

## 650V N-CHANNEL MOSFET

### ◆ Features:

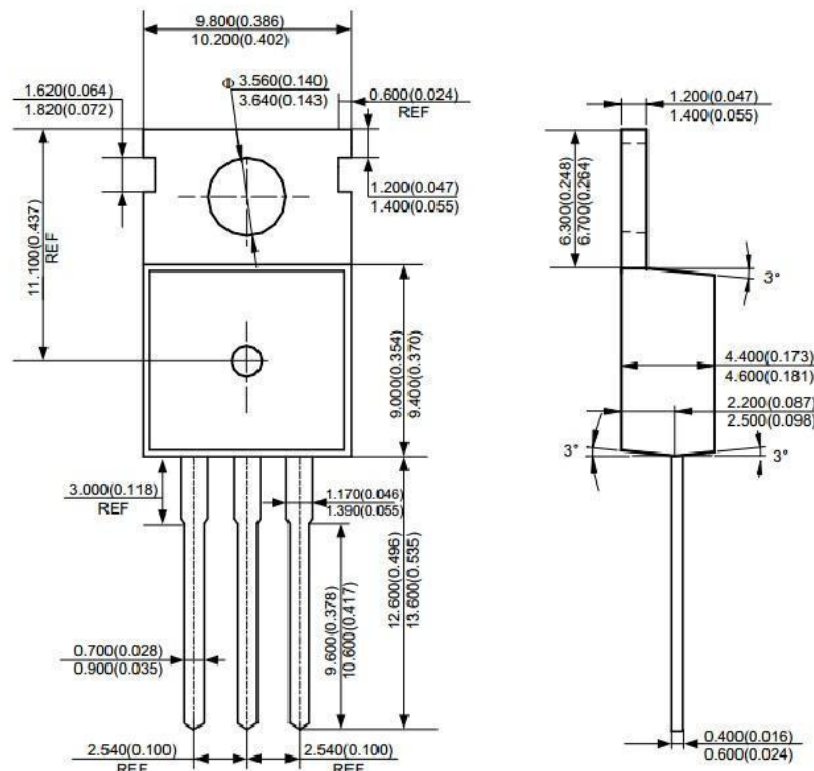
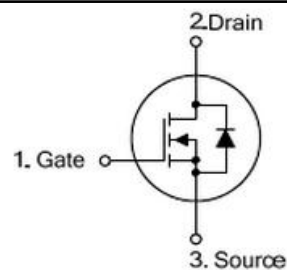
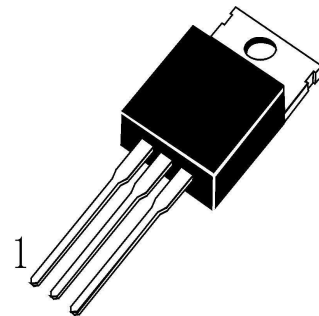
- ✧ Fast switching speed  
开关速度快
- ✧ High input impedance and low level drive  
高输入阻抗和低电平驱动
- ✧ Avalanche energy tested  
雪崩能量测试
- ✧ Improved dv/dt capability, high ruggedness  
提高 dv/dt 能力, 高耐用性

### ◆ Applications

- ✧ High efficiency switch mode power supplies  
高效率开关电源
- ✧ Power factor correction  
功率因数校正
- ✧ Electronic lamp ballast  
电子整流器



TO-220AB



### ◆ Absolute Maximum Ratings (Tc=25°C)

| Symbol           | Parameters                                       | Ratings    | Unit |
|------------------|--------------------------------------------------|------------|------|
| V <sub>DSS</sub> | Drain-Source Voltage<br>漏源电压                     | <b>650</b> | V    |
| V <sub>GS</sub>  | Gate-Source Voltage-Continuous<br>栅源电压           | <b>±30</b> | V    |
| I <sub>D</sub>   | Drain Current-Continuous (Note 2)<br>漏极持续电流      | <b>4</b>   | A    |
| I <sub>DM</sub>  | Drain Current-Single Plused (Note 1)<br>漏极单次脉冲电流 | <b>16</b>  | A    |
| P <sub>D</sub>   | Power Dissipation (Note 2)<br>功率损耗               | <b>75</b>  | W    |
| T <sub>j</sub>   | Max.Operating junction temperature<br>最大结温       | <b>150</b> | °C   |

