

BRCS2302MA

Rev.B Mar.-2024

描述 / Descriptions

SOT-23 塑封封装 N 沟道 MOS 场效应管。

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

特征 / Features

$V_{DS} (V) = 20V$ $I_D = 3A$

$R_{DS(ON)}@4.5V \leq 60m\Omega$ (Type.35m Ω)

$R_{DS(ON)}@2.5V \leq 115m\Omega$ (Type.45m Ω)

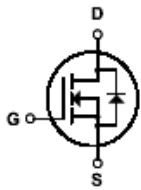
无卤产品。 HF Product.

用途 / Applications

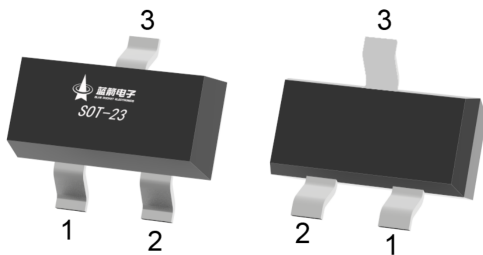
电池管理，高速开关，低功率 DC-DC 转换。

Battery management, High speed switch, low power DC to DC converter.

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

A2H

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

| 参数 Parameter | 符号 Symbol | 数值 Rating | 单位 Unit |
|--|------------------|--------------|------------|
| Drain-Source Voltage | V _{DS} | 20 | V |
| Gate-Source Voltage | V _{GS} | ±12 | V |
| Drain Current – Continuous | I _D | 3.0 | A |
| Pulsed Drain Current | I _{DM} | 13.5 | A |
| Power Dissipation | P _D | 0.9 | W |
| Storage Temperature Range | T _{stg} | -55~150 | °C |
| Thermal Resistance-Junction to Ambient | R _{θJA} | 139 | °C/W |

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

| 参数 Parameter | 符号 Symbol | 测试条件 Test Conditions | 最小值 Min | 典型值 Typ | 最大值 Max | 单位 Unit |
|------------------------------------|-----------------------|---|------------|------------|------------|------------|
| Drain-Source Breakdown Voltage | BV _{DSS} | V _{GS} =0 I _D =250μA | 20 | 21 | | V |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{GS} =0 V _{DS} =20V | | | 1.0 | μA |
| Gate-Body Leakage. | I _{GSS} | V _{GS} =±12V V _{DS} =0V | | | ±100 | nA |
| Static Drain-Source On-Resistance | R _{DS(on)1} | V _{GS} =4.5V I _D =3.6A | | 35 | 60 | mΩ |
| | R _{DS(on)2} | V _{GS} =2.5V I _D =3.1A | | 45 | 115 | mΩ |
| Drain-Source Diode Forward Voltage | V _{SD} | V _{GS} =0V I _D =1.25A | | | 1.2 | V |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} =V _{GS} I _D =250μA | 0.5 | 0.6 | 1.0 | V |
| Input Capacitance | C _{iss} | V _{DS} =15V V _{GS} =0V f=1.0MHz | | 340 | | pF |
| Output Capacitance | C _{oss} | | | 30 | | pF |
| Reverse Transfer Capacitance | C _{rss} | | | | 25 | pF |
| Total Gate Charge | Q _g (10V) | V _{GS} =10V, V _{DS} =15V, I _D =4A | | 8.2 | | nC |
| Total Gate Charge | Q _g (4.5V) | | | 4.3 | | |
| Gate Source Charge | Q _{gs} | | | 2 | | |
| Gate Drain Charge | Q _{gd} | | | 1.5 | | |
| Turn-On Delay Time | t _{d(on)} | V _{GS} =10V V _{DS} =15A R _{GEN} =3Ω R _L =3.75Ω | | 2.5 | | ns |
| Turn-On Rise Time | t _r | | | 3 | | |
| Turn-Off Delay Time | t _{d(off)} | | | 30 | | |
| Turn-Off Fall Time | t _f | | | 5 | | |

