

N-沟道功率 MOS 管/ N-CHANNEL POWER MOSFET

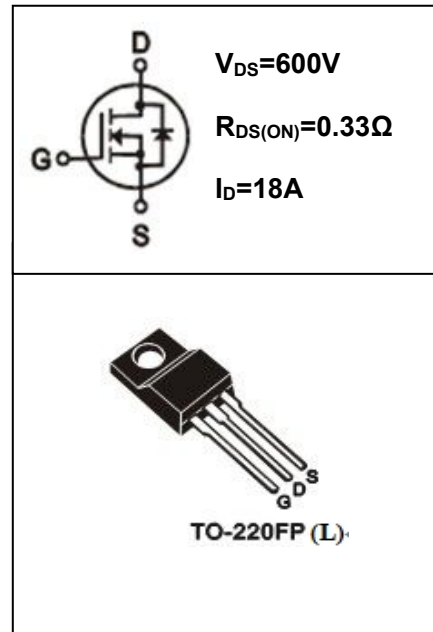
SIF18N60C

- 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-220FP(L)

| 参数 PARAMETER | 符号 SYMBOL | 额定值 VALUE | 单位 UNIT |
|----------------------------------------------|------------------|--------------|------------|
| 漏-源电压 Drain-source Voltage | V _{DS} | 600 | V |
| 栅-源电压 gate-source Voltage | V _{GS} | ±30 | V |
| 漏极电流 Continuous Drain Current TC=25°C | I _D | 18* | A |
| 漏极电流 Continuous Drain Current TC=100°C | I _D | 11* | A |
| 最大脉冲电流 Drain Current – Pulsed ① | I _{DM} | 72* | A |
| 耗散功率 Power Dissipation | P _D | 65 | 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 Energy② | E _{AS} | 1000 | mJ |



*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 | 600 | | | V |
| 击穿电压温度系数 Breakdown Voltage Temperature Coefficient | ΔBV _{DSS} / ΔT _J | I _D =250uA, Referenced to 25°C | | 0.6 | | V/°C |
| 栅极开启电压 Gate Threshold Voltage | V _{GS(TH)} | V _{GS} =V _{DS} , I _D =250μA | 3.0 | | 5.0 | V |
| 漏-源漏电流 Drain-source Leakage Current | I _{DSS} | V _{DS} =500V, V _{GS} =0V, T _J =25°C | | | 1 | μA |
| | | V _{DS} =400V, V _{GS} =0V, T _J =125°C | | | 10 | μA |
| 跨导 Forward Transconductance | g _{fs} | V _{DS} =40V, I _D =9.0A ③ | | 11 | | 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-220FP(L) 条管装/TUBE PACKING | SIF18N60C TO-220FP(L)-TU | SIF18N60C TO-220FP(L)-TU-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} | $V_{GS} = \pm 30V$ | | | ± 100 | nA |
| 漏-源导通电阻 Static Drain-source On Resistance | $R_{DS(ON)}$ | $V_{GS} = 10V, I_D = 9.0A$ ③ | | 0.33 | 0.4 | Ω |
| 输入电容 Input Capacitance | C_{iss} | $V_{GS} = 0V, V_{DS} = 25V$ $F = 1.0MHz$ | | 2650 | | pF |
| 输出电容 Output Capacitance | C_{oss} | | | 290 | | |
| 反向传输电容 Reverse transfer Capacitance | C_{rss} | | | 38 | | |
| 关断延迟 Turn -Off Delay Time | $T_d(off)$ | $V_{DD} = 320V, I_D = 18A$ $R_G = 5\Omega$ ③ | | 62 | | ns |
| 栅极电荷 Total Gate Charge | Q_g | $I_D = 9A, V_{DS} = 320V$ $V_{GS} = 10V$ ③ | | 46 | | nC |
| 栅源电荷 Gate-to-Source Charge | Q_{gs} | | | 13 | | nC |
| 栅漏电荷 Gate-to-Drain Charge | Q_{gd} | | | 21 | | nC |
| 二极管正向电流 Continuous Diode Forward Current | I_S | | | | 18 | A |
| 二极管正向压降 Diode Forward Voltage | V_{SD} | $T_j = 25^\circ C, I_S = I_f$ $V_{GS} = 0V$ ③ | | | 1.5 | V |
| 反向恢复时间 Reverse Recovery Time | t_{rr} | $T_j = 25^\circ C, I_f = 18A$ $di/dt = 100A/\mu s$ ③ | | | 520 | ns |
| 反向恢复电荷 Reverse Recovery Charge | Q_{rr} | | | 5.8 | | μC |

