

N-沟道功率 MOS 管/ N-CHANNEL POWER MOSFET

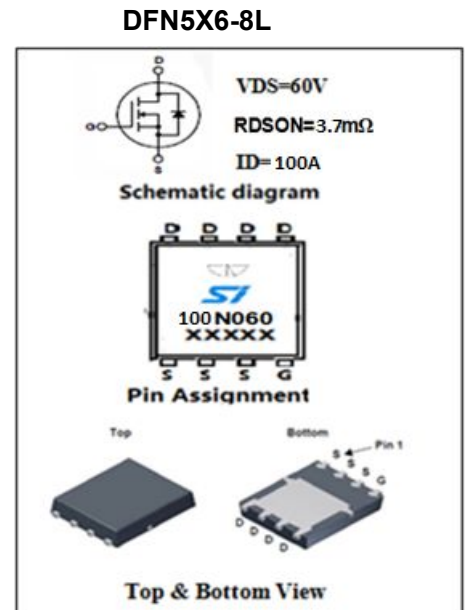
SIF100N060

- 特点：热阻低 导通电阻低 栅极电荷低，开关速度快 输入阻抗高 符合RoHS规范
- FEATURES: ■LOW THERMAL RESISTANCE ■LOW $R_{DS(ON)}$ TO MINIMIZE CONDUCTIVE LOSS ■LOW GATE CHARGE FOR FAST SWITCHING ■HIGH INPUT RESISTANCE ■RoHS COMPLIANT
- 应用：低压高频逆变电路 同步整流 开关
- APPLICATION: ■LOW VOLTAGE,HIGH FREQUENCY INVERTERS ■SYNCHRONOUS RECTIFIER ■PRIMARY SWITCH

●最大额定值 (TC=25°C)

●Absolute Maximum Ratings (Tc=25°C)

参数 PARAMETER	符号 SYMBOL	额定值 VALUE	单位 UNIT
漏-源电压 Drain-source Voltage	V_{DS}	60	V
栅-源电压 gate-source Voltage	V_{GS}	± 20	V
漏极电流 Continuous Drain Current TC=25°C ①	I_D	100	A
耗散功率 Total Power Dissipation ①	P_{tot}	80	W
最高结温 Junction Temperature	T_J	150	°C
存储温度 Storage Temperature	T_{STG}	-55-175	°C
单脉冲雪崩能量 Single Pulse Avalanche Energy ②	E_{AS}	390	mJ



●电特性 (Tc=25°C)

●Electronic Characteristics (Tc=25°C)

参数 PARAMETER	符号 SYMBOL	测试条件 TEST CONDITION	最小值 MIN	典型值 TYP	最大值 MAX	单位 UNIT
漏-源击穿电压 Drain-source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	60	65		V
栅极开启电压 Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.0	1.8	2.5	V
漏-源漏电流 Drain-source Leakage Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V,$			1	μA
栅极漏电流 Gate-body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			±100	nA
漏-源导通电阻 Static Drain-source On Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=24A$		3.7	5.5	mΩ
		$V_{GS}=4.5V, I_D=12A$		4.4	7	
跨导 Forward Transconductance	g_{FS}	$V_{DS}=10V, I_D=10A$		36		S

●订单信息/ORDERING INFORMATION:

包装形式/PACKING	订货编码/ORDERING CODE
DFN5X6-8L 编带装/TAPE & REEL PACKING	SIF100N060 DFN5X6-8L-TR-HF

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参数 PARAMETER	符号 SYMBOL	测试条件 TEST CONDITION	最小值 MIN	典型值 TYP	最大值 MAX	单位 UNIT
输入电容 Input Capacitance	Ciss	$V_{GS} = 0V, V_{DS} = 25V$ $F = 1.0MHz$		5500		pF
输出电容 Output Capacitance	Coss			520		
反向传输电容 Reverse Transfer Capacitance	Crss			400		
栅极电荷 Total Gate Charge	Qg	$I_D = 50A, V_{DS} = 48V$ $V_{GS} = 10V$		122		nC
栅源电荷 Gate-to-Source Charge	Qgs			21		nC
栅漏电荷 Gate-to-Drain Charge	Qgd			35		nC
导通延迟 Turn -On Delay Time	Td(on)	$V_{DD} = 50V, I_D = 20A$ $V_{GS} = 10V, R_{GEN} = 2.5\Omega$		13		ns
开启上升时间 Turn -On Rise Time	T _r			20		ns
关断延迟 Turn -Off Delay Time	Td(off)			47		ns
关断下降时间 Turn -Off Fall Time	T _f			25		ns
二极管正向压降 Diode Forward Voltage	V _{SD}	$T_j = 25^\circ C, I_F = 10A$ $V_{GS} = 0V$ ③			1.2	V
反向恢复时间 Reverse Recovery Time	t _{rr}	$I_f = 20A, di/dt = 500A/\mu s$ $T_j = 25^\circ C$ ③		25		ns
反向恢复电荷 Reverse Recovery Charge	Q _{rr}			125		nC

