

N-沟道功率 MOS 管/ N-CHANNEL POWER MOSFET

SIF12N100

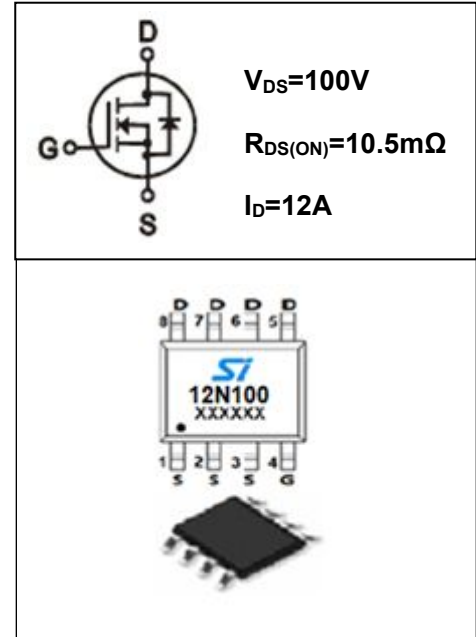
- 特点：热阻低 导通电阻低 栅极电荷低，开关速度快 输入阻抗高 符合RoHS规范
- FEATURES: ■LOW THERMAL RESISTANCE ■LOW $R_{DS(ON)}$ TO MINIMIZE CONDUCTIVE LOSS ■LOW GATE CHARGE FOR FAST SWITCHING ■HIGH INPUT RESISTANCE ■RoHS COMPLIANT
- 应用：低压高频逆变电路 同步整流 开关应用
- APPLICATION: ■LOW VOLTAGE,HIGH FREQUENCY INVERTERS ■SYNCHRONOUS RECTIFICATION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

●最大额定值 (TC=25°C)

●Absolute Maximum Ratings (Tc=25°C)

SOP-8

| 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 | 12* | A |
| 耗散功率 Total Power Dissipation ① | P_{tot} | 2.6 | 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} | 88 | 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 | 108 | | V |
| 栅极开启电压 Gate Threshold Voltage | $V_{GS(TH)}$ | $V_{GS}=V_{DS}, I_D=250\mu A$ ③ | 1.4 | 1.85 | 2.5 | V |
| 漏-源漏电流 Drain-source Leakage Current | I_{DSS} | $V_{DS}=100V, V_{GS}=0V$ | | | 1 | μA |
| 栅极漏电流 Gate-body Leakage Current ($V_{DS}=0$) | I_{GSS} | $V_{GS}=\pm 20V$ | | | ±100 | nA |
| 漏-源导通电阻 Static Drain-source On Resistance | $R_{DS(ON)}$ | $V_{GS}=10V, I_D=12A$ ③ | | 10.5 | 12.5 | mΩ |
| | | $V_{GS}=4.5V, I_D=9.5A$ ③ | | 13.0 | 14.5 | |
| 跨导 Forward Transconductance | g_{FS} | $V_{DS}=10V, I_D=12A$ ③ | 26 | | | S |

●订单信息/ORDERING INFORMATION:

| 包装形式/PACKING | 订货编码/ORDERING CODE | |
|-------------------------------|--------------------------------|-----------------------|
| | 普通塑封料/ Normal Package Material | 无卤塑封料/Halogen Free |
| SOP-8 条管装/TUBE PACKING | SIF12N100 SOP-8-TU | SIF12N100 SOP-8-TU-HF |
| SOP-8 编带装/TAPE & REEL PACKING | SIF12N100 SOP-8-TR | SIF12N100 SOP-8-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 | $V_{GS} = 0V, V_{DS} = 20V$ $F = 1.0MHz$ | | 3100 | | pF |
| 输出电容 Output Capacitance | Coss | | | 230 | | |
| 反向传输电容 Reverse Transfer Capacitance | Crss | | | 170 | | |
| 导通延迟 Turn -On Delay Time | Td(on) | $V_{DD}=30V, R_L=1\Omega$ $V_{GS} = 10V, R_{GEN}=3\Omega$ | | 15 | | ns |
| 开启上升时间 Turn -On Rise Time | T_r | | | 11 | | ns |
| 关断延迟 Turn -Off Delay Time | Td(off) | | | 52 | | ns |
| 关断下降时间 Turn -Off Fall Time | T_f | | | 13 | | ns |
| 栅极电荷 Total Gate Charge | Qg | $I_D = 12A, V_{DS} = 30V$ $V_{GS} = 10V$ | | 69 | | nC |
| 栅源电荷 Gate-to-Source Charge | Qgs | | | 12 | | nC |
| 栅漏电荷 Gate-to-Drain Charge | Qgd | | | 24 | | nC |
| 二极管正向压降 Diode Forward Voltage | V_{SD} | $T_j=25^\circ C, I_F=8A$ $V_{GS}=0V$ ③ | | 0.76 | 1.3 | V |
| 反向恢复时间 Reverse Recovery Time | trr | $I_f=12A, di/dt=100A/\mu s$ | | 33 | | ns |
| 反向恢复电荷 Reverse Recovery Charge | Qrr | $T_j=25^\circ C$, ③ | | 54 | | nC |