电参数曲线图 / Electrical Characteristic Curve

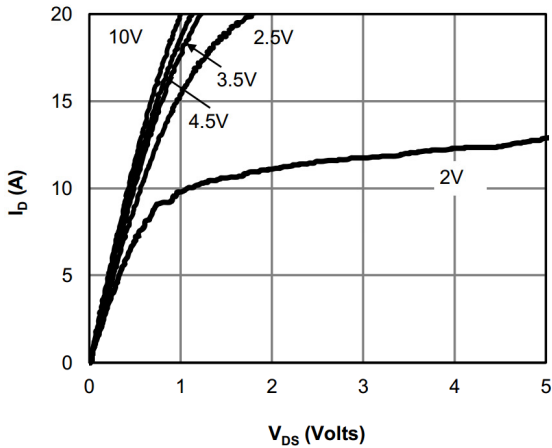


Figure 1: On-Region Characteristics

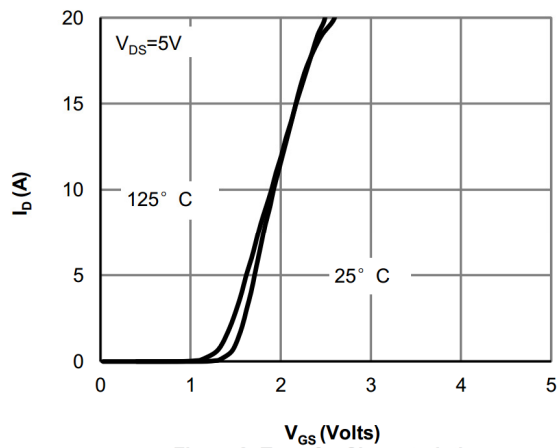


Figure 2: Transfer Characteristics

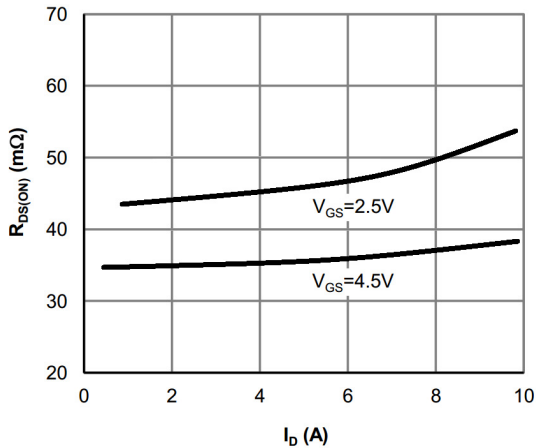


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

