

**N-沟道功率 MOS 管/ N-CHANNEL POWER MOSFET**

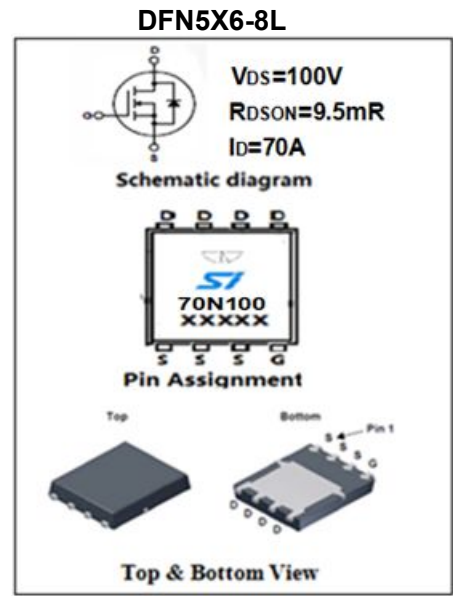
**SIF70N100**

- 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	$V_{DS}$	100	V
栅-源电压 gate-source Voltage	$V_{GS}$	±20	V
漏极电流 Continuous Drain Current TC=25°C ①	$I_D$	70	A
耗散功率 Total Power Dissipation ①	$P_{tot}$	62.5	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	$E_{AS}$	600	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	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	100	110		V
栅极开启电压 Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.4		3	V
漏-源漏电流 Drain-source Leakage Current	$I_{DSS}$	$V_{DS}=80V, V_{GS}=0V,$			1	$\mu A$
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	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$		9.5	12	mΩ
		$V_{GS}=4.5V, I_D=9.5A$		12.5	15.5	
跨导 Forward Transconductance	$g_{FS}$	$V_{DS}=5V, I_D=20A$		60		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	SIF70N100 DFN5X6-8L -TR-HF

N-沟道功率 MOS 管/ N-CHANNEL POWER MOSFET

SIF70N100

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	$V_{GS} = 0V, V_{DS} = 30V$ $F = 1.0MHz$		3100		pF
输出电容 Output Capacitance	Coss			355		
反向传输电容 Reverse Transfer Capacitance	Crss			237		
栅极电荷 Total Gate Charge	Qg	$I_D = 20A, V_{DS} = 50V$ $V_{GS} = 10V$		71		nC
栅源电荷 Gate-to-Source Charge	Qgs			12		nC
栅漏电荷 Gate-to-Drain Charge	Qgd			30		nC
导通延迟 Turn -On Delay Time	Td(on)	$V_{DD} = 50V, I_D = 20A$ $V_{GS} = 10V, R_{GEN} = 2.5\Omega$		15		ns
开启上升时间 Turn -On Rise Time	T <sub>r</sub>			50		ns
关断延迟 Turn -Off Delay Time	Td(off)			40		ns
关断下降时间 Turn -Off Fall Time	T <sub>f</sub>			55		ns
二极管正向压降 Diode Forward Voltage	V <sub>SD</sub>	$T_j = 25^\circ C, I_F = 20A$ $V_{GS} = 0V$ ③			1.2	V
反向恢复时间 Reverse Recovery Time	t <sub>rr</sub>	$I_f = 40A, di/dt = 100A/\mu s$ $T_j = 25^\circ C$ ③		38		ns
反向恢复电荷 Reverse Recovery Charge	Q <sub>rr</sub>			53		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 <sub>thJC</sub>	2.0	°C/W

注释(Notes):

- ① 以最高结温为限制， T<sub>c</sub>=25°C时测试。  
I<sub>D</sub> & P<sub>D</sub> base on maximum allowable junction temperature, test at T<sub>c</sub>=25°C.
- ② 初始结温=25°C, L=1mH.  
Starting T<sub>j</sub>=25°C, L=1mH
- ③ 脉冲测试: 脉冲宽度≤ 300μs , 占空比≤ 2%  
Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%

