

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

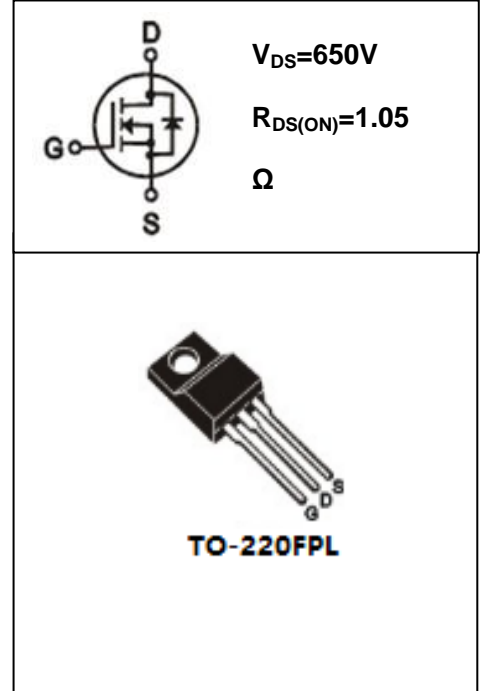
**SIF6N65FB**

- 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-220FPL

| 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>  | 650          | 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>   | 6.0          | A          |
| 漏极电流<br>Continuous Drain Current<br>TC=100°C | I <sub>D</sub>   | 3.2          | A          |
| 最大脉冲电流<br>Drain Current — Pulsed ①           | I <sub>DM</sub>  | 28           | A          |
| 耗散功率<br>Power Dissipation                    | P <sub>tot</sub> | TO-220FPL:40 | 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 Energy ②   | E <sub>AS</sub>  | 440          | mJ         |



●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                           | 650        |            |            | 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                            |            | 0.8        |            | 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             | 2.0        |            | 4.0        | V          |
| 漏-源漏电流<br>Drain-source Leakage Current                | I <sub>DSS</sub>                    | V <sub>DS</sub> =650V,<br>V <sub>GS</sub> =0V, T <sub>j</sub> =25°C  |            |            | 1          | μA         |
|   |                                     | V <sub>DS</sub> =520V,<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> =15V, I <sub>D</sub> =3.0A<br>③                      |            | 7.0        |            | 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-220FPL 条管装/TUBE PACKING | SIF6N65FB TO-220FPL-TU         | SIF6N65FB TO-220FPL-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        | $R_{DS(ON)}$ | $V_{GS} = 10V, I_D = 3.0A$<br>③                             |            | 1.05       | 1.5        | $\Omega$   |
| 输入电容<br>Input Capacitance                           | $C_{iss}$    | $V_{GS} = 0V, V_{DS} = 25V$<br>$F = 1.0MHz$                 | 800        | 1050       | 1200       | pF         |
| 输出电容<br>Output Capacitance                          | $C_{oss}$    |   | 40         | 84         | 150        |            |
| 反馈电容<br>Feedback Capacitance                        | $C_{rss}$    |   | 5          | 12         | 25         |            |
| 关断延迟<br>Turn -Off Delay Time                        | $T_d(off)$   | $V_{DD} = 325V, I_D = 6.0A$<br>$R_G = 25\Omega$ ③           |            | 50         |            | ns         |
| 栅极电荷<br>Total Gate Charge                           | $Q_g$        | $I_D = 6.0A, V_{DS} = 520V$<br>$V_{GS} = 10V$<br>③          |            | 21         | 25         | nC         |
| 栅源电荷<br>Gate-to-Source Charge                       | $Q_{gs}$     |   |            | 4.8        | 8          | nC         |
| 栅漏电荷<br>Gate-to-Drain Charge                        | $Q_{gd}$     |   |            | 6.5        | 10         | nC         |
| 二极管正向电流<br>Continuous Diode Forward Current         | $I_S$        |   |            |            | 7.0        | A          |
| 二极管正向压降<br>Diode Forward Voltage                    | $V_{SD}$     | $T_j = 25^\circ C, I_S = 6.0A$<br>$V_{GS} = 0V$ ③           |            |            | 1.4        | V          |
| 反向恢复时间<br>Reverse Recovery Time                     | $t_{rr}$     | $T_j = 25^\circ C, I_f = 6.0A$<br>$di/dt = 100A/\mu s$<br>③ |            | 365        |            | ns         |
| 反向恢复电荷<br>Reverse Recovery Charge                   | $Q_{rr}$     |   |            | 3.4        |            | $\mu C$    |