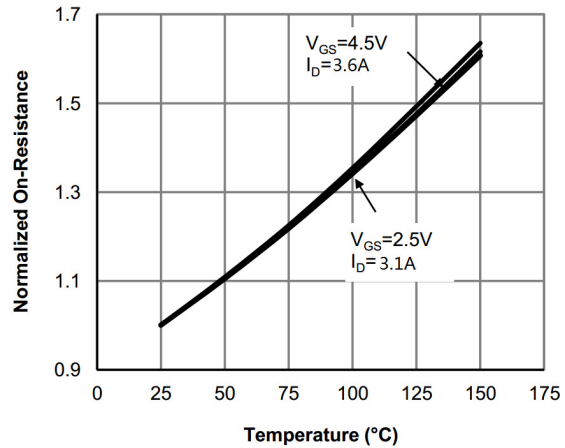


Figure 4: On-Resistance vs. Junction Temperature

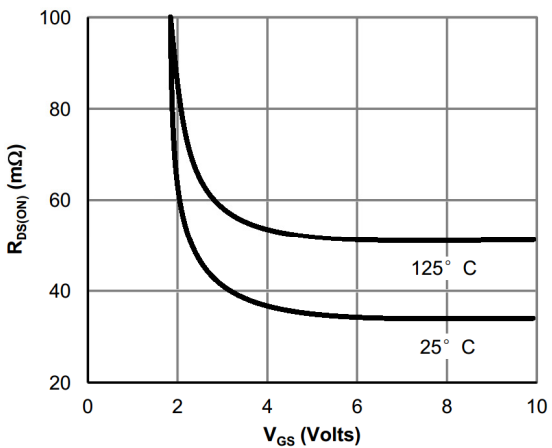


Figure 5: On-Resistance vs. Gate-Source Voltage

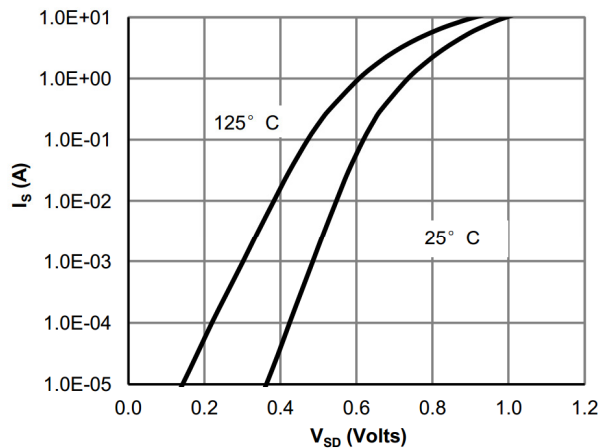


Figure 6: Body-Diode Characteristics

电参数曲线图 / Electrical Characteristic Curve

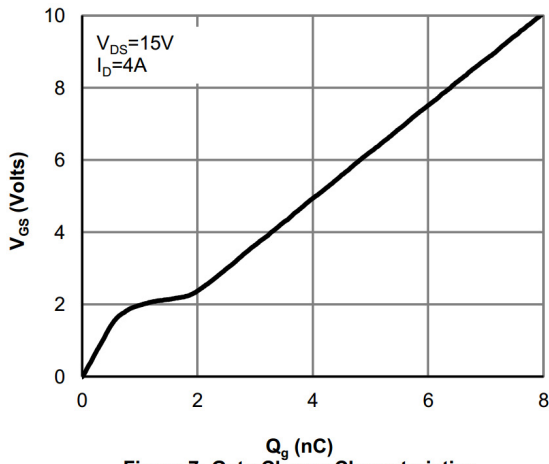


