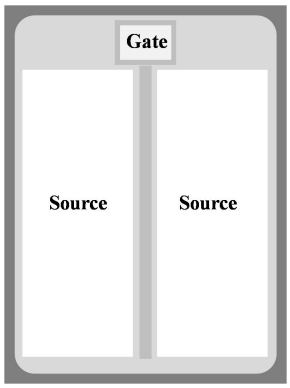
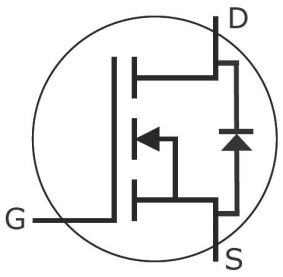
V_{DS}	1200 V
$I_{D@25℃}$	90A
$R_{DS(on)}$	25 mΩ

SiC 功率 MOSFET

N 沟道增强型器件

外观





产品型号	芯片尺寸（mm）
H3M25120L	6.2×4.6

额定参数 （除特别申明外 T_C=25°C）

符号	参数	值	单位	测试条件	备注
V_{DSmax}	源漏电压	1200	V	V_{GS} = 0 V, ID = 100 uA	
V_{GSmax}	最高栅压	-10/+25	V	栅压最大值	
V_{GSop}	工作栅压	-5/+20	V	建议驱动电压	
$I_{D(DC)}$	连续导通电流	90	A	V_{GS}=20V, T_C=25°C	Note 1
		60		V_{GS}=20V, T_J=100°C	
I_{Dpulse}	脉冲导通电流	250	A	Pulse width t_P limited by Tjmax	
T_J, T_{stg}	工作节温，存储温度	-40/+175	°C		
T_{Proc}	封装最高温度	325	°C	10min. maximum	

Note (1): Assumes a $R_{\theta JC}$ < 0.27K/W

电参数（除特别申明外 T_C=25℃）

符号	参数名称	Min.	Typ.	Max.	单位	测试条件
$V_{(BR)DSS}$	源漏击穿电压	1200	/	/	V	V_{GS}=0V, I_{DS}=100μA
$V_{GS(th)}$	栅阈值电压	1.9	2.4	/	V	V_{DS}=V_{GS}, I_{DS}=15mA,
		/	1.6	/		V_{DS}=V_{GS}, I_{DS}=15mA, T_J=175℃
I_{DSS}	零栅压漏极电流	/	1	100	μA	V_{DS}=1200V, V_{GS}=0V
I_{GSS}	栅源漏电	/	10	100	nA	V_{GS}=20V ,V_{DS}=0V,
$R_{DS(on)}$	通态源漏电阻	/	25	34	mΩ	V_{GS}=20V, I_D=50A
		/	43	/		V_{GS}=20V, I_D=50A, T_J=175℃
g_{fs}	跨导	/	22.8	/	S	V_{DS} = 20 V, I_D = 50 A
		/	21.2	/		V_{DS} = 20 V, I_D = 50 A, T_J = 175 ℃
C_{iss}	输入电容	/	3600	/	pF	V_{GS} = 0 V V_{DS} = 1000 V f = 1 MHz V_{AC} = 25 mV
C_{oss}	输出电容	/	240	/		
C_{rss}	反向转换电容	/	16	/		
E_{oss}	Coss 存储能量	/	122	/	μJ	
E_{AS}	单次雪崩耐量	/	3.5	/	J	I_D = 50A, V_{DD} = 50V
E_{ON}	开通开关损耗	/	1.8	/	mJ	V_{DS} = 800 V, V_{GS} = -5/20 V, I_D = 50A, $R_{G(ext)}$ = 2.5Ω,L= 412 μH
E_{OFF}	关断开关损耗	/	1.5	/		
$t_{d(on)}$	上升延迟时间	/	16	/	ns	V_{DD} = 800 V, V_{GS} = -5/20 V I_D = 50 A, $R_{G(ext)}$ = 2.5 Ω, R_L = 16 Ω
t_r	上升时间	/	16.2	/		
$t_{d(off)}$	下降延迟时间	/	33	/		
t_f	下降时间	/	7.8	/		
$R_{G(int)}$	内部栅阻		2		Ω	f = 1 MHz, VAC = 25 mV, ESR of CISS
Q_{gs}	栅源电荷		54		nC	V_{DS} = 800 V, V_{GS} = -5/20 V I_D = 50 A
Q_{gd}	栅漏电荷		29			
Q_g	总栅电荷		195			

