

N-沟道功率 MOS 管/ N-CHANNEL POWER MOSFET

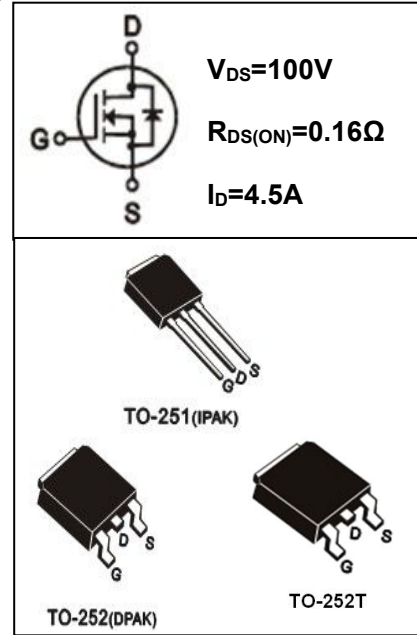
SIF9N10

- 特点：导通电阻低 开关速度快 输入阻抗高 符合RoHS规范
- FEATURES: ■LOW ON-RESISTANCE ■FAST SWITCHING ■HIGH INPUT RESISTANCE ■RoHS COMPLIANT
- 应用：不间断电源 照明
- APPLICATION: ■UPS ■LIGHTING

●最大额定值 (Tc=25°C)

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

| 参数 PARAMETER | 符号 SYMBOL | 额定值 VALUE | 单位 UNIT |
|---|------------------|--------------|------------|
| 漏-源电压 Drain-source Voltage | V _{DS} | 100 | V |
| -源电压 gate-source Voltage | V _{GS} | ±25 | V |
| 漏极电流 Continuous Drain Current TC=25°C | I _D | 9 | A |
| 漏极电流 Continuous Drain Current TC=100°C | I _D | 4.5 | A |
| 最大脉冲电流 Drain Current — Pulsed ① | I _{DM} | 36 | A |
| 耗散功率 Power Dissipation | P _{tot} | 33 | W |
| 最高结温 Junction Temperature | T _J | 150 | °C |
| 存储温度 Storage Temperature | T _{STG} | -55-150 | °C |
| 单脉冲雪崩能量 Single Pulse Avalanche Energy ② | E _{AS} | 64 | 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 =250μA | 100 | | | V |
| 击穿电压温度系数 Breakdown Voltage Temperature Coefficient | ΔBV _{DSS} / ΔT _J | I _D =250uA, Referenced to 25°C | | 0.5 | | V/°C |
| 栅极开启电压 Gate Threshold Voltage | V _{GS(TH)} | V _{GS} =V _{DS} , I _D =250μA | 1.5 | | 2.5 | V |
| 漏-源漏电流 Drain-source Leakage Current | I _{DSS} | V _{DS} =100V, V _{GS} =0V, T _J =25°C | | | 1 | μA |
| | | V _{DS} =100V, V _{GS} =0V, T _J =125°C | | | 10 | μA |
| 跨导 Forward Transconductance | g _{fs} | V _{DS} =10V, I _D =4.5A ③ | 5.0 | | | 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-252(T)或 251 条管装 TUBE PACKING | SIF9N10 TO-251-TU 或 SIF9N10 TO-252(T)-TU | SIF9N10 TO-251-TU-HF 或 SIF9N10 TO-252(T)-TU-HF |
| TO-252(T) 编带装/TAPE & REEL PACKING | SIF9N10 TO-252(T)-TR | SIF9N10 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 |
|---|--------------|---|------------|------------|------------|------------|
| 栅极漏电流 Gate-body Leakage Current ($V_{DS} = 0$) | I_{GSS} | $V_{GS} = \pm 10V$ | | | ± 100 | nA |
| 漏-源导通电阻 Static Drain-source On Resistance | $R_{DS(ON)}$ | $V_{GS} = 4.5V, I_D = 2.5A$ ③ | | 0.21 | 0.3 | Ω |
| 漏-源导通电阻 Static Drain-source On Resistance | $R_{DS(ON)}$ | $V_{GS} = 10V, I_D = 4.5A$ ③ | | 0.16 | 0.2 | Ω |
| 输入电容 Input Capacitance | C_{iss} | $V_{GS} = 0V, V_{DS} = 25V$ $F = 1.0MHz$ | | 378 | | pF |
| 关断延迟 Turn -Off Delay Time | $T_d(off)$ | $V_{DD} = 100V, I_D = 9A$ $R_G = 3.5\Omega, R_D = 25\Omega$ ③ | | 34 | | ns |
| 栅极电荷 Total Gate Charge | Q_g | $I_D = 9.0A, V_{DS} = 50V$ $V_{GS} = 10V$ ③ | | 9.50 | | nC |
| 栅源电荷 Gate-to-Source Charge | Q_{gs} | | | 1.90 | | nC |
| 栅漏电荷 Gate-to-Drain Charge | Q_{gd} | | | 3.10 | | nC |
| 二极管正向电流 Continuous Diode Forward Current | I_s | | | | 9.0 | A |
| 二极管正向压降 Diode Forward Voltage | V_{SD} | $T_j = 25^\circ C, I_s = 9A$ $V_{GS} = 0V$ ③ | | | 1.45 | V |
| 反向恢复时间 Reverse Recovery Time | t_{rr} | $T_j = 25^\circ C, I_f = 9A$ $di/dt = 100A/\mu s$ ③ | | | 20 | ns |
| 反向恢复电荷 Reverse Recovery Charge | Q_{rr} | | | 138 | | 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} | 2.5 | $^\circ C/W$ |
| 热阻结-环境 Thermal Resistance Junction-ambient | R_{thJA} | 62.5 | $^\circ C/W$ |

