

关键参数
Key Parameters

V_{DSmax}		1200	V
$R_{DS(on)}$	Typ.	13	mΩ
I_D	Max.	155	A
Die Size		6.00×5.00	mm ²

特点
Features

- 高开关频率 High Switching Frequency
- 低开关损耗 Low Switching Loss
- 软、快速开关 Soft, fast Switching
- 易并联使用 Easy Paralleling

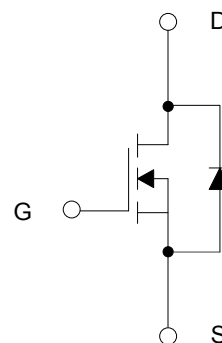
电路结构
Circuit Configuration


图 1. 电路结构

Fig. 1 Circuit configuration

最大额定值
Maximum Ratings

符号 Symbol	参数名称 Parameter	数值 Value	单位 Unit
V_{DSmax}	漏源极电压 Drain-source voltage	1200	V
V_{GSS}	栅源电压 Gate-source voltage	-8/+23	V
V_{GSop}	栅源电压 Gate-source voltage	-4/+18	V
I_D	持续正向电流, 由 $T_{vj\ max}$ 限制 Continuous forward current, limited by $T_{vj\ max}$	155	A
I_{DM}	最大重复正向电流, 由 $T_{vj\ max}$ 限制 Maximum repetitive forward current, limited by $T_{vj\ max}$	310	A
$T_{vj\ max}$	最大允许结温 Max. Junction temperature	175	°C
$T_{vj(op)}$	工作结温 Operation junction temperature	-40...+175	°C
$T_{Proc}^{(*1)}$	最大加工温度 Maximum processing temperature	325	°C

电特性值
Electrical Characteristics

除非特别声明, 否则 $T_{vj}=25\text{ }^{\circ}\text{C}$
 $T_{vj}=25\text{ }^{\circ}\text{C}$ unless otherwise stated

符号 Symbol	参数名称 Parameter	测试条件 Test Conditions	最小值 Min.	典型值 Typ.	最大值 Max.	单位 Unit
I_{DSS}	零栅压漏极电流 Zero gate voltage drain current	$V_{GS}=0V, V_{DS}=V_{DSS}$			20	μA
		$V_{GS}=0V, V_{DS}=V_{DSS}, T_{vj}=175\text{ }^{\circ}\text{C}$			20	μA
I_{GSS}	栅极漏电流 Gate leakage current	$V_{GS}=V_{GSS}, V_{DS}=0V$			100	nA
$V_{GS(th)}^{(*2)}$	栅极-源极阈值电压 Gate threshold voltage	$I_D=10\text{ mA}, V_{GS}=V_{DS}$	2.0	2.6	3.2	V
$R_{DS(on)}$	漏极-源极通态电阻 Drain-source on-state resistance	$V_{GS}=18V, I_D=78A$		13	16	m Ω
		$V_{GS}=18V, I_D=78A, T_{vj}=175\text{ }^{\circ}\text{C}$		20		m Ω
g_{fs}	跨导 Forward transconductance	$V_{DS}=20V, I_D=155A$		87		S
C_{iss}	输入电容 Input capacitance	$V_{DS}=1000V, V_{GS}=0V,$ $f=100\text{ kHz}, V_{AC}=25\text{ mV}$		5678		pF
C_{oss}	输出电容 Output capacitance			308		pF
C_{rss}	反向传输电容 Reverse transfer capacitance			21		pF
E_{oss}	电容存储能量 C_{oss} Stored Energy			154		μJ
R_{Gint}	内部栅极电阻 Internal gate resistor	$V_{GS}=0V$		7.0		Ω
Q_{gs}	栅源电荷 Gate to source charge	$I_D=155A, V_{DS}=800V, V_{GS}=-4/+18V$		63		nC
Q_{gd}	栅漏电荷 Gate to drain charge			155		nC
Q_g	总栅极电荷 Total gate charge			251		nC
V_{SD}	二极管正向电压 Diode forward voltage	$I_{SD}=78A, V_{GS}=-4V$		4.6		V
		$I_{SD}=78A, V_{GS}=-4V, T_{vj}=175\text{ }^{\circ}\text{C}$		4.2		V

