

# AP3404

## N-Channel Power MOSFET

### 描述 / Descriptions

SOT23-3 塑封封装 N 道 MOS 场效应管。N- CHANNEL MOSFET in a SOT23-3 Plastic Package.

### 特征 / Features

$V_{DS} = 30V$

$I_D = 6.5 A (V_{GS} = 10V)$

$R_{DS(ON)} < 24m\Omega (V_{GS} = 10V)$

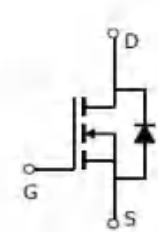
$R_{DS(ON)} < 34m\Omega (V_{GS} = 4.5V)$

### 用途 / Applications

适用于作负载开关或脉宽调制应用。

This device is suitable for use as a load switch or in PWM applications.

### 内部等效电路 / Equivalent Circuit



### 引脚排列 / Pinning



PIN 1 : S

PIN 2 : G

PIN 3 : D

### 印章代码 / Marking

|         |  |
|---------|--|
| Marking |  |
|---------|--|

**N-Channel Power MOSFET**
**极限参数 / Absolute Maximum Ratings(Ta=25°C)**

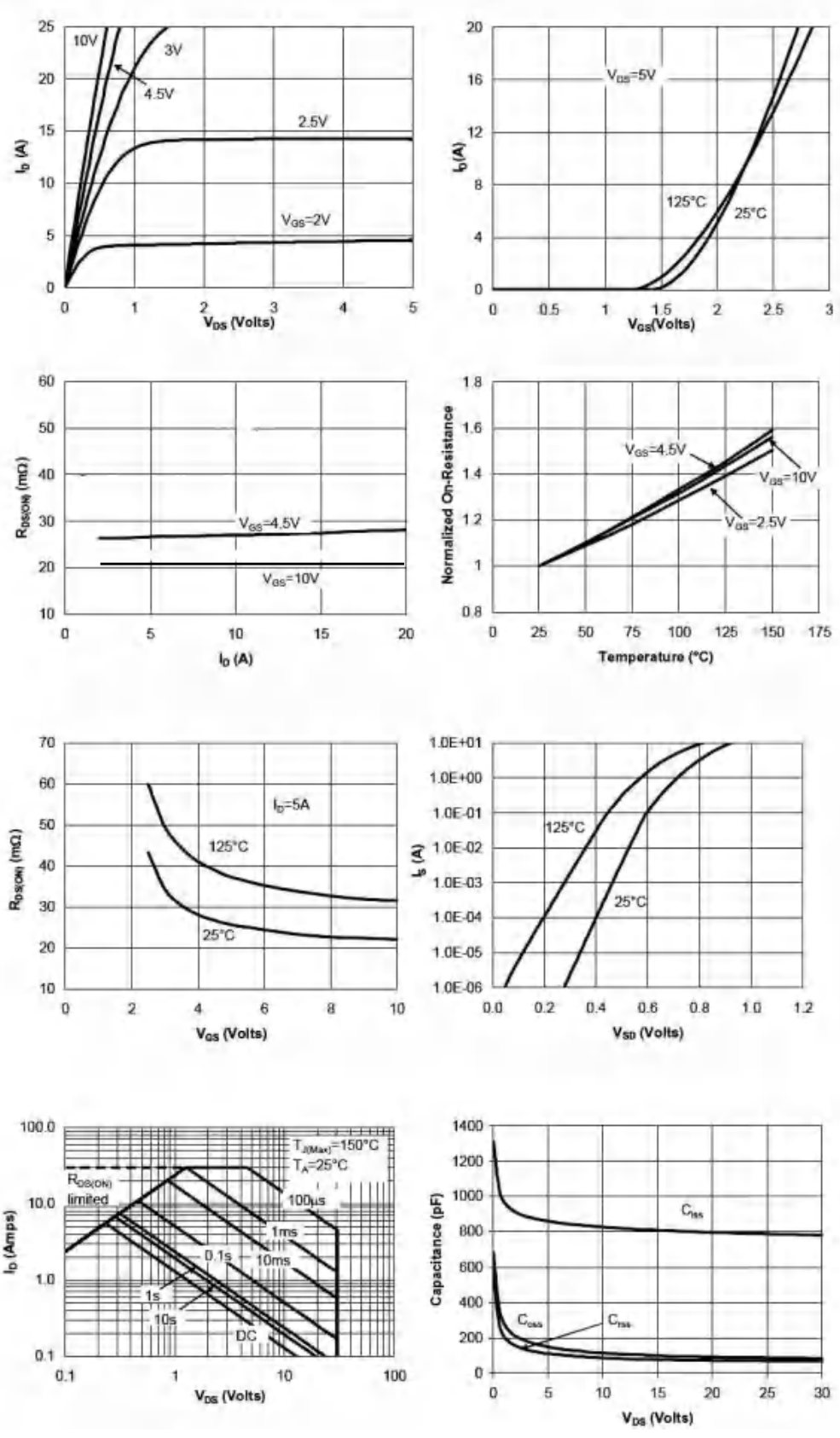
| 参数<br>Parameter                                  | 符号<br>Symbol                | 数值<br>Rating | 单位<br>Unit       |
|--|-----------------------------|--------------|------------------|
| Drain-Source Voltage                             | $V_{DS}$                    | 30           | V                |
| Drain Current – Continuous                       | $I_D$                       | 6.5          | A                |
| Drain Current- Continuous                        | $I_D(T_a=70^\circ\text{C})$ | 5.2          | A                |
| Pulsed Drain Current                             | $I_{DM}$                    | 34           | A                |
| Gate-Source Voltage                              | $V_{GS}$                    | $\pm 20$     | V                |
| Total Power Dissipation                          | $P_D$                       | 1.4          | W                |
| Total Power Dissipation                          | $P_D(T_a=70^\circ\text{C})$ | 1.0          | W                |
| Operating and Storage Junction Temperature Range | $T_J, T_{STG}$              | -55 to 150   | $^\circ\text{C}$ |

