

BRCS2312MAQ

Rev.A Nov.-2022

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

芯片采用超高密度圆胞设计技术， $R_{DS(ON)}$ 导通电阻小，SOT-23 封装，符合 AEC-Q101 标准高可靠性要求，无卤产品。

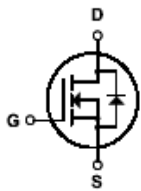
Super high dense cell design for low $R_{DS(ON)}$, SOT-23 package, Qualified to AEC-Q101 Standards for High Reliability, HF Product.

用途 / Applications

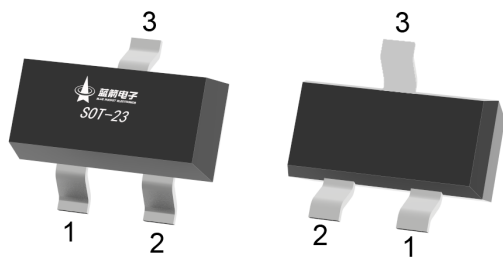
电池管理，高速开关，低功率 DC-DC 转换，满足汽车应用的严格要求。

Battery management, High speed switch, low power DC to DC converter, Meet the stringent requirements of automotive applications.

内部等效电路 / Equivalent Circuit



引脚排列 / Pinning



PIN 1 : G

PIN 2 : S

PIN 3 : D

印章代码 / Marking

Marking

C2Q

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 _{DSS}	20	V
Gate-Source Voltage	V _{GSS}	±12	V
Drain Current – Continuous	I _D	6.5	A
Pulsed Drain Current	I _{DM}	38	A
Power Dissipation	P _D	1.3	W
Storage Temperature Range	T _{stg}	-55~150	°C
Maximum Junction-to-Ambient	R _{θJA}	90	°C/W
Maximum Junction-to-Ambient		Steady-State	
Maximum Junction-to-Lead	R _{θJL}	80	

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
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} I _D =250μA	0.5	0.9	1.2	V
Drain–Source Breakdown Voltage	V _{(BR)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 =5.0A		16.5	33	mΩ
	R _{DS(on)2}	V _{GS} =2.5V I _D =4.5A		23.5	40	mΩ
	R _{DS(on)3}	V _{GS} =1.8V I _D =4.0A			51	mΩ
Drain–Source Diode Forward Voltage	V _{SD}	V _{GS} =0V I _D =1A		0.78	1.2	V

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
Input Capacitance	Ciss	V _{GS} =0V, V _{DS} =10V f=1MHz		860		pF
Output Capacitance	Coss			800		
Reverse Transfer Capacitance	Crss			495		
Gate resistance	Rg	V _{GS} =0V, V _{DS} =0V f=1MHz		4.9		Ω
Total Gate Charge	Qg(4.5V)	V _{GS} =4.5V, V _{DS} =10V I _D =6.5A		7		nC
Gate Source Charge	Qgs			1		
Gate Drain Charge	Qgd			2		
Turn-On Delay Time	t _{d(on)}	V _{GS} =4.5V, V _{DS} =10V R _L =1.54Ω, R _{GEN} =3Ω		7		ns
Turn-On Rise Time	t _r			10		
Turn-Off Delay Time	t _{d(off)}			32		
Turn-Off Fall Time	t _f			11		

