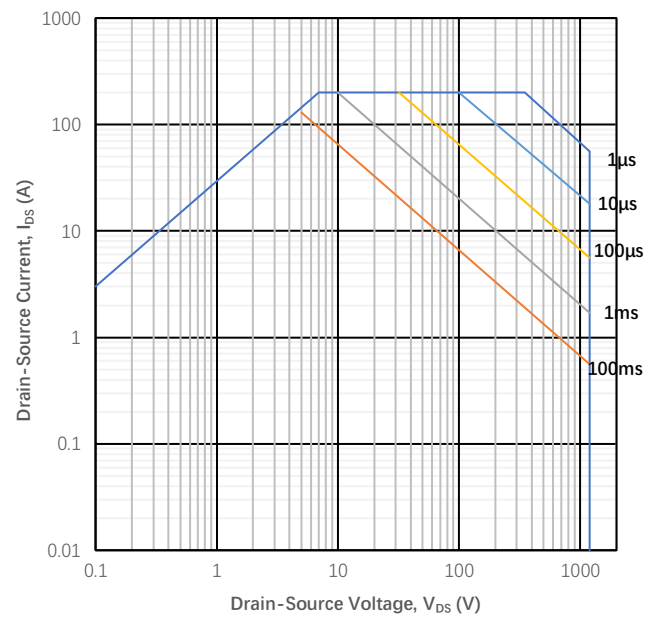
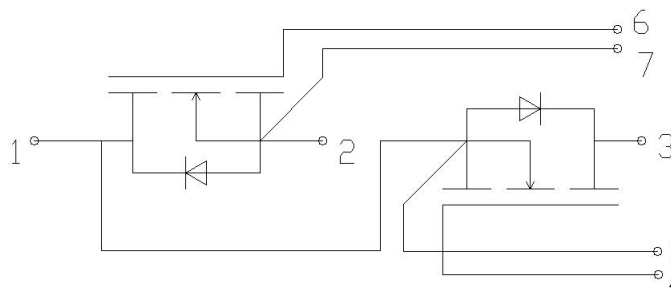
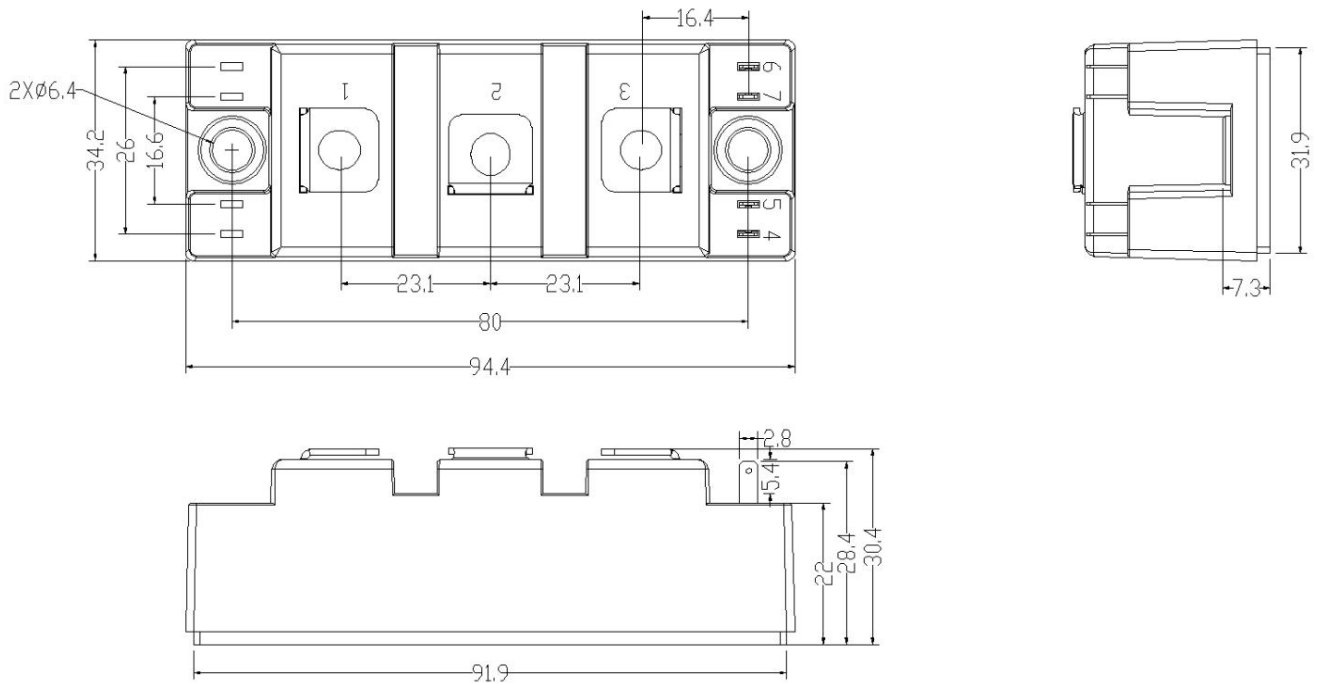


Figure 10

Safe Operating Area

Circuit Diagram



Package Outline(Unit: mm):***Important Usage Information and Disclaimer**

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