**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     | $BV_{DSS}$      | $V_{GS}=0V$ $I_D=250\mu A$                                     | 30         |            |            | V          |
| Zero Gate Voltage Drain Current    | $I_{DSS}$       | $V_{DS}=24V$ $V_{GS}=0V$                                       |            |            | 1          | $\mu A$    |
|                                    |                 | $V_{DS}=24V$ $V_{GS}=0V$<br>$T_J=55^\circ\text{C}$             |            |            | 5          | $\mu A$    |
| Gate–Body Leakage.                 | $I_{GSS}$       | $V_{GS}=\pm 20V$ $V_{DS}=0V$                                   |            |            | $\pm 0.1$  | $\mu A$    |
| On–State Drain Current             | $I_{D(on)}$     | $V_{GS}=4.5V$ $V_{DS}=5V$                                      | 30         |            |            | A          |
| Gate Threshold Voltage             | $V_{GS(th)}$    | $V_{DS}=V_{GS}$ $I_D=250\mu A$                                 | 1.2        | 1.6        | 2.5        | V          |
| Static Drain–Source On–Resistance  | $R_{DS(on)(1)}$ | $V_{GS}=10V$ $I_D=6.5A$  |            | 20         | 24         | m $\Omega$ |
|                                    | $R_{DS(on)(2)}$ | $V_{GS}=10V$ $I_D=6.5A$<br>$T_J=125^\circ\text{C}$             |            |            | 39         |            |
|                                    | $R_{DS(on)(3)}$ | $V_{GS}=4.5V$ $I_D=5A$   |            | 27         | 34         |            |
| Forward Transconductance           | $g_{FS}$        | $V_{DS}=5V$ $I_D=5A$   | 8.5        |            |            | S          |
| Drain–Source Diode Forward Voltage | $V_{SD}$        | $V_{GS}=0V$ $I_S=1A$   |            | 0.77       | 1          | V          |
| Input Capacitance                  | $C_{iss}$       | $V_{DS}=15V$ $V_{GS}=0V$<br>$f=1\text{MHz}$                    |            | 345        | 690        | pF         |
| Output Capacitance                 | $C_{oss}$       |  |            | 55         |            |            |
| Reverse Transfer Capacitance       | $C_{rss}$       |  |            | 32         |            |            |
| Turn–On Delay Time                 | $t_{d(on)}$     | $V_{GS}=10V$ $R_L=2.7\Omega$<br>$V_{DS}=15V$ $R_{GEN}=6\Omega$ |            | 2.8        |            | ns         |
| Turn–On Rise Time                  | $t_r$           |  |            | 7.2        |            |            |
| Turn–Off Delay Time                | $t_{d(off)}$    |  |            | 15.8       |            |            |
| Turn–Off Fall Time                 | $t_f$           |  |            | 4.6        |            |            |