体二极管特性（除特别申明外 T_C=25℃）

参数	符号	最小值	典型值	最大值	单位	测试条件	备注
V_{SD}	正向压降	/	5.4	/	V	V_{GS}=-5V, I_F=25A	
		/	5.0	/	V	V_{GS}=-5V, I_F=25A，T_J=175℃	
I_S	连续二极管正向电流	/	/	98	A	T_C = 25 ℃	
t_{rr}	反向恢复时间	/	55	/	μS	V_{DS}=800V V_{GS}=-5V/20V I_F=25A dif/dt=1000A/us	
Q_{rr}	反向恢复电荷	/	220	/	μC		
I_{rrm}	反向恢复峰值电流	/	6.7	/	A		

器件典型特性

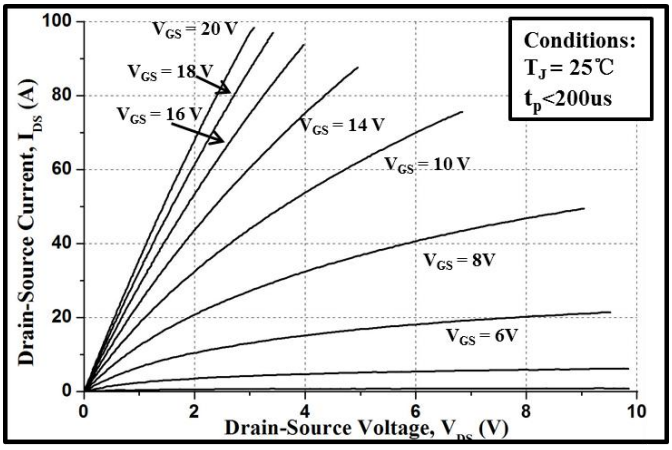


Figure 1. Typical Output Characteristics T_J=25°C

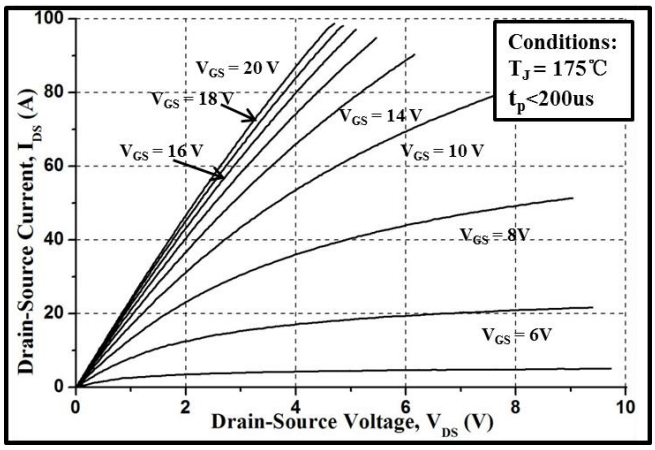


