

## 650V N-CHANNEL MOSFET

### ◆ Features:

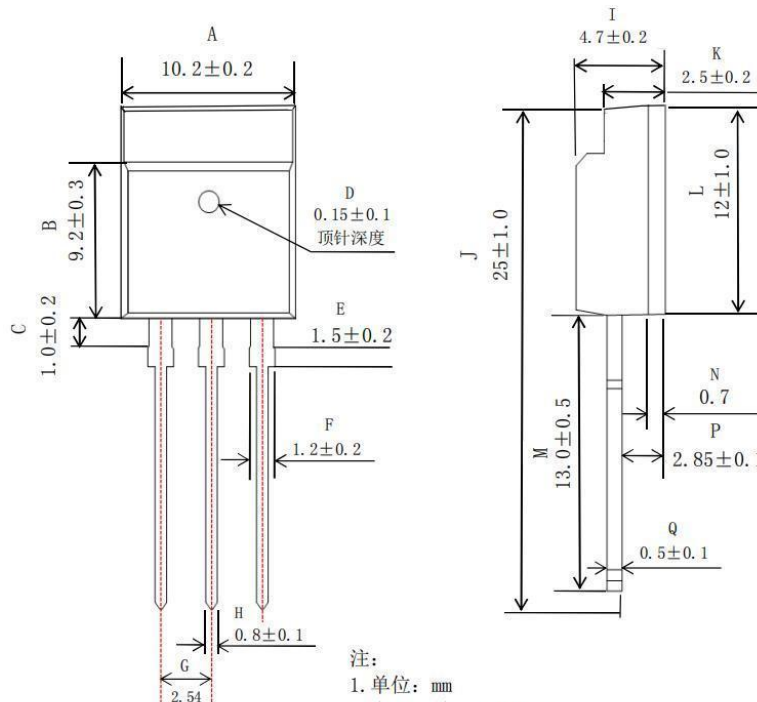
- ✧ Fast switching speed  
开关速度快
- ✧ High input impedance and low level drive  
高输入阻抗和低电平驱动
- ✧ Avalanche energy tested  
雪崩能量测试
- ✧ Improved dv/dt capability, high ruggedness  
提高 dv/dt 能力, 高耐用性

### ◆ 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-262F



注:  
1. 单位: mm  
2. 未注公差:  $\pm 0.2$ mm  
(除非另有说明)

# ◆ 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>5</b>   | A    |
| I <sub>DM</sub>  | Drain Current-Single Plused (Note 1)<br>漏极单次脉冲电流 | <b>18</b>  | A    |
| P <sub>D</sub>   | Power Dissipation (Note 2)<br>功率损耗               | <b>35</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>2.3</b> | <b>2.8</b>  | Ω     | V <sub>GS</sub> =10V, I <sub>D</sub> =2.5A                          |
| 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>1.2</b> | --         | --          | S     | V <sub>DS</sub> =15V, I <sub>D</sub> =2.5A                          |



## OSPH5N65C

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| Switching Characteristics |                                                                         |    |     |      |      |                                                                                   |
|---------------------------|-------------------------------------------------------------------------|----|-----|------|------|-----------------------------------------------------------------------------------|
| T <sub>d (on)</sub>       | Turn-On Delay Time<br>开启延迟时间                                            | -- | 20  | 40   | ns   | V <sub>DS</sub> =325V, I <sub>D</sub> =5A,<br>R <sub>G</sub> =25Ω（Note 2）         |
| T <sub>r</sub>            | Rise Time<br>上升时间                                                       | -- | 45  | 100  | ns   |                                                                                   |
| T <sub>d (off)</sub>      | Turn-Off Delay Time<br>关闭延迟时间                                           | -- | 35  | 75   | ns   |                                                                                   |
| T <sub>f</sub>            | Fall Time<br>下降时间                                                       | -- | 35  | 85   | ns   |                                                                                   |
| Q <sub>g</sub>            | Total Gate Charge<br>栅极总电荷                                              | -- | 15  | 20   | nC   | V <sub>DS</sub> =520V<br>，<br>V <sub>GS</sub> =10V,<br>I <sub>D</sub> =5A（Note 2） |
| Q <sub>gs</sub>           | Gate-Source Charge<br>栅源极电荷                                             | -- | 3.5 | --   | nC   |                                                                                   |
| Q <sub>gd</sub>           | Gate-Drain Charge<br>栅漏极电荷                                              | -- | 7.5 | --   | nC   |                                                                                   |
| Dynamic Characteristics   |                                                                         |    |     |      |      |                                                                                   |
| C <sub>iss</sub>          | Input Capacitance<br>输入电容                                               | -- | 515 | 670  | 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                                              | -- | 65  | 80   | pF   |                                                                                   |
| C <sub>rss</sub>          | Reverse Transfer Capacitance<br>反向传输电容                                  | -- | 7.5 | 10.5 | pF   |                                                                                   |
| I <sub>S</sub>            | Continuous Drain-Source Diode<br>Forward Current（Note 2）<br>二极管导通正向持续电流 | -- | --  | 5    | A    |                                                                                   |
| 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> =5A, V <sub>GS</sub> =0                                            |
| R <sub>th(j-c)</sub>      | Thermal Resistance, Junction to Case<br>结到外壳的热阻                         | -- | --  | 3.6  | °C/W |                                                                                   |

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

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