注意: 1. (*1) 表示最长持续时间 10min ((*1) indicates 10min, maximum);

Note: 2. (*2) 表示做过预处理后的测试值 ((*2) indicates $V_{GS(th)}$ is preprocessed);

电特性值
Electrical Characteristics

符号 Symbol	参数名称 Parameter	测试条件 Test Conditions		最小值 Min.	典型值 Typ.	最大值 Max.	单位 Unit
$t_{d(off)}$	关断延迟时间 Turn-off delay time	I_D =155A, V_{DS} = 800V, V_{GS} = -4/+18V, $R_{G(OFF)}$ =1.2Ω, dv/dt =36100V/μs (T_{vj} = 175 °C)	T_{vj} = 25 °C		78		ns
			T_{vj} = 175 °C		98		
t_f	下降时间 Fall time		T_{vj} = 25 °C		40		ns
			T_{vj} = 175 °C		44		
E_{OFF}	关断损耗 Turn-off energy loss		T_{vj} = 25 °C		3140		μJ
			T_{vj} = 175 °C		3520		
$t_{d(on)}$	开通延迟时间 Turn-on delay time	I_D =155A, V_{DS} = 800V, V_{GS} = -4/+18V, $R_{G(ON)}$ =3.0Ω, di/dt =3330A/μs (T_{vj} = 175 °C)	T_{vj} = 25 °C		58		ns
			T_{vj} = 175 °C		54		
t_r	上升时间 Rise time		T_{vj} = 25 °C		48		ns
			T_{vj} = 175 °C		40		
E_{ON}	开通损耗 Turn-on energy loss		T_{vj} = 25 °C		4250		μJ
			T_{vj} = 175 °C		4790		
Q_{rr}	二极管反向恢复电荷 Diode reverse recovery charge	I_D =155A, V_{DS} = 800V, - di_{SD}/dt = 3330A/μs (T_{vj} = 175 °C)	T_{vj} = 25 °C		1000		nC
			T_{vj} = 175 °C		1000		
I_{rr}	二极管反向恢复电流 Diode reverse recovery current		T_{vj} = 25 °C		25		A
			T_{vj} = 175 °C		59		

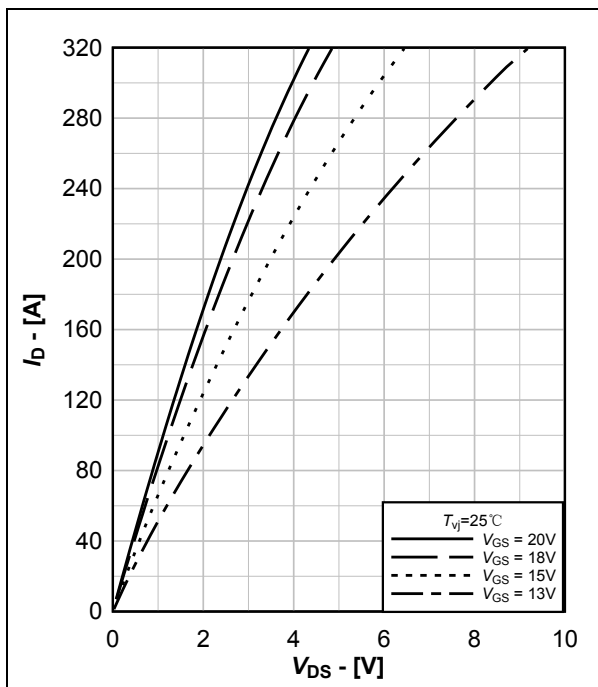


图 2. 输出特性典型曲线, $I_D = f(V_{DS})$, $T_{vj} = 25\text{ }^{\circ}\text{C}$

Fig.2 Typical output characteristics, $I_D = f(V_{DS})$, $T_{vj} = 25\text{ }^{\circ}\text{C}$

