

**N-沟道功率 MOS 管/ N-CHANNEL POWER MOSFET**

**SIF18N50C**

●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

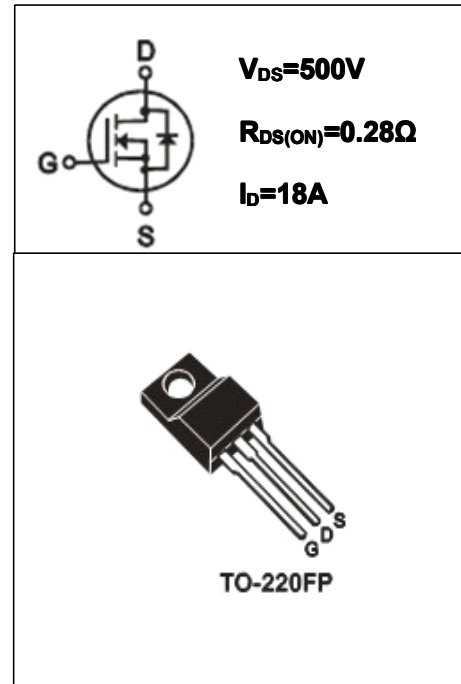
●应用：电子镇流器 电子变压器 开关电源

●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**

| 参数<br>PARAMETER                              | 符号<br>SYMBOL     | 额定值<br>VALUE | 单位<br>UNIT |
|--|------------------|--------------|------------|
| 漏-源电压<br>Drain-source Voltage                | V <sub>DS</sub>  | 500          | V          |
| 栅-源电压<br>gate-source Voltage                 | V <sub>GS</sub>  | ± 30         | V          |
| 漏极电流<br>Continuous Drain Current<br>TC=25°C  | I <sub>D</sub>   | 18*          | A          |
| 漏极电流<br>Continuous Drain Current<br>TC=100°C | I <sub>D</sub>   | 11*          | A          |
| 最大脉冲电流<br>Drain Current – Pulsed ①           | I <sub>DM</sub>  | 72*          | A          |
| 耗散功率<br>Power Dissipation                    | P <sub>D</sub>   | 65           | W          |
| 最高结温<br>Junction Temperature                 | T <sub>j</sub>   | 150          | °C         |
| 存储温度<br>Storage Temperature                  | T <sub>STG</sub> | -55-150      | °C         |
| 单脉冲雪崩能量<br>Single Pulse Avalanche Energy②    | E <sub>AS</sub>  | 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<br>PARAMETER                                       | 符号<br>SYMBOL                        | 测试条件<br>TEST CONDITION   | 最小值<br>MIN | 典型值<br>TYP | 最大值<br>MAX | 单位<br>UNIT |
|---|-------------------------------------|--|------------|------------|------------|------------|
| 漏-源击穿电压<br>Drain-source Breakdown Voltage             | BV <sub>DSS</sub>                   | V <sub>GS</sub> =0V, I <sub>D</sub> =250μA                           | 500        |            |            | V          |
| 击穿电压温度系数<br>Breakdown Voltage Temperature Coefficient | ΔBV <sub>DSS</sub> /ΔT <sub>j</sub> | I <sub>D</sub> =250uA, Referenced to 25°C                            |            | 0.6        |            | V/°C       |
| 栅极开启电压<br>Gate Threshold Voltage                      | V <sub>GS(TH)</sub>                 | V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250μA             | 3.0        |            | 5.0        | V          |
| 漏-源漏电流<br>Drain-source Leakage Current                | I <sub>DSS</sub>                    | V <sub>DS</sub> =500V,<br>V <sub>GS</sub> =0V, T <sub>j</sub> =25°C  |            |            | 1          | μA         |
|   |                                     | V <sub>DS</sub> =400V,<br>V <sub>GS</sub> =0V, T <sub>j</sub> =125°C |            |            | 10         | μA         |
| 跨导<br>Forward Transconductance                        | g <sub>fs</sub>                     | V <sub>DS</sub> =40V, I <sub>D</sub> =9.0A<br>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 条管装/TUBE PACKING | SIF18N50C TO-220FP-TU          | SIF18N50C TO-220FP-TU-HF |

