


N-沟道功率 MOS 管/ N-CHANNEL POWER MOSFET

SIF6N70C

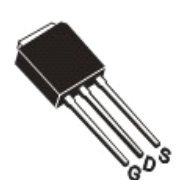
- 特点：热阻低 开关速度快 输入阻抗高 符合RoHS规范
- FEATURES: ■LOW THERMAL RESISTANCE ■FAST SWITCHING ■HIGH INPUT RESISTANCE
■RoHS COMPLIANT
- 应用：电子镇流器 电子变压器 开关电源
- APPLICATION: ■ELECTRONIC BALLAST ■ELECTRONIC TRANSFORMER ■SWITCH MODE POWER SUPPLY
- 最大额定值 (Tc=25°C)

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

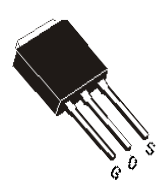
| 参数 PARAMETER | 符号 SYMBOL | 额定值 VALUE | 单位 UNIT |
|--|------------------|--------------|------------|
| 漏-源电压 Drain-source Voltage | V _{DS} | 700 | V |
| 栅-源电压 gate-source Voltage | V _{GS} | ± 30 | V |
| 漏极电流 Continuous Drain Current TC=25°C | I _D | 6.0* | A |
| 漏极电流 Continuous Drain Current TC=100°C | I _D | 4.2* | A |
| 最大脉冲电流 Drain Current —Pulsed ① | I _{DM} | 24* | A |
| 耗散功率 Power Dissipation | P _{tot} | 50 | 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} | 515 | mJ |



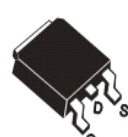
V_{DS}=700V
R_{DS(ON)}=1.65Ω
I_D=6.0A



TO-251(IPAK)



TO-251S



TO-252(DPAK)

*漏极电流由最高结温限制

*Drain current limited by maximum junction temperature

●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 | 700 | | | V |
| 击穿电压温度系数 Breakdown Voltage Temperature Coefficient | ΔBV _{DSS} /ΔT _j | I _D =250uA, Referenced to 25°C | | 0.65 | | V/°C |
| 栅极开启电压 Gate Threshold Voltage | V _{GS(TH)} | V _{GS} =V _{DS} , I _D =250μA | 2.0 | | 4.0 | V |
| 漏-源漏电流 Drain-source Leakage Current | I _{DSS} | V _{DS} =700V, V _{GS} =0V, T _j =25°C | | | 1 | μA |
| | | V _{DS} =560V, V _{GS} =0V, T _j =125°C | | | 10 | μA |
| 跨导 Forward Transconductance | g _{fs} | V _{DS} =15V, I _D =3.0A ③ | | 6.0 | | 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 或 251 或 251S 条管装/TUBE PACKING | SIF6N70C TO-251-TU 或 TO-251S-TU 或 TO-252-TU | SIF6N70C TO-251-TU-HF 或 TO-251S-TU-HF 或 TO-252-TU-HF |
| TO-252 编带装/TAPE & REEL PACKING | SIF6N70C TO-252-TR | SIF6N70C TO-252-TR-HF |

N-沟道功率 MOS 管/ N-CHANNEL POWER MOSFET

SIF6N70C

| 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} | $V_{GS} = \pm 30V$ | | | ± 100 | nA |
| 漏-源导通电阻 Static Drain-source On Resistance | $R_{DS(ON)}$ | $V_{GS} = 10V, I_D = 3.0A$ ③ | | 1.5 | 1.65 | Ω |
| 输入电容 Input Capacitance | C_{iss} | $V_{GS} = 0V, V_{DS} = 25V$ $F = 1.0MHz$ | | 700 | | pF |
| 关断延迟 Turn -Off Delay Time | $T_d(off)$ | $V_{DD} = 350V, I_D = 6.0A$ $R_G = 25\Omega$ ③ | | 50 | | ns |
| 栅极电荷 Total Gate Charge | Q_g | $I_D = 6.0A, V_{DS} = 560V$ $V_{GS} = 10V$ ③ | | 22 | | nC |
| 栅源电荷 Gate-to-Source Charge | Q_{gs} | | | 4.9 | | nC |
| 栅漏电荷 Gate-to-Drain Charge | Q_{gd} | | | 7.7 | | nC |
| 二极管正向电流 Continuous Diode Forward Current | I_S | | | | 6.0 | A |
| 二极管正向压降 Diode Forward Voltage | V_{SD} | $T_j = 25^\circ C, I_S = 6.0A$ $V_{GS} = 0V$ ③ | | | 1.4 | V |
| 反向恢复时间 Reverse Recovery Time | t_{rr} | $T_j = 25^\circ C, I_f = 6.0A$ $di/dt = 100A/\mu s$ ③ | | 290 | | ns |
| 反向恢复电荷 Reverse Recovery Charge | Q_{rr} | | | 2.35 | | μC |

