

BRCS3404MCQ

Rev. A Aug-2022

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

$V_{DS} (V) = 30V$

$I_D = 5.5 A (V_{GS} = 20V)$

$R_{DS(ON)} < 31m\Omega (V_{GS} = 10V)$

$R_{DS(ON)} < 43m\Omega (V_{GS} = 4.5V)$

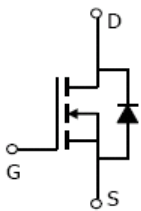
符合 AEC-Q101 标准高可靠性要求，无卤产品。 Qualified to AEC-Q101 Standards for High Reliability, HF Product.

用途 / Applications

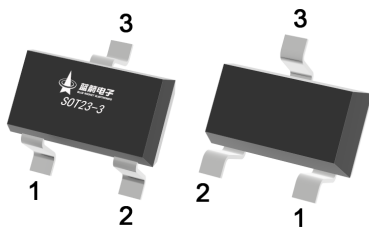
适用于作负载开关或脉宽调制应用，满足汽车应用的严格要求。

This device is suitable for use as a load switch or in PWM applications, 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	B4Q
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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}	30	V
Drain Current – Continuous	I_D	5.5	A
Pulsed Drain Current	I_{DM}	19	A
Gate-Source Voltage	V_{GS}	± 20	V
Total Power Dissipation	P_D	1.4	W
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to 150	°C
Maximum Junction-to-Ambient	$t \leq 10s$	90	°C/W
Maximum Junction-to-Ambient	Steady-State		
Maximum Junction-to-Lead	$R_{\theta JL}$	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	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	μA
		$V_{DS}=24V$ $V_{GS}=0V$ $T_J=55^\circ C$			5	μA
Gate–Body Leakage.	I_{GSS}	$V_{GS}=\pm 20V$ $V_{DS}=0V$			± 0.1	μA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	1.0	1.5	2.5	V
Static Drain–Source On–Resistance	$R_{DS(on)(1)}$	$V_{GS}=10V$ $I_D=5.5A$		20	31	$m\Omega$
	$R_{DS(on)(2)}$	$V_{GS}=4.5V$ $I_D=4A$		26	43	
Drain–Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V$ $I_S=1A$		0.77	1	V
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ $f=1MHz$		380		pF
Output Capacitance	C_{oss}			165		
Reverse Transfer Capacitance	C_{rss}			15		
Total Gate Charge	$Q_{g(10V)}$	$V_{GS}=10V,$ $V_{DS}=15V,$ $I_D=5.5A$		5.2		nC
Total Gate Charge	$Q_{g(4.5V)}$			2.5		
Gate Source Charge	Q_{gs}			0.8		
Gate Drain Charge	Q_{gd}			1.3		
Turn–On Delay Time	$t_{d(on)}$	$V_{GS}=10V$ $R_L=3\Omega$ $V_{DS}=15V$ $R_{GEN}=3\Omega$		4.5		ns
Turn–On Rise Time	t_r			2.5		
Turn–Off Delay Time	$t_{d(off)}$			14.5		
Turn–Off Fall Time	t_f			3.5		

电参数曲线图 / Electrical Characteristic Curve

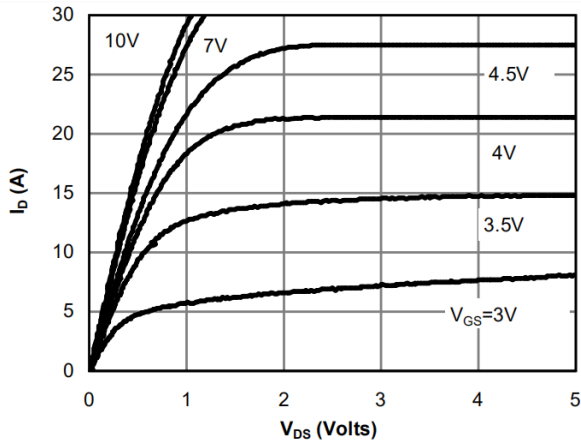


Fig 1: On-Region Characteristics

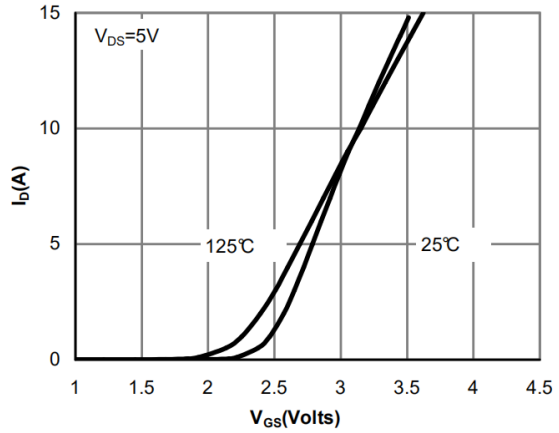


Figure 2: Transfer Characteristics

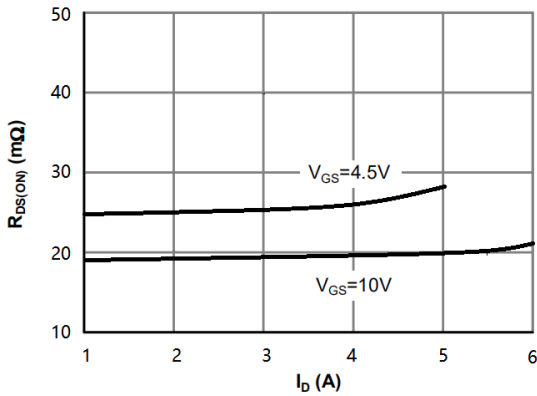


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

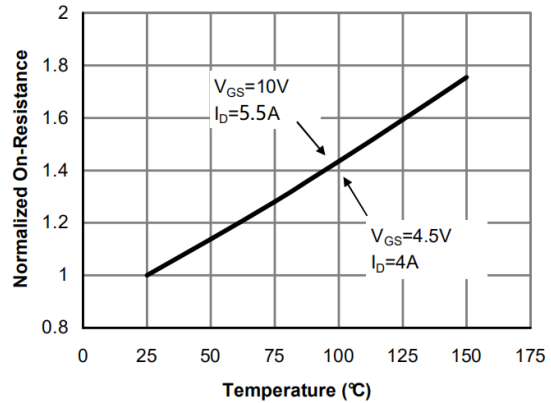


Figure 4: On-Resistance vs. Junction Temperature

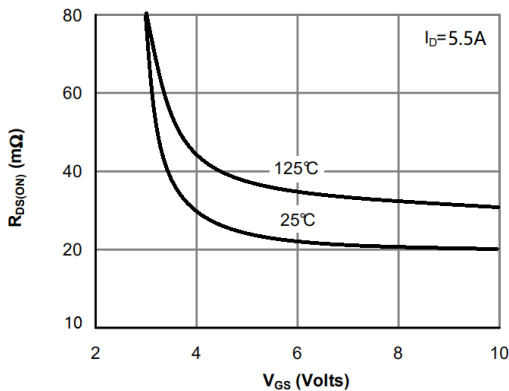


Figure 5: On-Resistance vs. Gate-Source Voltage

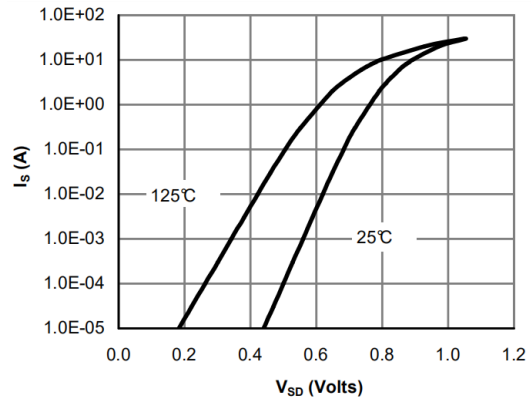


Figure 6: Body-Diode Characteristics

电参数曲线图 / Electrical Characteristic Curve

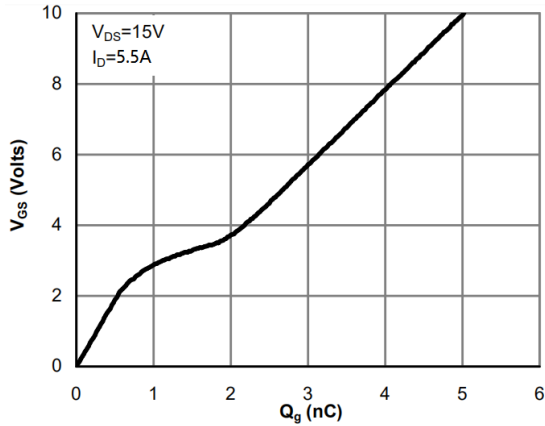


Figure 7: Gate-Charge Characteristics

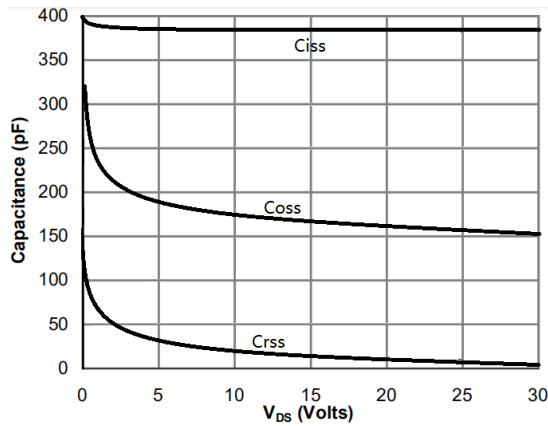


Figure 8: Capacitance Characteristics

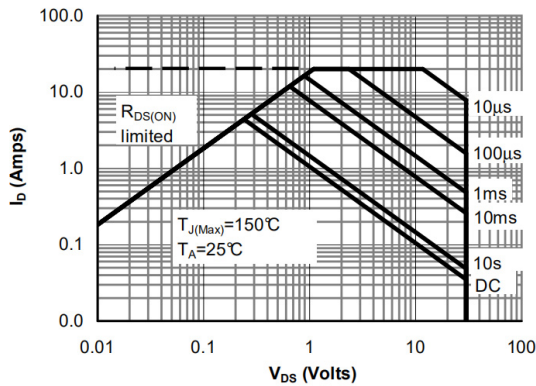


Figure 09: Maximum Forward Biased Safe Operating Area

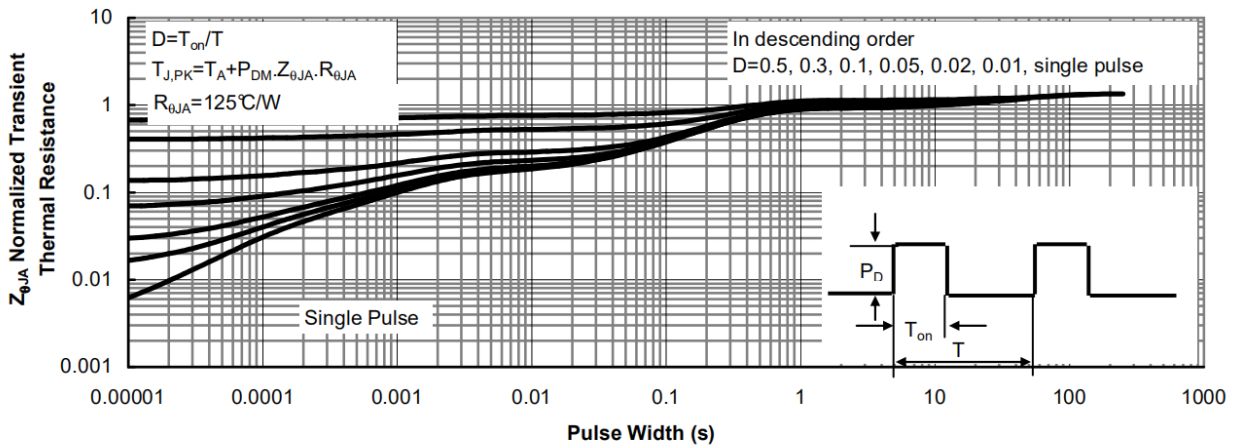
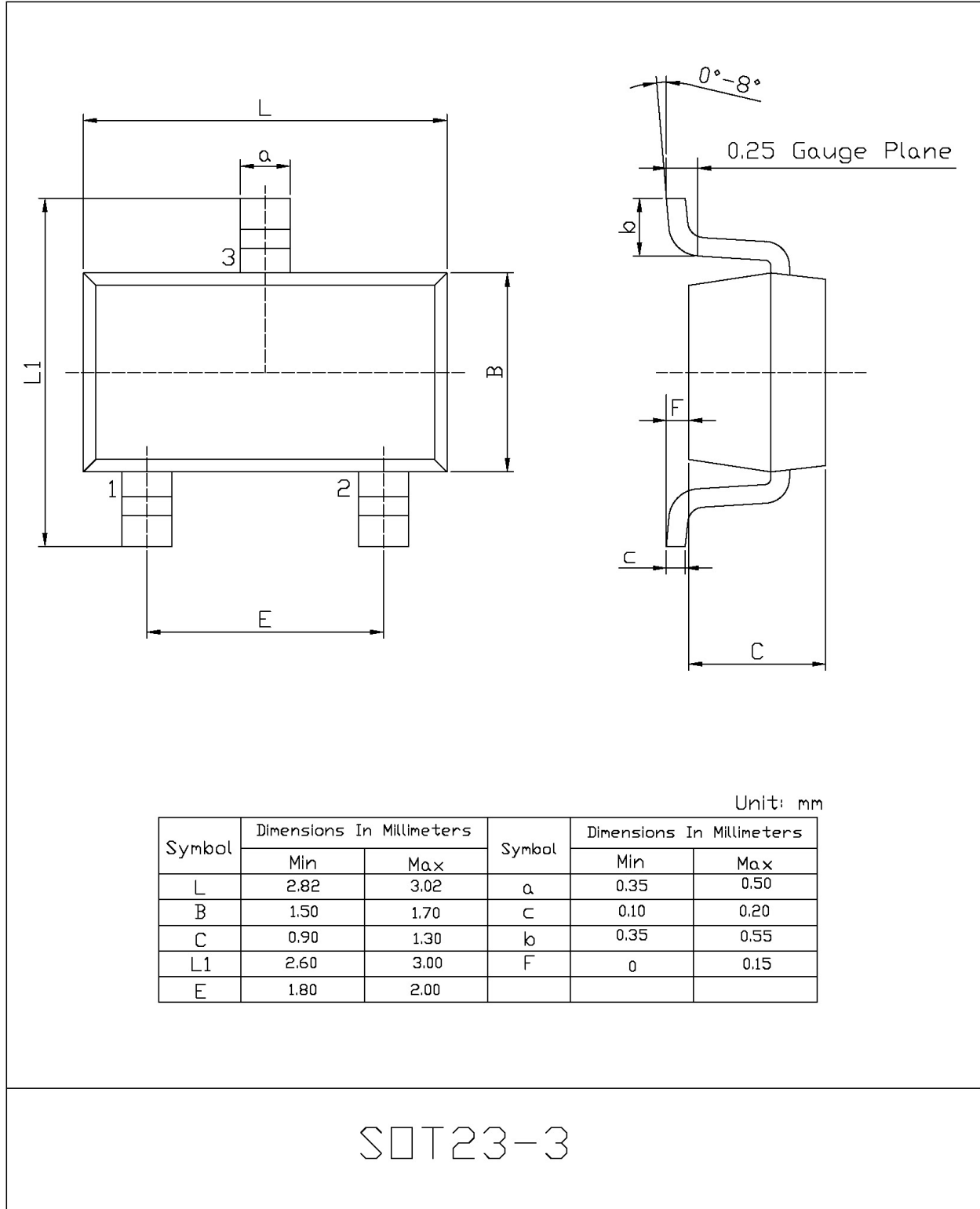
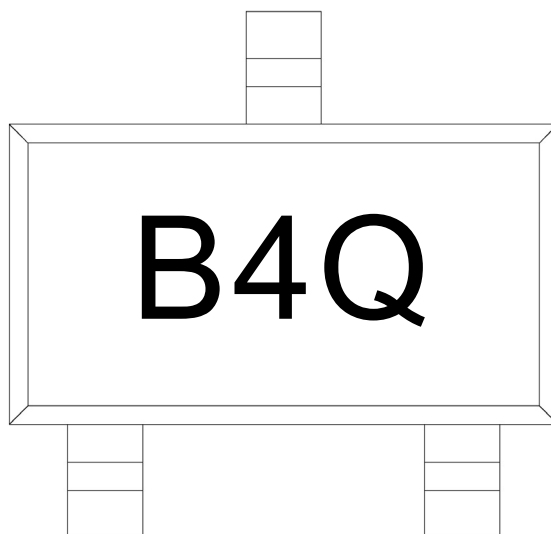


