

## SOP-8 N Channel Enhancement 沟道增强型 MOS Field Effect Transistor 场效应管

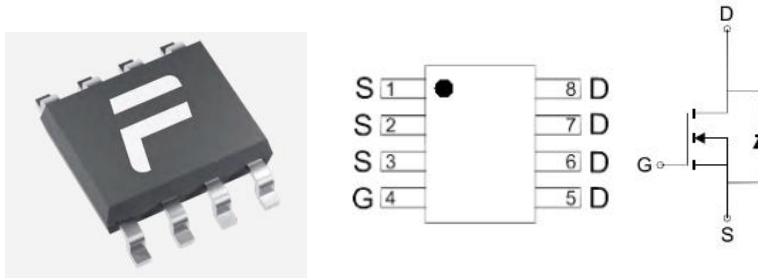
### ■Features 特点

Low on-resistance 低导通电阻  
 $R_{DS(ON)}=8.5m\Omega(\text{Type})@V_{GS}=10V$   
 $R_{DS(ON)}=10m\Omega(\text{Type})@V_{GS}=4.5V$

### ■Applications 应用

Load Switch 负载开关  
 DC-DC Conversion 升压转换  
 Power Management 电源管理  
 Portable Equipment 桌面设备

### ■Internal Schematic Diagram 内部结构



### ■Absolute Maximum Ratings 最大额定值

| Characteristic 特性参数                    | Symbol 符号                                                       | Rat 额定值     | Unit 单位      |
|----------------------------------------|-----------------------------------------------------------------|-------------|--------------|
| Drain-Source Voltage 漏极-源极电压           | $BV_{DSS}$                                                      | 40          | V            |
| Gate- Source Voltage 栅极-源极电压           | $V_{GS}$                                                        | $\pm 20$    | V            |
| Drain Current (continuous)漏极电流-连续      | $I_D$ (at $T_A = 25^\circ C$ )                                  | 12.5        | A            |
| Drain Current (pulsed)漏极电流-脉冲          | $I_{DM}$                                                        | 30          | A            |
| Total Device Dissipation 总耗散功率         | $P_{TOT}(\text{at } T_A = 25^\circ C$<br>at $T_A = 70^\circ C)$ | 2.08<br>1.3 | W            |
| Avalanche Energy Single Pulse 雪崩能量     | $E_{AS}$                                                        | 26          | mJ           |
| Thermal Resistance Junction-Ambient 热阻 | $R_{\theta JA}$                                                 | 60          | $^\circ C/W$ |
| Junction/Storage Temperature 结温/储存温度   | $T_J, T_{stg}$                                                  | -55~150     | $^\circ C$   |

**■ Electrical Characteristics 电特性**

 (T<sub>A</sub>=25℃ unless otherwise noted 如无特殊说明, 温度为 25℃)