N-沟道功率 MOS 管/ N-CHANNEL POWER MOSFET

SIF70N100

● 特性曲线

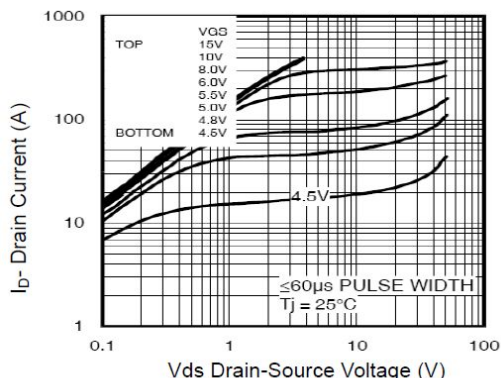


Figure 1 Output Characteristics

图 1 输出特性曲线,  $T_c=25^{\circ}\text{C}$

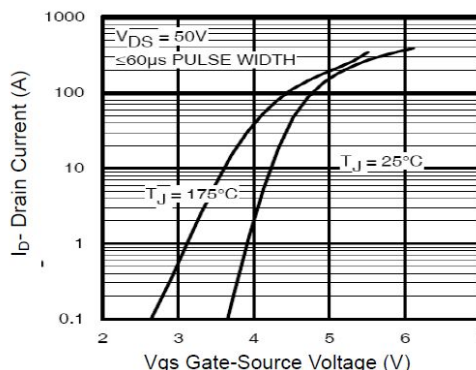


Figure 2 Transfer Characteristics

图 2 转移特性曲线

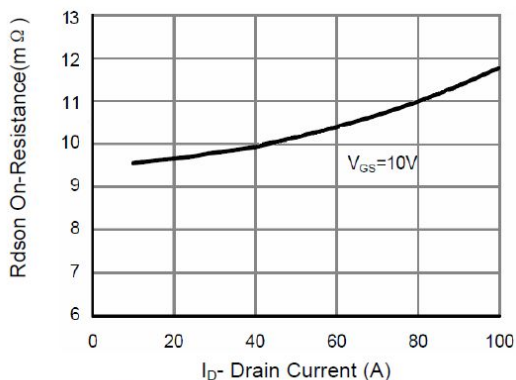


Figure 3 Rdson- Drain Current

图 3 导通电阻与漏极电流 曲线

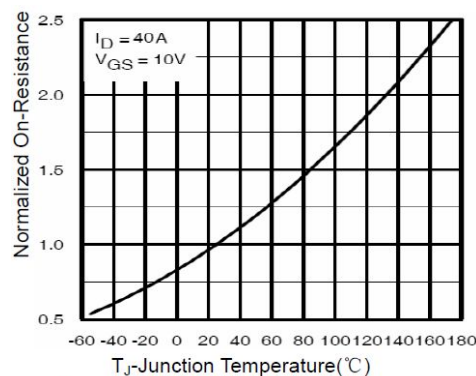


Figure 4 Rdson-Junction Temperature

图 4 导通电阻与结温度 曲线

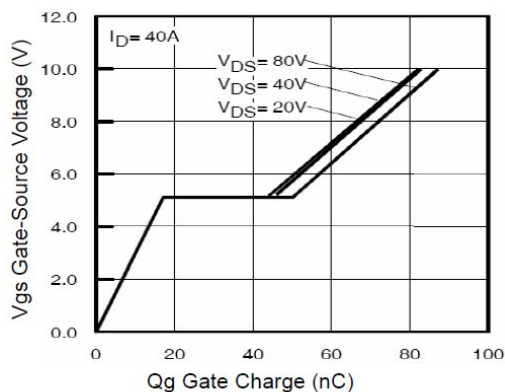


Figure 5 Gate Charge

图 5 栅电荷 曲线

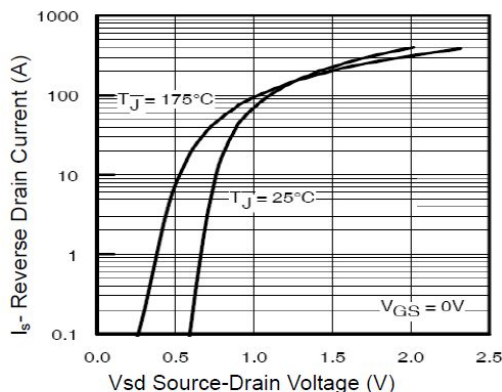


Figure 6 Source- Drain Diode Forward

图 6.二极管正向压降与源极电流 曲线

N-沟道功率 MOS 管/ N-CHANNEL POWER MOSFET