电参数曲线图 / Electrical Characteristic Curve

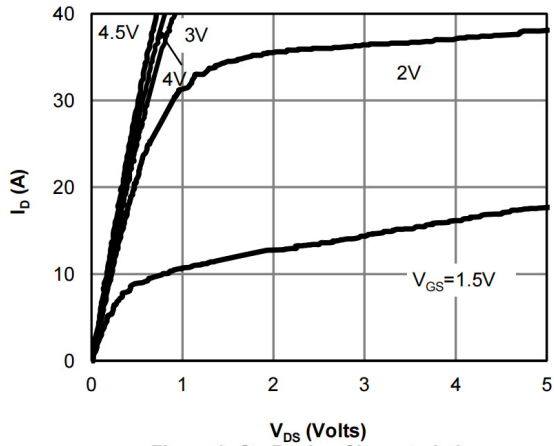


Figure 1: On-Region Characteristics

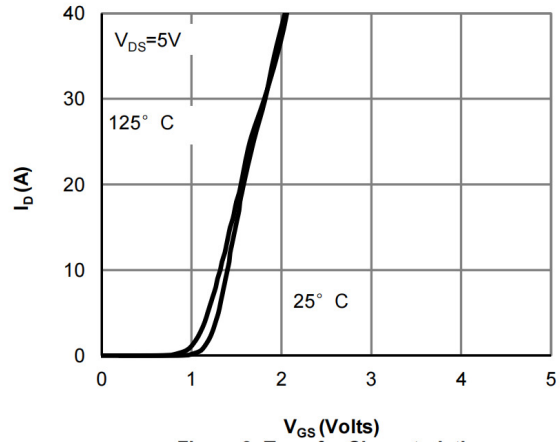


Figure 2: Transfer Characteristics

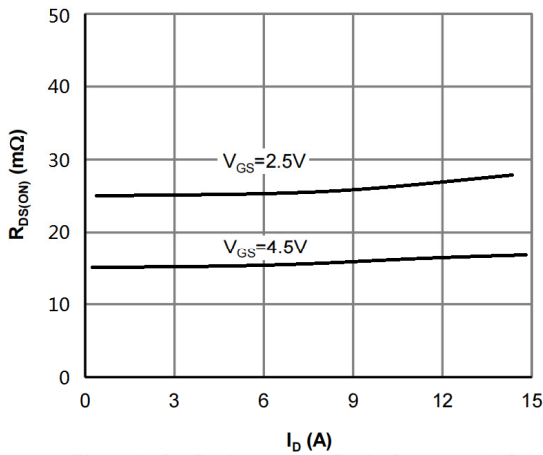


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

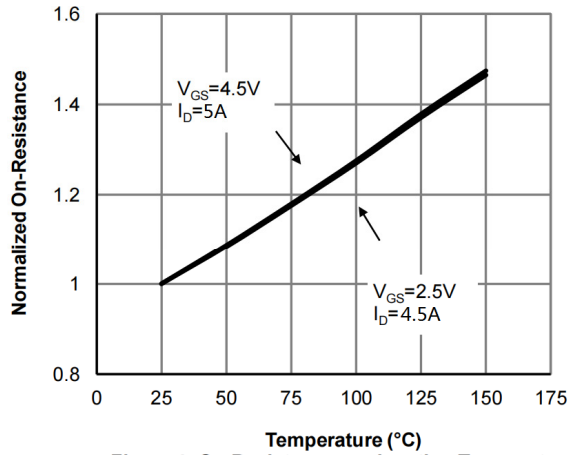


Figure 4: On-Resistance vs. Junction Temperature

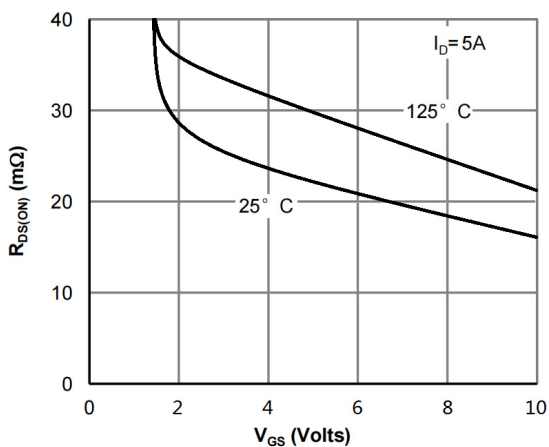


Figure 5: On-Resistance vs. Gate-Source Voltage

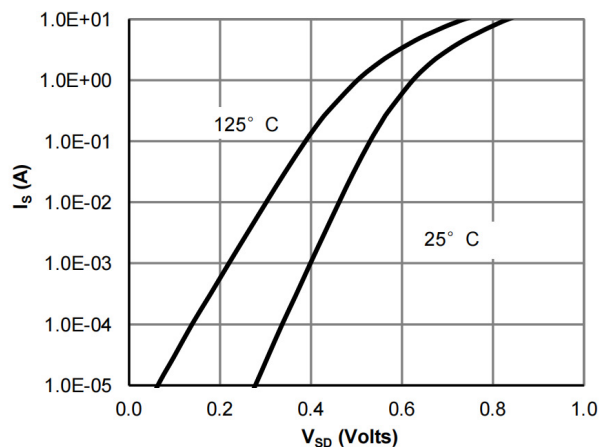


Figure 6: Body-Diode Characteristics

电参数曲线图 / Electrical Characteristic Curve

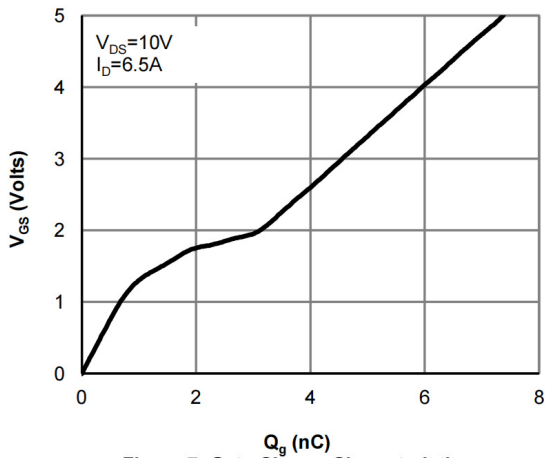


Figure 7: Gate-Charge Characteristics

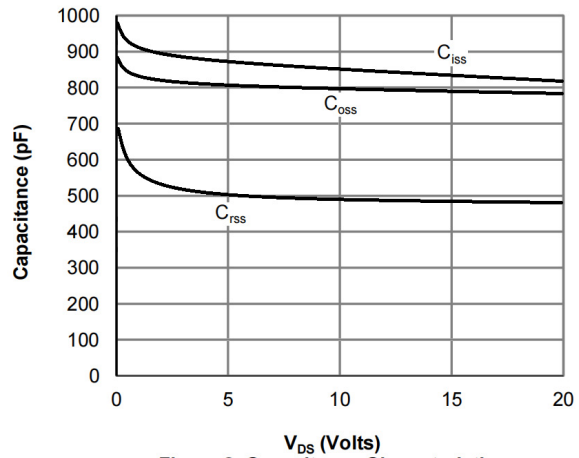


Figure 8: Capacitance Characteristics

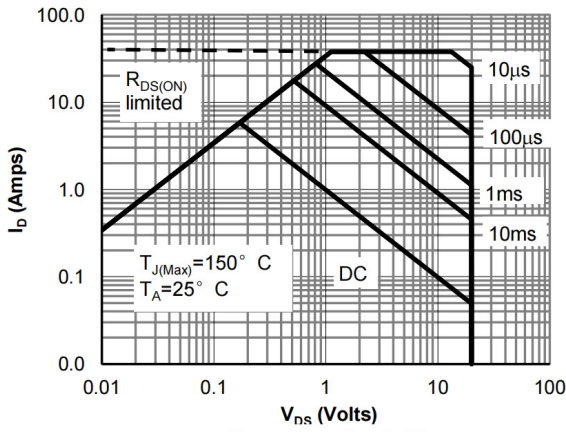


Figure 9: Maximum Forward Biased Safe Operating Area

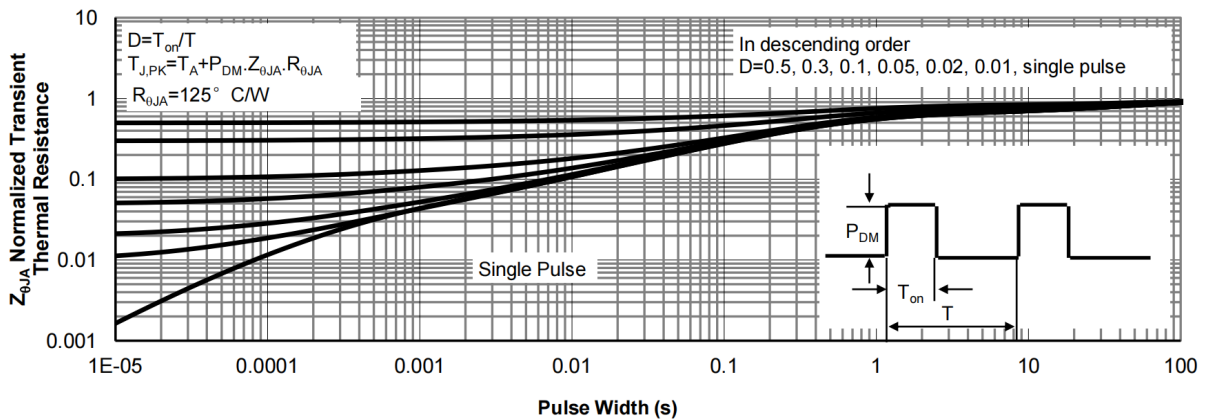
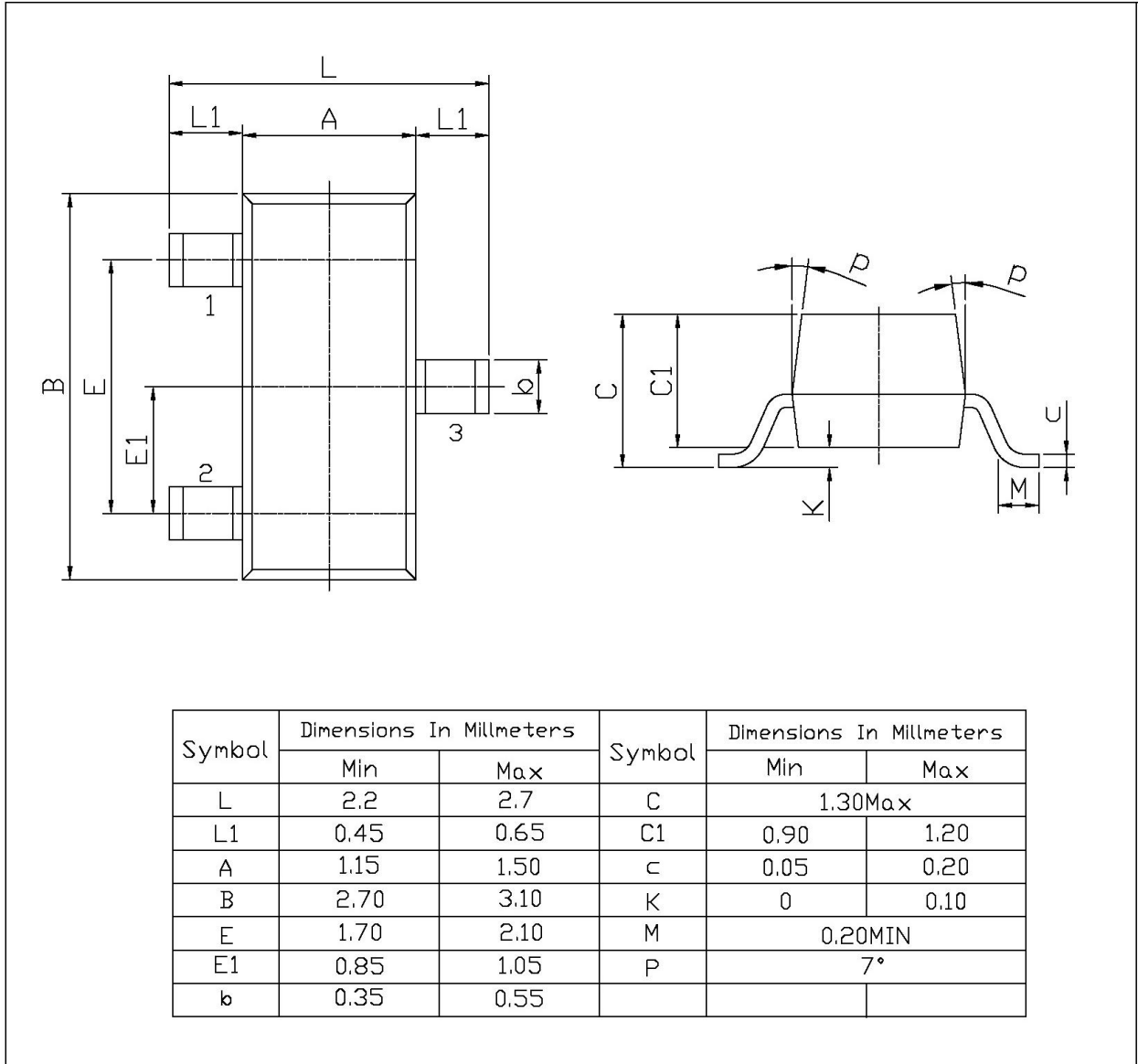


Figure 10: Normalized Maximum Transient Thermal Impedance

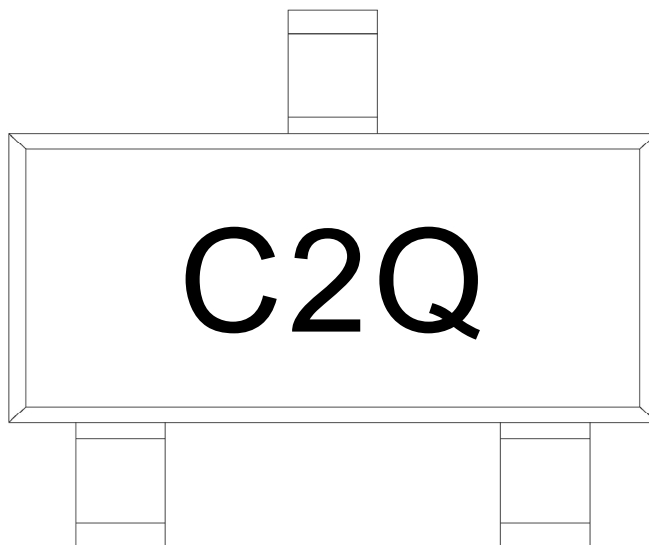
外形尺寸图 / Package Dimensions

SOT-23

单位: mm



印章说明 / Marking Instructions



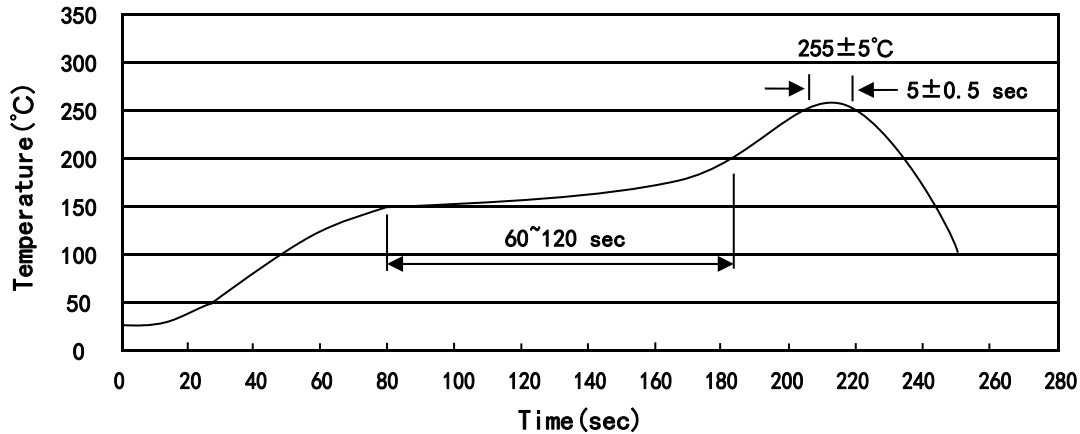
说明：

- C2: 为型号代码
- Q: 为汽车无卤产品标识

Note:

- C2 : Product Type Code
- Q: Automobile halogen-free product 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 ~ 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 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