● 热特性

● Thermal Characteristics

| 参数 PARAMETER | 符号 SYMBOL | 最大值 MAX | 单位 UNIT |
|---|--------------|-----------------|--------------|
| | | TO-251/251S/252 | |
| 热阻结-壳 Thermal Resistance Junction-case | R_{thJC} | 2.50 | $^\circ C/W$ |
| 热阻结-环境 Thermal Resistance Junction-ambient | R_{thJA} | 104.0 | $^\circ C/W$ |

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= $25^\circ C$, $V_{DD} = 50V$, $L = 19.5mH$, $R_G = 25\Omega$, $I_{AS} = 6.0A$
Starting $T_j = 25^\circ C$, $V_{DD} = 50V$, $L = 19.5mH$, $R_G = 25\Omega$, $I_{AS} = 6.0A$
- 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

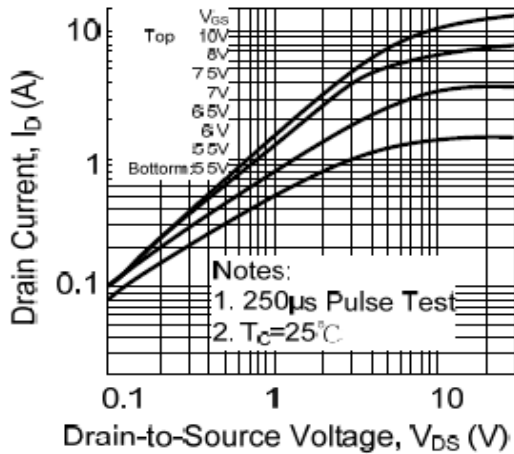


图 1 输出特性曲线, $T_c=25^\circ\text{C}$