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| 参数<br>PARAMETER                                     | 符号<br>SYMBOL | 测试条件<br>TEST CONDITION                                     | 最小值<br>MIN | 典型值<br>TYP | 最大值<br>MAX | 单位<br>UNIT |
|---|--------------|--|------------|------------|------------|------------|
| 栅极漏电流<br>Gate-body Leakage Current ( $V_{DS} = 0$ ) | $I_{GSS}$    | $V_{GS} = \pm 30V$   |            |            | $\pm 100$  | nA         |
| 漏-源导通电阻<br>Static Drain-source On Resistance        | $R_{DS(ON)}$ | $V_{GS} = 10V, I_D = 9.0A$<br>③                            |            | 0.24       | 0.28       | $\Omega$   |
| 输入电容<br>Input Capacitance                           | $C_{iss}$    | $V_{GS} = 0V, V_{DS} = 25V$<br>$F = 1.0MHz$                |            | 2650       |            | pF         |
| 输出电容<br>Output Capacitance                          | $C_{oss}$    |  |            | 290        |            |            |
| 反馈电容<br>Feedback Capacitance                        | $C_{rss}$    |  |            | 38         |            |            |
| 关断延迟<br>Turn -Off Delay Time                        | $T_d(off)$   | $V_{DD} = 320V, I_D = 18A$<br>$R_G = 5\Omega$ ③            |            | 62         |            | ns         |
| 栅极电荷<br>Total Gate Charge                           | $Q_g$        | $I_D = 9A, V_{DS} = 320V$<br>$V_{GS} = 10V$<br>③           |            | 46         |            | nC         |
| 栅源电荷<br>Gate-to-Source Charge                       | $Q_{gs}$     |  |            | 13         |            | nC         |
| 栅漏电荷<br>Gate-to-Drain Charge                        | $Q_{gd}$     |  |            | 21         |            | nC         |
| 二极管正向电流<br>Continuous Diode Forward Current         | $I_S$        |  |            |            | 18         | A          |
| 二极管正向压降<br>Diode Forward Voltage                    | $V_{SD}$     | $T_j = 25^\circ C, I_S = I_f$<br>$V_{GS} = 0V$ ③           |            |            | 1.5        | V          |
| 反向恢复时间<br>Reverse Recovery Time                     | $t_{rr}$     | $T_j = 25^\circ C, I_f = 18A$<br>$di/dt = 100A/\mu s$<br>③ |            |            | 520        | ns         |
| 反向恢复电荷<br>Reverse Recovery Charge                   | $Q_{rr}$     |  |            | 5.8        |            | $\mu C$    |

● 热特性

● Thermal Characteristics

| 参数<br>PARAMETER                               | 符号<br>SYMBOL | 最大值<br>MAX | 单位<br>UNIT   |
|---|--------------|------------|--------------|
|   |              | TO-220FP   |              |
| 热阻结-壳<br>Thermal Resistance Junction-case     | $R_{thJC}$   | 1.92       | $^\circ C/W$ |
| 热阻结-环境<br>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

