

**描述 / Descriptions**

SOT-23 塑封封装 P 道场效应管。

P- CHANNEL MOSFET in a SOT-23 Plastic Package.

**特征 / Features**

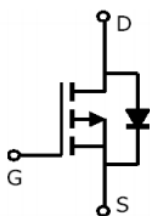
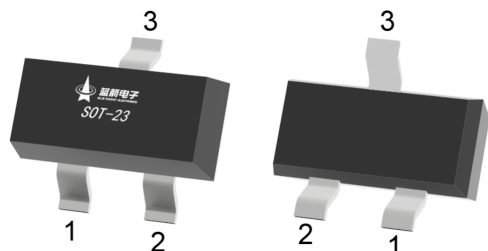
低导通电阻，开关时间快，低导通电压，符合 AEC-Q101 标准高可靠性要求，无卤产品。

Ultra Low on-resistance. fast switching. Low on voltage, Qualified to AEC-Q101 Standards for High Reliability, HF Product.

**用途 / Applications**

PWM 应用与负载开关，满足汽车应用的严格要求。

PWM application & Load switch, Meet the stringent requirements of automotive applications.

**内部等效电路 / Equivalent Circuit****引脚排列 / Pinning**

PIN1 : G

PIN 2 : S

PIN 3 : D

**印章代码 / Marking**

|         |      |
|---------|------|
| Marking | Q5P6 |
|---------|------|

**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>                 | -60          | V          |
| Gate–Body Leakage Voltage                                        |              | V <sub>GSS</sub>                 | ±20          | V          |
| Drain Current - Continuous                                       |              | I <sub>D</sub>                   | -5           | A          |
| Pulsed Drain Current                                             |              | I <sub>DM</sub>                  | -18          | A          |
| Power Dissipation<br>(Surface Mounted on FR4 Board, t ≤ 10 sec.) |              | P <sub>D</sub>                   | 1.5          | W          |
| Operating and Storage Temperature Range                          |              | T <sub>J</sub> ,T <sub>STG</sub> | -55~150      | ℃          |
| Maximum Junction-to-Ambient                                      | t ≤ 10s      | R <sub>θJA</sub>                 | 118.6        | ℃/W        |
| Maximum Junction-to-Ambient                                      | Steady-State |                                  | 161.6        | ℃/W        |
| Maximum Junction-to-Lead                                         | Steady-State | R <sub>θJL</sub>                 | 83.3         | ℃/W        |

