

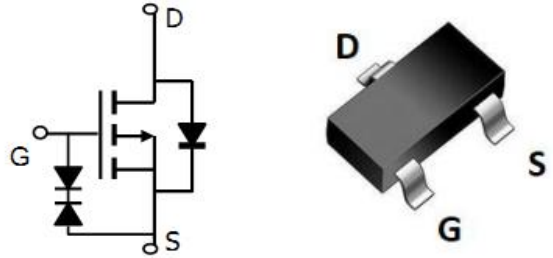


# 安徽富信半导体科技有限公司

ANHUI FOSAN SEMICONDUCTOR TECHNOLOGY CO., LTD.

AO3415L3-6AF

**SOT-23-3L -20V P Channel ESD Protection 沟道带静电保护**  
**MOS Field Effect Transistor 场效应管**



## ■ 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           | $BV_{DSS}$                     | -20      | V            |
| Gate- Source Voltage 栅极-源极电压           | $V_{GS}$                       | $\pm 12$ | V            |
| Drain Current (continuous)漏极电流-连续      | $I_D$ (at $T_A = 25^\circ C$ ) | -5       | A            |
| Drain Current (pulsed)漏极电流-脉冲          | $I_{DM}$                       | -23      | A            |
| Total Device Dissipation 总耗散功率         | $P_D$ (at $T_A = 25^\circ C$ ) | 1300     | mW           |
| ESD Protected Up to 人体模式静电保护范围         | ESD(HBM)                       | 2.0      | kV           |
| Thermal Resistance Junction-Ambient 热阻 | $R_{\theta JA}$                | 98       | $^\circ C/W$ |
| Junction/Storage Temperature 结温/储存温度   | $T_J, T_{stg}$                 | -55~150  | $^\circ C$   |

## ■ Device Marking 产品字标

AO3415L3-6AF=AFHV\*\*



## ■ Electrical Characteristics 电特性

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

| 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>   | -20        | —          | —          | 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> | -0.4       | -0.62      | -1         | V          |
| Zero Gate Voltage Drain Current<br>零栅压漏极电流(V <sub>GS</sub> =0V, V <sub>DS</sub> = -20V)                                                               | I <sub>DSS</sub>    | —          | —          | 1          | uA         |
| Gate Body Leakage<br>栅极漏电流(V <sub>GS</sub> =±10V, V <sub>DS</sub> =0V)                                                                                | I <sub>GSS</sub>    | —          | —          | ±15        | uA         |
| Static Drain-Source On-State Resistance<br>静态漏源导通电阻(I <sub>D</sub> = -5A, V <sub>GS</sub> = -4.5V)<br>(I <sub>D</sub> = -4A, V <sub>GS</sub> = -2.5V) | R <sub>DS(ON)</sub> | —          | 30<br>36   | 42<br>55   | mΩ         |
| Diode Forward Voltage Drop<br>内附二极管正向压降(I <sub>SD</sub> = -5A, V <sub>GS</sub> =0V)                                                                   | V <sub>SD</sub>     | —          | —          | -1.2       | V          |
| Input Capacitance 输入电容<br>(V <sub>GS</sub> =0V, V <sub>DS</sub> = -10V, f=1MHz)                                                                       | C <sub>ISS</sub>    | —          | 1180       | —          | pF         |
| Common Source Output Capacitance<br>共源输出电容(V <sub>GS</sub> =0V, V <sub>DS</sub> = -10V, f=1MHz)                                                       | C <sub>OSS</sub>    | —          | 125        | —          | pF         |
| Reverse Transfer Capacitance<br>反馈电容(V <sub>GS</sub> =0V, V <sub>DS</sub> = -10V, f=1MHz)                                                             | C <sub>RSS</sub>    | —          | 88         | —          | pF         |
| Total Gate Charge 栅极电荷密度<br>(V <sub>DS</sub> = -10V, I <sub>D</sub> = -4A, V <sub>GS</sub> = -4.5V)                                                   | Q <sub>g</sub>      | —          | 11         | —          | nC         |
| Gate Source Charge 栅源电荷密度<br>(V <sub>DS</sub> = -10V, I <sub>D</sub> = -4A, V <sub>GS</sub> = -4.5V)                                                  | Q <sub>gs</sub>     | —          | 2          | —          | nC         |
| Gate Drain Charge 栅漏电荷密度<br>(V <sub>DS</sub> = -10V, I <sub>D</sub> = -4A, V <sub>GS</sub> = -4.5V)                                                   | Q <sub>gd</sub>     | —          | 3          | —          | nC         |
| Turn-ON Delay Time 开启延迟时间<br>(V <sub>DS</sub> = -10V I <sub>D</sub> = -1A, R <sub>GEN</sub> =2.5 Ω, V <sub>GS</sub> = -4.5V)                          | t <sub>d(on)</sub>  | —          | 14         | —          | ns         |
| Turn-ON Rise Time 开启上升时间<br>(V <sub>DS</sub> = -10V I <sub>D</sub> = -1A, R <sub>GEN</sub> =2.5 Ω, V <sub>GS</sub> = -4.5V)                           | t <sub>r</sub>      | —          | 10         | —          | ns         |
| Turn-OFF Delay Time 关断延迟时间<br>(V <sub>DS</sub> = -10V I <sub>D</sub> = -1A, R <sub>GEN</sub> =2.5 Ω, V <sub>GS</sub> = -4.5V)                         | t <sub>d(off)</sub> | —          | 20         | —          | ns         |
| Turn-OFF Fall Time 关断下降时间<br>(V <sub>DS</sub> = -10V I <sub>D</sub> = -1A, R <sub>GEN</sub> =2.5 Ω, V <sub>GS</sub> = -4.5V)                          | t <sub>f</sub>      | —          | 30         | —          | ns         |