Figure 7: Gate-Charge Characteristics

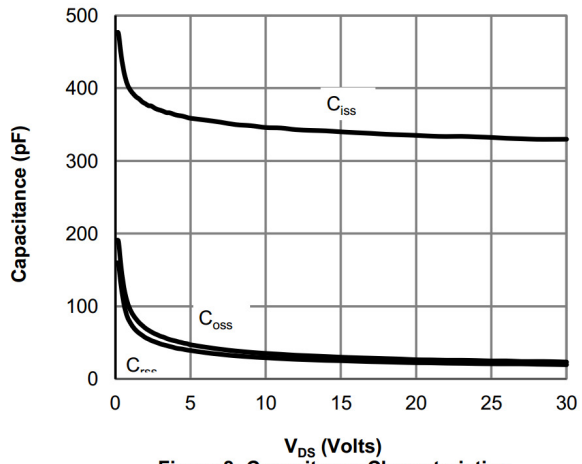


Figure 8: Capacitance Characteristics

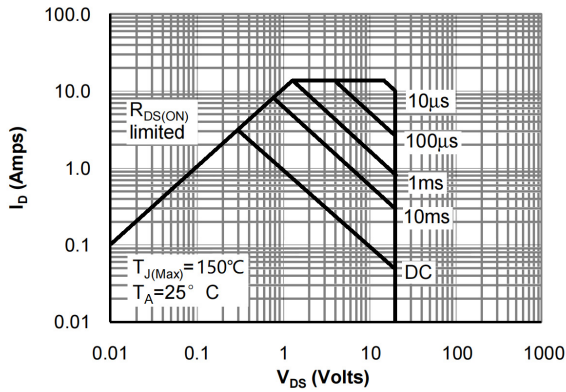


Figure 9: Maximum Forward Biased Safe Operating Area

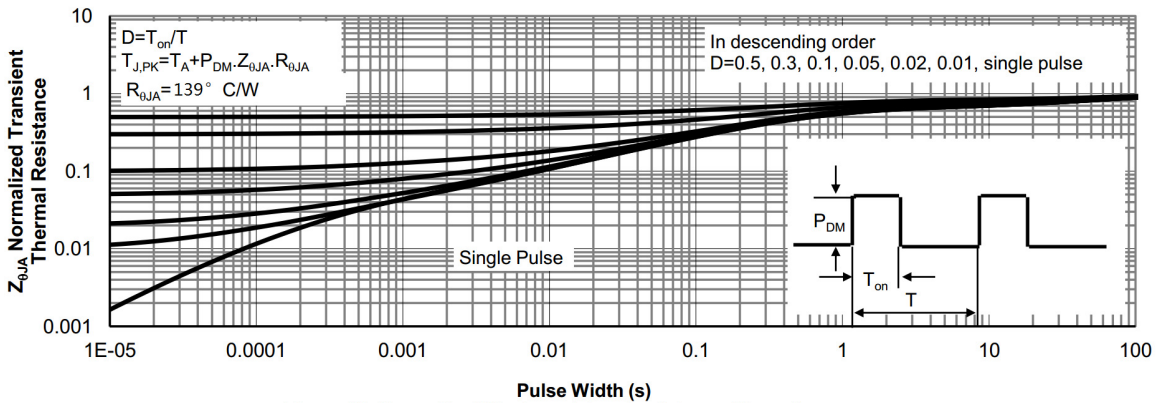
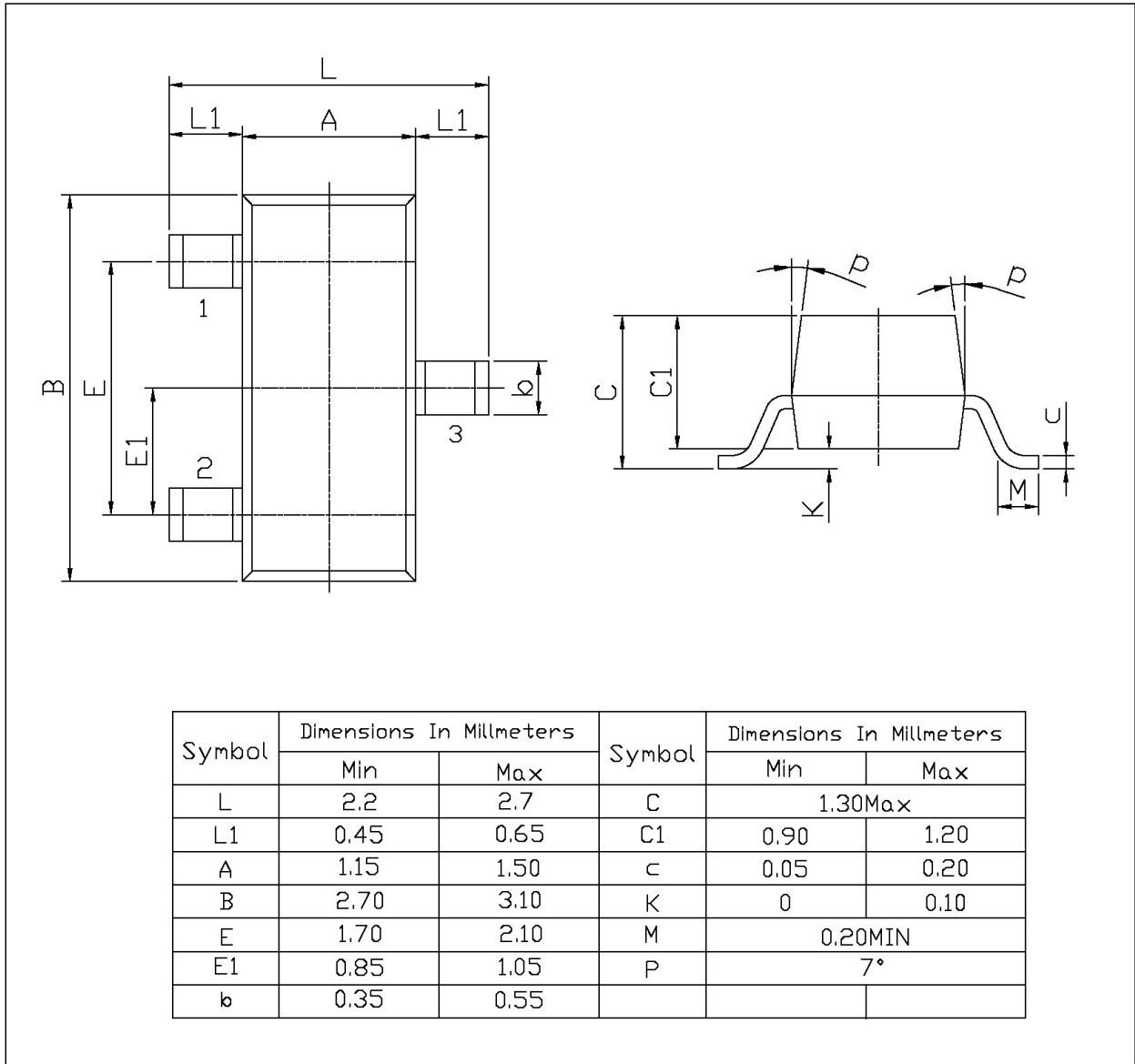