**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        | V <sub>(BR)DSS</sub>   | V <sub>GS</sub> =0V I <sub>D</sub> =-250μA                                             | -60        | -63        |            | V          |
| Gate Threshold Voltage                | V <sub>GS(th)</sub>    | V <sub>DS</sub> =V <sub>GS</sub> I <sub>D</sub> =-250μA                                | -1         | -1.5       | -2.5       | V          |
| Static Drain-Source<br>On-Resistance  | R <sub>DS(on)</sub>    | V <sub>GS</sub> =-10V I <sub>D</sub> =-2A                                              |            | 84         | 100        | mΩ         |
|                                       |                        | V <sub>GS</sub> =-4.5V I <sub>D</sub> =-1A                                             |            | 103        | 125        | mΩ         |
| Zero Gate Voltage Drain Current       | I <sub>DSS</sub>       | V <sub>DS</sub> =-60V V <sub>GS</sub> =0V                                              |            |            | -1.0       | μA         |
| Gate-Body Leakage.                    | I <sub>GSS</sub>       | V <sub>GS</sub> =-20V                                                                  |            |            | -100       | nA         |
|                                       |                        | V <sub>GS</sub> =20V                                                                   |            |            | 100        | nA         |
| Drain-Source Diode Forward<br>Voltage | V <sub>SD</sub>        | V <sub>GS</sub> =0V I <sub>S</sub> =-1A<br>T <sub>J</sub> =25°C                        |            |            | -1.2       | V          |
| Input Capacitance                     | C <sub>iss</sub>       | V <sub>DS</sub> =-25V V <sub>GS</sub> =0V<br>f=1.0MHz                                  |            | 885        |            | pF         |
| Output Capacitance                    | C <sub>oss</sub>       |                                                                                        |            | 90         |            |            |
| Reverse Transfer Capacitance          | C <sub>rss</sub>       |                                                                                        |            | 64         |            |            |
| Total Gate Charge                     | Q <sub>g</sub> (-10V)  | V <sub>DS</sub> =-30V V <sub>GS</sub> =-10.0V<br>I <sub>D</sub> =-5A                   |            | 25         |            | nC         |
| Total Gate Charge                     | Q <sub>g</sub> (-4.5V) |                                                                                        |            | 9.6        |            |            |
| Gate-to-Source Charge                 | Q <sub>gs</sub>        |                                                                                        |            | 3          |            |            |
| Gate-to-Drain Charge                  | Q <sub>gd</sub>        |                                                                                        |            | 7          |            |            |
| Turn-On Delay Time                    | t <sub>d(on)</sub>     | V <sub>DD</sub> =-30V V <sub>GS</sub> =-10V<br>R <sub>L</sub> =7.5Ω R <sub>G</sub> =3Ω |            | 8          |            | ns         |
| Turn-On Rise Time                     | t <sub>r</sub>         |                                                                                        |            | 4          |            |            |
| Turn-Off Delay Time                   | t <sub>d(off)</sub>    |                                                                                        |            | 32         |            |            |
| Turn-Off Fall Time                    | t <sub>f</sub>         |                                                                                        |            | 7          |            |            |