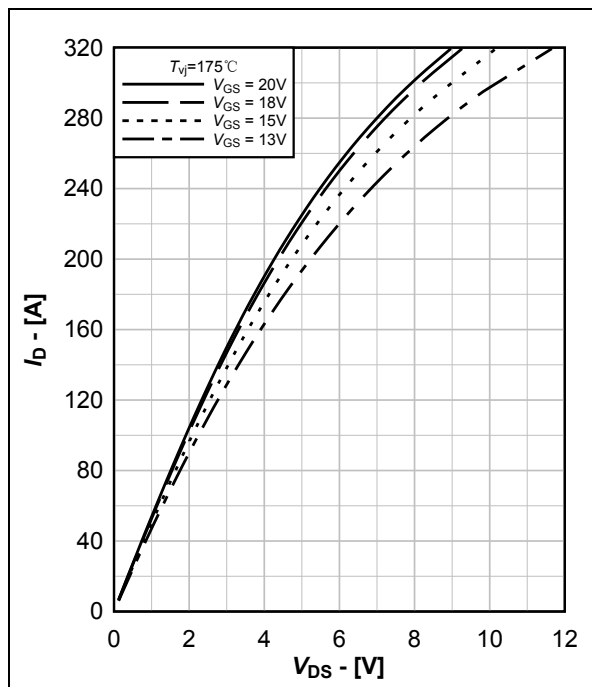


图 3. 输出特性典型曲线, $I_D = f(V_{DS})$, $T_{vj} = 175\text{ }^{\circ}\text{C}$

Fig.3 Typical output characteristics, $I_D = f(V_{DS})$, $T_{vj} = 175\text{ }^{\circ}\text{C}$