Figure 2. Typical Output Characteristics T_J=175°C

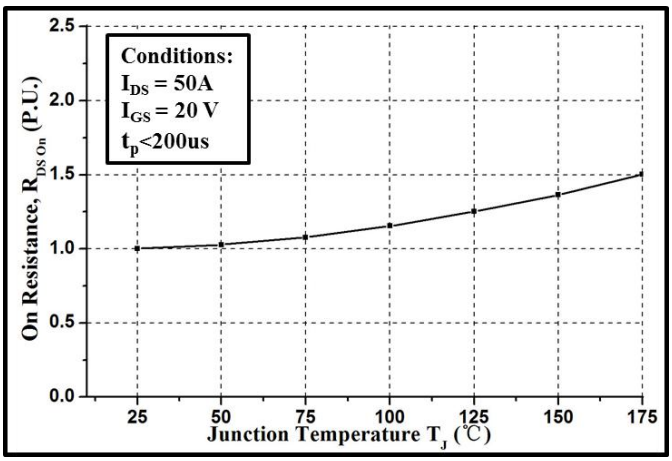


Figure 3. Normalized On-Resistance vs. Temperature

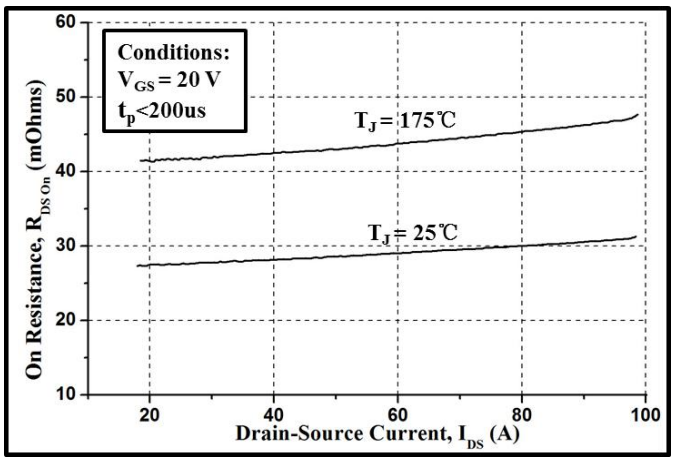


Figure 4. On-Resistance vs. Drain Current

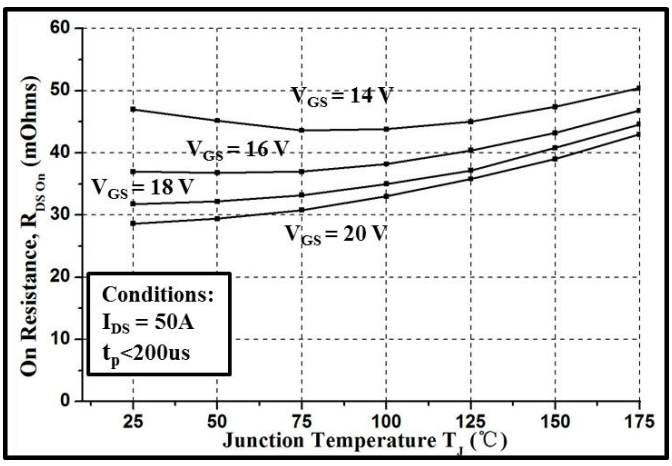


Figure 5. On-Resistance vs. Temperature

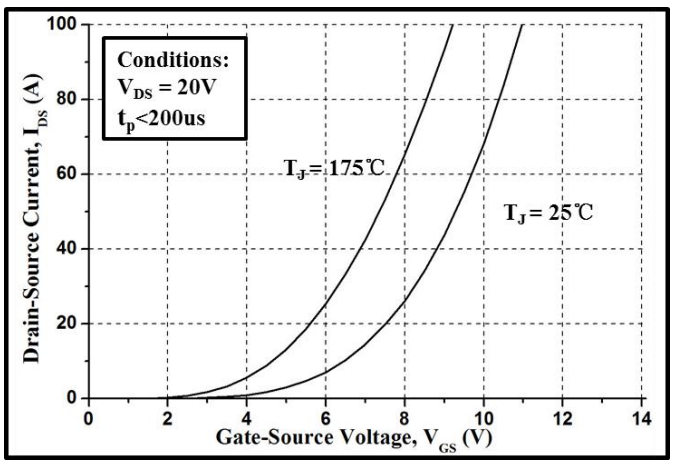


Figure 6. Typical Transfer Characteristics

器件典型特性

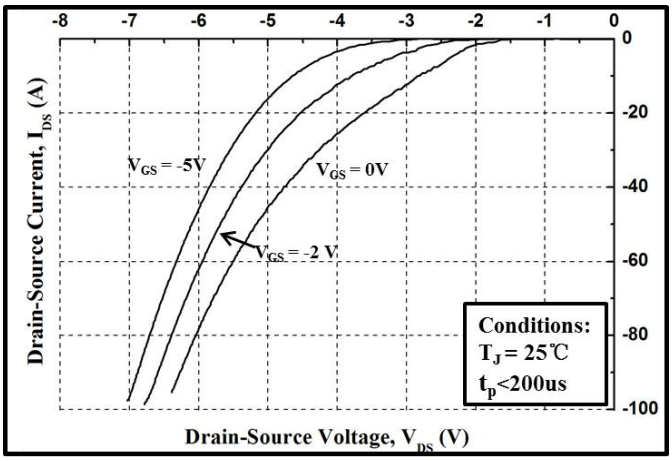