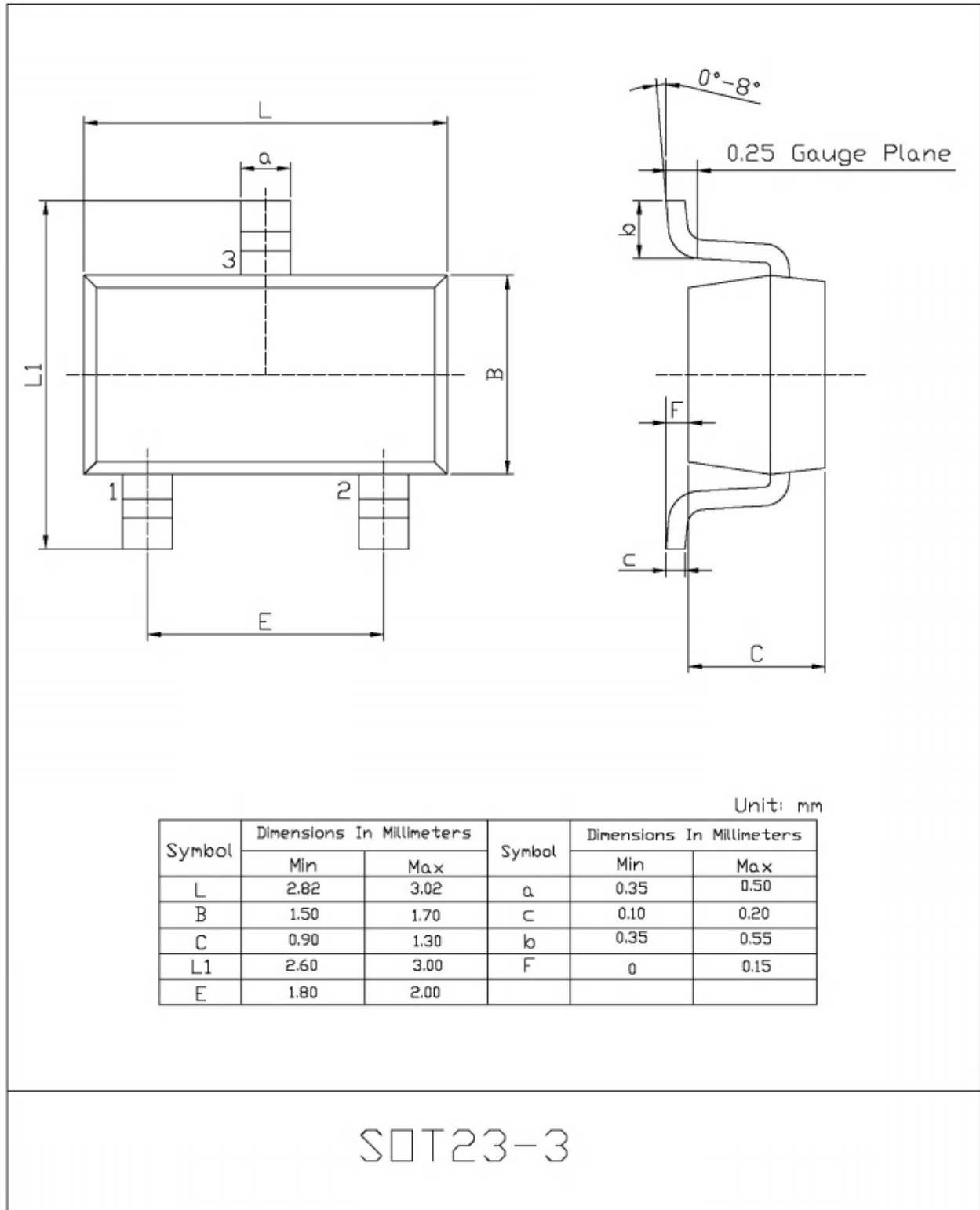
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电参数曲线图 / Electrical Characteristic Curve



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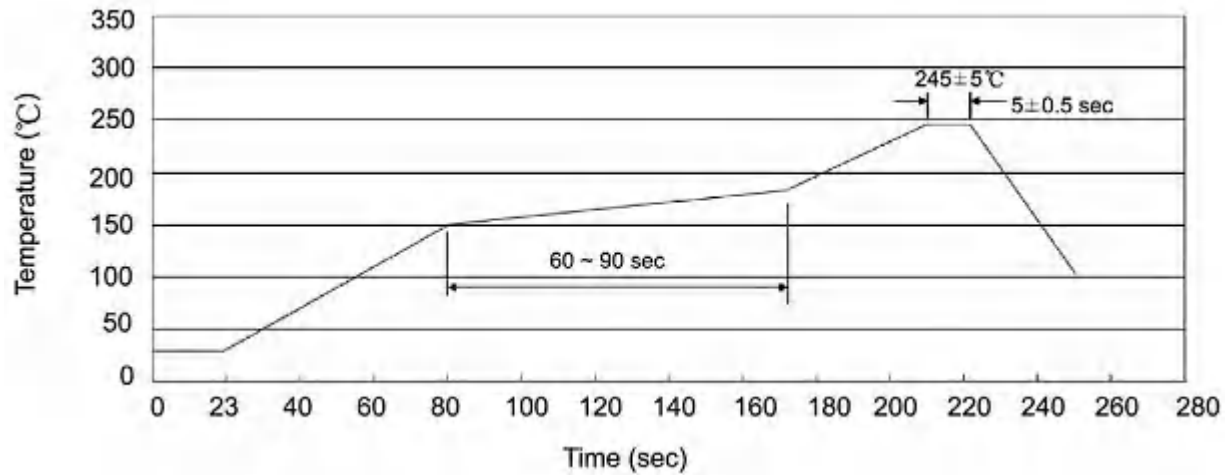
外形尺寸图 / Package Dimensions



**AP3404**

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**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 |
| SOT-23-3             | 3,000              | 10                      | 30,000                 | 4                            | 120,000                | 7" ×8                                   | 210×205×205 | 445×230×435 |

**使用说明 / Notices**