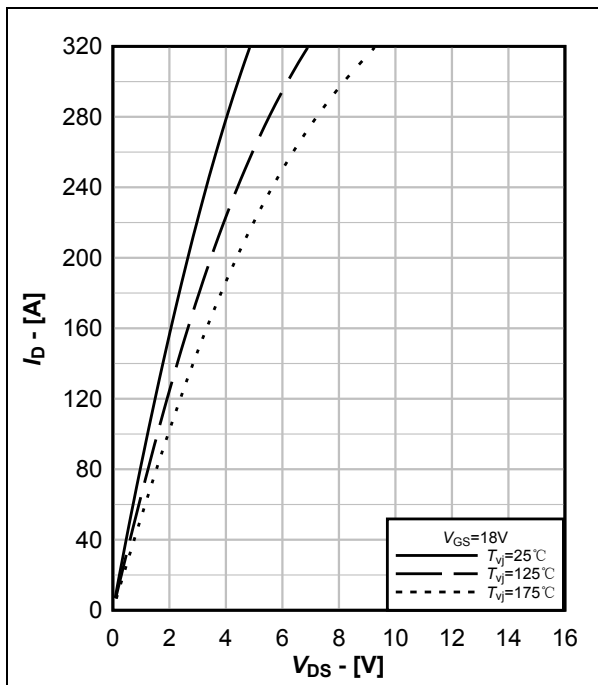


图 4. 输出特性典型曲线, $I_D = f(V_{DS})$

Fig.4 Typical output characteristics, $I_D = f(V_{DS})$

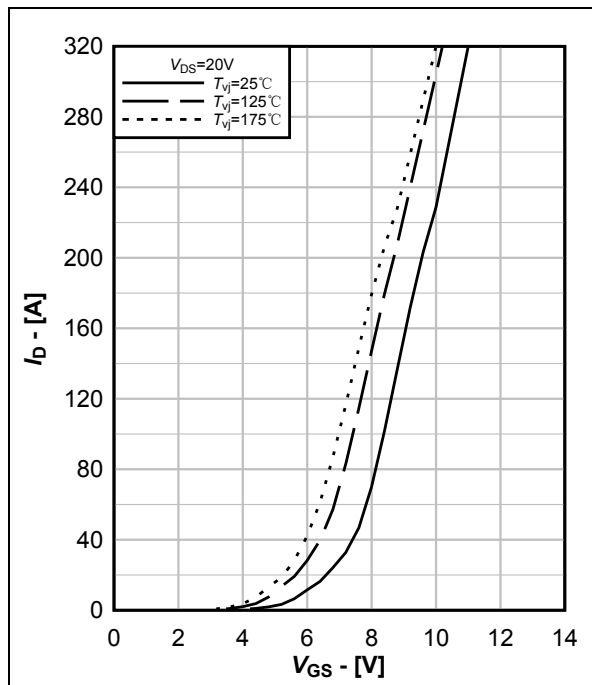


图 5. 传输特性典型曲线, $I_D = f(V_{GS})$

Fig.5 Typical transfer characteristics, $I_D = f(V_{GS})$

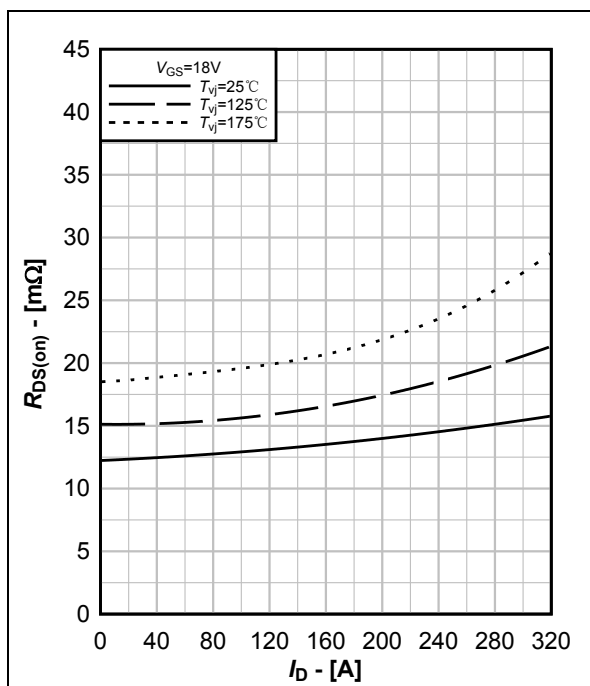

 图 6. 导通电阻典型曲线, $R_{DS(on)} = f(I_D)$

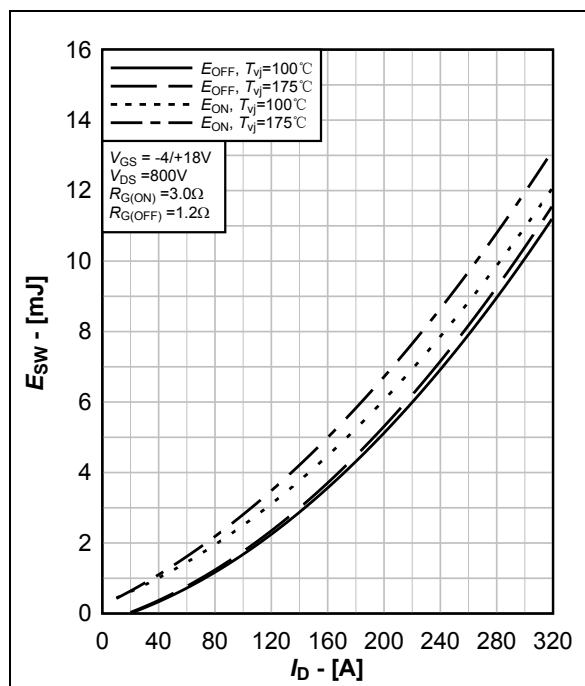
 Fig.6 Typical On-Resistance characteristics, $R_{DS(on)} = f(I_D)$

