

N-沟道功率 MOS 管/ N-CHANNEL POWER MOSFET

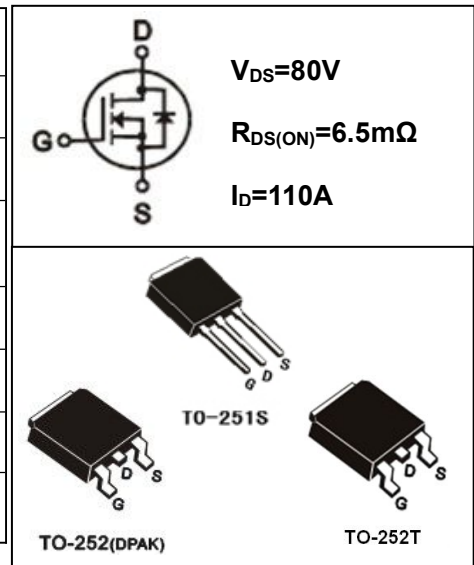
SIF110N080

- 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)

0●Absolute Maximum Ratings (Tc=25°C) TO-251S/252/252T

| 参数 PARAMETER | 符号 SYMBOL | 额定值 VALUE | 单位 UNIT |
|---|--------------|--------------|------------|
| 漏-源电压 Drain-source Voltage | V_{DS} | 80 | V |
| 栅-源电压 gate-source Voltage | V_{GS} | ±25 | V |
| 漏极电流 Continuous Drain Current TC=25°C ① | I_D | 110* | A |
| 耗散功率 Total Power Dissipation ① | P_{tot} | 40 | 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} | 550 | 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} | $V_{GS}=0V, I_D=250\mu A$ | 80 | 86 | | V |
| 栅极开启电压 Gate Threshold Voltage | $V_{GS(TH)}$ | $V_{GS}=V_{DS}, I_D=250\mu A$ ③ | 2 | 3 | 4 | V |
| 漏-源漏电流 Drain-source Leakage Current | I_{DSS} | $V_{DS}=80V, V_{GS}=0V$ | | | 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 | $R_{DS(ON)}$ | $V_{GS}=10V, I_D=40A$ ③ | | 6.5 | 8 | mΩ |
| 跨导 Forwad Transconductance | g_{FS} | $V_{DS}=25V, I_D=20A$ ③ | | 80 | | 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 |
| TO-251S&252(T)条管装/TUBE PACKING | SIF110N080 TO-251S-TU 或 TO-252(T)-TU | SIF110N080 TO-251S-TU-HF 或 TO-252(T)-TU-HF |
| TO-252(T) 编带装/TAPE & REEL PACKING | SIF110N080 TO-252(T)-TR | SIF110N080 TO-252(T)-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 | $V_{GS} = 0V, V_{DS} = 25V$ $F = 1.0MHz$ | | 3150 | | pF |
| 输出电容 Output Capacitance | Coss | | | 450 | | |
| 反向传输电容 Reverse Transfer Capacitance | Crss | | | 220 | | |
| 导通延迟 Turn -On Delay Time | Td(on) | $V_{DD}=38V, I_D = 10A, R_L=3.8\Omega$ $V_{GS} = 10V, R_G=1\Omega$ | | 20 | | ns |
| 开启上升时间 Turn -On Rise Time | T_r | | | 35 | | |
| 关断延迟 Turn -Off Delay Time | Td(off) | | | 55 | | |
| 关断下降时间 Turn -Off Fall Time | T_f | | | 22 | | |
| 栅极电荷 Total Gate Charge | Qg | $I_D = 80A, V_{DS} = 60V$ $V_{GS} = 10V$ | | 80 | | nC |
| 栅源电荷 Gate-to-Source Charge | Qgs | | | 17 | | nC |
| 栅漏电荷 Gate-to-Drain Charge | Qgd | | | 31 | | nC |
| 二极管正向压降 Diode Forward Voltage | V_{SD} | $T_j=25^\circ C, I_s=30A$ $V_{GS} = 0V$ ③ | | | 1.35 | V |
| 反向恢复时间 Reverse Recovery Time | trr | $T_j=25^\circ C, I_s=10A$ $di/dt=100A/\mu s$ ③ | | 37 | | ns |
| 反向恢复电荷 Reverse Recovery Charge | Qrr | | | 58 | | nC |