●热特性

● Thermal Characteristics

参数 PARAMETER	符号 SYMBOL	最大值 MAX	单位 UNIT
热阻结-壳 Thermal Resistance Junction-case	R _{thJC}	1.56	°C/W
热阻结-环境 Thermal Resistance Junction-ambient	R _{thJA}	55	°C/W

注释(Notes):

- ① 以最高结温为限制， T_c=25°C时测试。
I_D & P_D base on maximum allowable junction temperature, test at T_c=25°C.
- ② 初始结温=25°C, L=0.1mH.
Starting T_j=25°C, L=0.1mH
- ③ 脉冲测试: 脉冲宽度 ≤ 300μs , 占空比 ≤ 2%
Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%

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● 特性曲线

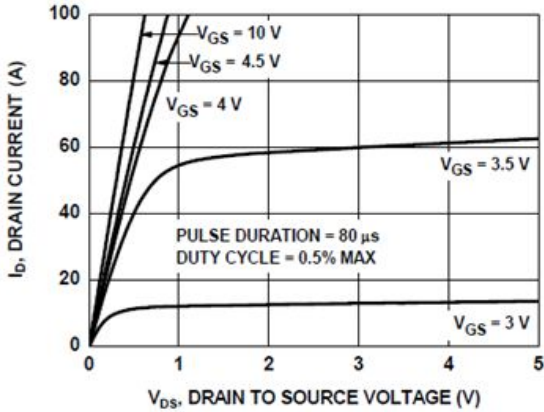


Figure 1 Output Characteristics

图 1 输出特性曲线, $T_c=25^\circ\text{C}$

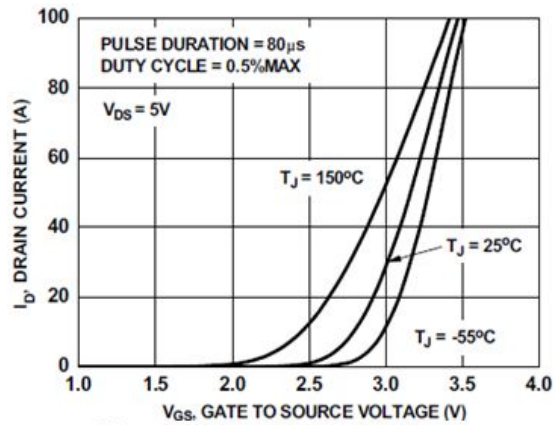


Figure 2. Transfer Characteristics

图 2 转移特性曲线

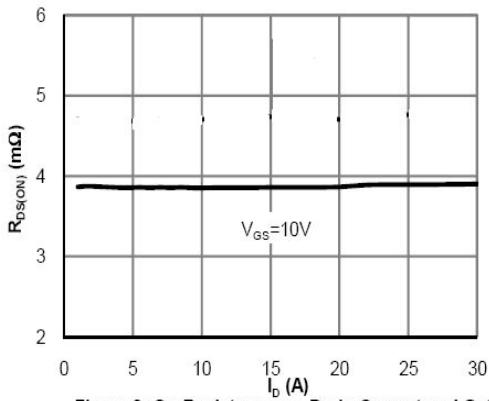


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

图 3 导通电阻与漏极电流 曲线

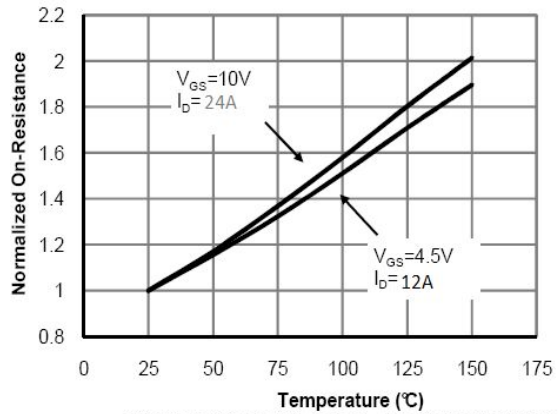


Figure 4: On-Resistance vs. Junction Temperature

图 4 导通电阻与结温度 曲线

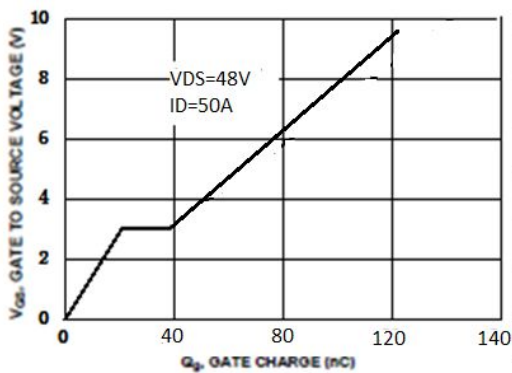