 图 7. MOSFET 开关损耗典型曲线, $E_{off} = f(I_D)$, $E_{on} = f(I_D)$

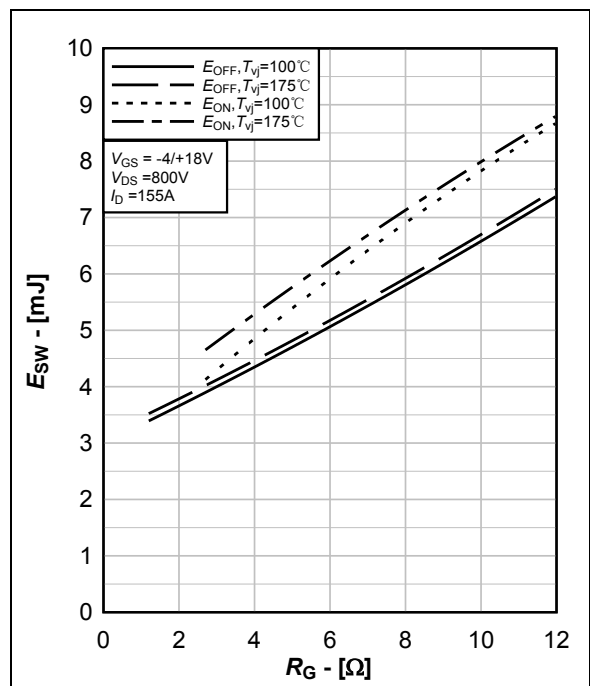
 Fig.7 Typical MOSFET switching energy, $E_{off} = f(I_D)$, $E_{on} = f(I_D)$

 图 8. MOSFET 开关损耗典型曲线, $E_{on} = f(R_G)$, $E_{off} = f(R_G)$

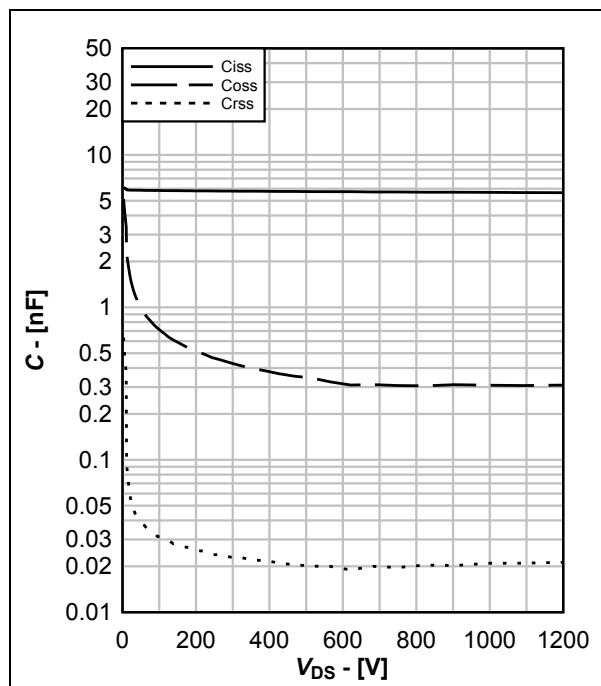
 Fig.8 Typical MOSFET switching energy, $E_{on} = f(R_G)$, $E_{off} = f(R_G)$

