

### 描述 / Descriptions

TO-252 塑封封装 N 沟道 MOS 场效应管。N-CHANNEL MOSFET in a TO-252 Plastic Package.

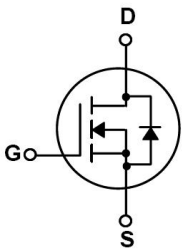
### 特征 / Features

低栅电荷,低反馈电容,开关速度快。  
Low gate charge, low crss, fast switching.

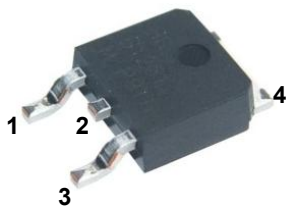
### 用途 / Applications

用于高功率 DC/DC 转换和功率开关。  
These devices are well suited for high efficiency switching DC/DC converters and switch mode power supplies.

### 内部等效电路 / Equivalent Circuit



### 引脚排列 / Pinning



PIN1 : G      PIN 2 : D      PIN 3 : S      PIN 4 : D

### 放大及印章代码 / h<sub>FE</sub> Classifications & Marking

见印章说明。 See Marking Instructions.

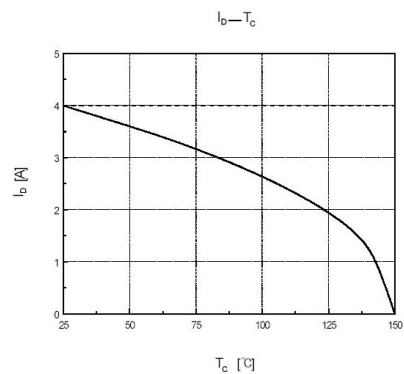
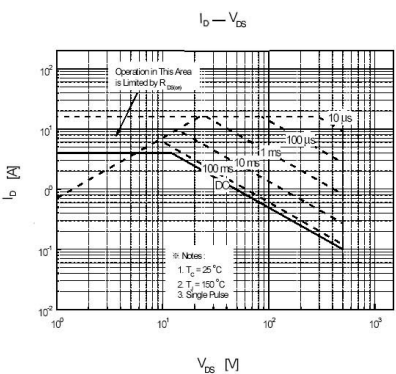
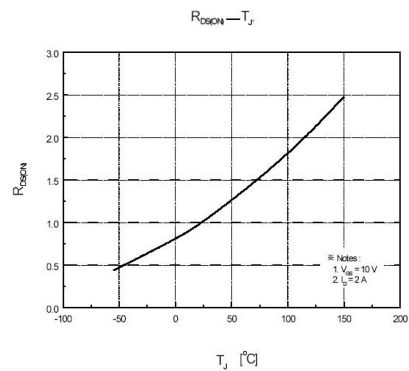
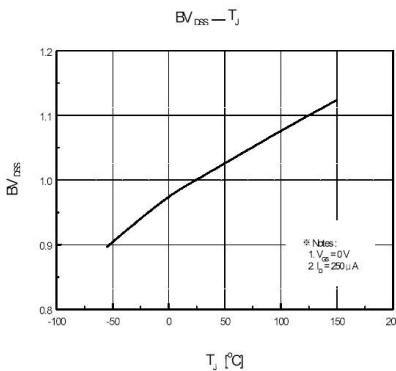
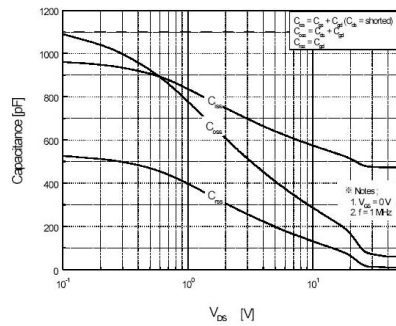
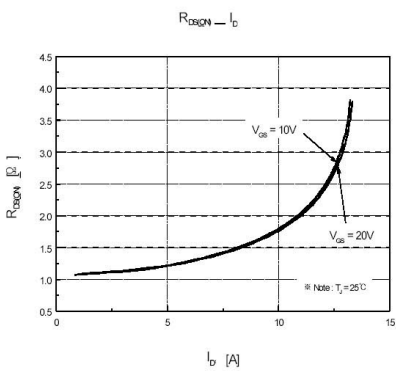
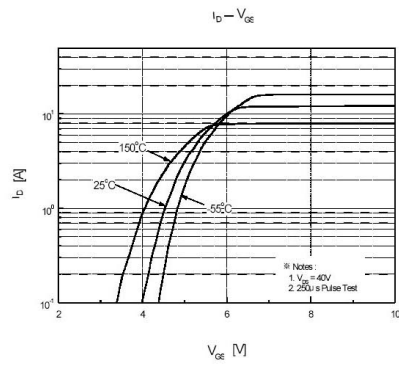
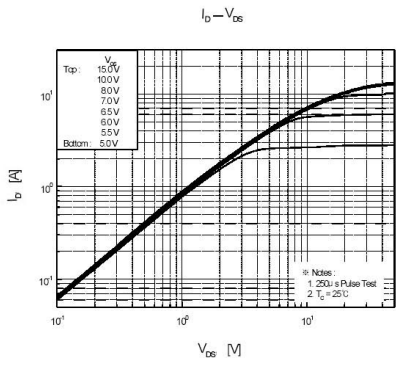
**极限参数 / Absolute Maximum Ratings(Ta=25°C)**