## 电参数曲线图 / Electrical Characteristic Curve

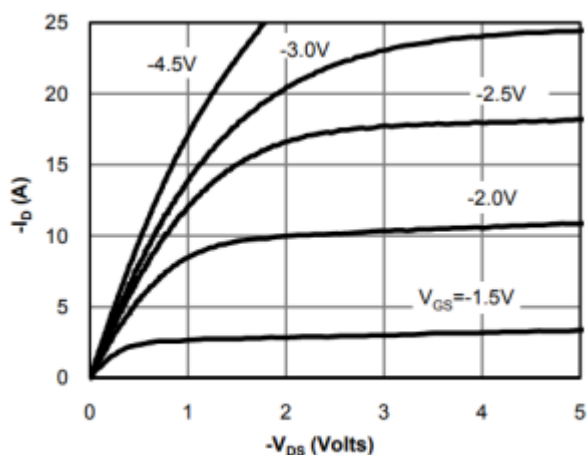


Figure 1: On-Region Characteristics

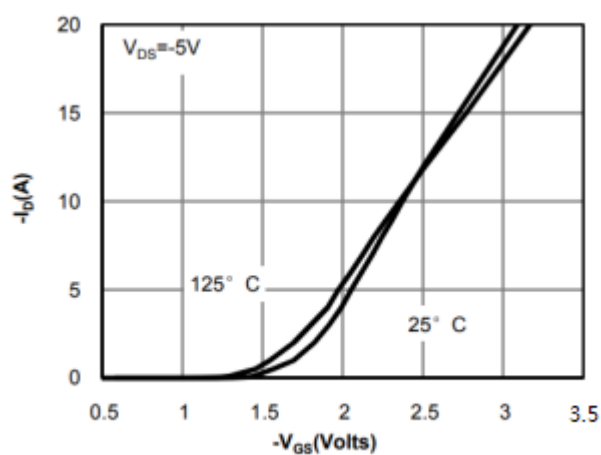


Figure 2: Transfer Characteristics

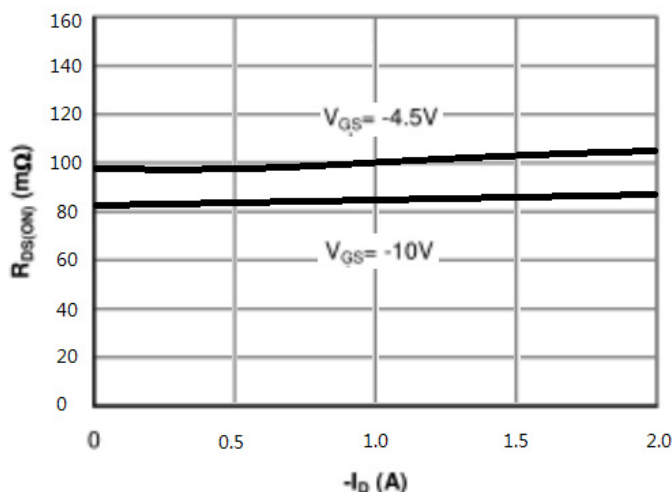


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