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

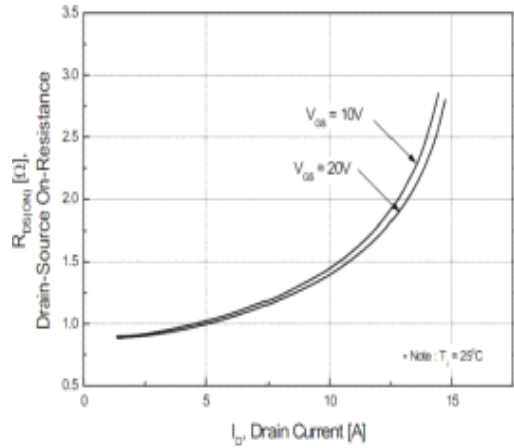


图 2 导通电阻与漏极电流和栅极电压曲线

Fig2 On-Resistance Vs. Drain Current and Gate Voltage

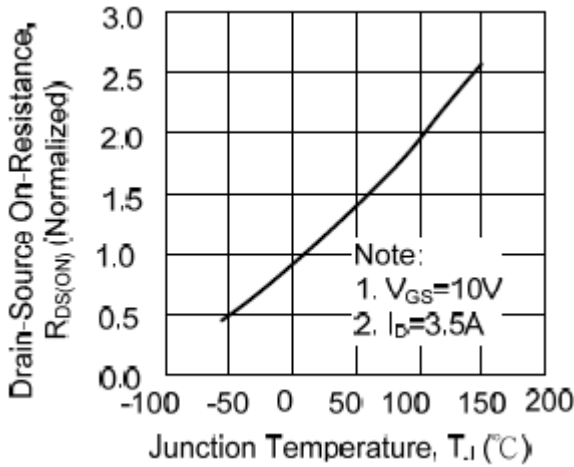


图 3 导通电阻与温度曲线

Fig3 Normalized On-Resistance Vs. Temperature

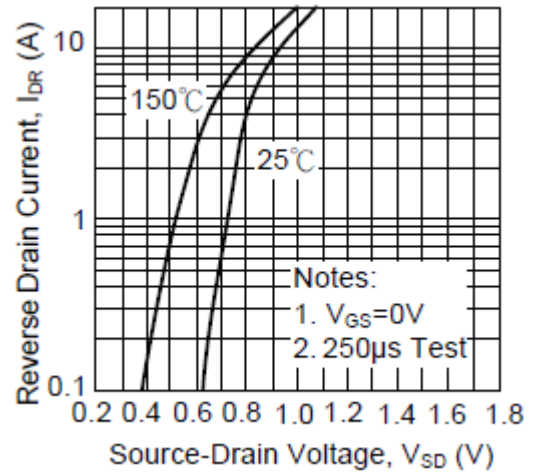


图 4 二极管正向电压曲线

Fig4 Typical Source-Drain Diode Forward Voltage

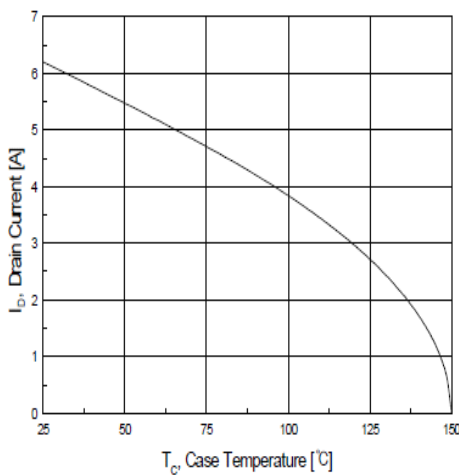


图 5 最大漏极电流与壳温曲线

Fig5 Maximum Drain Current Vs. Case Temperature

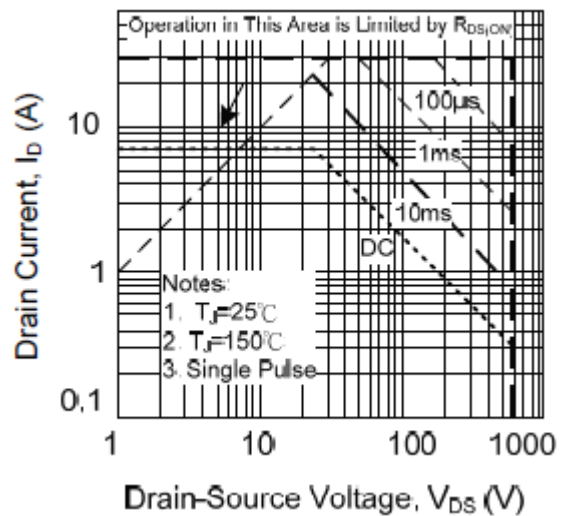


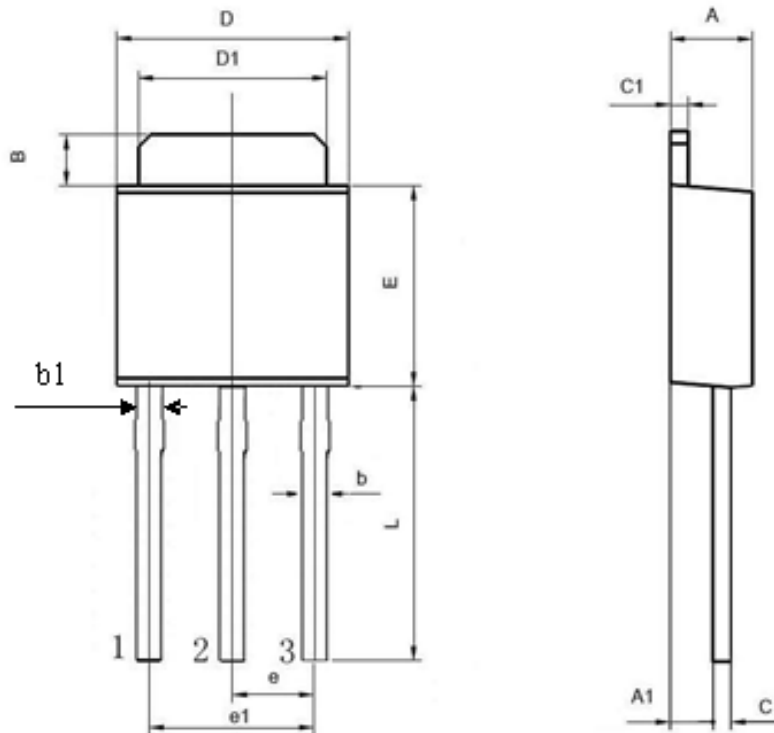
图 6 最大安全工作区曲线

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 | 2.25 | 2.30 | 2.35 |
| L | 7.00 | | 9.20 |