●热特性

●Thermal Characteristics

| 参数<br>PARAMETER                               | 符号<br>SYMBOL | 最大值<br>MAX | 单位<br>UNIT   |
|---|--------------|------------|--------------|
|   |              | TO-220FPL  |              |
| 热阻结-壳<br>Thermal Resistance Junction-case     | $R_{thJC}$   | 3.13       | $^\circ C/W$ |
| 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 初始结温= $25^\circ C$ ,  $V_{DD} = 50V$ ,  $L = 18mH$ ,  $R_G = 25\Omega$ ,  $I_{AS} = 7.0A$   
Starting  $T_j = 25^\circ C$ ,  $V_{DD} = 50V$ ,  $L = 18mH$ ,  $R_G = 25\Omega$ ,  $I_{AS} = 7.0A$
- 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

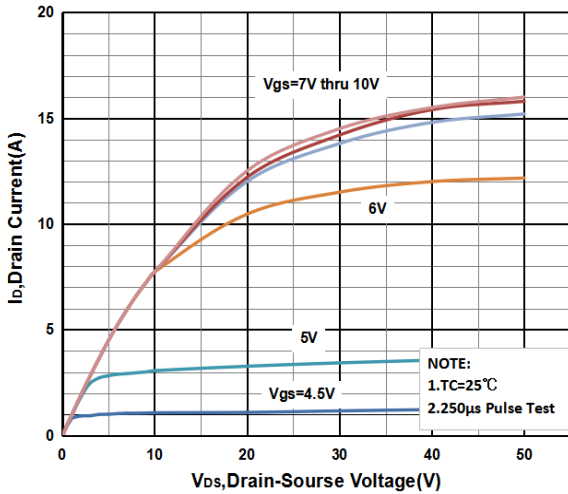


图 1 输出特性曲线, Tc=25°C

Fig1 Typical Output Characteristics, Tc=25°C

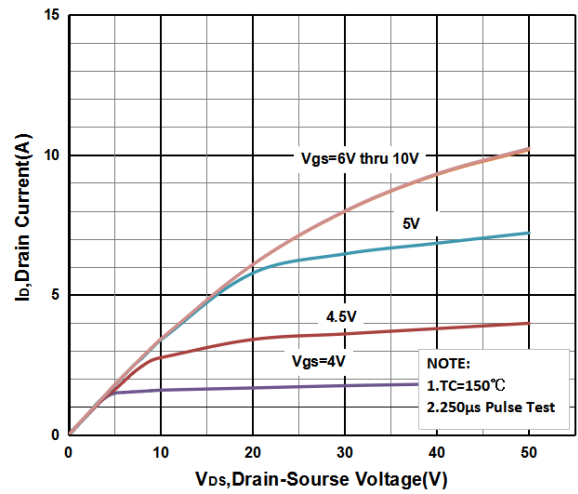


图 2 输出特性曲线, Tc=150°C

Fig2 Typical Output Characteristics, Tc=150°C

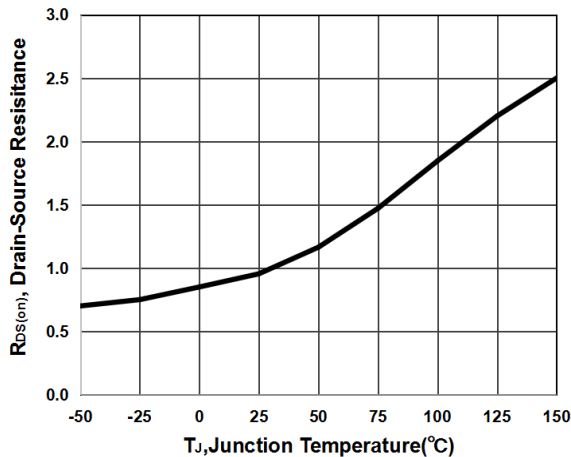