 图 9. 电容特性典型曲线, $C = f(V_{DS})$

 Fig.9 Typical capacity characteristics, $C = f(V_{DS})$

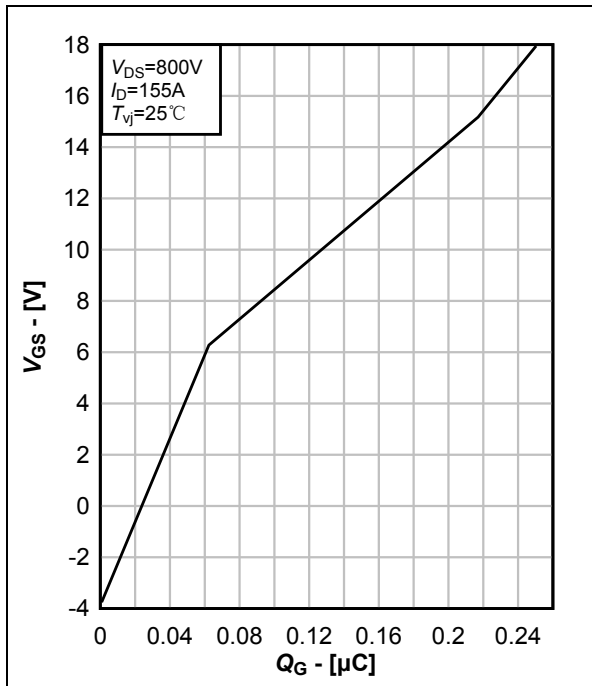


图 10. 栅极电荷特性典型曲线, $V_{GS} = f(Q_G)$

Fig.10 Typical gate charge characteristic, $V_{GS} = f(Q_G)$

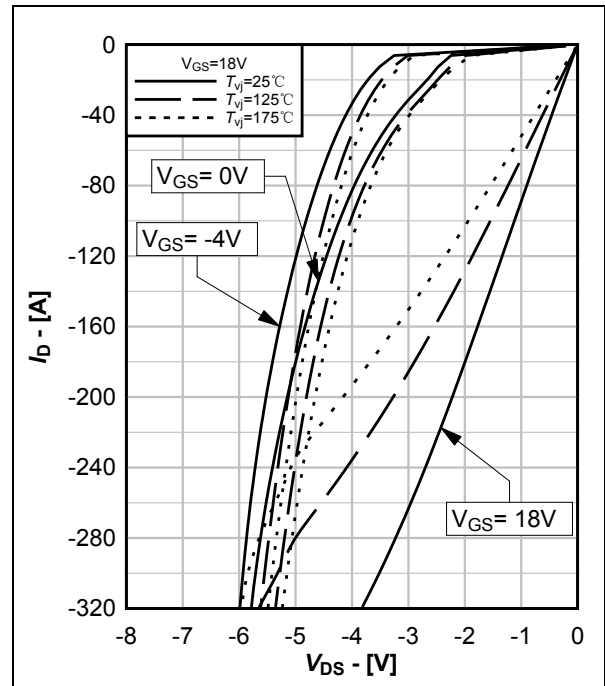


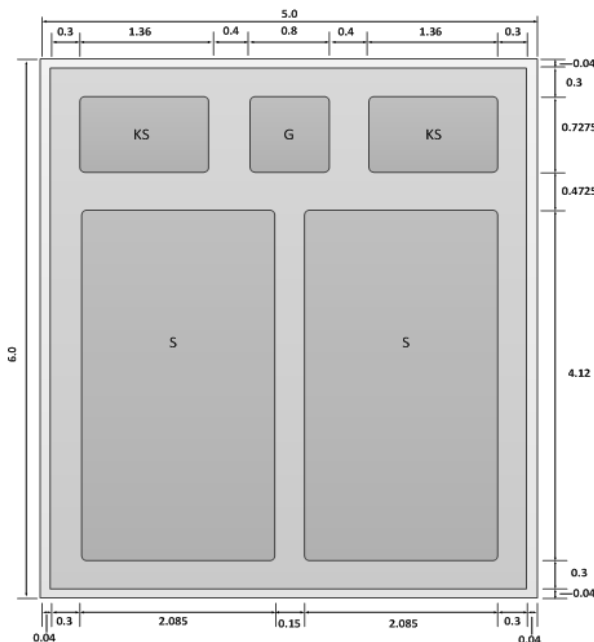
图 11. 体二极管及第三象限输出特性典型曲线, $I_D = f(V_{DS})$

Fig.11 Typical body diode output and 3rd quadrant characteristics,

$$I_D = f(V_{DS})$$

工艺参数值
Mechanical Parameters

芯片尺寸 Chip size	6.00×5.00	mm ²
源极键合区尺寸(不包含开尔文源级) Source pad size (excl. Kelvin Source pad)	2×(2.08×4.12)	mm ²
栅极键合区尺寸 Gate pad size	0.8×0.72	mm ²
总面积 Area total	30.00	mm ²
厚度 Thickness	150±10	μm
晶圆尺寸 Wafer size	150	mm
每片晶圆上最大芯片数 Max. possible chips per wafer	462	
正面金属 Frontside (Source and Gate) metal	Ni:Pd:Au (2.0:0.2:0.1μm)	
背面金属 Backside (Drain) metal	Ni:Pd:Au (2.0:0.2:0.1μm)	
正面钝化 Passivation frontside	Polyimide	
建议存储环境 Recommended storage environment	存储在原始容器中, 23°C 干燥氮气柜小于 6 个月 Store in original container, in dry nitrogen, <6 months at an ambient temperature of 23°C	



S=源极 G=栅极 KS=开尔文源极 单位: 毫米

S=Source G=Gate KS=Kelvin Source Unit: mm

图 12. 芯片外观尺寸

Fig. 12 Chip drawing

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