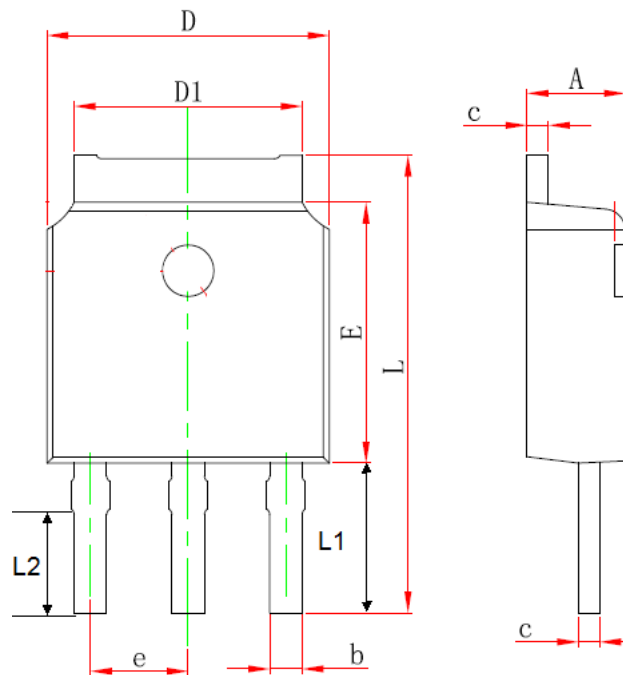


TO-251S 封装机械尺寸

TO-251S (IPAK) MECHANICAL DATA

单位:毫米/UNIT: mm

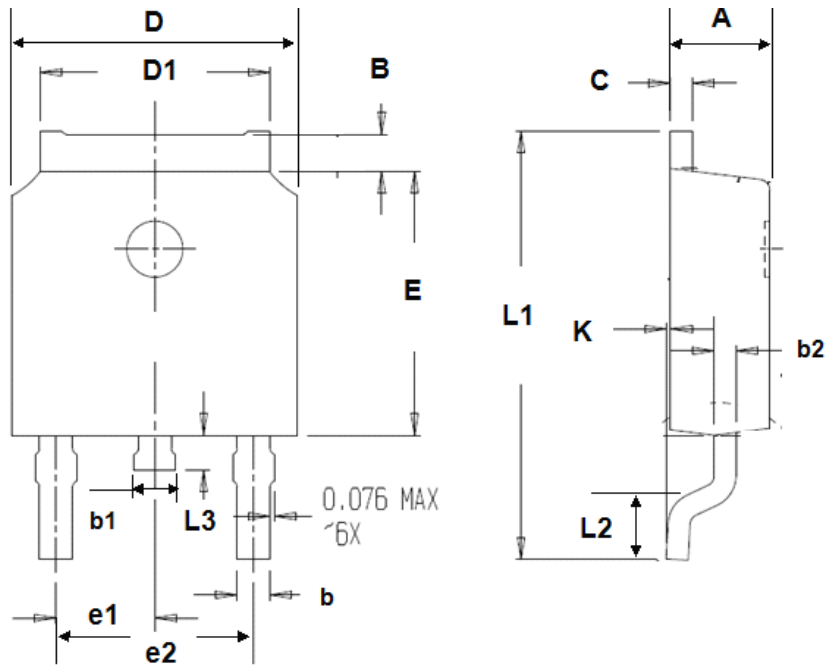
| 符号/SYMBOL | 最小值/min | 典型值/nom | 最大值/max |
|-----------|---------|---------|---------|
| A | 2.20 | | 2.40 |
| b | 0.60 | | 0.85 |
| C | 0.45 | 0.50 | 0.60 |
| D | 6.50 | | 6.70 |
| D1 | 5.10 | | 5.50 |
| E | 5.9 | | 6.20 |
| e | 2.18 | 2.29 | 2.38 |
| L | 11.00 | | 12.40 |
| L1 | 4.8 | | 5.3 |
| L2 | 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 | 0.50 | 0.90 |
| 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-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 | 最大值 max | 符号 SYMBOL | 最小值 min | 最大值 max |
|--------------|------------|------------|--------------|------------|------------|
| W | 16.0-0.3 | 16.0+0.3 | F | 7.5-0.1 | 7.5+0.1 |
| P0 | 4.0-0.1 | 4.0+0.1 | D | 1.5-0.0 | 1.5+0.1 |
| P | 8.0-0.1 | 8.0+0.1 | P1 | 2.0-0.1 | 2.0+0.1 |
| K | 2.65 | 2.80 | D1 | 1.5-0.0 | 1.5+0.1 |