注释(Notes):

- ① 脉冲宽度：以最高结温为限制
Repetitive rating: Pulse width limited by maximum junction temperature
- ② 初始结温= $25^\circ C$, $V_{DD} = 50V$, $L = 2.0mH$, $R_G = 25\Omega$, $I_{AS} = 8A$
Starting $T_j = 25^\circ C$, $V_{DD} = 50V$, $L = 2.0mH$, $R_G = 25\Omega$, $I_{AS} = 8A$
- 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

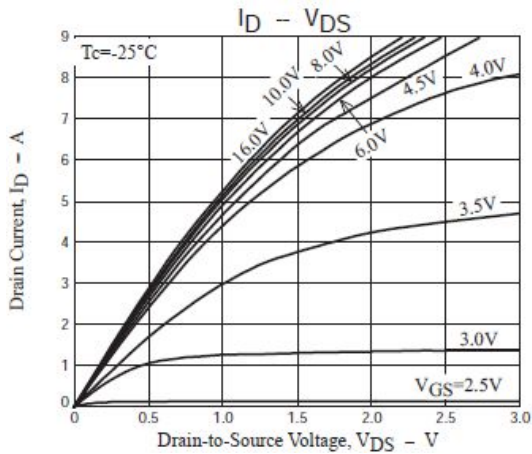


图 1 输出特性曲线, Tc=25°C

Fig1 Typical Output Characteristics, Tc=25°C

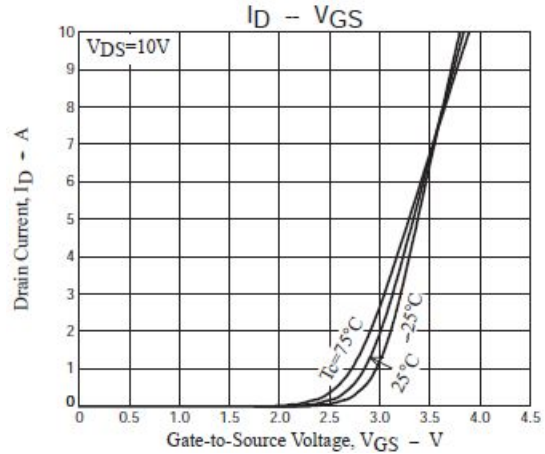