#### ■ Typical Characteristic Curve 典型特性曲线

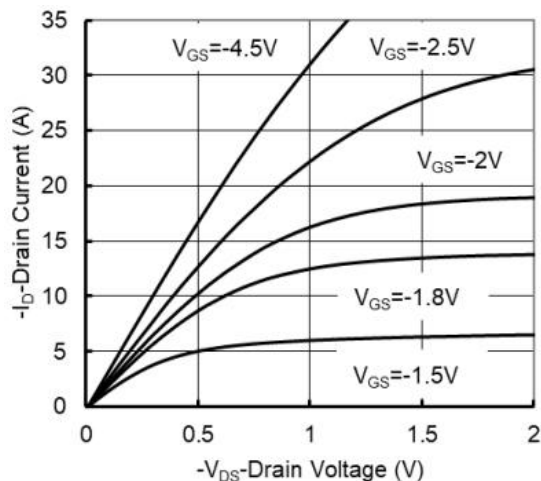


Figure 1: Output Characteristics

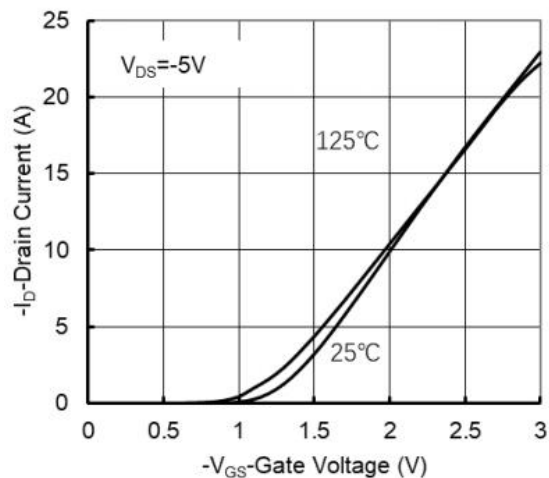


Figure 2: Transfer Characteristics

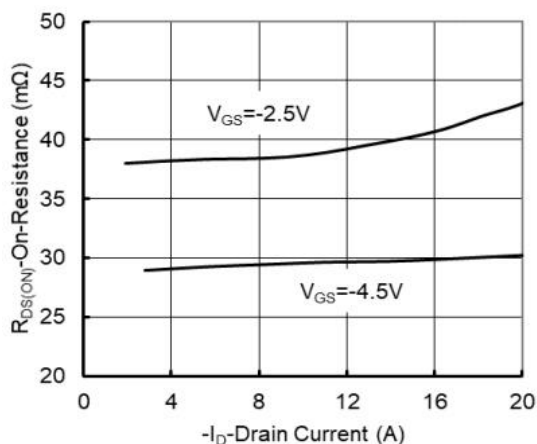


Figure 3: On-Resistance vs. Drain Current

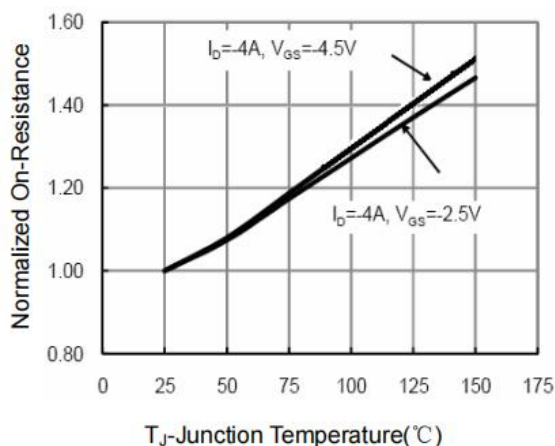


Figure 4: On-Resistance vs. Temperature

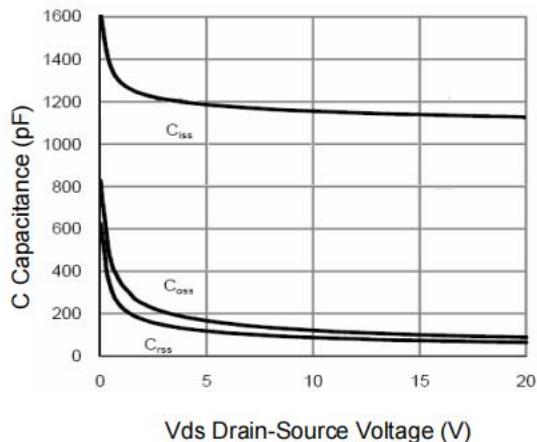


Figure 5: Capacitance Characteristics

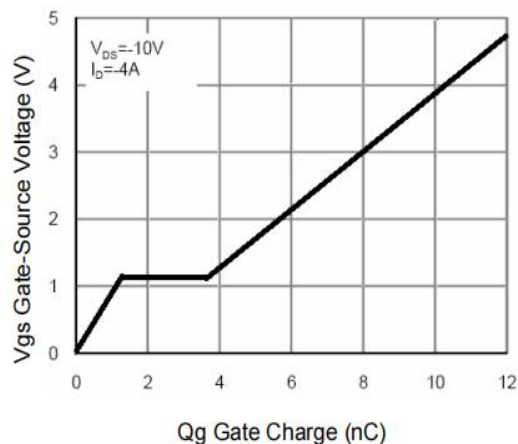


Figure 6: Gate-Charge Characteristics

#### ■ Typical Characteristic Curve 典型特性曲线

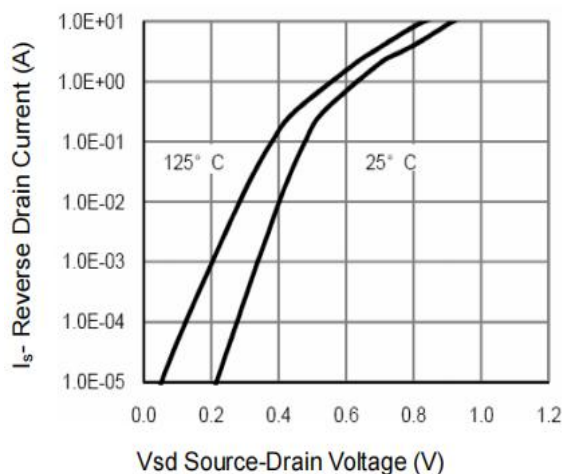


Figure 7: Diode Characteristics