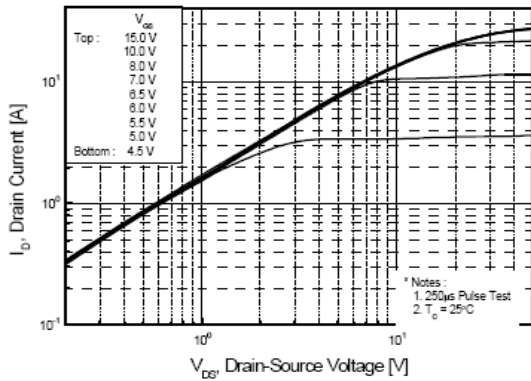


图 1 输出特性曲线, Tc=25°C  
Fig1 Typical Output Characteristics, Tc=25°C

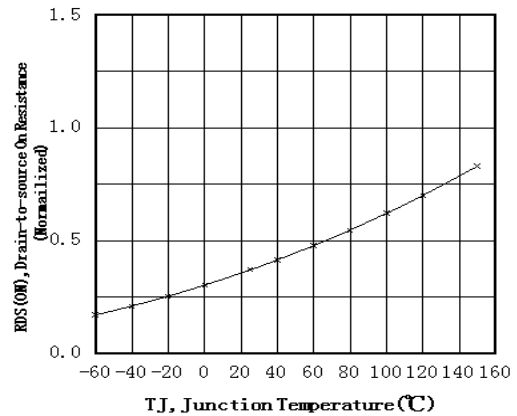


图 2 导通电阻与漏极电流和栅极电压曲线  
Fig2 On-Resistance Vs.Drain Current and Gate Voltage

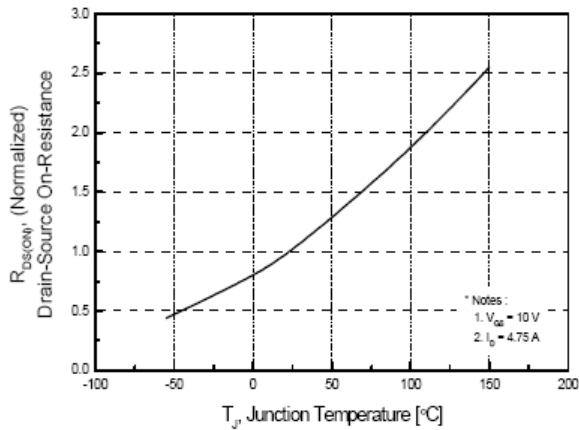


图 3 导通电阻与温度曲线  
Fig3 Normalized On-Resistance Vs. Temperature

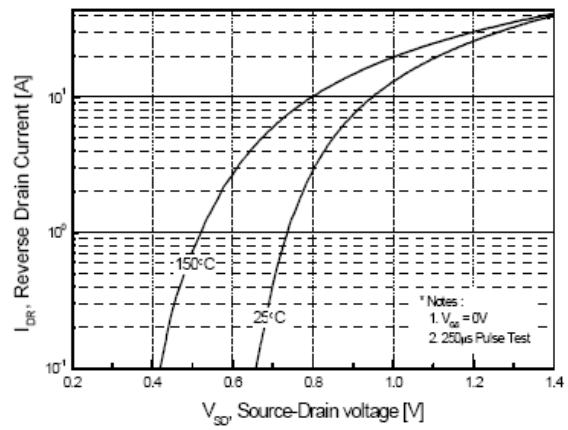


图 4 二极管正向电压曲线  
Fig4 Typical Source-Drain Diode Forward Voltage

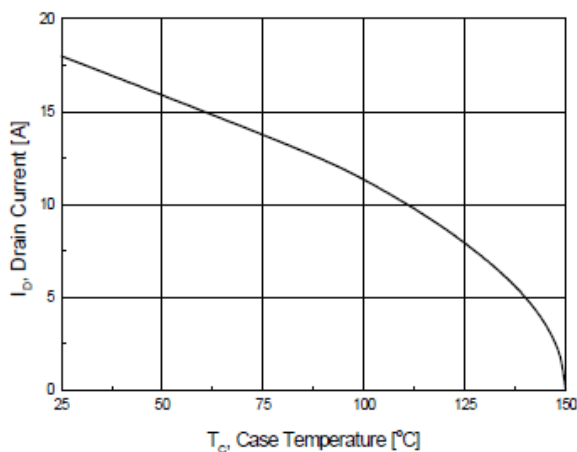


图 5 最大漏极电流与壳温曲线  
Fig5 Maximum Drain Current Vs. Case Temperature

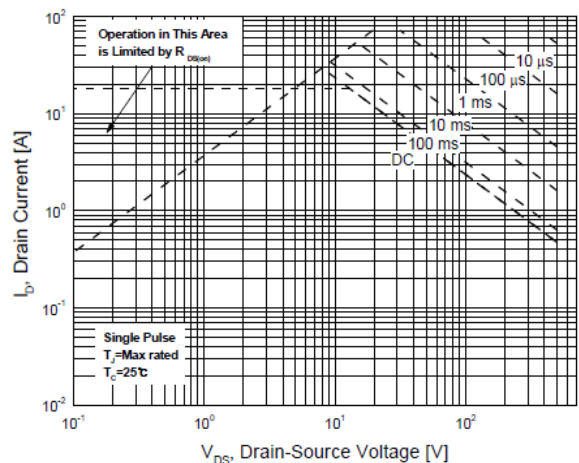


图 6 最大安全工作区曲线  
Fig6 Maximum Safe Operating Area

## TO-220FP 封装机械尺寸 TO-220FP MECHANICAL DATA

单位:毫米/UNIT: mm

| 符号<br>SYMBOL   | 最小值<br>min  | 典型值<br>nom | 最大值<br>max  | 符号<br>SYMBOL   | 最小值<br>min | 典型值<br>nom | 最大值<br>max |
|----------------|-------------|------------|-------------|----------------|------------|------------|------------|
| A              | <b>4.40</b> |            | <b>4.95</b> | e              |            | 2.54       |            |
| A <sub>1</sub> | 2.30        |            | 2.90        | L              | 12.50      |            | 14.30      |
| b              | 0.45        |            | 0.90        | L <sub>1</sub> | 9.10       |            | 10.05      |
| b <sub>1</sub> | 1.10        |            | 1.70        | L <sub>2</sub> | 15.00      |            | 16.00      |
| c              | 0.35        |            | 0.90        | L <sub>3</sub> | 3.00       |            | 4.00       |
| D              | 14.50       |            | 17.00       | øp             | 3.00       |            | 3.50       |
| D <sub>1</sub> | 6.10        |            | 9.00        | Q              | 2.30       |            | 2.80       |
| E              | 9.60        |            | 10.30       |                |            |            |            |

