

BRCS2300MA

Rev.B Aug.-2023

描述 / Descriptions

SOT-23 塑封封装 N 沟道场效应管。

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

特征 / Features

$R_{DS(ON)}$ 导通电阻小, SOT-23 封装, 无卤产品。

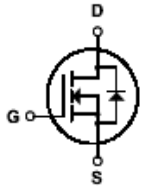
Low $R_{DS(ON)}$, SOT-23 package, HF Product.

用途 / Applications

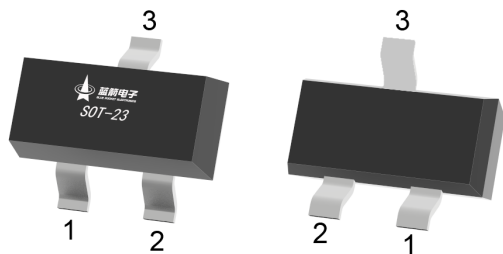
电池管理, 高速开关, 低功率 DC-DC 转换。

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

内部等效电路 / Equivalent Circuit



引脚排列 / Pinning



PIN 1 : G

PIN 2 : S

PIN 3 : D

印章代码 / Marking

Marking	A8H
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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}	±10	V
Drain Current – Continuous	I _D	4.5	A
Pulsed Drain Current	I _{DM}	12	A
Power Dissipation	P _D	1.4	W
Storage Temperature Range	T _{stg}	-55~150	°C
Maximum Junction-to-Ambient	t ≤ 10s	90	°C/W
Maximum Junction-to-Ambient	Steady-State	125	
Maximum Junction-to-Lead	Steady-State	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
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0 I _D =250μA	20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{GS} =0 V _{DS} =20V			1.0	μA
Gate-Body Leakage.	I _{GSS}	V _{GS} =±10V V _{DS} =0V			±100	nA
Static Drain-Source On-Resistance	R _{DS(on)1}	V _{GS} =4.5V I _D =4.5A		21	25	mΩ
	R _{DS(on)2}	V _{GS} =2.5V I _D =4.0A		26	38	mΩ
Forward Transconductance	g _{FS}	V _{DS} =5V I _D =4.5A		6		S
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} =0V I _D =1A		0.74	1.2	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} I _D =50μA	0.5	0.6	1.0	V
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =10V, f=1MHz		500		pF
Output Capacitance	C _{oss}			255		
Reverse Transfer Capacitance	C _{rss}			210		
Gate resistance	R _g	V _{GS} =V _{DS} =0V, f=1MHz		1.7		Ω

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
Total Gate Charge	$Q_g(10V)$	$V_{DS}=10V$ $V_{GS}=10V$ $I_D=4.5A$		12.5		nC
Total Gate Charge	$Q_g(4.5V)$			6		
Gate Source Charge	Q_{gs}			1		
Gate Drain Charge	Q_{gd}			2		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=10V$ $V_{GS}=10V$ $R_{GEN}=3\Omega$ $R_L=1.7\Omega$		3		ns
Turn-On Rise Time	t_r			7.5		
Turn-Off Delay Time	$t_{d(off)}$			20		
Turn-Off Fall Time	t_f			6		

电参数曲线图 / Electrical Characteristic Curve

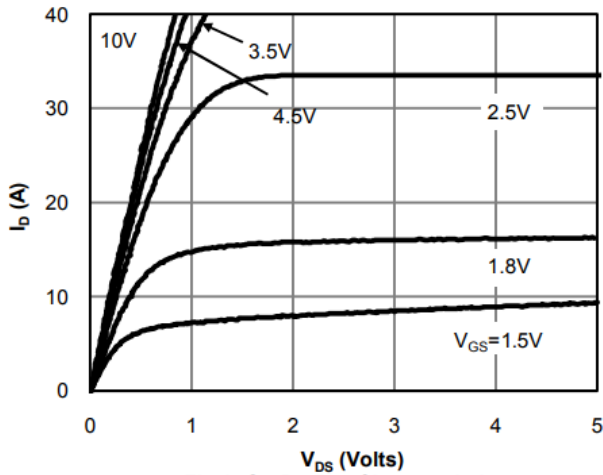


Fig 1: On-Region Characteristics

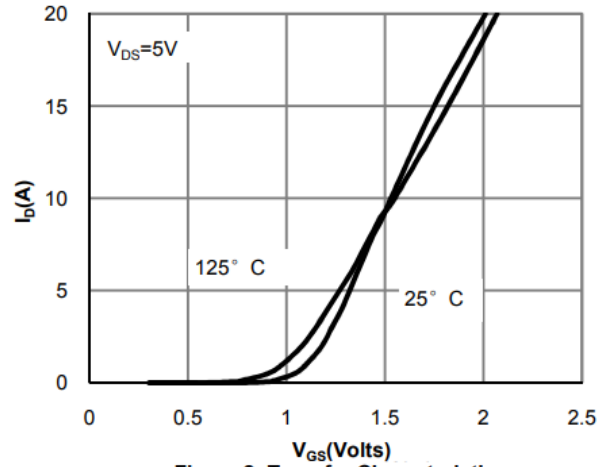


Figure 2: Transfer Characteristics

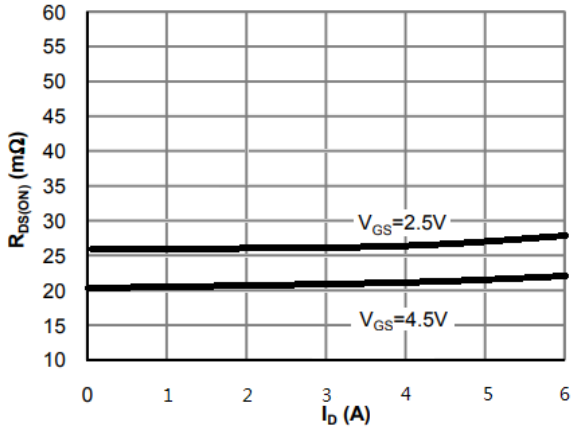


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

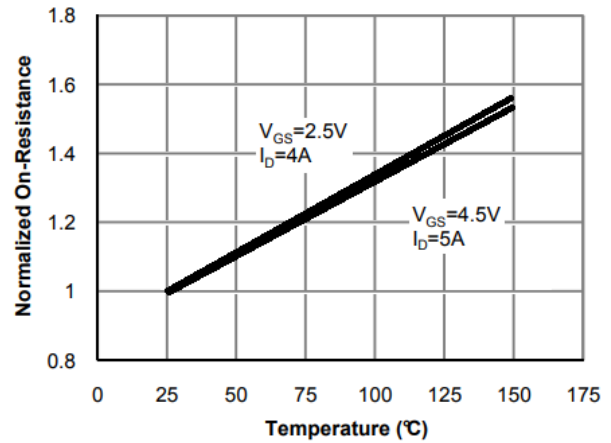


Figure 4: On-Resistance vs. Junction Temperature

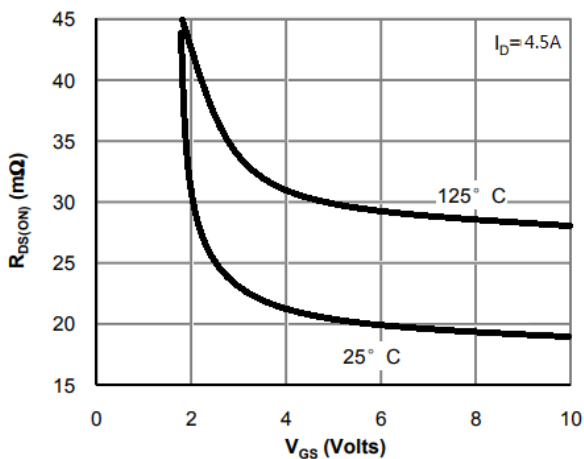


Figure 5: On-Resistance vs. Gate-Source Voltage

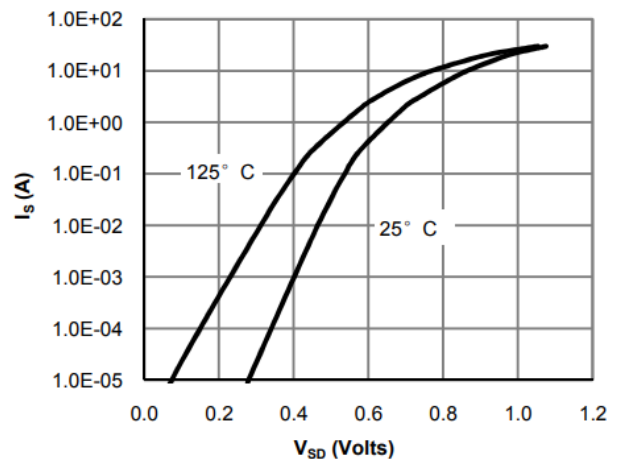


Figure 6: Body-Diode Characteristics

电参数曲线图 / Electrical Characteristic Curve

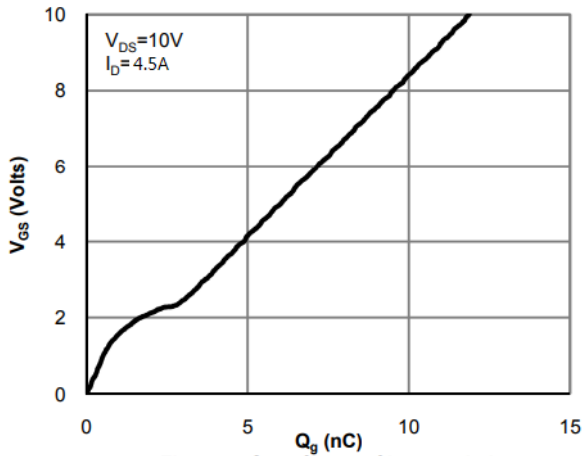


Figure 7: Gate-Charge Characteristics

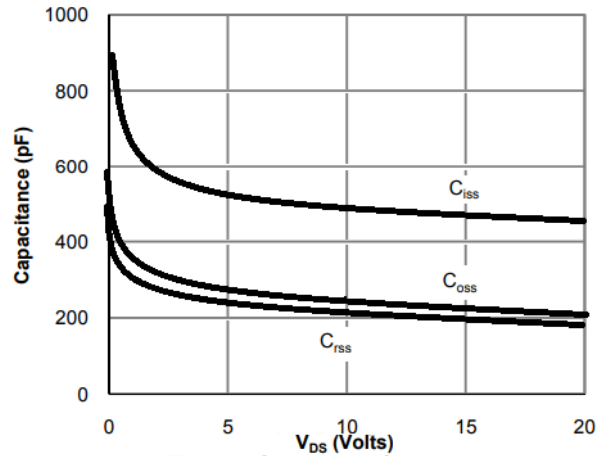


Figure 8: Capacitance Characteristics

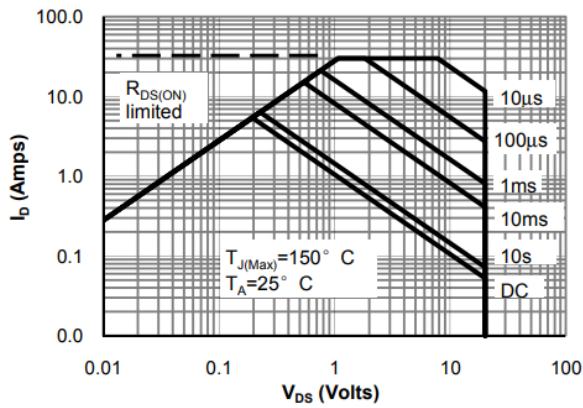


Figure 9: Maximum Forward Biased Safe Operating Area

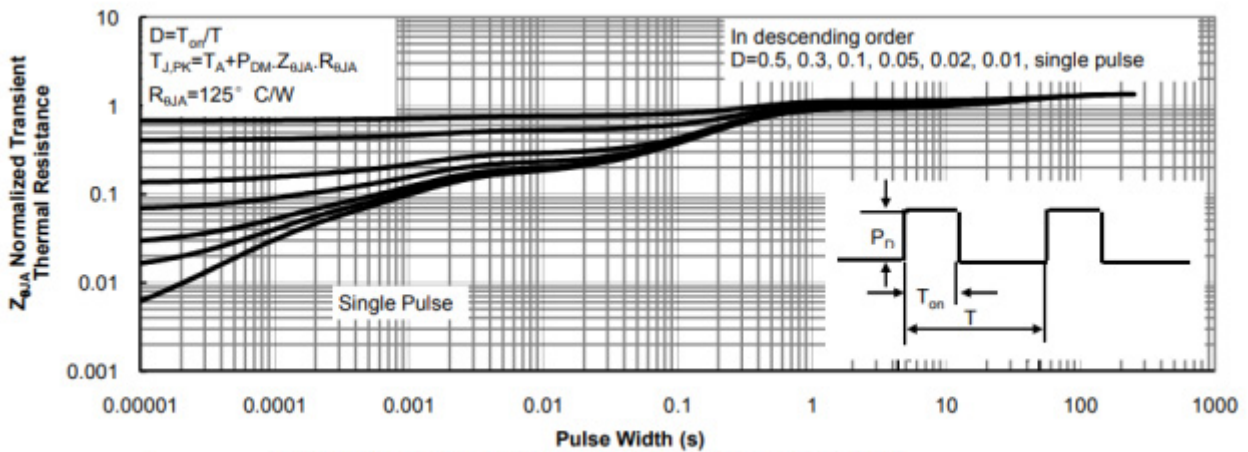
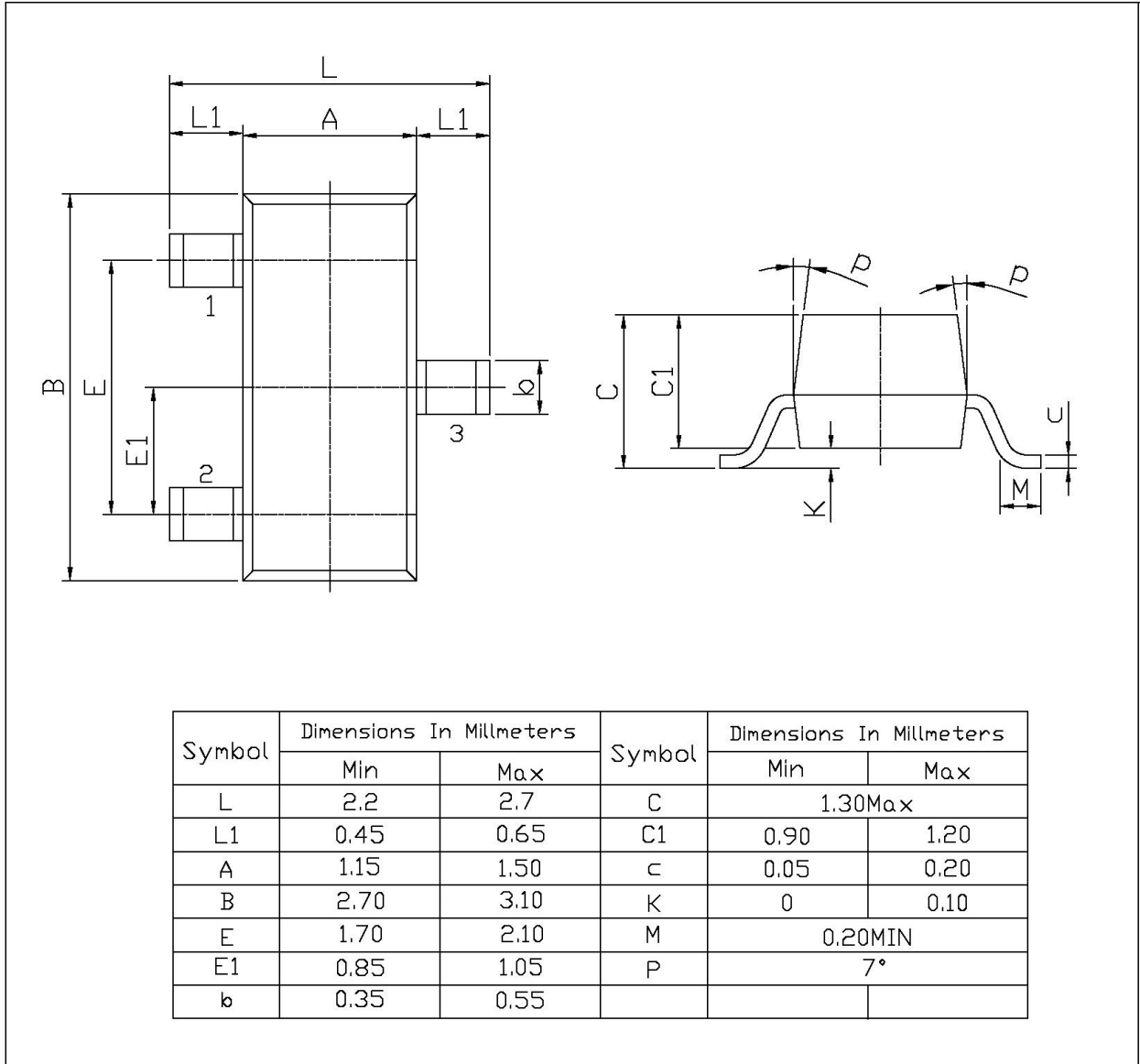


Figure 10: Normalized Maximum Transient Thermal Impedance

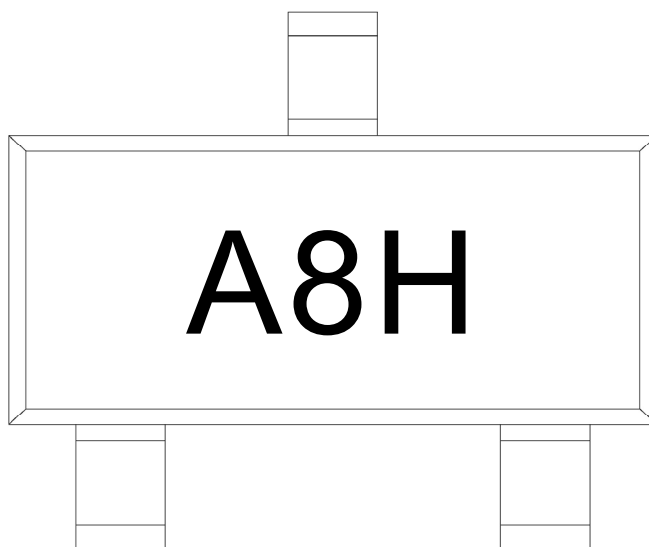
外形尺寸图 / Package Dimensions

SOT-23

单位: mm



印章说明 / Marking Instructions



说明：

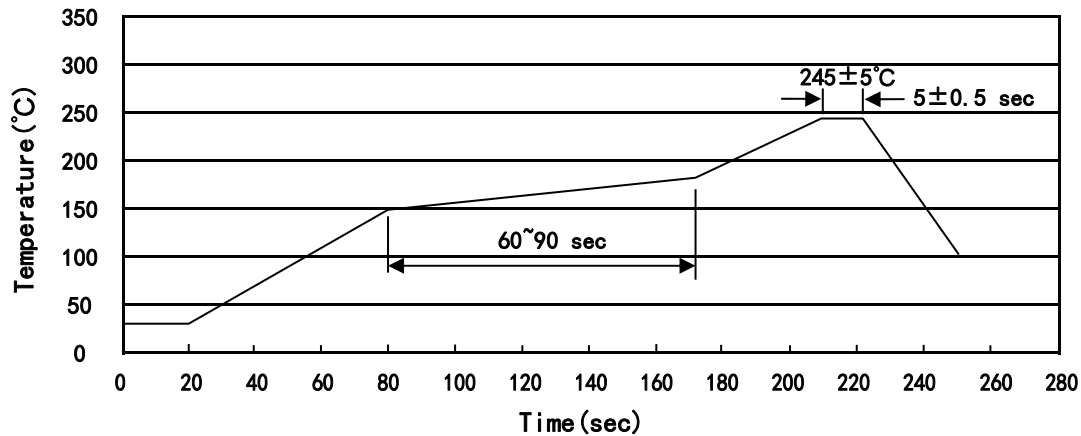
A8: 为型号代码

H: 为公司代码

Note:

A8 : 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