图 2 栅源开启电压与环境温度关系曲线

Fig2 Gate-to-Source Voltage Vs Case Temperature

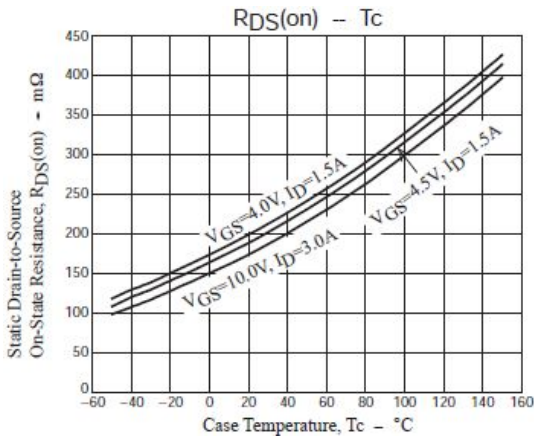


图 3 导通电阻与温度曲线

Fig3 Normalized On-Resistance Vs. Temperature

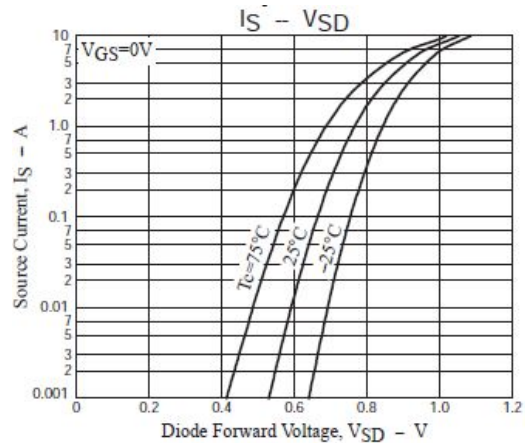


图 4 二极管正向压降与正向电流曲线

Fig4 Typical Source-Drain Diode Forward Voltage

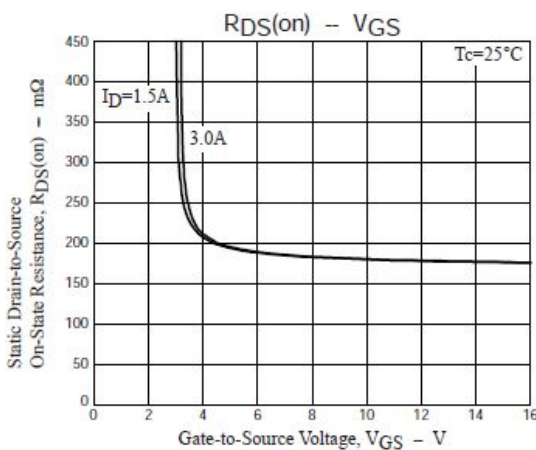


图 5 漏极电流与导通电阻曲线

Fig5 Drain-current Vs On-Resistance

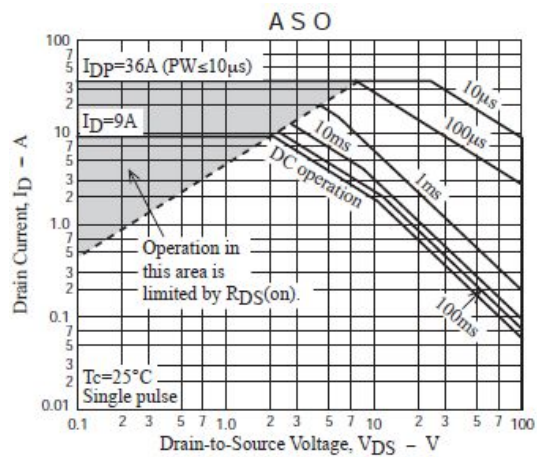


图 6 最大安全工作区