| Characteristic<br>特性参数                                                                                                                       | Symbol<br>符号        | Min<br>最小值 | Typ<br>典型值 | Max<br>最大值   | Unit<br>单位 |
|----------------------------------------------------------------------------------------------------------------------------------------------|---------------------|------------|------------|--------------|------------|
| Drain-Source Breakdown Voltage<br>漏极-源极击穿电压(I <sub>D</sub> =250uA, V <sub>GS</sub> =0V)                                                      | BV <sub>DSS</sub>   | 40         | —          | —            | V          |
| Gate Threshold Voltage<br>栅极开启电压(I <sub>D</sub> =250uA, V <sub>GS</sub> =V <sub>DS</sub> )                                                   | V <sub>GS(th)</sub> | 1.5        | 1.8        | 2.5          | V          |
| Zero Gate Voltage Drain Current<br>零栅压漏极电流(V <sub>GS</sub> =0V, V <sub>DS</sub> =32V)                                                        | I <sub>DSS</sub>    | —          | —          | 1            | uA         |
| Gate Body Leakage<br>栅极漏电流(V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V)                                                                       | I <sub>GSS</sub>    | —          | —          | ±100         | nA         |
| Static Drain-Source On-State Resistance<br>静态漏源导通电阻(I <sub>D</sub> =7A, V <sub>GS</sub> =10V)<br>(I <sub>D</sub> =5A, V <sub>GS</sub> =4.5V) | R <sub>DS(ON)</sub> | —          | 8.5<br>10  | 10.5<br>12.5 | mΩ         |
| Diode Forward Voltage Drop<br>内附二极管正向压降(I <sub>SD</sub> =2A, V <sub>GS</sub> =0V)                                                            | V <sub>SD</sub>     | —          | 0.7        | 1.1          | V          |
| Input Capacitance 输入电容<br>(V <sub>GS</sub> =0V, V <sub>DS</sub> =20V, f=1MHz)                                                                | C <sub>ISS</sub>    | —          | 1125       | —            | pF         |
| Common Source Output Capacitance<br>共源输出电容(V <sub>GS</sub> =0V, V <sub>DS</sub> =20V, f=1MHz)                                                | C <sub>OSS</sub>    | —          | 132        | —            | pF         |
| Reverse Transfer Capacitance 反馈电容<br>(V <sub>GS</sub> =0V, V <sub>DS</sub> =20V, f=1MHz)                                                     | C <sub>RSS</sub>    | —          | 70         | —            | pF         |
| Total Gate Charge 栅极电荷密度<br>(V <sub>DS</sub> =20V, I <sub>D</sub> =7A, V <sub>GS</sub> =10V)                                                 | Q <sub>g</sub>      | —          | 20         | —            | nC         |
| Gate Source Charge 栅源电荷密度<br>(V <sub>DS</sub> =20V, I <sub>D</sub> =7A, V <sub>GS</sub> =10V)                                                | Q <sub>gs</sub>     | —          | 4          | —            | nC         |
| Gate Drain Charge 栅漏电荷密度<br>(V <sub>DS</sub> =20V, I <sub>D</sub> =7A, V <sub>GS</sub> =10V)                                                 | Q <sub>gd</sub>     | —          | 3          | —            | nC         |
| Turn-ON Delay Time 开启延迟时间<br>(V <sub>DS</sub> =20V I <sub>D</sub> =1A, R <sub>GEN</sub> =1Ω, V <sub>GS</sub> =10V)                           | t <sub>d(on)</sub>  | —          | 13         | —            | ns         |
| Turn-ON Rise Time 开启上升时间<br>(V <sub>DS</sub> =20V I <sub>D</sub> =1A, R <sub>GEN</sub> =1Ω, V <sub>GS</sub> =10V)                            | t <sub>r</sub>      | —          | 10         | —            | ns         |
| Turn-OFF Delay Time 关断延迟时间<br>(V <sub>DS</sub> =20V I <sub>D</sub> =1A, R <sub>GEN</sub> =1Ω, V <sub>GS</sub> =10V)                          | t <sub>d(off)</sub> | —          | 23         | —            | ns         |
| Turn-OFF Fall Time 关断下降时间<br>(V <sub>DS</sub> =20V I <sub>D</sub> =1A, R <sub>GEN</sub> =1Ω, V <sub>GS</sub> =10V)                           | t <sub>f</sub>      | —          | 6          | —            | ns         |