Figure 5 Gate Charge

图 5 栅电荷 曲线

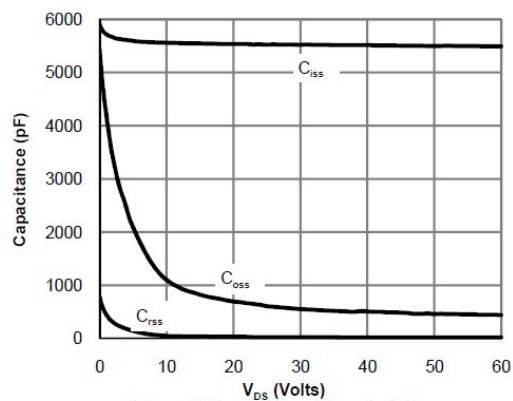


Figure 8: Capacitance Characteristics

图 6. 电容特性曲线

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● 特性曲线

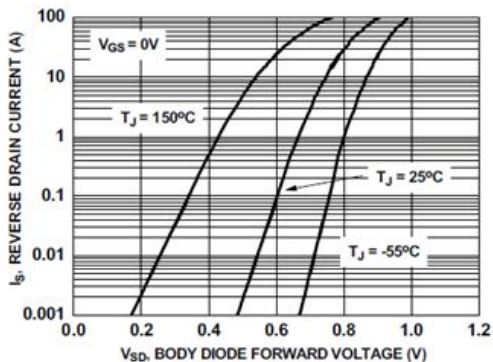


Figure 7. Source to Drain Diode Forward Voltage vs Source Current

图 7 二极管正向压降与源极电流 曲线

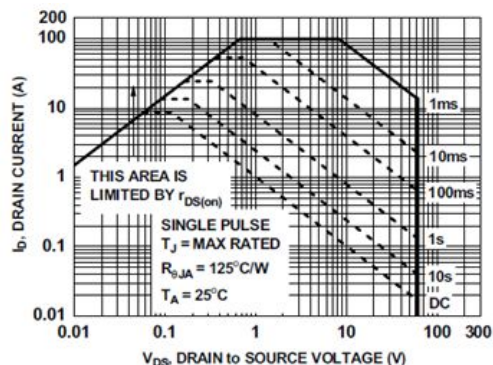


Figure 8. Forward Bias Safe Operating Area

图 8 SOA 曲线

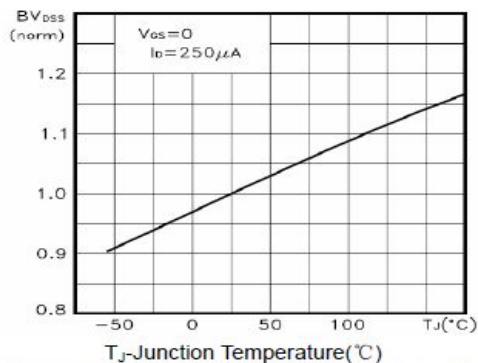


Figure 9 BV_{DSS} vs Junction Temperature

图 9 BVDSS-结温曲线

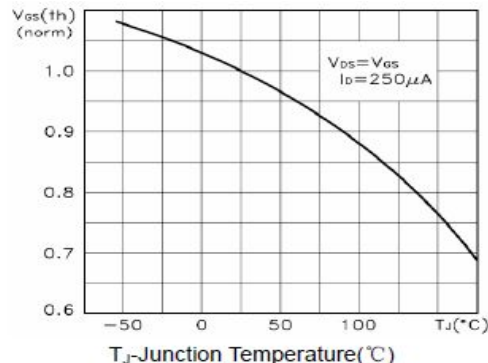


Figure 10 V_{GS(th)} vs Junction Temperature

图 10 VTH-结温曲线

DFN5X6-8L 封装机械尺寸 DFN5X6-8L Package Information

单位:毫米/UNIT: mm

符号 SYMBOL	最小值 min	最大值 max	符号 SYMBOL	最小值 min	最大值 max	符号 SYMBOL	最小值 min	最大值 max
A	0.90	1.15	E	5.9	6.1	L2		0.1
b	0.35	0.45	E1	5.7	5.8	θ	8°	12°
c	0.21	0.34	E2	3.34	3.54	P	1.0	1.2
D		5.1	H	0.51	0.71			
D1	4.8	5.0	K	1.1				
D2	3.91	4.11	L	0.51	0.71			
e	1.17	1.37	L1	0.06	0.2			