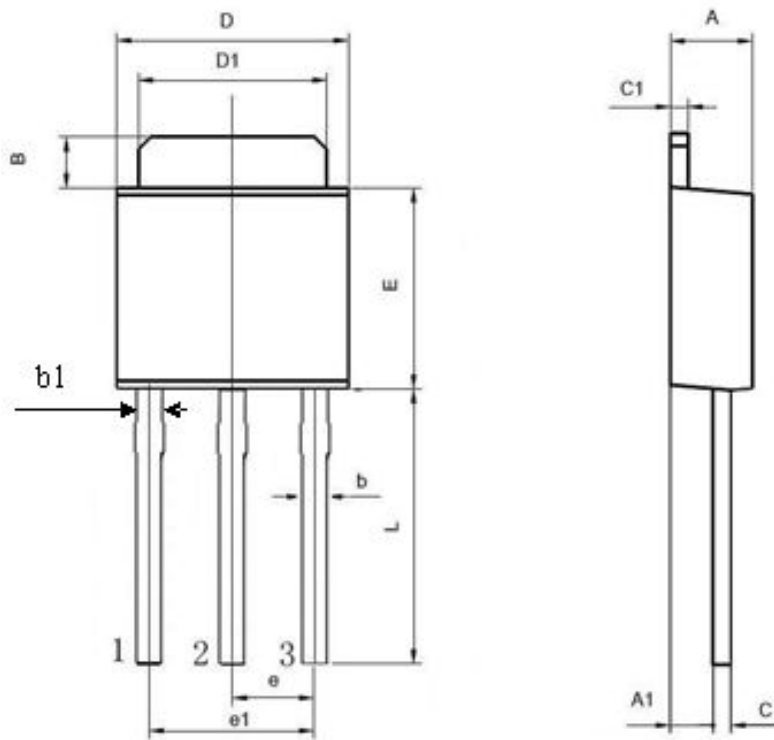
Fig6 Maximum Safe Operating Area

TO-251 封装机械尺寸 TO-251 (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 | 2.10 | | 2.50 |
| A ₁ | 0.95 | | 1.30 |
| B | 0.80 | | 1.25 |
| b | 0.50 | | 0.80 |
| b ₁ | 0.70 | | 0.90 |
| c | 0.45 | | 0.70 |
| c ₁ | 0.45 | | 0.70 |
| D | 6.35 | | 6.80 |
| D ₁ | 5.10 | | 5.50 |
| E | 5.30 | | 6.30 |
| e | | 2.30 | |
| L | 7.00 | | 9.20 |
| R | | 0.30 | |

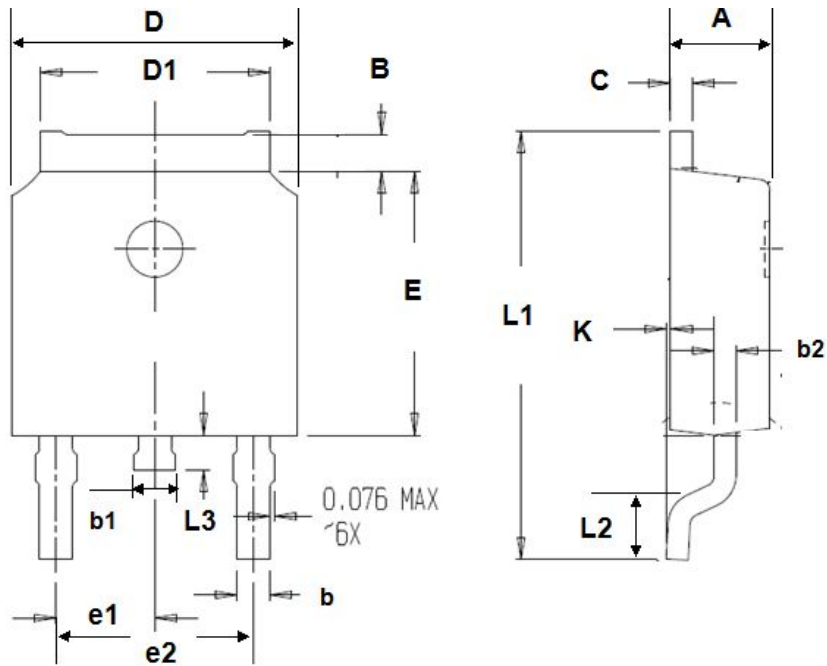
[S/L]