●热特性

| 参数 PARAMETER | 符号 SYMBOL | 最大值 MAX | | | 单位 UNIT |
|---|--------------|------------|--|-----------|------------|
| | | TO-251S | | TO-252(T) | |
| 热阻结-壳 Thermal Resistance Junction-case | RthJC | 3.1 | | 3.1 | °C/W |
| 热阻结-环境 Thermal Resistance Junction-ambient | RthJA | 62 | | 62 | °C/W |

●Thermal Characteristics

注释(Notes):

- ① 以最高结温为限制，基于 TO-251s/252 封装形式，25°C 下本产品硅限电流 I_D 为 110A，封装限制电流为 80A。
 I_D & P_D base on maximum allowable junction temperature, calculated upon TO-251s/252 package type is limited to carry 80A at 25°C.
- ② 初始结温=25°C, $V_{DD} = 40V, V_G=10V, L=0.5mH, R_G = 25\Omega$ 。
Starting $T_j=25^\circ C, V_{DD} = 40V, V_G=10V, L=0.5mH, R_G = 25\Omega$.
- 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

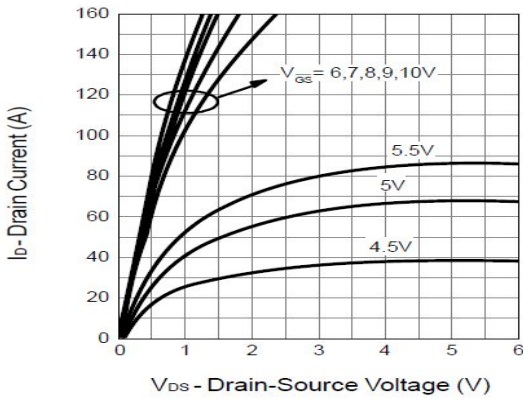


图 1 输出特性曲线, $T_c=25^\circ\text{C}$