●热特性

●Thermal Characteristics

| 参数 PARAMETER | 符号 SYMBOL | 最大值 MAX | 单位 UNIT |
|-----------------------------------------------|--------------|-------------|--------------|
| | | TO-220FP(L) | |
| 热阻结-壳 Thermal Resistance Junction-case | R_{thJC} | 1.92 | $^\circ C/W$ |
| 热阻结-环境 Thermal Resistance Junction-ambient | R_{thJA} | 62.5 | $^\circ C/W$ |

注释(Notes):

- ① 脉冲宽度：以最高节温为限制
Repetitive rating: Pulse width limited by maximum junction temperature
- ② Starting $T_j = 25^\circ C, V_{DD} = 50V, L = 5mH, R_G = 25\Omega, I_{AS} = 18A$
- 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

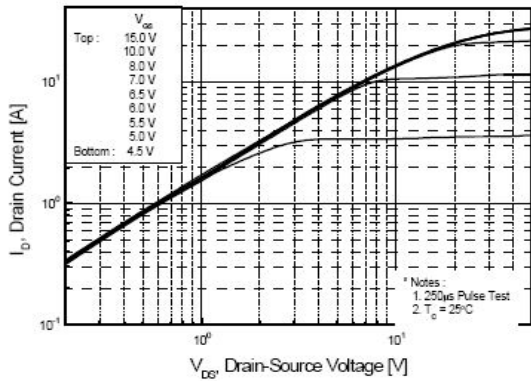


图 1 输出特性曲线, Tc=25°C
Fig1 Typical Output Characteristics, Tc=25°C

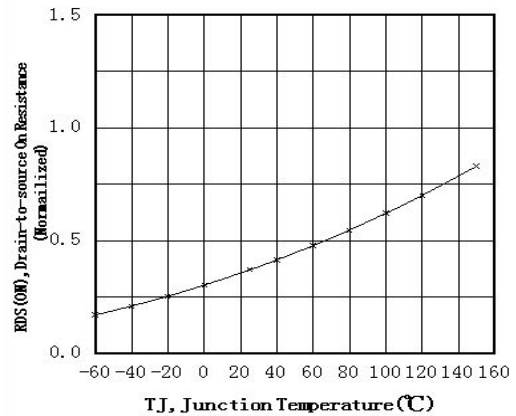


图 2 导通电阻与漏极电流和栅极电压曲线
Fig2 On-Resistance Vs.Drain Current and Gate Voltage

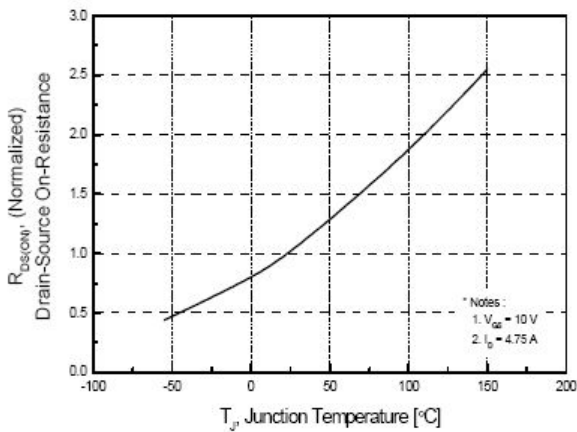


图 3 导通电阻与温度曲线
Fig3 Normalized On-Resistance Vs. Temperature

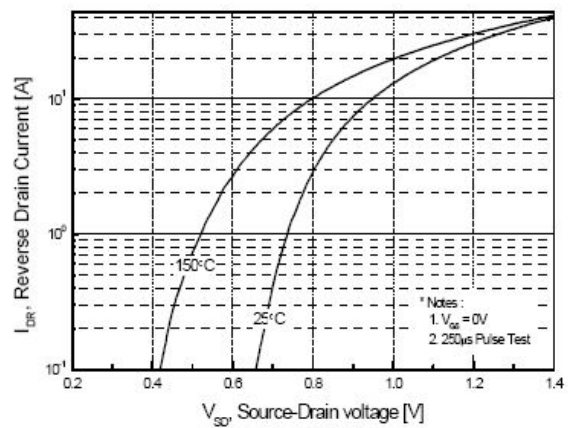


图 4 二极管正向电压曲线
Fig4 Typical Source-Drain Diode Forward Voltage