| 参数<br>Parameter                          | 符号<br>Symbol                           | 数值<br>Rating | 单位<br>Unit |
|--|--|--------------|------------|
| Drain-Source Voltage                     | V <sub>DSS</sub>                       | 500          | V          |
| Drain Current                            | I <sub>D</sub> (T <sub>C</sub> =25°C)  | 5            | A          |
| Drain Current                            | I <sub>D</sub> (T <sub>C</sub> =100°C) | 2.8          | A          |
| Drain Current - Pulsed                   | I <sub>DM</sub>                        | 16           | A          |
| Gate-Source Voltage                      | V <sub>GSS</sub>                       | ±30          | V          |
| Avalanche Current                        | I <sub>AR</sub>                        | 4            | A          |
| Single Pulsed Avalanche Energy           | E <sub>AS</sub>                        | 300          | mJ         |
| Repetitive Avalanche Energy              | E <sub>AR</sub>                        | 4.8          | mJ         |
| Power Dissipation (T <sub>A</sub> =25°C) | P <sub>D</sub>                         | 2.5          | W          |
| Power Dissipation (T <sub>C</sub> =25°C) | P <sub>D</sub>                         | 48           | W          |
| Operating and Storage Temperature Range  | T <sub>J</sub> , T <sub>STG</sub>      | -55to150     | °C         |

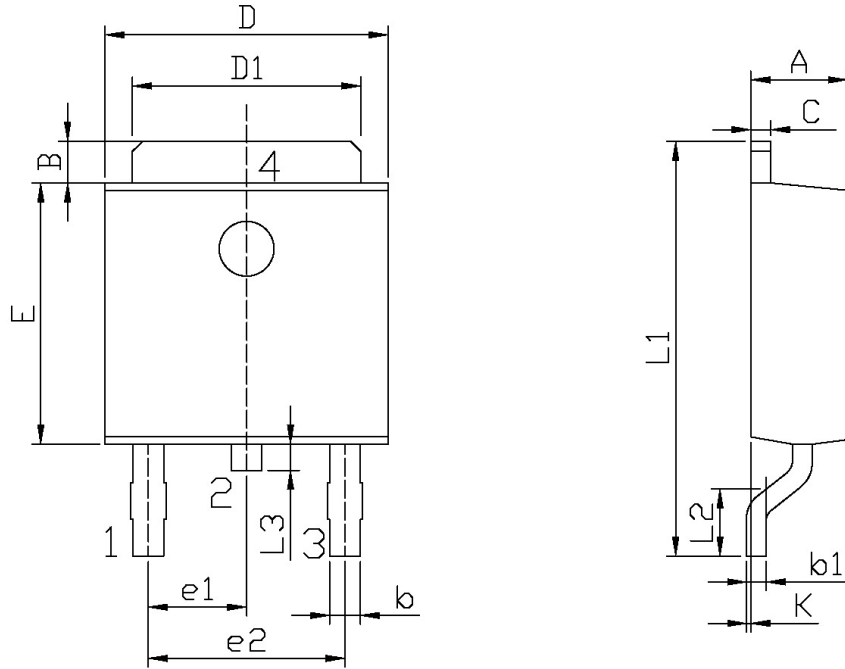
**电性能参数 / Electrical Characteristics(Ta=25°C)**