Fig1 Typical Output Characteristics, $T_c=25^\circ\text{C}$

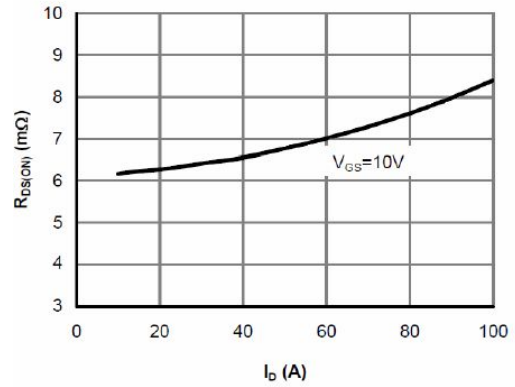


图 2 导通电阻与漏极电流的曲线

Fig2 Resistance V.S Drain Current

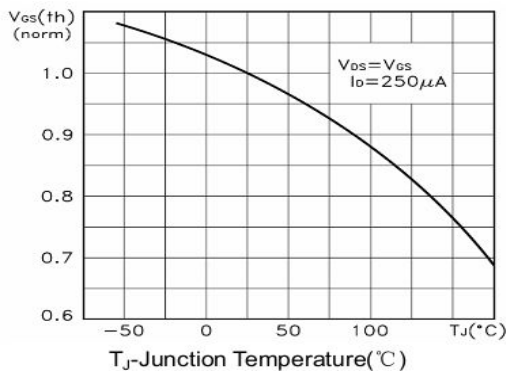


图 3 阈值电压与结温度曲线

Fig3 Threshold Voltage V.S Junction Temperature

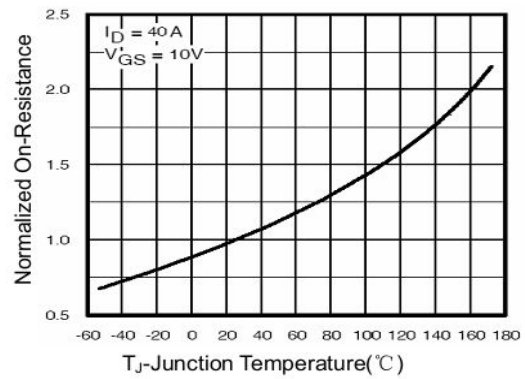


图 4 导通电阻与结温度曲线

Fig4 Resistance V.S Junction Temperature

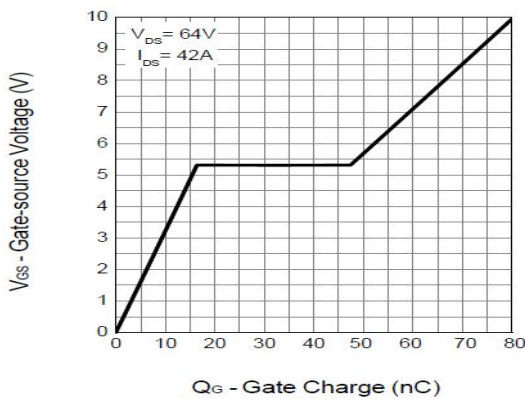


图 5 典型栅极电荷与栅源电压曲线

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

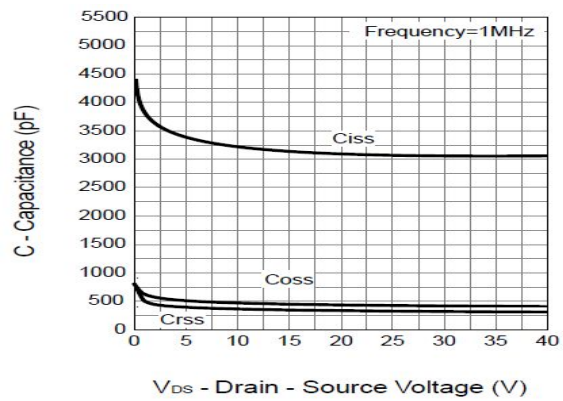


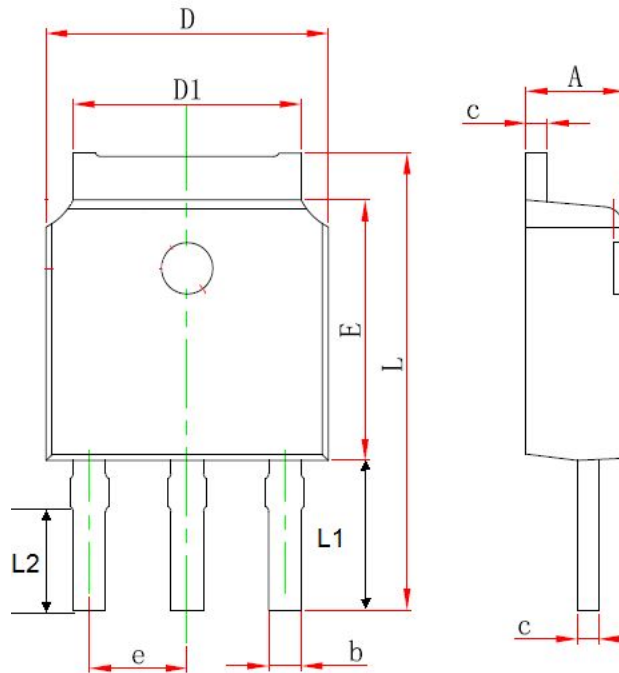
图 6.典型电容与漏源击穿电压的曲线

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

TO-251S 封装机械尺寸 TO-251S (IPAK) MECHANICAL DATA

单位:毫米/UNIT: mm

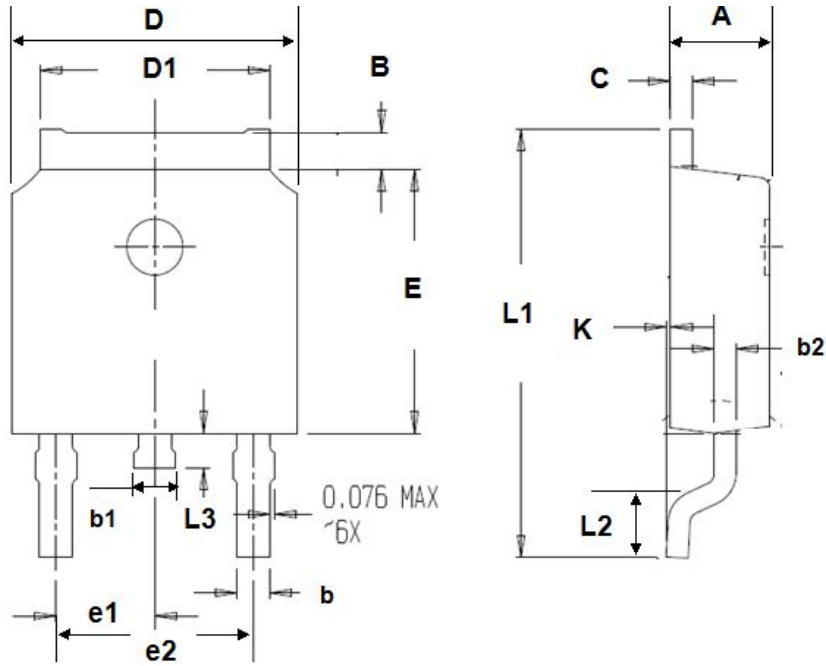
| 符号/SYMBOL | 最小值/min | 典型值/nom | 最大值/max |