TO-252 封装机械尺寸 TO-252 MECHANICAL DATA

单位:毫米/UNIT: mm

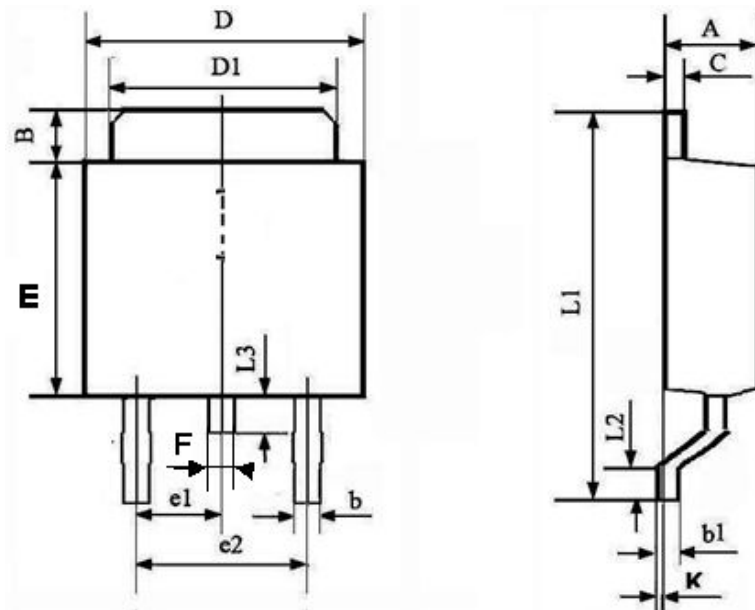
| 符号 SYMBOL | 最小值 min | 最大值 max | 符号 SYMBOL | 最小值 min | 最大值 max |
|--------------|------------|------------|--------------|------------|------------|
| A | 2.10 | 2.50 | B | 0.85 | 1.25 |
| b | 0.50 | 0.80 | b1 | 0.70 | 1.20 |
| b2 | 0.45 | 0.70 | C | 0.45 | 0.70 |
| D | 6.30 | 6.75 | D1 | 5.10 | 5.50 |
| 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 |

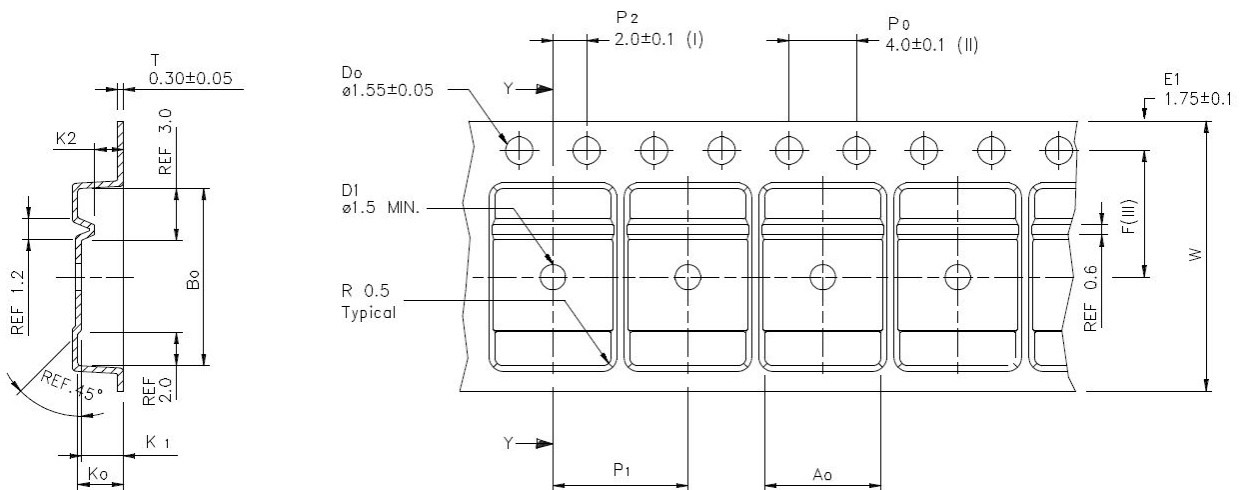


[LJ]

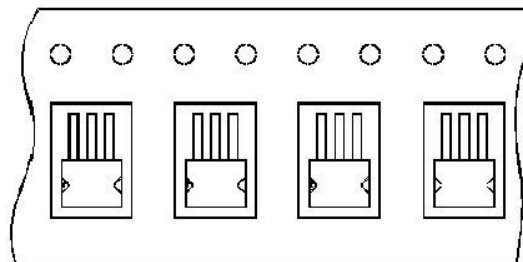
TO-252 编带规格尺寸 TO-252 TAPE AND REEL DATA

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