| 参数<br>Parameter                    | 符号<br>Symbol        | 测试条件<br>Test Conditions   | 最小值<br>Min | 典型值<br>Typ | 最大值<br>Max | 单位<br>Unit |
|------------------------------------|---------------------|---|------------|------------|------------|------------|
| Drain-Source Breakdown Voltage     | BV <sub>DSS</sub>   | V <sub>GS</sub> =0V I <sub>D</sub> =250μA                       | 500        |            |            | V          |
| Zero Gate Voltage Drain Current    | I <sub>DSS</sub>    | V <sub>DS</sub> =500V V <sub>GS</sub> =0V                       |            |            | 1          | μA         |
|                                    |                     | V <sub>DS</sub> =400V T <sub>C</sub> =125°C                     |            |            | 10         | μA         |
| Gate-Body Leakage Current Forward  | I <sub>GSS</sub>    | V <sub>GS</sub> =±30V V <sub>DS</sub> =0V                       |            |            | ±0.1       | μA         |
| Gate Threshold Voltage             | V <sub>GS(th)</sub> | V <sub>DS</sub> =V <sub>GS</sub> I <sub>D</sub> =250μA          | 2          |            | 4          | V          |
| Static Drain-Source On-Resistance  | R <sub>DS(on)</sub> | V <sub>GS</sub> =10V I <sub>D</sub> =2.5A                       |            | 1.14       | 1.4        | Ω          |
| Forward Transconductance           | g <sub>FS</sub>     | V <sub>DS</sub> =40V I <sub>D</sub> =2A                         |            | 5.2        |            | S          |
| Drain-Source Diode Forward Voltage | V <sub>SD</sub>     | V <sub>GS</sub> =0V I <sub>S</sub> =5A                          |            |            | 1.4        | V          |
| Input Capacitance                  | C <sub>iss</sub>    | V <sub>DS</sub> =25V V <sub>GS</sub> =0V<br>f=1MHz              |            | 480        | 625        | pF         |
| Output Capacitance                 | C <sub>oss</sub>    |   |            | 80         | 105        | pF         |
| Reverse Transfer Capacitance       | C <sub>rss</sub>    |   |            | 15         | 20         | pF         |
| Turn-On Delay Time                 | t <sub>d(on)</sub>  | V <sub>DD</sub> =250V I <sub>D</sub> =5A<br>R <sub>G</sub> =25Ω |            | 12         | 35         | ns         |
| Turn-On Rise Time                  | t <sub>r</sub>      |   |            | 46         | 100        | ns         |
| Turn-Off Delay Time                | t <sub>d(off)</sub> |   |            | 50         | 110        | ns         |
| Turn-Off Fall Time                 | t <sub>f</sub>      |   |            | 48         | 105        | ns         |

**电参数曲线图 / Electrical Characteristic Curve**



**外形尺寸图 / Package Dimensions**

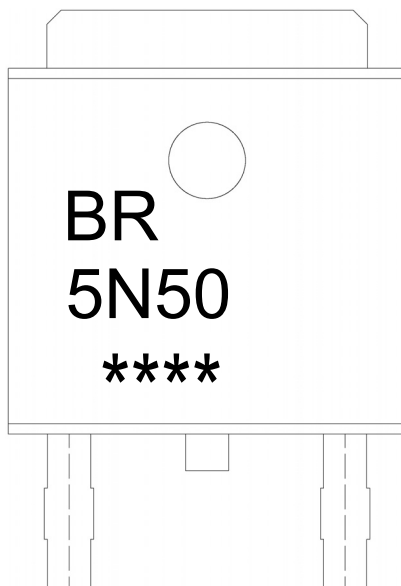


单位: mm

| Symbol | Dimensions In Millimeters |      | Symbol | Dimensions In Millimeters |      |
|--------|---------------------------|------|--------|---------------------------|------|
|        | Min                       | Max  |        | Min                       | Max  |
| A      | 2.20                      | 2.40 | E      | 5.95                      | 6.25 |
| B      | 0.95                      | 1.25 | e1     | 2.24                      | 2.34 |
| b      | 0.50                      | 0.70 | e2     | 4.43                      | 4.73 |
| b1     | 0.45                      | 0.55 | L1     | 9.45                      | 9.95 |
| C      | 0.45                      | 0.55 | L2     | 1.25                      | 1.75 |
| D      | 6.45                      | 6.75 | L3     | 0.60                      | 0.90 |
| D1     | 5.10                      | 5.50 | K      | 0.00                      | 0.10 |