|-----------|---------|---------|---------|
| A | 2.20 | | 2.40 |
| b | 0.50 | | 0.85 |
| C | 0.45 | 0.50 | 0.60 |
| D | 6.50 | | 6.70 |
| D1 | 5.10 | | 5.50 |
| E | 5.9 | | 6.20 |
| e | 2.18 | 2.29 | 2.38 |
| L | 11.00 | | 12.40 |
| L1 | 4.8 | | 5.3 |
| L2 | 3.5 | | 4.2 |



TO-252 封装机械尺寸 TO-252 MECHANICAL DATA

单位:毫米/UNIT: mm

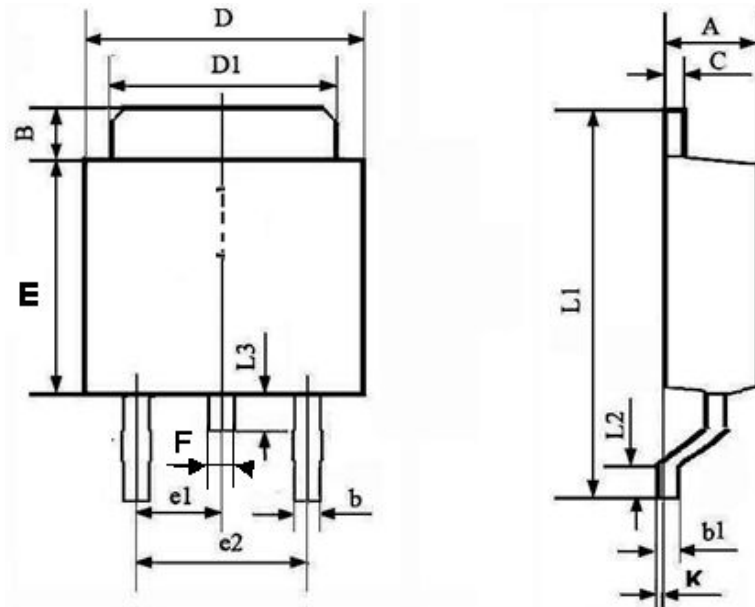
| 符号 SYMBOL | 最小值 min | 最大值 max | 符号 SYMBOL | 最小值 min | 最大值 max |
|--------------|------------|------------|--------------|------------|------------|
| A | 2.10 | 2.50 | B | 0.85 | 1.25 |
| b | 0.50 | 0.80 | b1 | 0.70 | 1.20 |
| b2 | 0.45 | 0.70 | C | 0.45 | 0.70 |
| D | 6.30 | 6.75 | D1 | 5.10 | 5.50 |
| E | 5.30 | 6.30 | e1 | 2.25 | 2.35 |
| L1 | 9.20 | 10.60 | e2 | 4.45 | 4.75 |
| L2 | 0.90 | 1.75 | L3 | 0.60 | 1.10 |
| K | 0.00 | 0.23 | | | |