●热特性

● Thermal Characteristics

| 参数 PARAMETER | 符号 SYMBOL | 最小值 MIN | 典型值 TYP | 最大值 MAX | 单位 UNIT |
|-----------------------------------------------|--------------|------------|------------|------------|--------------|
| 热阻结-壳 Thermal Resistance Junction-case | RthJC | | | 48 | $^\circ C/W$ |
| 热阻结-环境 Thermal Resistance Junction-ambient | RthJA | | | 75 | $^\circ C/W$ |

注释(Notes):

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

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● 特性曲线

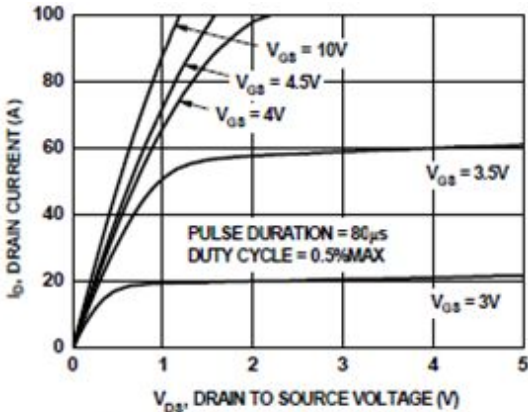


Figure 1 Output Characteristics

图 1 输出特性曲线, Tc=25°C

Fig1 Typical Output Characteristics, Tc=25°C

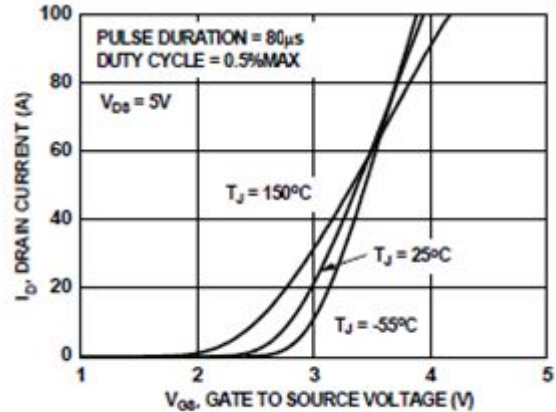


Figure 2 Transfer Characteristics

图 2 转移特性曲线

Fig2 Resistance V.S Drain Current

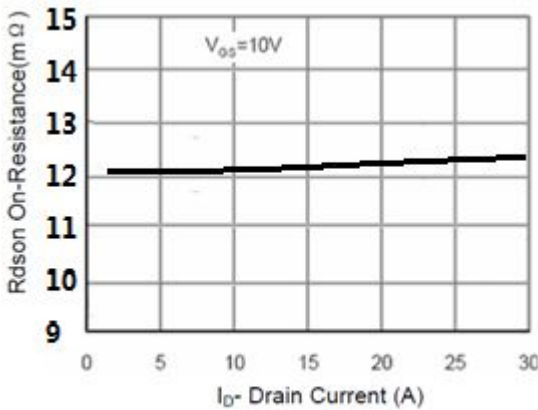


Figure 3 Rdson- Drain Current

图 3 导通电阻与漏极电流的曲线

Fig3 Threshold Voltage V.S Junction Temperature

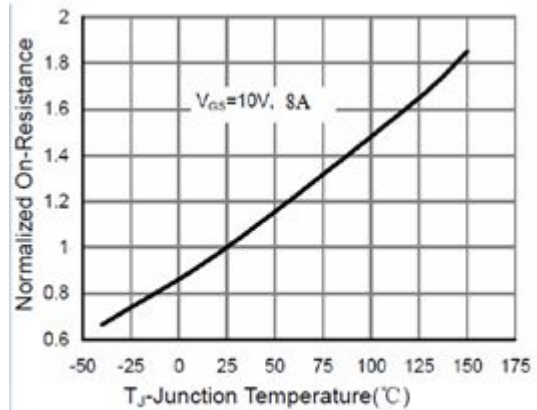


Figure 4 Rdson-Junction Temperature