TO-252

**印章说明 / Marking Instructions**



说明：

BR： 为公司代码

5N50： 为型号代码

\*\*\*\*： 为生产批号代码，随生产批号变化。

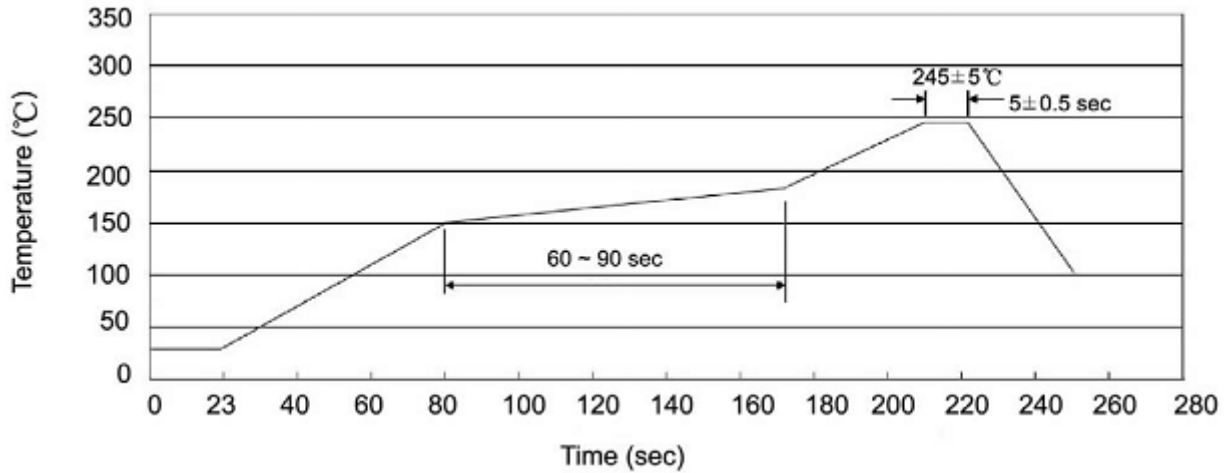
Note:

BR: Company Code

5N50: Product Type.

\*\*\*\*: Lot No. Code, code change with Lot No.

**回流焊温度曲线图(无铅) / Temperature Profile for IR Reflow Soldering(Pb-Free)**



说明：

- 1、预热温度 25 ~ 150°C，时间 60 ~ 90sec;
- 2、峰值温度 245±5°C，时间持续为 5±0.5sec;
- 3、焊接制程冷却速度为 2 ~ 10°C/sec.

Note:

- 1.Preheating:25~150°C, Time:60~90sec.
- 2.Peak Temp.:245±5°C, Duration:5±0.5sec.
3. Cooling Speed: 2~10°C/sec.

**耐焊接热试验条件 / Resistance to Soldering Heat Test Conditions**

温度：260±5°C

时间：10±1 sec.

Temp.:260±5°C

Time:10±1 sec

**包装规格 / Packaging SPEC.**

卷盘包装 / REEL

| Package Type<br>封装形式 | Units 包装数量         |                         |                        |                              |                        | Dimension 包装尺寸 (unit: mm <sup>3</sup> ) |             |             |
|----------------------|--------------------|-------------------------|------------------------|------------------------------|------------------------|---|-------------|-------------|
|                      | Units/Reel<br>只/卷盘 | Reels/Inner Box<br>卷盘/盒 | Units/Inner Box<br>只/盒 | Inner Boxes/Outer Box<br>盒/箱 | Units/Outer Box<br>只/箱 | Reel                                    | Inner Box 盒 | Outer Box 箱 |
| TO-252               | 2,500              | 2                       | 5,000                  | 5                            | 25,000                 | 13" ×16                                 | 360×360×50  | 385×257×392 |

套管包装 / TUBE

| Package Type<br>封装形式 | Units 包装数量         |                         |                        |                              |                        | Dimension 包装尺寸 (unit: mm <sup>3</sup> ) |             |             |
|----------------------|--------------------|-------------------------|------------------------|------------------------------|------------------------|---|-------------|-------------|
|                      | Units/Tube<br>只/套管 | Tubes/Inner Box<br>套管/盒 | Units/Inner Box<br>只/盒 | Inner Boxes/Outer Box<br>盒/箱 | Units/Outer Box<br>只/箱 | Tube 套管                                 | Inner Box 盒 | Outer Box 箱 |
| TO-251/252           | 75                 | 48                      | 3,600                  | 5                            | 18,000                 | 526×20.5×5.25                           | 555×164×50  | 575×290×180 |

**使用说明 / Notices**