TO-252T 封装机械尺寸 TO-252T MECHANICAL DATA

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 |
|--------------|------------|------------|--------------|------------|------------|
| A | 2.20 | 2.40 | B | 0.85 | 1.25 |
| b | 0.50 | 0.80 | C | 0.45 | 0.70 |
| b1 | 0.45 | 0.70 | D | 6.30 | 6.70 |
| D1 | 5.10 | 5.50 | E | 5.30 | 6.20 |
| L1 | 9.20 | 10.60 | F | 0.50 | 0.90 |
| L2 | 0.90 | 1.50 | e1 | 2.25 | 2.35 |
| L3 | 0.60 | 1.10 | e2 | 4.50 | 4.70 |
| | | | K | 0.00 | 0.18 |

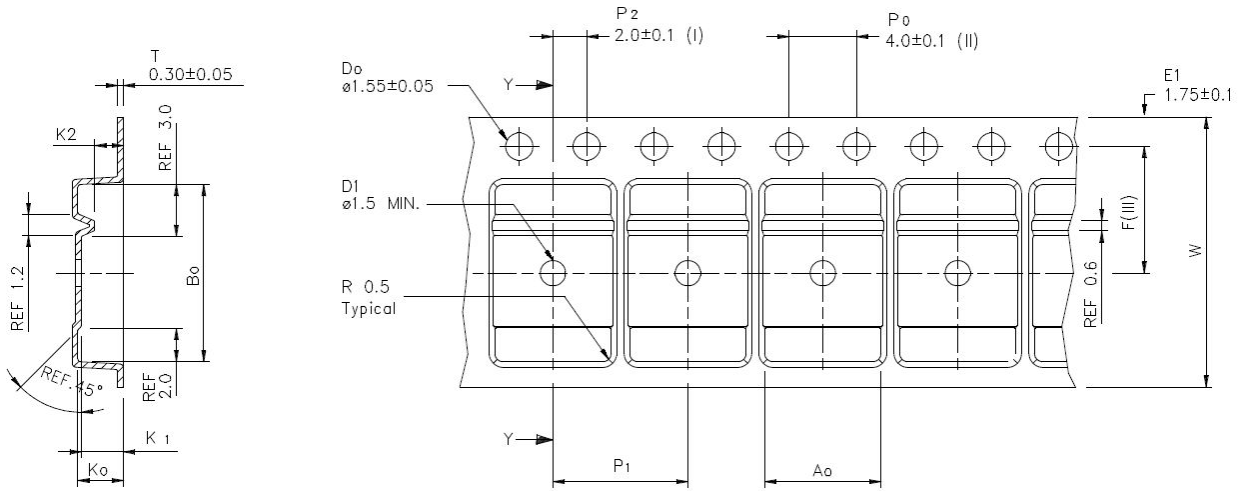


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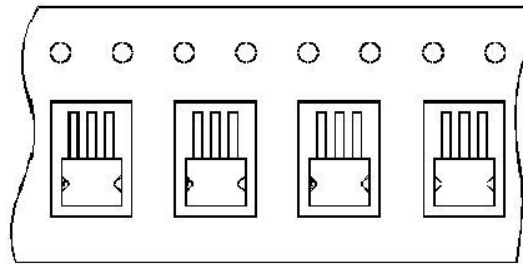
TO-252 编带规格尺寸 TO-252 TAPE AND REEL DATA

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 |
|--------------|------------|------------|------------|--------------|------------|------------|------------|
| A0 | 6.80 | 6.90 | 7.00 | B0 | 10.40 | 10.50 | 10.60 |
| K0 | 2.60 | 2.70 | 2.90 | K1 | 2.40 | 2.50 | 2.60 |
| F | 7.40 | 7.50 | 7.60 | K2 | 1.60 | 1.70 | 1.80 |
| W | 15.90 | 16.00 | 16.10 | P1 | 7.90 | 8.00 | 8.10 |



使用供带方向/USER DIRECTION OF FEED



编带器件定位/UNIT ORIENTATION