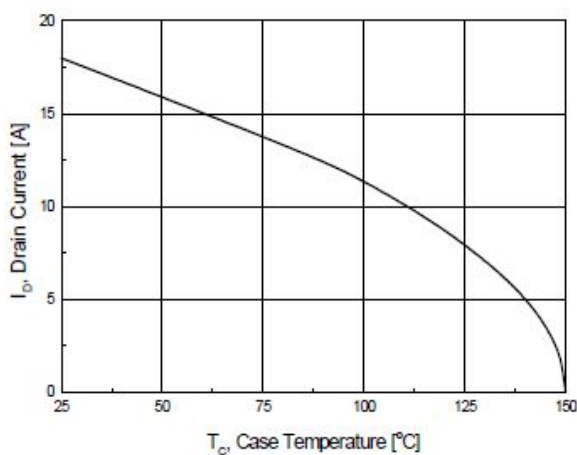


图 5 最大漏极电流与壳温曲线
Fig5 Maximum Drain Current Vs. Case Temperature

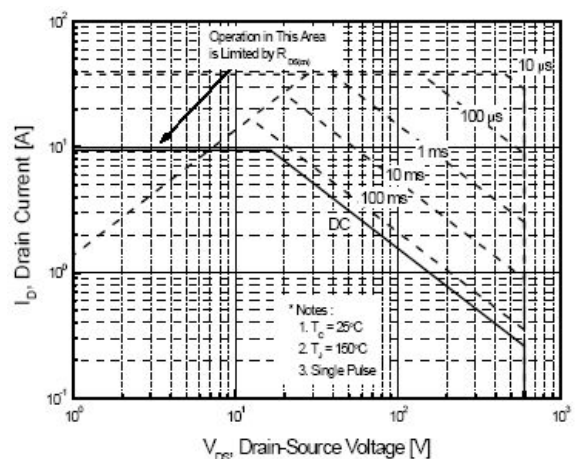
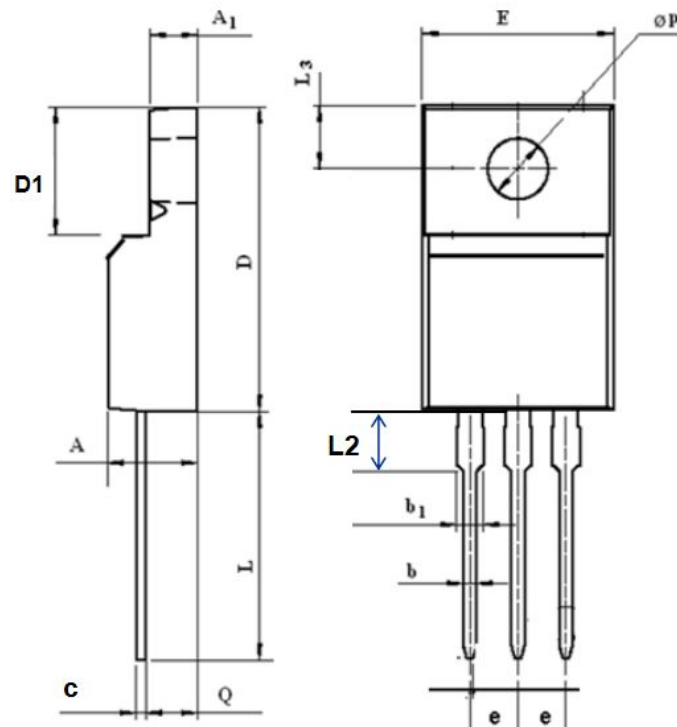


图 6 最大安全工作区曲线
Fig6 Maximum Safe Operating Area

TO-220FP 封装机械尺寸 TO-220FP 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 | 4.40 | | 4.95 | E | 9.60 | | 10.30 |
| A ₁ | 2.30 | | 2.90 | e | | 2.54 | |
| b | 0.70 | | 0.90 | L | 12.40 | | 14.00 |
| b ₁ | 1.18 | | 1.45 | L ₂ | 2.30 | | 2.60 |
| c | 0.40 | | 0.70 | L ₃ | 3.00 | | 4.00 |
| D | 14.50 | | 17.00 | ∅p | 3.00 | | 3.50 |
| D1 | 6.10 | | 9.00 | Q | 2.30 | | 2.80 |



TO-220FPL 封装机械尺寸 TO-220FPL 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 | 9.90 | | 10.36 | a | 1.08 | | 1.48 |
| B | 15.40 | | 16.40 | a1 | 0.70 | | 0.90 |
| B1 | 3.05 | | 3.55 | E | 2.34 | | 2.75 |
| C | 4.40 | | 5.00 | C1 | 2.25 | | 2.85 |
| c | 0.40 | | 0.60 | C2 | 2.45 | | 3.05 |
| b | 12.40 | | 13.50 | R | 2.90 | | 3.35 |
| b1 | 2.90 | | 3.90 | | | | L |