Figure 7. Body Diode Characteristics at 25° C

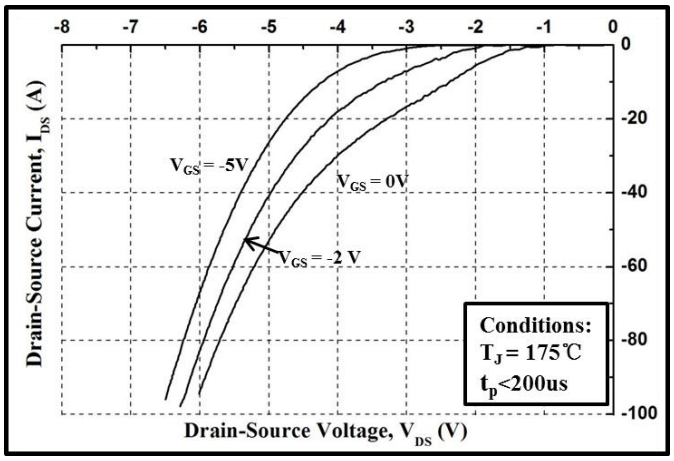


Figure 7. Body Diode Characteristics at 175°C

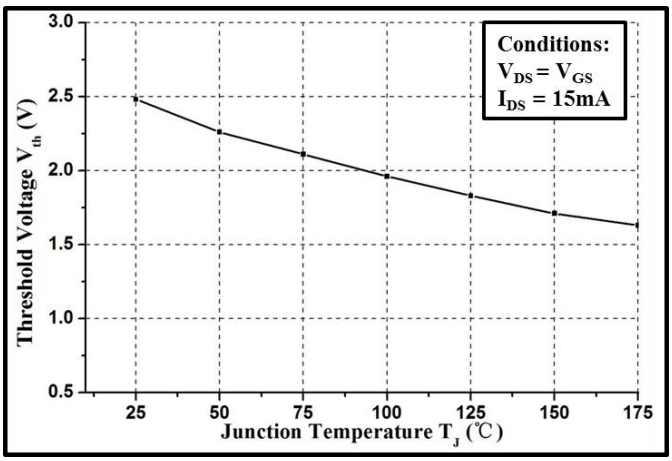


Figure 9. Gate Threshold Voltage vs. Temperature

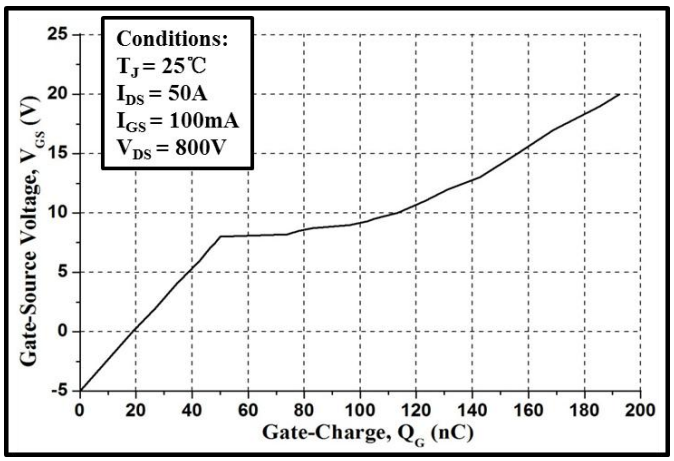


Figure 10. Gate Charge Characteristic

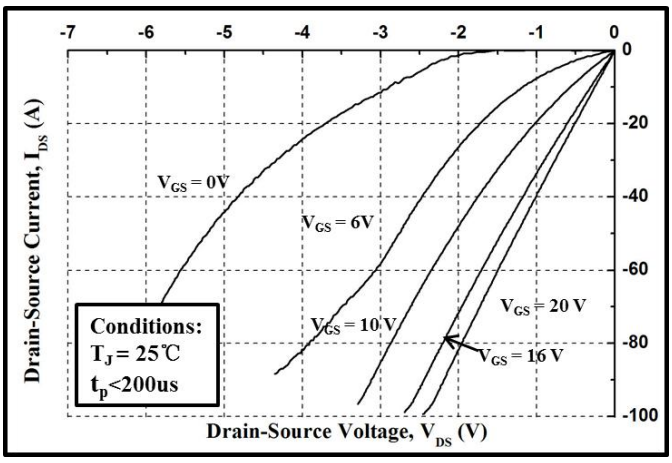


Figure 11. 3rd Quadrant Characteristics at 25° C

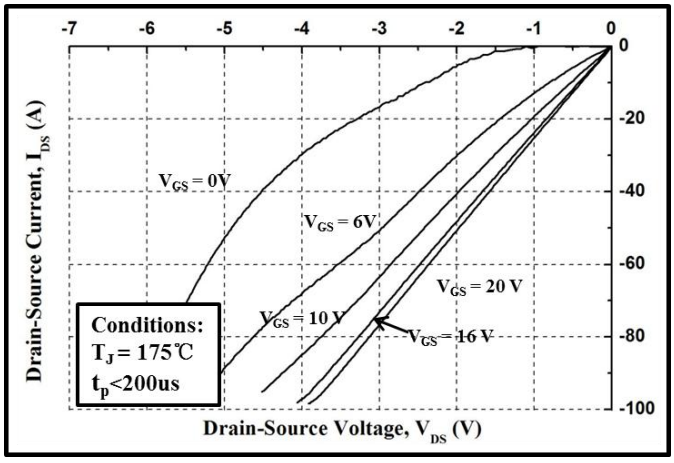