■ Typical Characteristic Curve 典型特性曲线

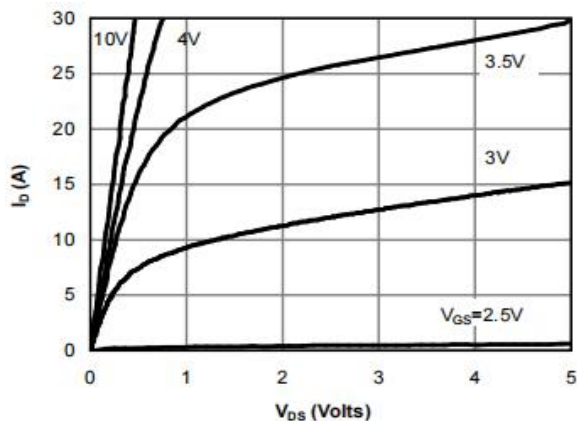


Figure 1: Output Characteristics

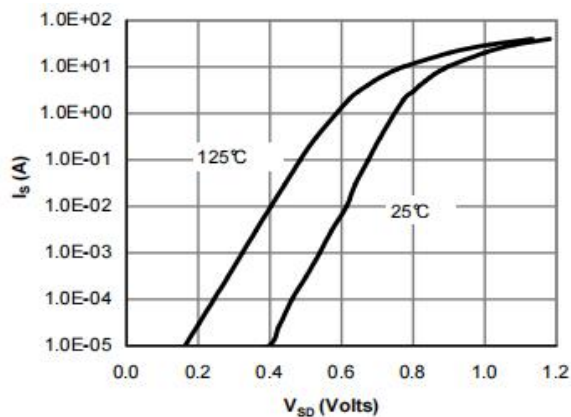


Figure 2: Diode Forward Characteristics

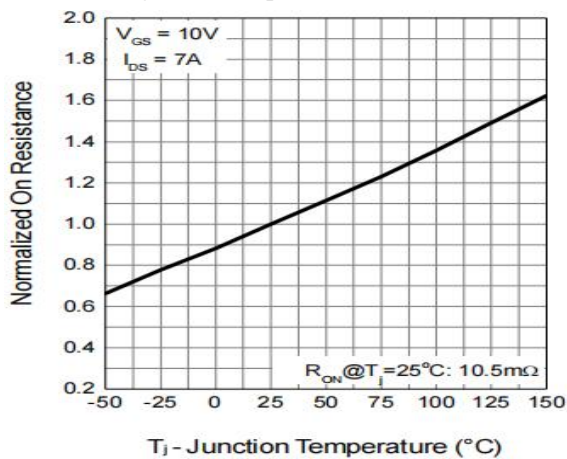


Figure 3: On-Resistance vs.  $T_J$

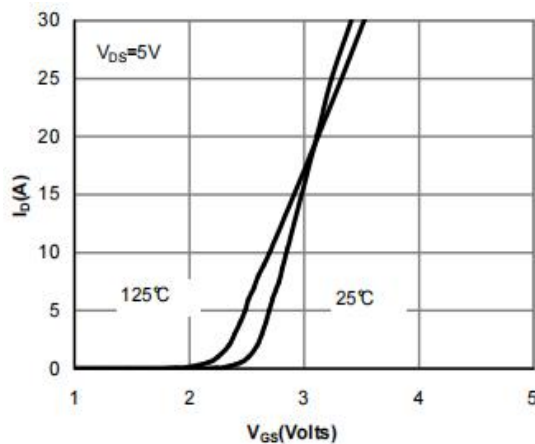


Figure 4: Transfer Characteristics

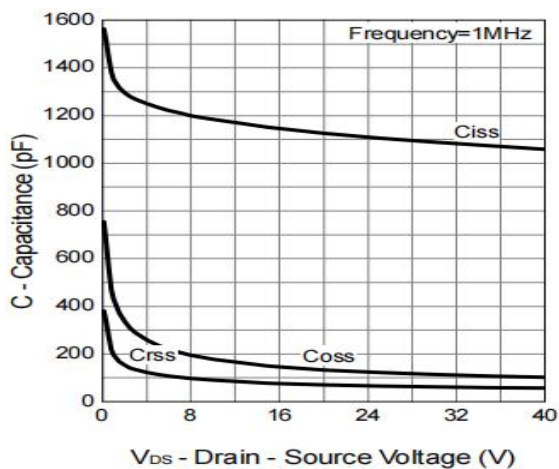


Figure 5: Capacitance Characteristics

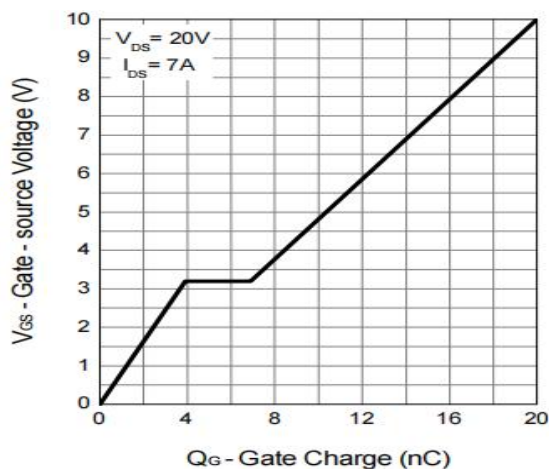


Figure 6: Gate-Charge Characteristics

■ Typical Characteristic Curve 典型特性曲线

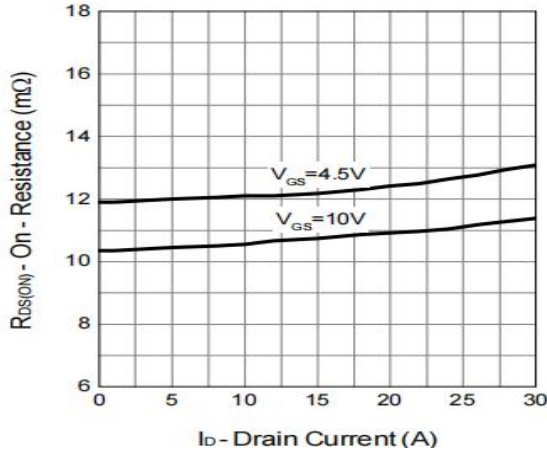


Figure 7: On-Resistance vs. Drain Current