图 3 导通电阻与温度曲线

Fig3 Normalized On-Resistance Vs. Temperature

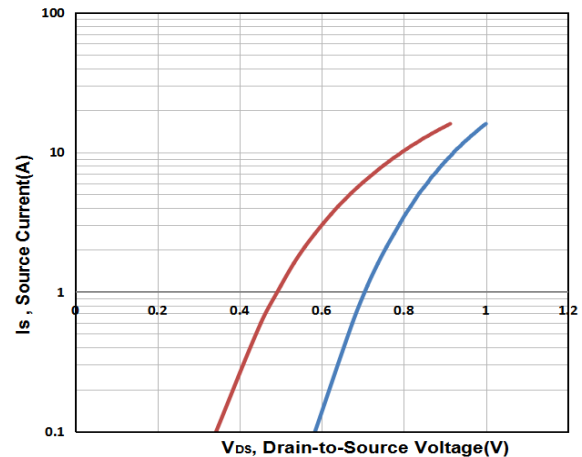


图 4 二极管正向电压曲线

Fig4 Typical Source-Drain Diode Forward Voltage

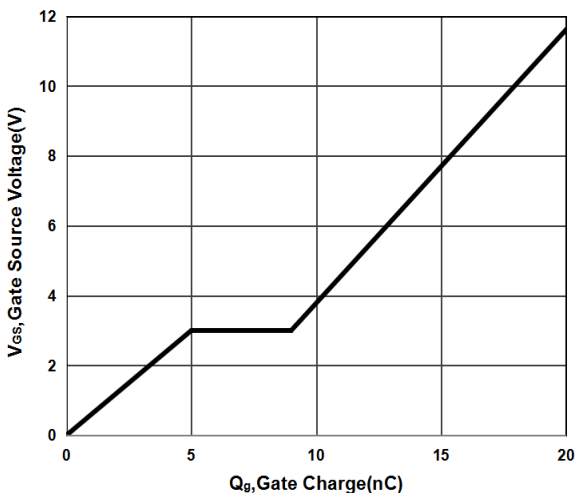


图 5 栅电荷 曲线

Fig5 Gate Charge waveforms

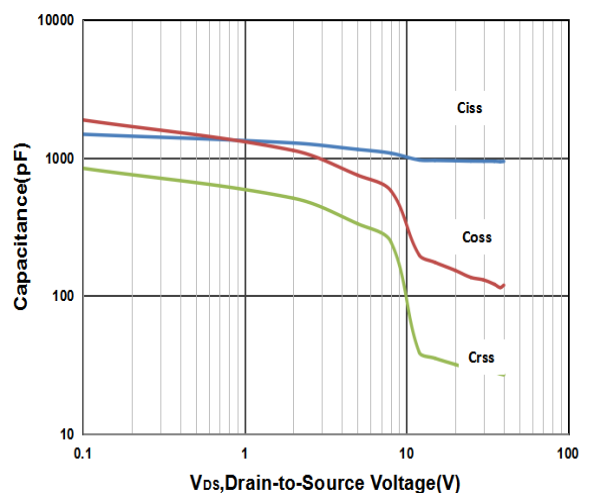


图 6 电容特性曲线

Fig6 Capacitance

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● 特性曲线

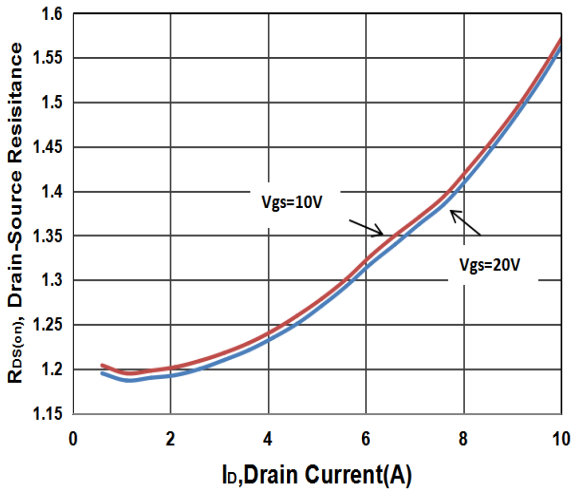


图 7  $T_c=25^{\circ}C$  导通电阻与漏极电流和栅极电压曲线  
Fig7 On-Resistance Vs.Drain Current and Gate Voltage

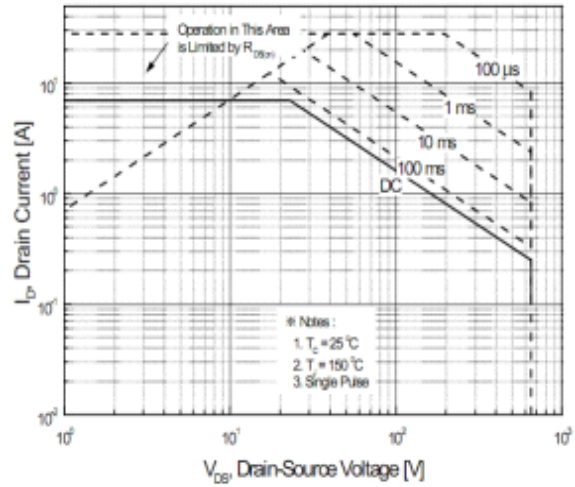


图 8 最大安全工作区曲线  
Fig8 Maximum Safe Operating Area

## TO-220FPL 封装机械尺寸 TO-220FPL 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            | 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       |
| <b>b1</b>    | <b>2.60</b> |            | <b>3.60</b> |              |            |            |            |

