

**LOW Voltage Trench Nch MOSFET**
**◆ Features:**

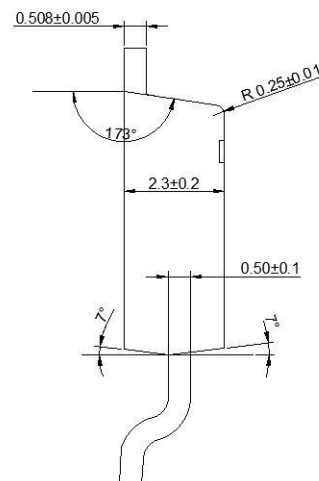
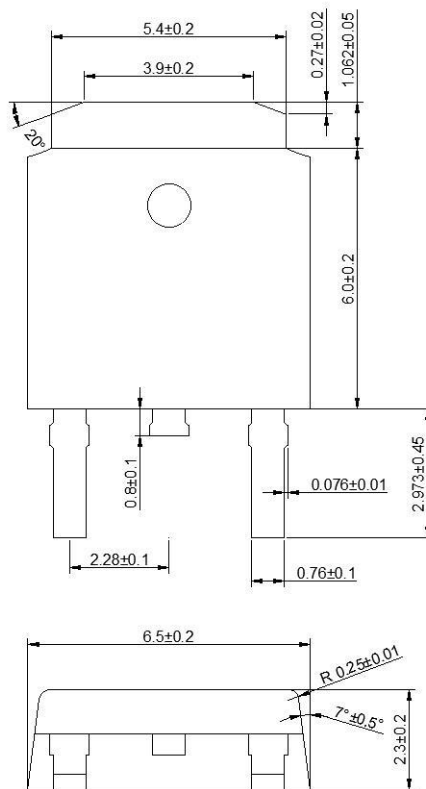
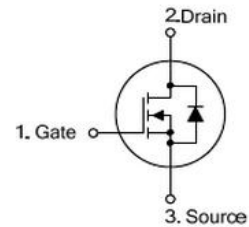
- ✧ Fast switching speed  
开关速度快
- ✧ Low gate charge  
低门充电
- ✧ High power and current handling capability  
高功率和电流处理能力
- ✧ RoHS compliant  
符合 RoHS 标准

**◆ Applications**

- ✧ DC to DC converters  
直流到直流转换
- ✧ Synchronous Rectification  
同步整流


**TO-252**


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单位:mm  
**TO-252**

**LOW Voltage Trench Nch MOSFET**
**◆ Absolute Maximum Ratings (Tc=25°C)**

| Symbol           | Parameters                                       | Ratings    | Unit |
|------------------|--------------------------------------------------|------------|------|
| V <sub>DSS</sub> | Drain-Source Voltage<br>漏源电压                     | <b>30</b>  | V    |
| V <sub>GS</sub>  | Gate-Source Voltage-Continuous<br>栅源电压           | <b>±20</b> | V    |
| I <sub>D</sub>   | Drain Current-Continuous (Note 2)<br>漏极持续电流      | <b>90</b>  | A    |
| I <sub>DM</sub>  | Drain Current-Single Plused (Note 1)<br>漏极单次脉冲电流 | <b>360</b> | A    |
| P <sub>D</sub>   | Power Dissipation (Note 2)<br>功率损耗               | <b>115</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>V</sub> DSS            | Drain-Source Breakdown<br>VoltageCurrent (Note 1)<br>漏极击穿电压 | <b>30</b>  | --         | --          | V     | I <sub>D</sub> =250μA, V <sub>GS</sub> =0V               |
| V <sub>GS(th)</sub>           | Gate Threshold Voltage<br>栅极开启电压                            | <b>1.0</b> | <b>1.5</b> | <b>2.5</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>3.3</b> | --          | mΩ    | V <sub>GS</sub> =10V, I <sub>D</sub> =1A                 |
| I <sub>GSS</sub>              | Gate-Body Leakage Current<br>栅极漏电流                          | --         | --         | <b>±100</b> | nA    | V <sub>GS</sub> =±25V, 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> =30V, V <sub>GS</sub> =0                 |
| g <sub>fs</sub>               | Forward Transconductance<br>正向跨导                            | <b>20</b>  | --         | --          | S     | V <sub>DS</sub> =10V, I <sub>D</sub> =20A                |

**OSD90N03T****LOW Voltage Trench Nch MOSFET**

| Switching Characteristics |                                                                          |    |      |      |      |                                                                                          |
|---------------------------|--------------------------------------------------------------------------|----|------|------|------|------------------------------------------------------------------------------------------|
| T <sub>d (on)</sub>       | Turn-On Delay Time<br>开启延迟时间                                             | -- | 15   | --   | ns   | V <sub>GS</sub> =10V,<br>V <sub>DS</sub> =30V,I <sub>D</sub> =30A,<br>R <sub>G</sub> =1Ω |
| T <sub>r</sub>            | Rise Time<br>上升时间                                                        | -- | 13   | --   | ns   |                                                                                          |
| T <sub>d (off)</sub>      | Turn-Off Delay Time<br>关闭延迟时间                                            | -- | 35   | --   | ns   |                                                                                          |
| T <sub>f</sub>            | Fall Time<br>下降时间                                                        | -- | 10   | --   | ns   |                                                                                          |
| Q <sub>g</sub>            | Total Gate Charge<br>栅极总电荷                                               | -- | 78   | --   | nC   | V <sub>DS</sub> =30, V <sub>GS</sub> =4.5V,<br>I <sub>D</sub> =40A                       |
| Q <sub>gs</sub>           | Gate-Source Charge<br>栅源极电荷                                              | -- | 15   | --   | nC   |                                                                                          |
| Q <sub>gd</sub>           | Gate-Drain Charge<br>栅漏极电荷                                               | -- | 25   | --   | nC   |                                                                                          |
| Dynamic Characteristics   |                                                                          |    |      |      |      |                                                                                          |
| C <sub>iss</sub>          | Input Capacitance<br>输入电容                                                | -- | 3200 | --   | pF   | V <sub>DS</sub> =20V, V <sub>GS</sub> =0,<br>f=1MHz                                      |
| C <sub>oss</sub>          | Output Capacitance<br>输出电容                                               | -- | 375  | --   | pF   |                                                                                          |
| C <sub>rss</sub>          | Reverse Transfer Capacitance<br>反向传输电容                                   | -- | 60   | --   | 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 | -- | --   | 90   | A    |                                                                                          |
| V <sub>SD</sub>           | Diode Forward On-Voltage<br>二极管正向导通电压                                    | -- | --   | 1.2  | V    | I <sub>S</sub> =40A, V <sub>GS</sub> =0                                                  |
| R <sub>th(j-c)</sub>      | Thermal Resistance, Junction to Case<br>结到外壳的热阻                          | -- | --   | 1.09 | °C/W |                                                                                          |

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

Note 2: Pulse test: PW ≤ 300us , duty cycle ≤ 2%.