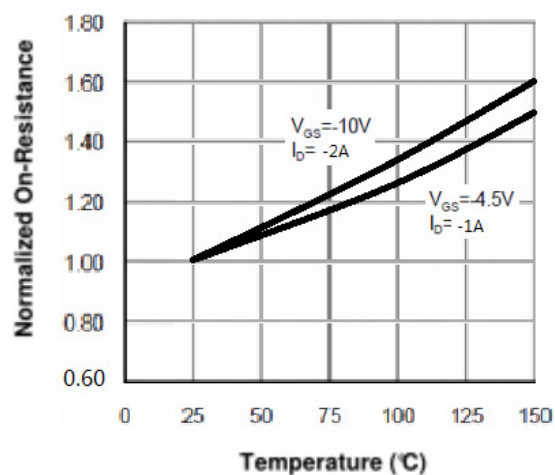


Figure 4: On-Resistance vs. Junction Temperature

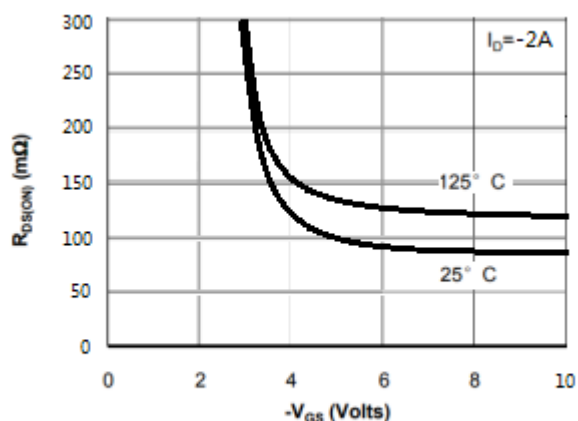


Figure 5: On-Resistance vs. Gate-Source Voltage

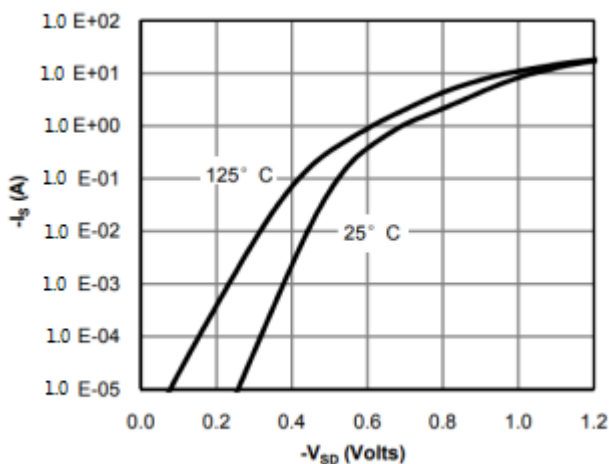


Figure 6: Body-Diode Characteristics

## 电参数曲线图 / Electrical Characteristic Curve

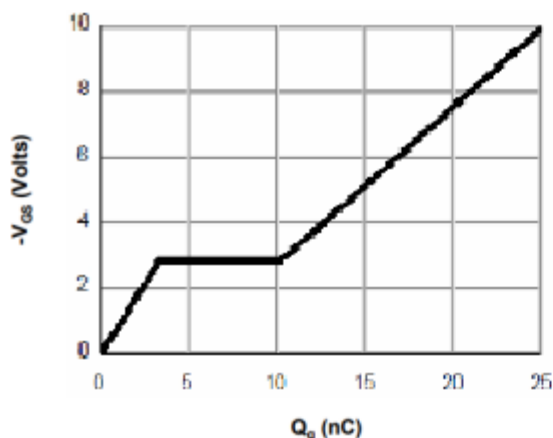


Figure 7: Gate-Charge Characteristics

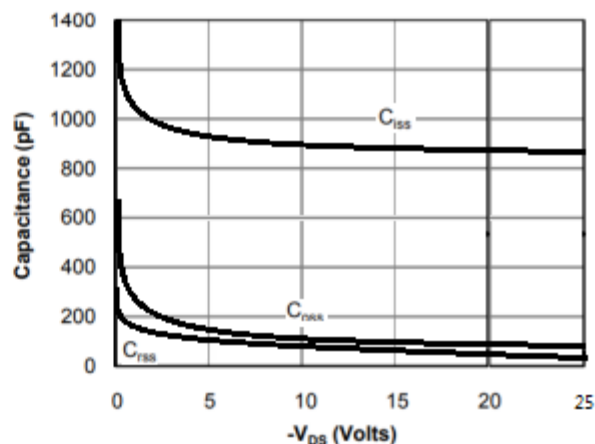


Figure 8: Capacitance Characteristics

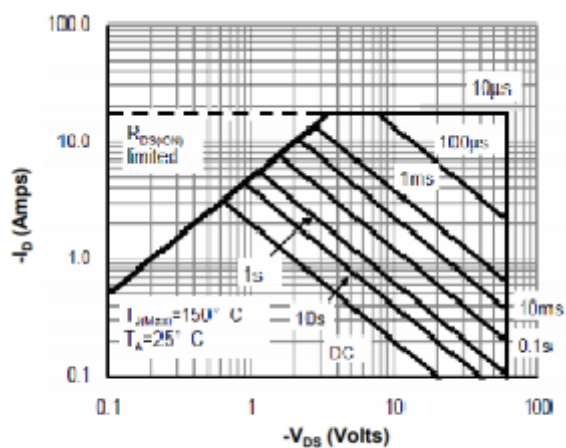


Figure 9: Maximum Forward Biased Safe Operating Area

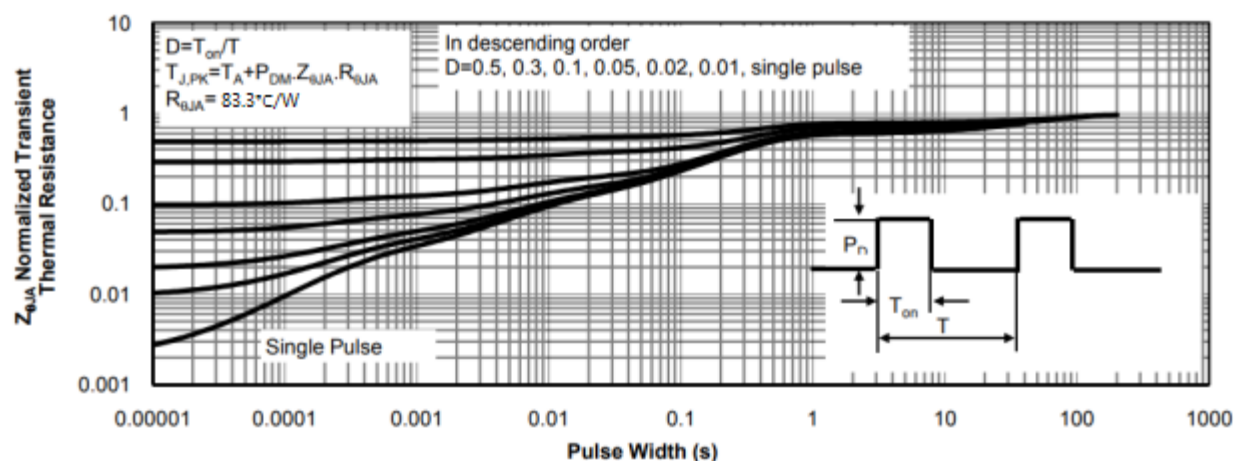
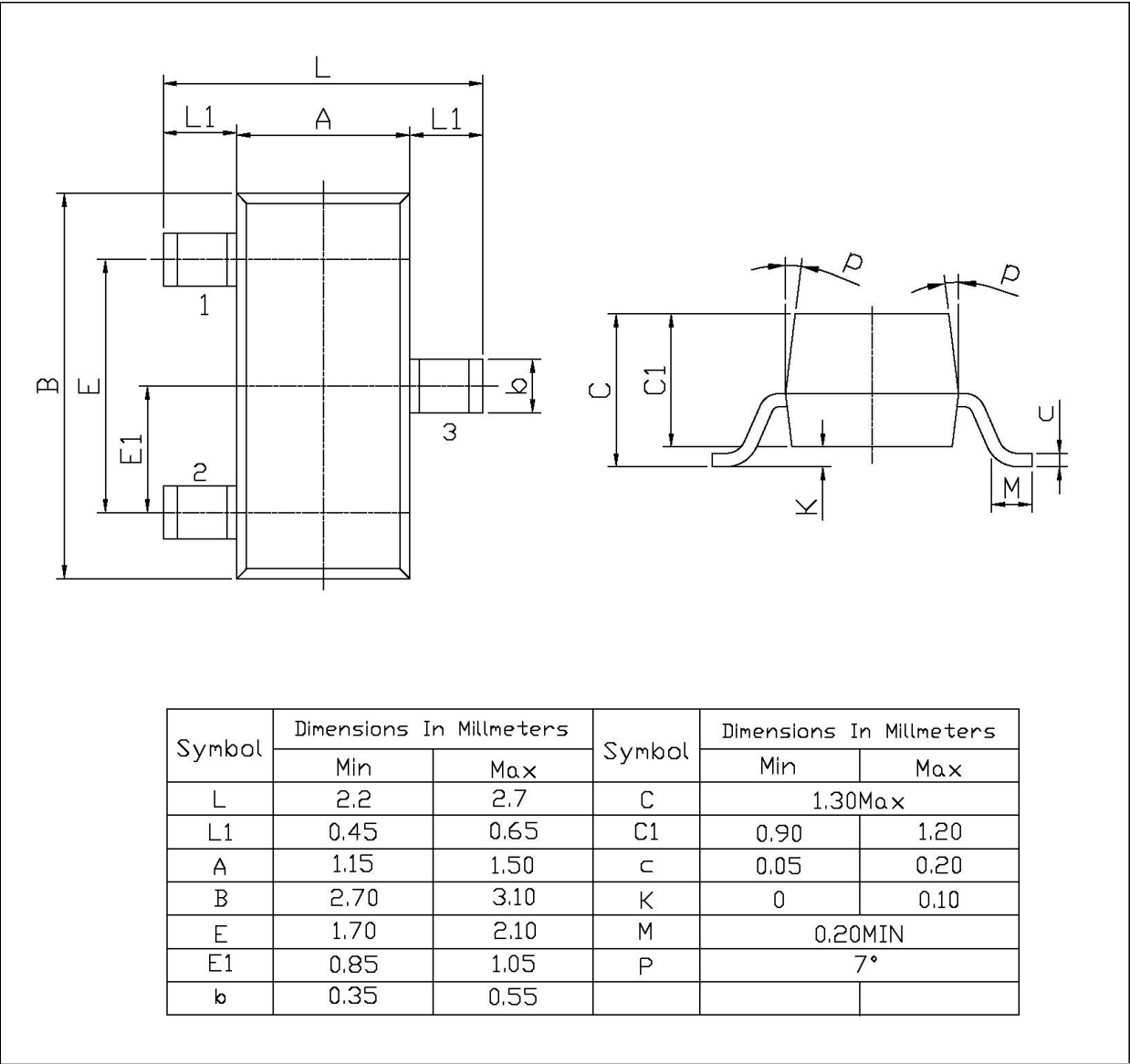


Figure 10: Normalized Maximum Transient Thermal Impedance

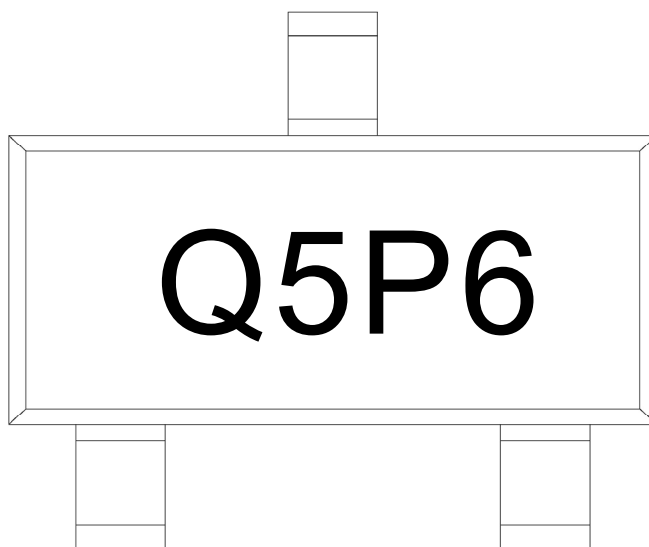
外形尺寸图 / Package Dimensions

SOT-23

单位：mm



**印章说明 / Marking Instructions**



说明：

Q： 为汽车无卤产品标识

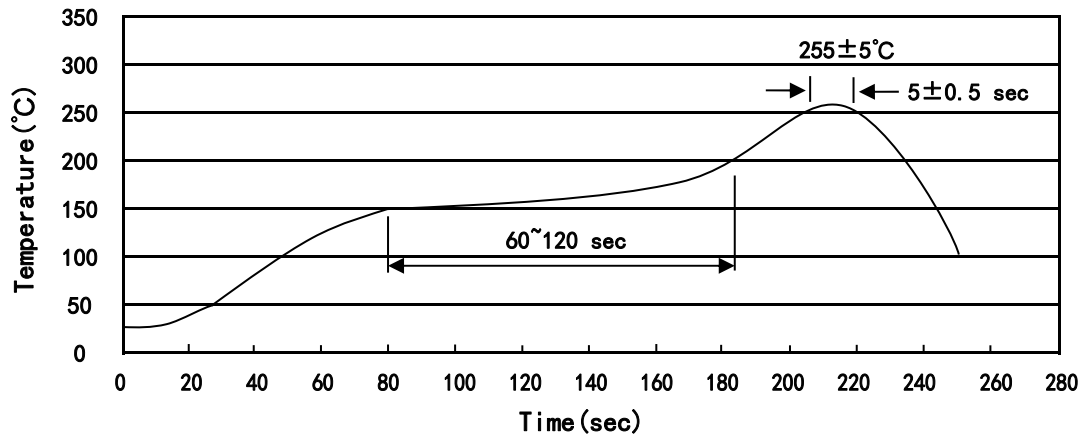
5P6： 为型号代码

Note:

Q: Automobile halogen-free product Code

5P6: Product Type

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 150 ~ 200°C , 时间 60 ~ 120sec;
- 2、峰值温度 255±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:150~200°C, Time:60~120sec.
- 2.Peak Temp.:255±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 |
| SOT-23               | 3,000              | 10                      | 30,000                 | 6                            | 180,000                | 7" ×8                                   | 180×120×180 | 390×385×205 |

使用说明 / Notices