Figure 10: Normalized Maximum Transient Thermal Impedance

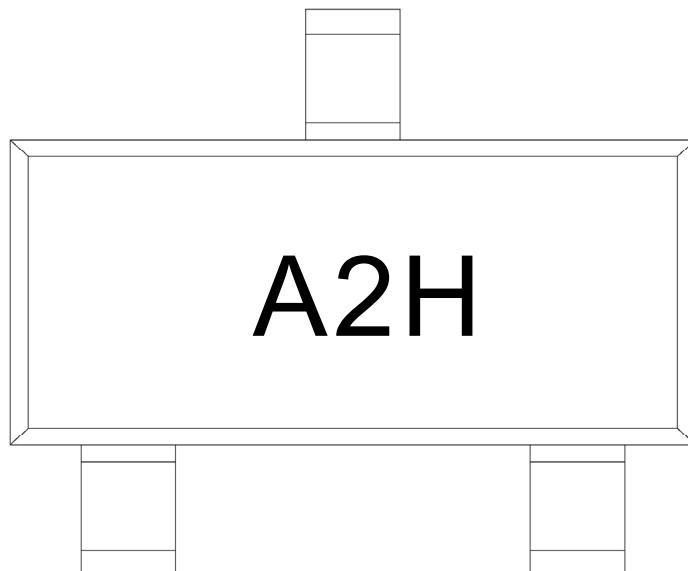
外形尺寸图 / Package Dimensions

SOT-23

单位: mm



印章说明 / Marking Instructions



说明：

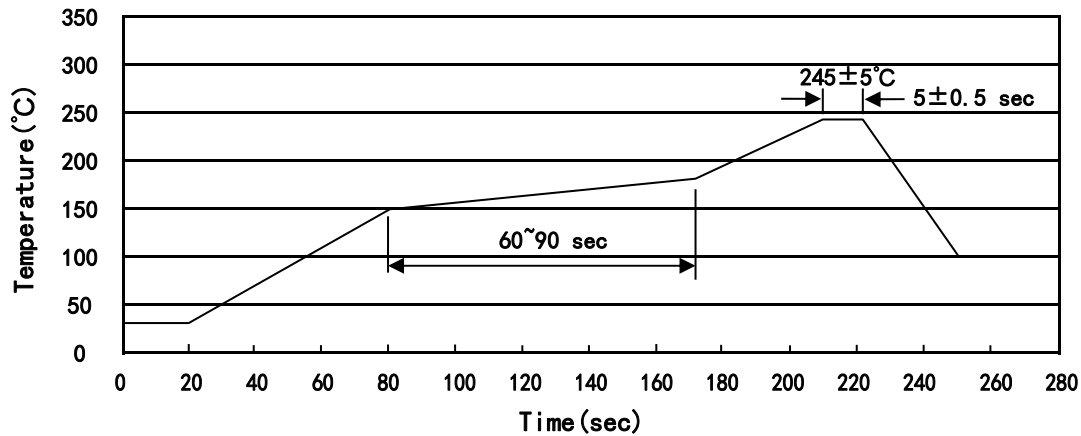
A2: 为型号代码

H: 为公司代码

Note:

A2 : Product Type Code

H: Company 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 封装形式 | Units 包装数量 | | | | | Dimension 包装尺寸 (unit: mm ³) | | |
|----------------------|--------------------|-------------------------|------------------------|------------------------------|------------------------|---|-------------|-------------|
| | Units/Reel 只/卷盘 | Reels/Inner Box 卷盘/盒 | Units/Inner Box 只/盒 | Inner Boxes/Outer Box 盒/箱 | Units/Outer Box 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