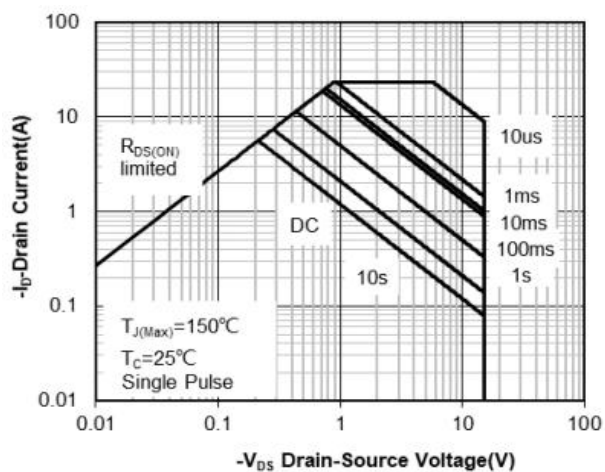


Figure 8: Safe Operating Area

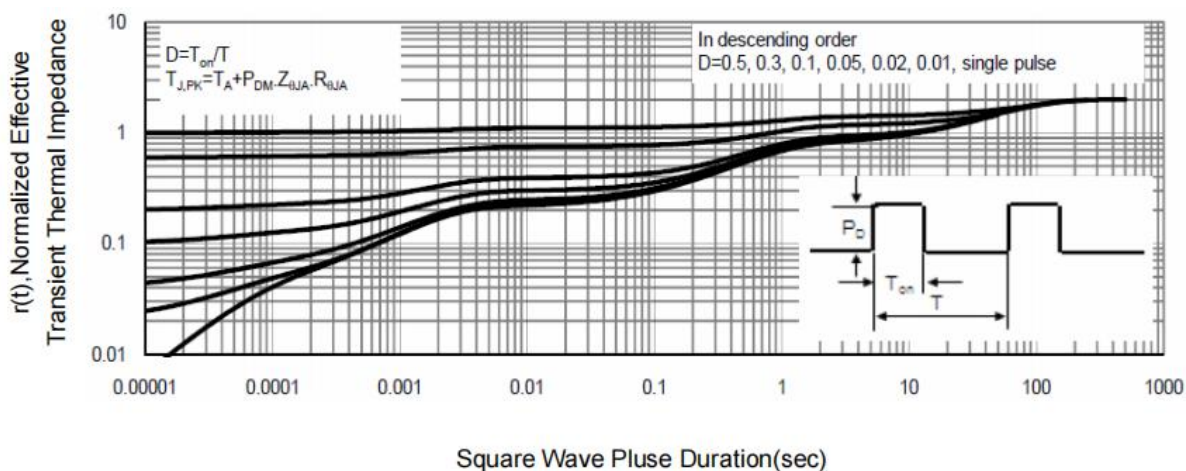
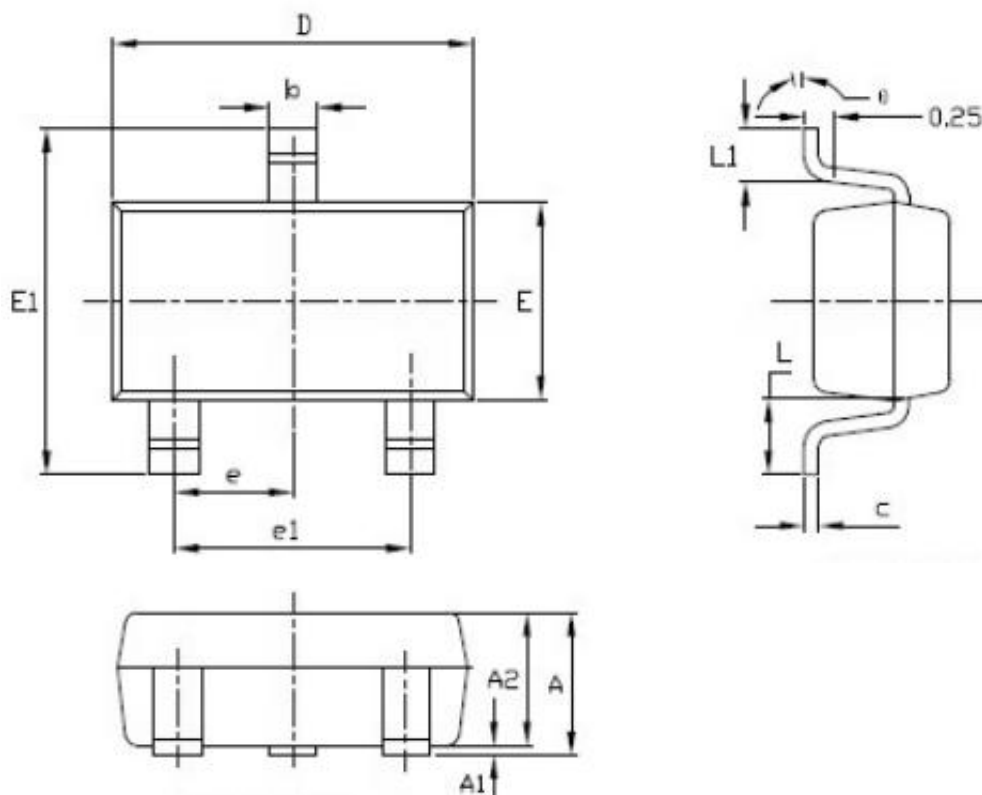


Figure 9: Transient Thermal Response Curve

#### ■ Dimension 外形封装尺寸



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min                       | Max   | Min                  | Max   |
| A      | 1.050                     | 1.250 | 0.041                | 0.049 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 1.050                     | 1.150 | 0.041                | 0.045 |
| b      | 0.300                     | 0.500 | 0.012                | 0.020 |
| c      | 0.100                     | 0.200 | 0.004                | 0.008 |
| D      | 2.820                     | 3.020 | 0.111                | 0.119 |
| E      | 1.500                     | 1.700 | 0.059                | 0.067 |
| E1     | 2.650                     | 2.950 | 0.104                | 0.116 |
| e      | 0.900                     | 1.00  | 0.035                | 0.039 |
| e1     | 1.800                     | 2.000 | 0.071                | 0.079 |
| L      | 0.450                     | 0.650 | 0.018                | 0.026 |
| L1     | 0.300                     | 0.600 | 0.012                | 0.024 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |