

BRCS3415MCQ

Rev.A Sep.-2023

描述 / Descriptions

SOT23-3 塑封封装 P 道场效应管。

P- CHANNEL MOSFET in a SOT23-3 Plastic Package.

特征 / Features

$R_{DS(ON)} < 41 \text{ m}\Omega, V_{GS} = -4.5\text{V}$

$R_{DS(ON)} < 53 \text{ m}\Omega, V_{GS} = -2.5\text{V}$

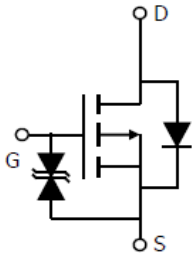
符合 AEC-Q101 标准高可靠性要求，无卤产品。Qualified to AEC-Q101 Standards for High Reliability, HF Product.

用途 / Applications

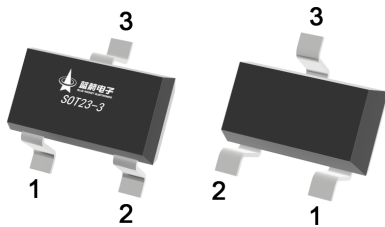
负载开关，电池保护，满足汽车应用的严格要求。

Load switch, Battery protection, 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	AFQ
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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 _{DS}	-20	V
Gate-Source Voltage	V _{GS}	±8	V
Drain Current-Continuous @ T _C =25°C	I _D	-4	A
Drain Current-Pulsed Note1 @ T _C =25°C	I _{DM}	-30	A
Maximum Power Dissipation	P _D	1.5	W
Storage Temperature Range	T _{STG}	-55 to +150	° C
Operating Junction Temperature Range	T _J	-55 to +150	° C
Thermal Resistance, Junction-to-Ambient Note2	R _{θJA}	100	° 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	B _{VDS}	V _{GS} =0V I _{DS} =-250μA	-20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-20V V _{GS} =0V			-1	uA
Gate-Body Leakage	I _{GSS}	V _{GS} =±8V V _{DS} =0V			±10	uA
Gate Threshold Voltage	V _{TH}	V _{DS} =V _{GS} I _{DS} =-250μA	-0.3	-0.6	-0.9	V
Drain-Source On-State Resistance	R _{DS}	V _{GS} =-4.5V I _{DS} =-4A		35	41	mΩ
		V _{GS} =-2.5V I _{DS} =-4A		45	53	
Input Capacitance	C _{iSS}	V _{DS} =-10V V _{GS} =0V f=1MHz		750		pF
Output Capacitance	C _{oss}			110		
Reverse Transfer Capacitance	C _{rss}			80		
Turn-On Delay Time	t _{d(on)}	V _{DS} =-10V V _{GS} =-4.5V R _G =3 R _L =2.5		15.6		ns
Rise Time	t _r			11.2		
Turn-Off Delay Time	t _{d(off)}			23.1		
Fall Time	t _f			32.7		
Total Gate Charge at 10V	Q _g	V _{DS} =-10V I _{DS} =-4A V _{GS} =-4.5V		10		nC
Gate to Source Gate Charge	Q _{gs}			1.5		
Gate to Drain "Miller" Charge	Q _{gd}			2.2		
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} =0V I _{DS} =-1A		-0.7		V

Notes:

1. Pulse Test: Pulse Width 300μs, Duty Cycle 2%.
2. R_{θJA} is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. R_{θJC} is guaranteed by design while R_{θCA} is determined by the user's board design. R_{θJA} shown below for single device operation on FR-4 in still air.

电参数曲线图 / Electrical Characteristic Curve

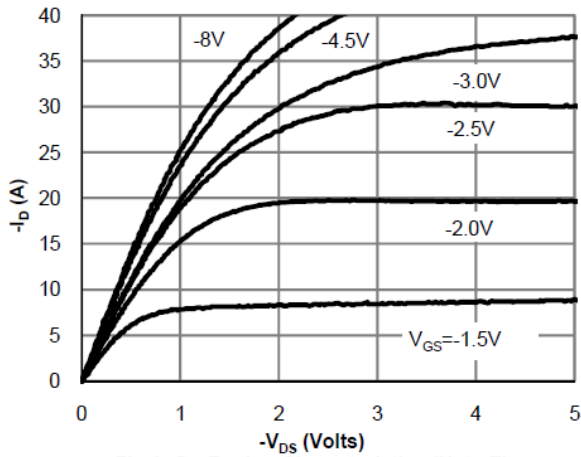


Fig 1: On-Region Characteristics (Note E)

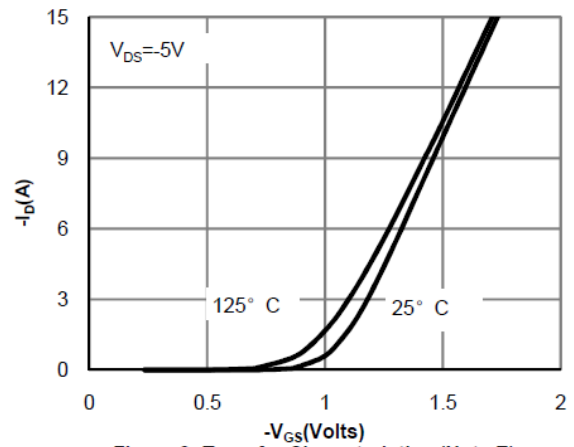


Figure 2: Transfer Characteristics (Note E)

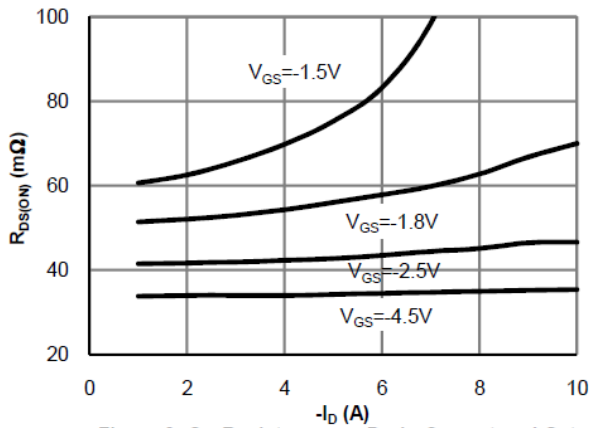


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

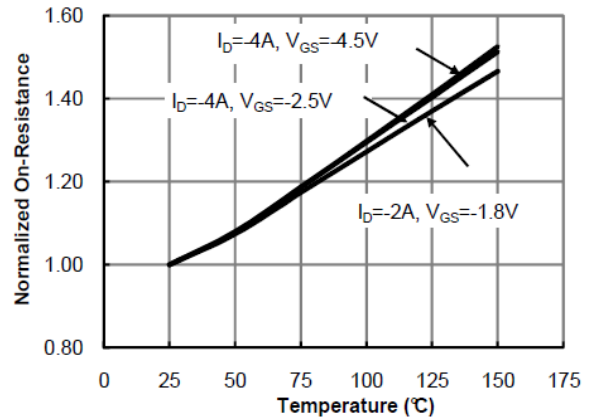


Figure 4: On-Resistance vs. Junction Temperature (Note E)

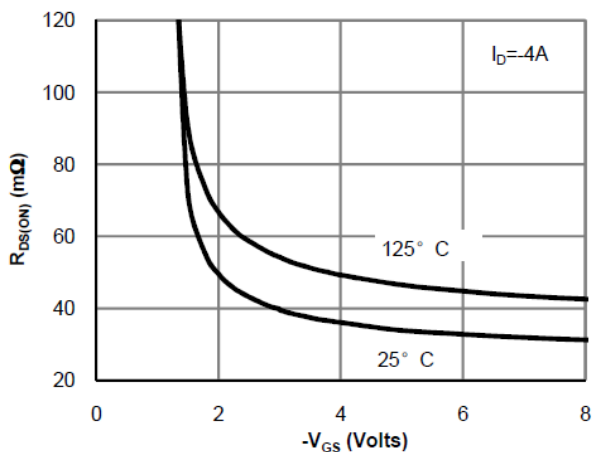


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

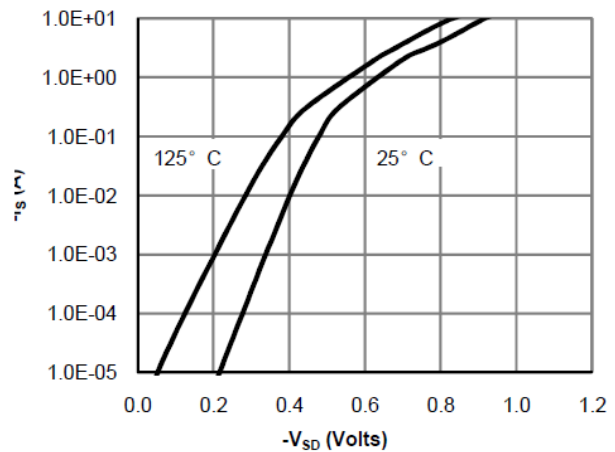
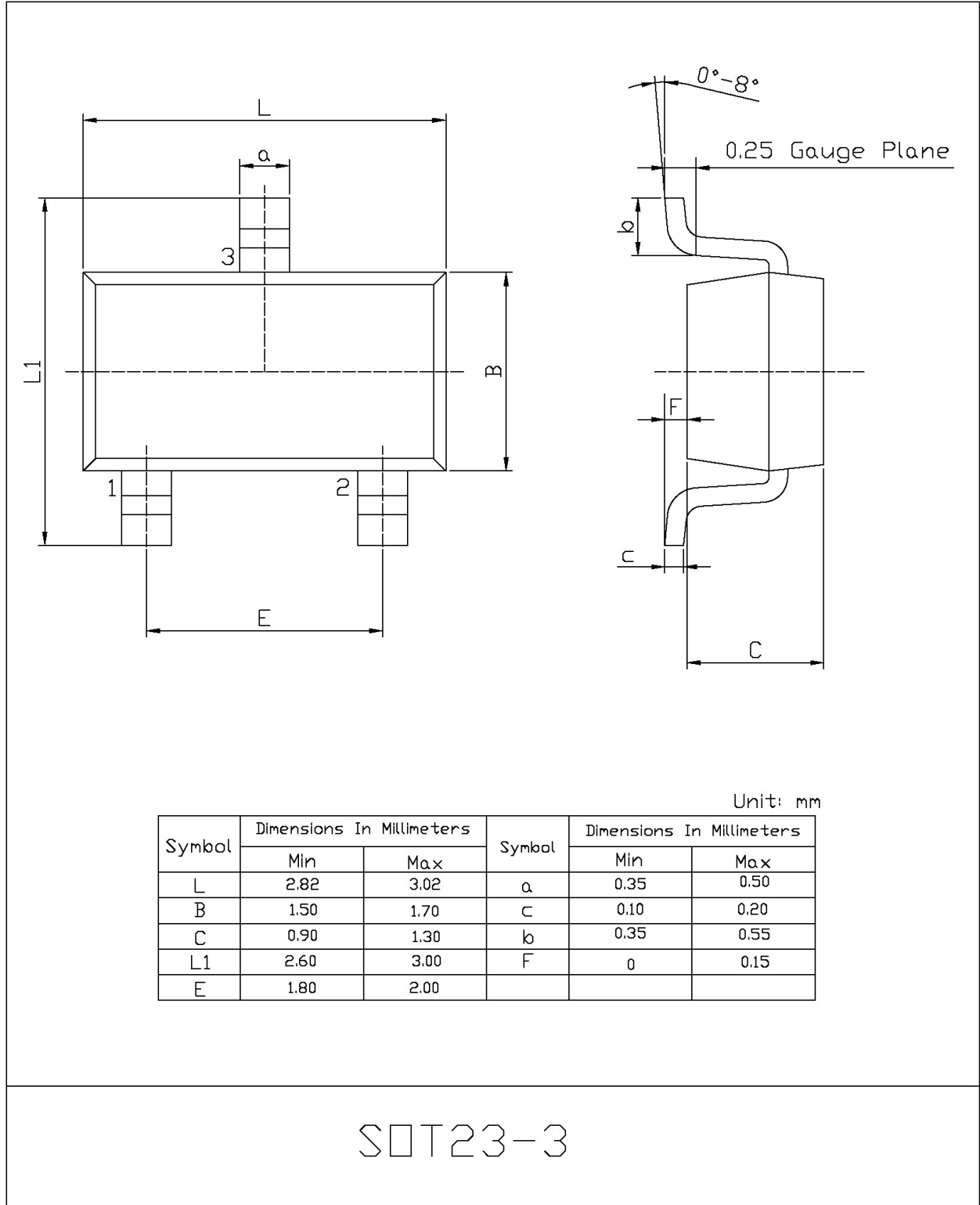
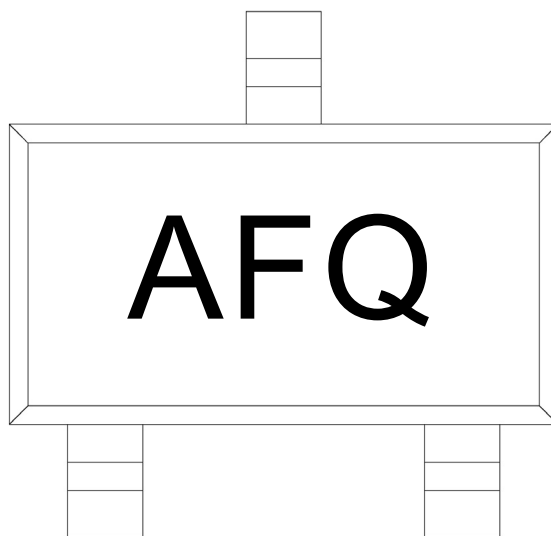


Figure 6: Body-Diode Characteristics (Note E)

外形尺寸图 / Package Dimensions



印章说明 / Marking Instructions



说明：

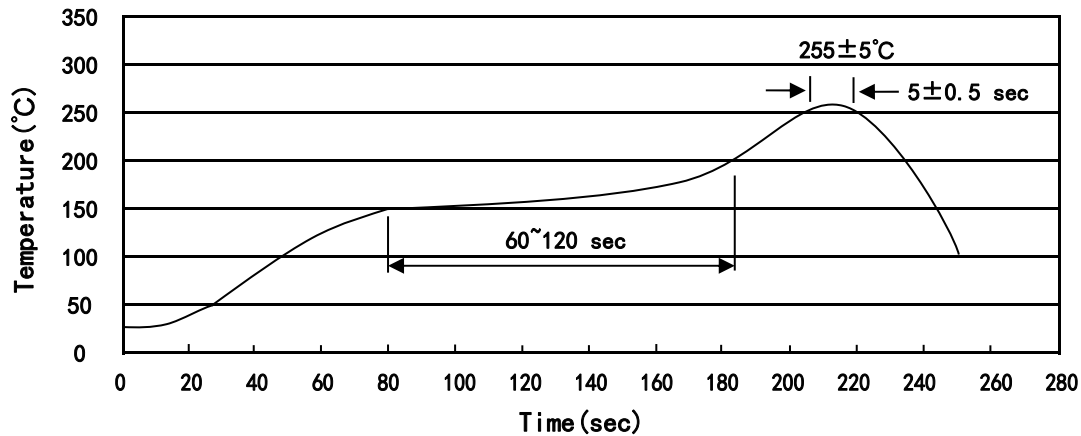
Q： 为汽车无卤产品标识

AF： 为型号代码

Note:

Q: Automobile halogen-free product Code

AF : Product Type

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
SOT23-3	3,000	10	30,000	4	120,000	7" ×8	210×205×205	445×435×230

使用说明 / Notices