图 4 导通电阻与结温度曲线

Fig4 Resistance V.S Junction Temperature

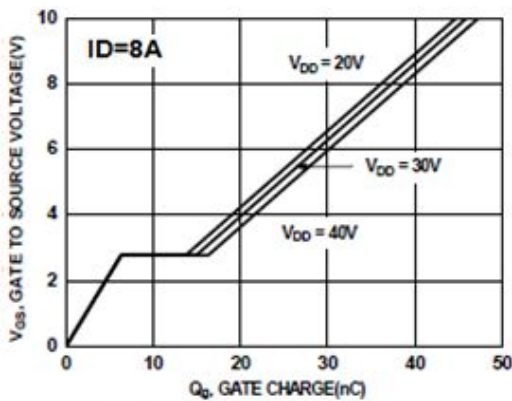


Figure 5 Gate Charge

图 5 典型栅极电荷与栅源电压曲线

Fig5 Typical Gate Charge V.S Gate-to-Source Voltage

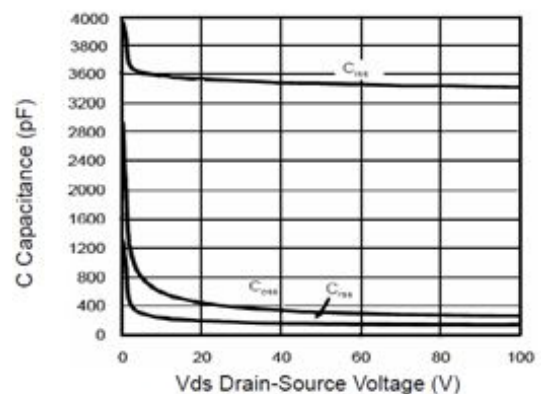


Figure 6 Capacitance vs Vds

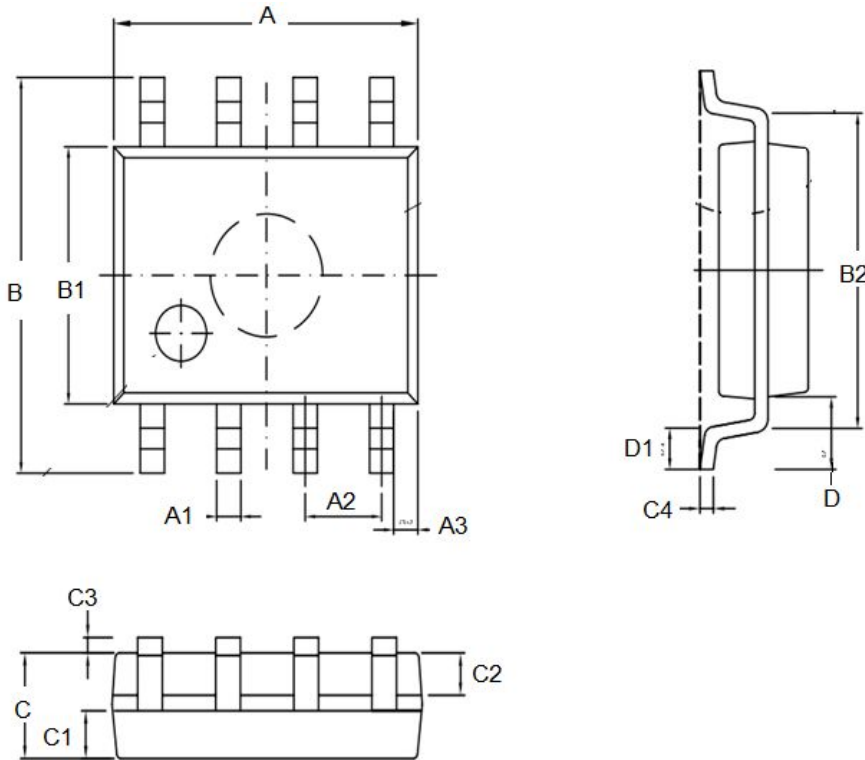
图 6.典型电容与漏源电压的曲线

Fig6 Typical Capacitance V.S Drain-to-Source Voltage

SOP8 封装机械尺寸 SOP8 MECHANICAL DATA

单位:毫米/UNIT: mm

| 符号 SYMBOL | 最小值 min | 典型值 nom | 最大值 max | 符号 SYMBOL | 最小值 min | 典型值 nom | 最大值 max |
|--------------|------------|------------|------------|--------------|------------|------------|------------|
| A | 4.80 | | 5.10 | C | 1.30 | | 1.50 |
| A1 | 0.37 | | 0.47 | C1 | 0.55 | | 0.75 |
| A2 | | 1.27 TYP | | C2 | 0.55 | | 0.65 |
| A3 | | 0.41 TYP | | C3 | 0.05 | | 0.20 |
| B | 5.80 | | 6.20 | C4 | 0.19 | 0.20TYP | 0.23 |
| B1 | 3.80 | | 4.00 | D | | 1.05TYP | |
| B2 | | 5.0TYP | | D1 | 0.40 | | 0.62 |



SOP8 (13")编带规格 SOP8 (13")TAPE AND REEL DATA

单位:毫米/UNIT: mm