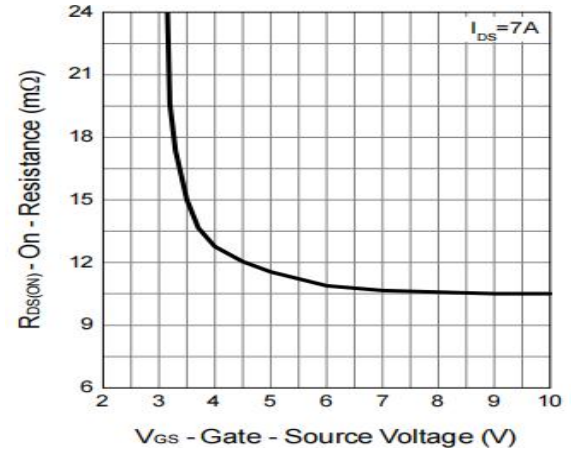


Figure 8: On-Resistance vs.  $V_{GS}$

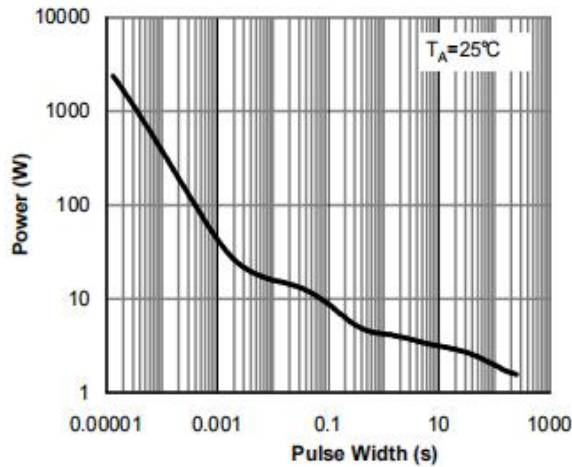


Figure 9: Power Rating Curve

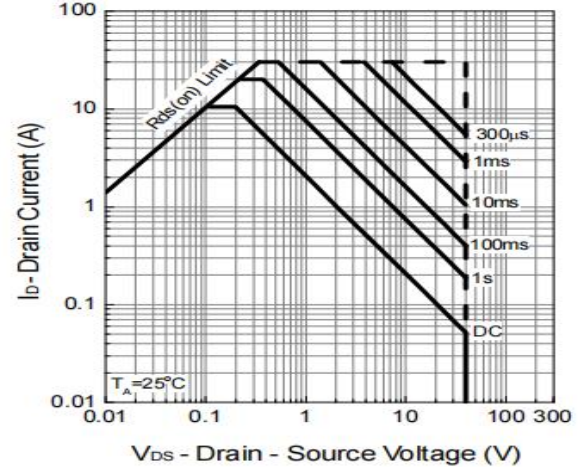


Figure 10: Safe Operating Area

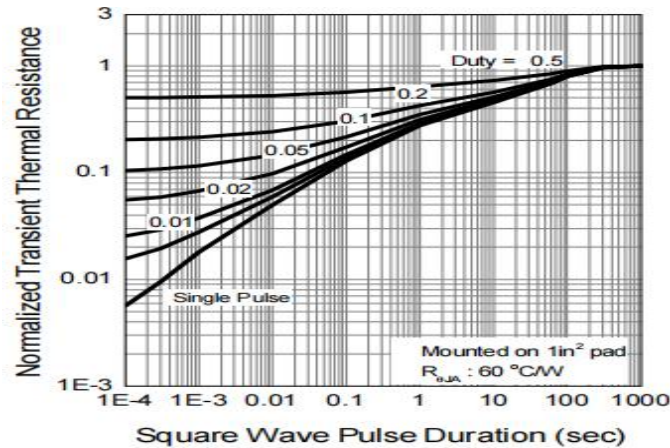
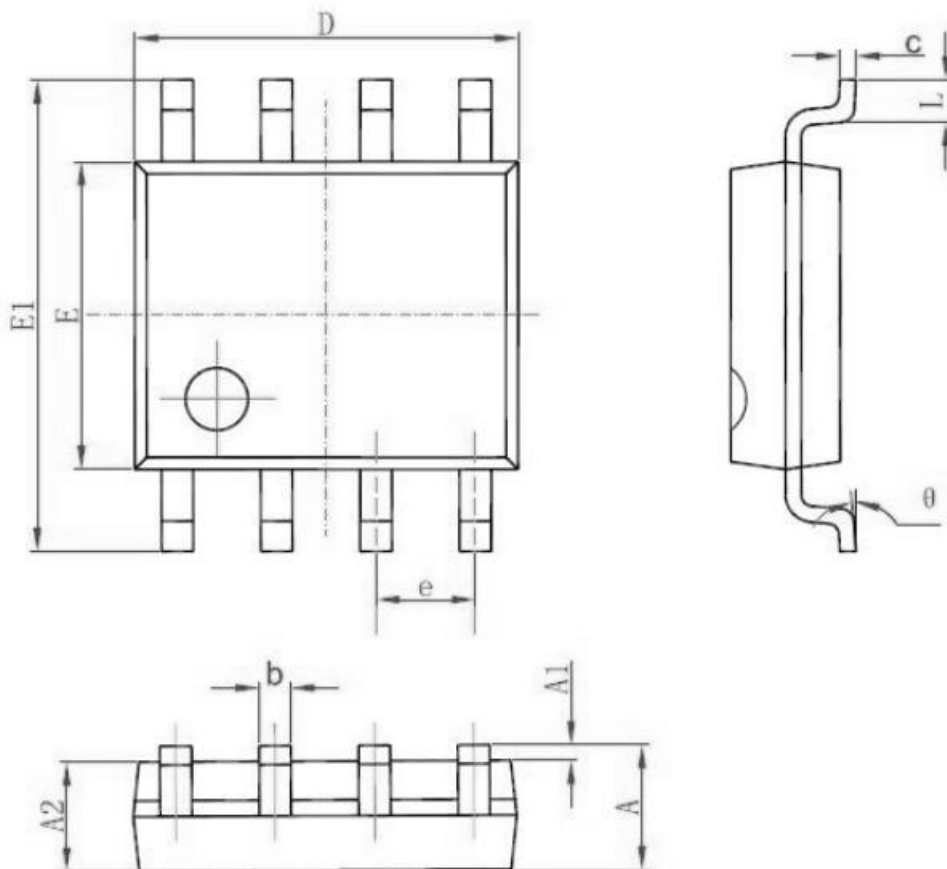


Figure 11: Transient Thermal Response Curve

■ **Dimension 外形封装尺寸**



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min                       | Max   | Min                  | Max   |
| A      | 1.350                     | 1.750 | 0.053                | 0.069 |
| A1     | 0.100                     | 0.250 | 0.004                | 0.010 |
| A2     | 1.350                     | 1.550 | 0.053                | 0.061 |
| b      | 0.330                     | 0.510 | 0.013                | 0.020 |
| c      | 0.170                     | 0.250 | 0.006                | 0.010 |
| D      | 4.700                     | 5.100 | 0.185                | 0.200 |
| E      | 3.800                     | 4.000 | 0.150                | 0.157 |
| E1     | 5.800                     | 6.200 | 0.228                | 0.244 |
| e      | 1.270 (BSC)               |       | 0.050 (BSC)          |       |
| L      | 0.400                     | 1.270 | 0.016                | 0.050 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |