

**描述 / Descriptions**

SOT-523 塑封封装 N 沟道 MOS 场效应管。

N-CHANNEL MOSFET in a SOT-523 Plastic Package.

**特征 / Features**

$V_{DS}(V)=20\text{ V}$      $I_D=0.75\text{ A}$

$R_{DS(ON)}@4.5\text{ V}\leq 380\text{ m}\Omega(\text{Typ.}170\text{ m}\Omega)$

$R_{DS(ON)}@2.5\text{ V}\leq 450\text{ m}\Omega(\text{Typ.}230\text{ m}\Omega)$

$R_{DS(ON)}@1.8\text{ V}\leq 590\text{ m}\Omega(\text{Typ.}330\text{ m}\Omega)$

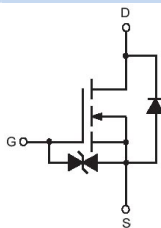
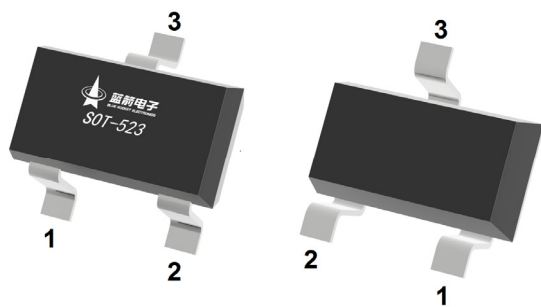
静电保护达 2KV。ESD protected up to 2KV.

无卤产品。HF Product.

**用途 / Applications**

负载切换、低电流逆变器、低电流 DC/DC 转换器。

Load Switching, Low Current Inverters, Low Current DC/DC Converters.

**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**

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                        | $V_{DS}$        | 20           | V          |
| Gate-Source Voltage                         | $V_{GS}$        | $\pm 12$     | V          |
| Drain Current                               | $I_D$           | 0.75         | A          |
| Drain Current – Pulsed                      | $I_{DM}$        | 3.0          | A          |
| Power Dissipation                           | $P_D$           | 0.15         | W          |
| Junction Temperature Range                  | $T_j$           | 150          | °C         |
| Storage Temperature Range                   | $T_{stg}$       | -55~150      | °C         |
| Thermal Resistance from Junction to Ambient | $R_{\theta JA}$ | 833          | °C/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     | $V_{DSS}$       | $V_{GS}=0$ $I_D=250\mu A$                                   | 20         |            |            | V          |
| Zero Gate Voltage Drain Current    | $I_{DSS}$       | $V_{GS}=0$ $V_{DS}=20V$                                     |            |            | 1          | $\mu A$    |
| Gate–Body Leakage                  | $I_{GSS}$       | $V_{DS}=0V$ $V_{GS}=\pm 10V$                                |            |            | $\pm 10$   | $\mu A$    |
| Gate Threshold Voltage             | $V_{GS(th)}$    | $V_{DS}=V_{GS}$ $I_D=250\mu A$                              | 0.4        | 0.7        | 1.0        | V          |
| Static Drain-Source On-Resistance  | $R_{DS(on)(1)}$ | $V_{GS}=4.5V$ $I_D=650mA$                                   |            | 170        | 380        | m $\Omega$ |
|                                    | $R_{DS(on)(2)}$ | $V_{GS}=2.5V$ $I_D=550mA$                                   |            | 230        | 450        | m $\Omega$ |
|                                    | $R_{DS(on)(3)}$ | $V_{GS}=1.8V$ $I_D=450mA$                                   |            | 330        | 590        | m $\Omega$ |
| Drain-Source Diode Forward Voltage | $V_{SD}$        | $V_{GS}=0V$ $I_S=150mA$                                     |            |            | 1.2        | V          |
| Input Capacitance                  | $C_{iss}$       | $V_{DS}=10V$ $V_{GS}=0V$<br>$f=1.0MHz$                      |            | 55         |            | pF         |
| Output Capacitance                 | $C_{oss}$       |                                                             |            | 15         |            |            |
| Reverse Transfer Capacitance       | $C_{rss}$       |                                                             |            | 10         |            |            |
| Total Gate Charge                  | $Q_g$           | $V_{GS}=4.5V$ $V_{DS}=10V$ ,<br>$I_D=0.65A$                 |            | 0.8        |            | nC         |
| Gate Source Charge                 | $Q_{gs}$        |                                                             |            | 0.2        |            |            |
| Gate Drain Charge                  | $Q_{gd}$        |                                                             |            | 0.01       |            |            |
| Turn-On Delay Time                 | $t_{d(on)}$     | $V_{GS}=4.5V$ $V_{DS}=10V$<br>$I_D=0.5A$ $R_{GEN}=10\Omega$ |            | 6.7        |            | ns         |
| Turn-On Rise Time                  | $t_r$           |                                                             |            | 4.8        |            |            |
| Turn-Off Delay Time                | $t_{d(off)}$    |                                                             |            | 17.3       |            |            |
| Turn-Off Fall Time                 | $t_f$           |                                                             |            | 7.4        |            |            |

## 电参数曲线图 / Electrical Characteristic Curve

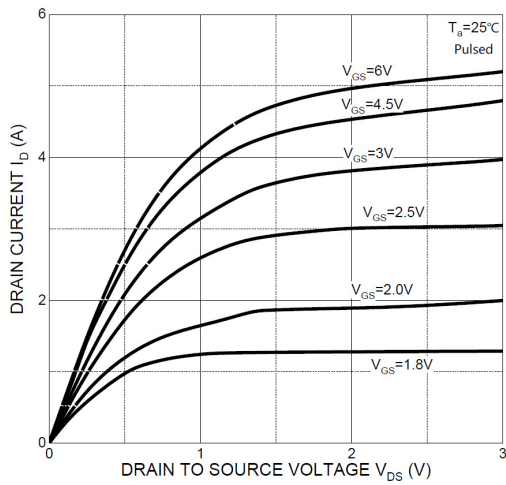


Figure 1. Output Characteristics

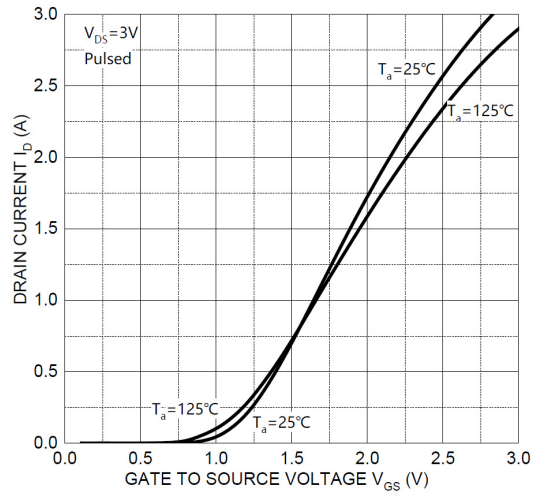


Figure 2. Transfer Characteristics

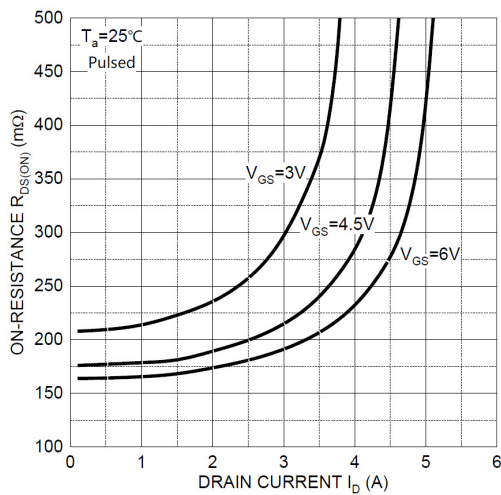
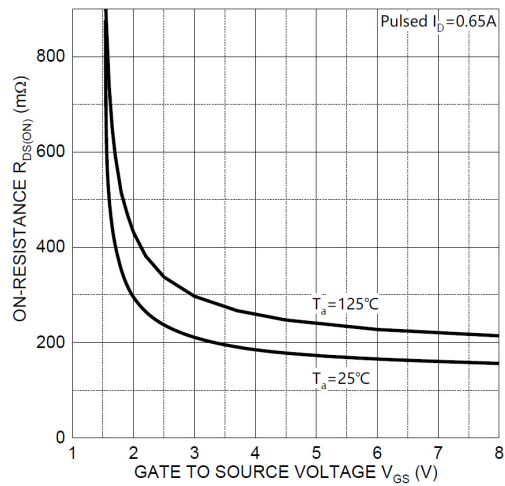
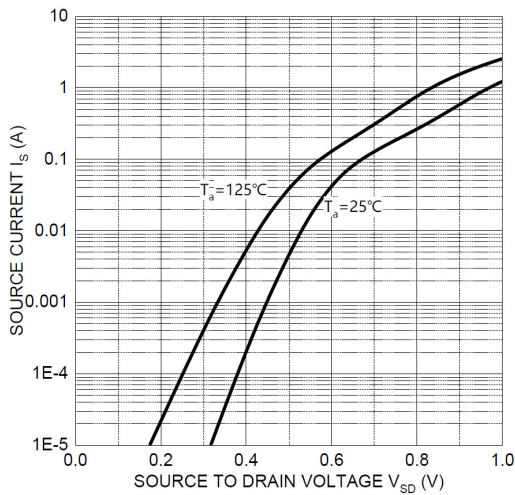
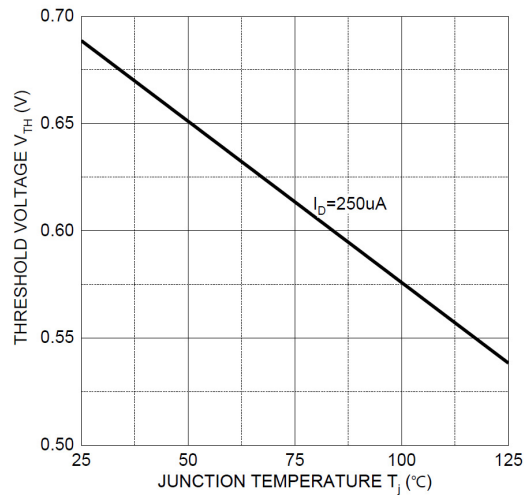
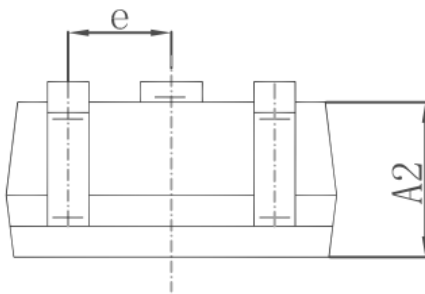
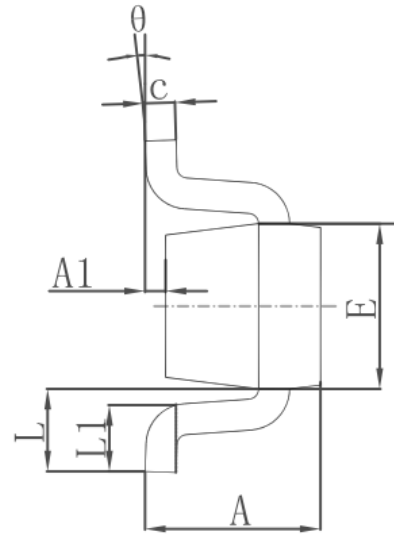
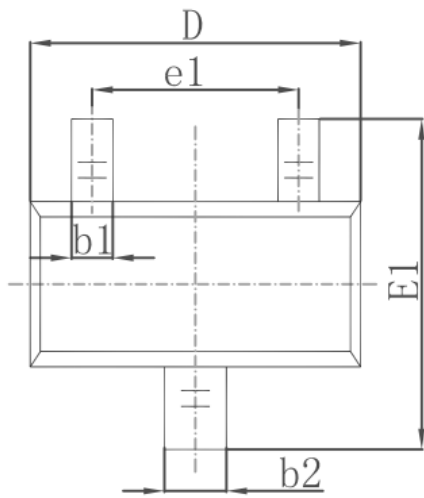
Figure 3.  $R_{DS(ON)}$ - $I_D$ Figure 4.  $R_{DS(ON)}$ - $V_{GS}$ Figure 5.  $I_S$ - $V_{SD}$ 

Figure 6. Threshold Voltage

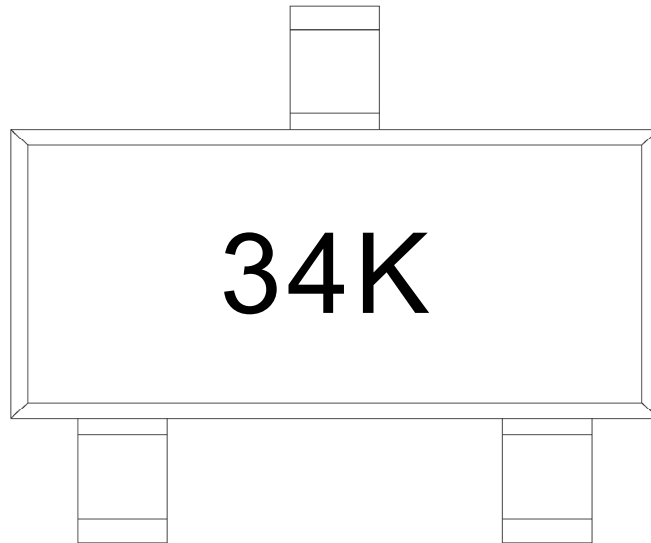
## 外形尺寸图 / Package Dimensions



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min.                      | Max.  | Min.                 | Max.  |
| A      | 0.700                     | 0.900 | 0.028                | 0.035 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 0.700                     | 0.800 | 0.028                | 0.031 |
| b1     | 0.150                     | 0.250 | 0.006                | 0.010 |
| b2     | 0.250                     | 0.350 | 0.010                | 0.014 |
| c      | 0.100                     | 0.200 | 0.004                | 0.008 |
| D      | 1.500                     | 1.700 | 0.059                | 0.067 |
| E      | 0.700                     | 0.900 | 0.028                | 0.035 |
| E1     | 1.450                     | 1.750 | 0.057                | 0.069 |
| e      | 0.500 TYP.                |       | 0.020 TYP.           |       |
| e1     | 0.900                     | 1.100 | 0.035                | 0.043 |
| L      | 0.400 REF.                |       | 0.016 REF.           |       |
| L1     | 0.260                     | 0.460 | 0.010                | 0.018 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |



**印章说明 / Marking Instructions**



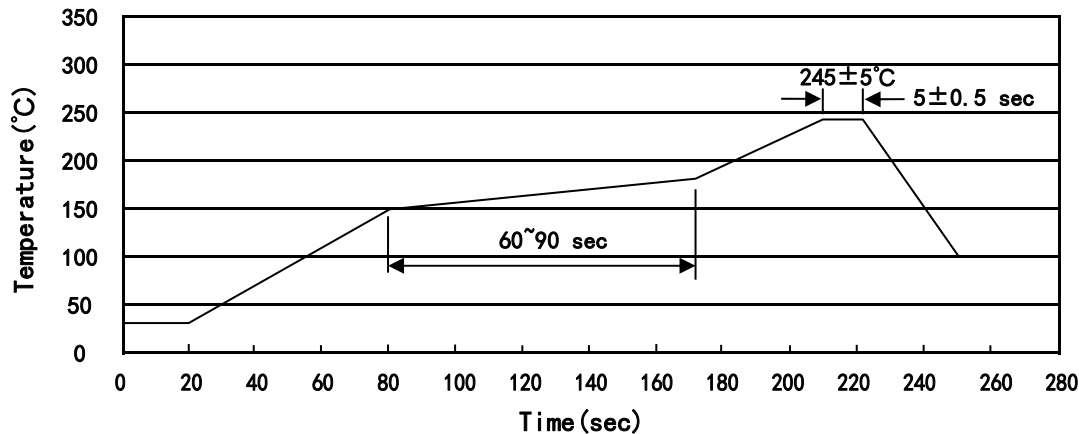
说明：

34K： 为型号代码

Note:

34K: Product Type Code

## 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 150~180°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:150~180°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 |
| SOT-523              | 3,000              | 10                      | 30,000                 | 6                            | 180,000                | 7" ×8                                   | 180×120×180 | 390×385×205 |

## 使用说明 / Notices

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