Figure 12. 3rd Quadrant Characteristics at 175° C

器件典型特性

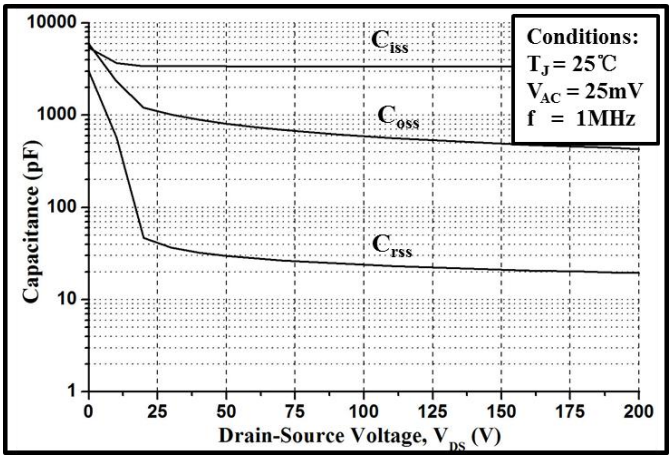


Figure 13. Capactances vs. Drain-Source Voltage

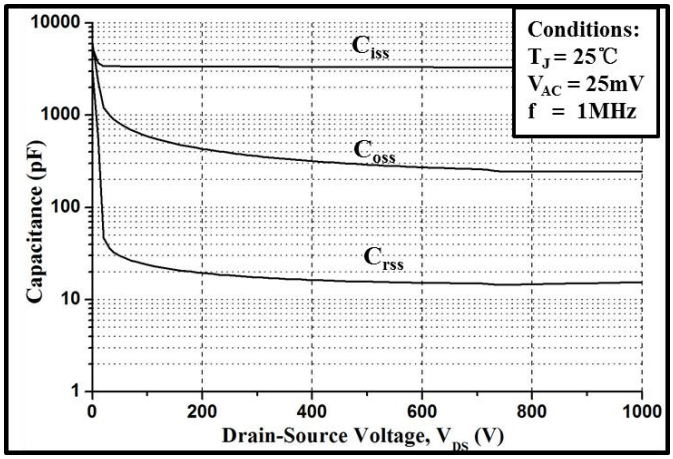


Figure 14. Capactances vs. Drain-Source Voltage

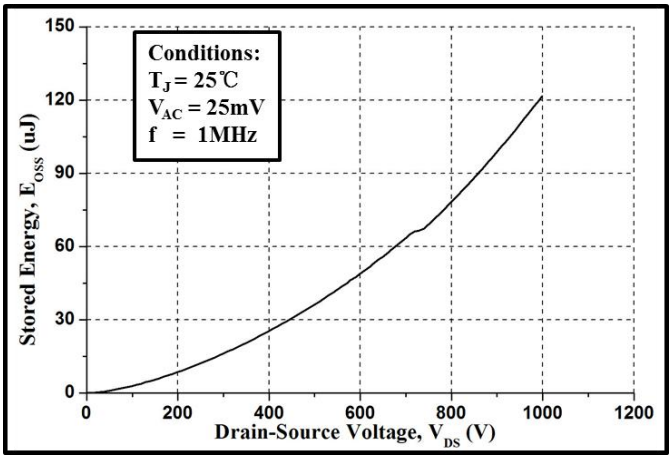


Figure 15. Output Capacitor Stored Energy

机械参数

参数	典型值	单位
芯片尺寸	4.6×6.2	mm
栅极压块窗口	0.44×0.64	mm
源极压块窗口	1.8×4.17(×2)	mm
芯片厚度	360±50	μm
栅极金属化（Al）	4	μm
源极金属化（Al）	4	μm
漏极金属化（Ni/Ag）	0.4/1.2	μm

芯片尺寸