SIF70N100

● 特性曲线

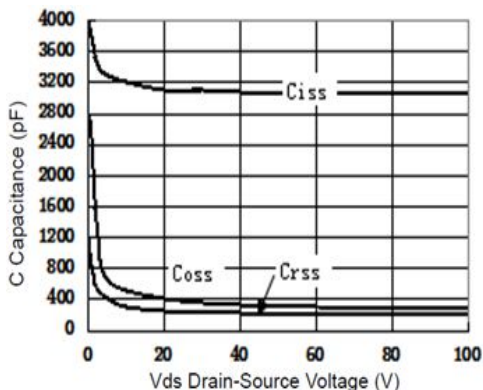


Figure 7 Capacitance vs Vds

图 7 电容特性曲线

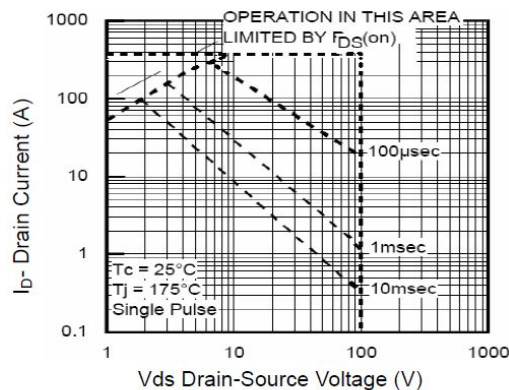


Figure 8 Safe Operation Area

图 8 SOA 曲线

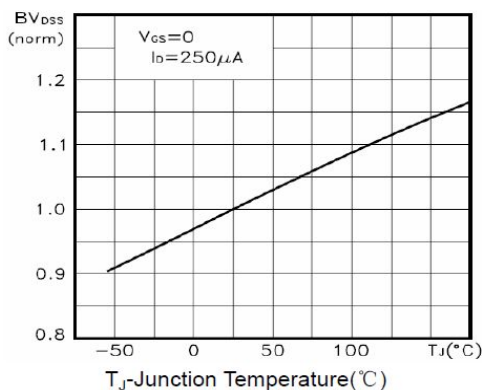


Figure 9 BV<sub>DSS</sub> vs Junction Temperature

图 9 BV<sub>DSS</sub>-结温曲线

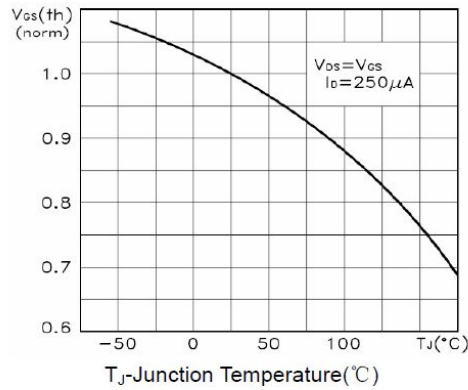


Figure 10 V<sub>GS(th)</sub> vs Junction Temperature

图 10 V<sub>th</sub>-结温曲线

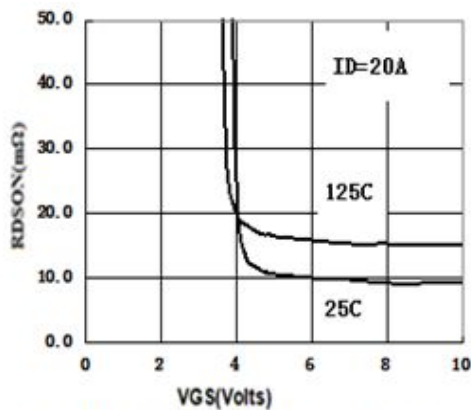


Figure 11 On Resistance VS Gate-Source Voltage

图 11 R<sub>DS(on)</sub> -VGS 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	$\theta$	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			