### ◆ Electrical characteristics (Tc=25°C unless otherwise noted)

| Symbo<br>l                       | Parameters                                                  | Min        | Typ        | Max         | Units | Conditions                                                          |
|----------------------------------|-------------------------------------------------------------|------------|------------|-------------|-------|---------------------------------------------------------------------|
| <b>Static Characteristics</b>    |                                                             |            |            |             |       |                                                                     |
| B <sub>VDSS</sub>                | Drain-Source Breakdown<br>VoltageCurrent (Note 1)<br>漏极击穿电压 | <b>650</b> | --         | --          | V     | I <sub>D</sub> =250μA,<br>V <sub>GS</sub> =0V, T <sub>j</sub> =25°C |
| V <sub>GS(th)</sub>              | Gate Threshold Voltage<br>栅极开启电压                            | <b>2.0</b> | --         | <b>4.0</b>  | V     | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA            |
| R <sub>DS(on)</sub>              | Drain-Source On-Resistance<br>漏源导通电阻                        | --         | <b>2.4</b> | <b>2.8</b>  | Ω     | V <sub>GS</sub> =10V, I <sub>D</sub> =2A                            |
| I <sub>GSS</sub>                 | Gate-Body Leakage Current<br>栅极漏电流                          | --         | --         | <b>±100</b> | nA    | V <sub>GS</sub> =±30V, V <sub>DS</sub> =0                           |
| I <sub>DSS</sub>                 | Zero Gate Voltage Drain Current<br>零栅极电压漏极电流                | --         | --         | <b>1</b>    | μA    | V <sub>DS</sub> =650V, V <sub>GS</sub> =0                           |
| g <sub>fs</sub>                  | Forward Transconductance<br>正向跨导                            | <b>1.3</b> | --         | --          | S     | V <sub>DS</sub> =15V, I <sub>D</sub> =2A                            |
| <b>Switching Characteristics</b> |                                                             |            |            |             |       |                                                                     |

**OSP4N65****650V N-CHANNEL MOSFET**

|                         |                                                 |    |     |      |      |                                                                            |
|-------------------------|-------------------------------------------------|----|-----|------|------|----------------------------------------------------------------------------|
| T <sub>d (on)</sub>     | Turn-On Delay Time<br>开启延迟时间                    | -- | 13  | 35   | ns   | V <sub>DS</sub> =325V, I <sub>D</sub> =4A,<br>R <sub>G</sub> =25Ω (Note 2) |
| T <sub>r</sub>          | Rise Time<br>上升时间                               | -- | 40  | 85   | ns   |                                                                            |
| T <sub>d (off)</sub>    | Turn-Off Delay Time<br>关闭延迟时间                   | -- | 22  | 70   | ns   |                                                                            |
| T <sub>f</sub>          | Fall Time<br>下降时间                               | -- | 30  | 80   | ns   |                                                                            |
| Q <sub>g</sub>          | Total Gate Charge<br>栅极总电荷                      | -- | 13  | 19   | nC   | V <sub>DS</sub> =520, V <sub>GS</sub> =10V,<br>I <sub>D</sub> =4A (Note 2) |
| Q <sub>gs</sub>         | Gate-Source Charge<br>栅源极电荷                     | -- | 3.4 | --   | nC   |                                                                            |
| Q <sub>gd</sub>         | Gate-Drain Charge<br>栅漏极电荷                      | -- | 7.1 | --   | nC   |                                                                            |
| Dynamic Characteristics |                                                 |    |     |      |      |                                                                            |
| C <sub>iss</sub>        | Input Capacitance<br>输入电容                       | -- | 490 | 650  | pF   | V <sub>DS</sub> =25V, V <sub>GS</sub> =0,<br>f=1MHz                        |
| C <sub>oss</sub>        | Output Capacitance<br>输出电容                      | -- | 55  | 70   | pF   |                                                                            |
| C <sub>rss</sub>        | Reverse Transfer Capacitance<br>反向传输电容          | -- | 8   | 12   | pF   |                                                                            |
| V <sub>SD</sub>         | Diode Forward On-Voltage<br>二极管正向导通电压           | -- | --  | 1.4  | V    | I <sub>S</sub> =4A, V <sub>GS</sub> =0                                     |
| R <sub>th(j-c)</sub>    | Thermal Resistance, Junction to Case<br>结到外壳的热阻 | -- | --  | 1.67 | °C/W |                                                                            |

Note 1: Repetitive Rating : Pulse width limited by maximum junction temperature

Note 2: Pulse test: PW  $\leq$  300us , duty cycle  $\leq$  2%.