Figure 10: Normalized Maximum Transient Thermal Impedance

外形尺寸图 / Package Dimensions



印章说明 / Marking Instructions



说明：

B4： 为型号代码

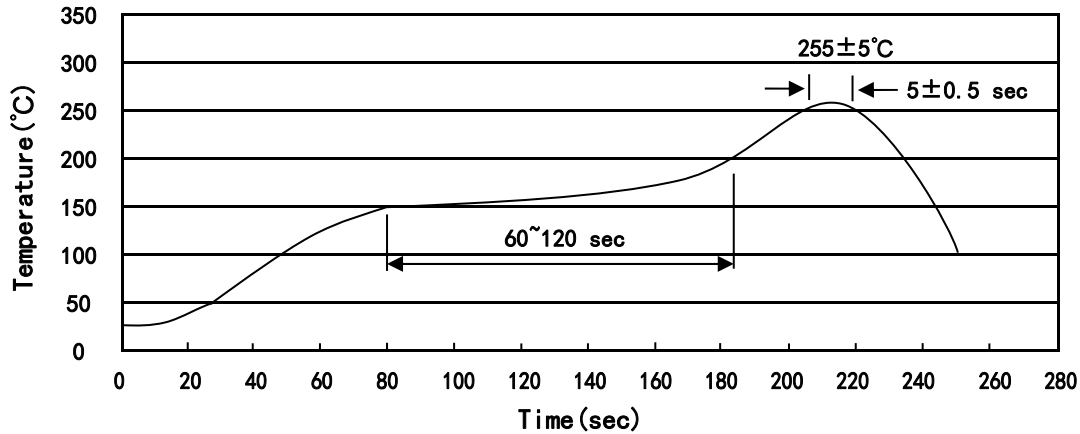
Q： 为汽车无卤产品标识

Note:

B4: 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：

Note:

- | | |
|--------------------------------------|--|
| 1、预热温度 150 ~ 200°C , 时间 60 ~ 120sec; | 1.Preheating:150~200°C, Time:60~120sec. |
| 2、峰值温度 255±5°C , 时间持续为 5±0.5sec; | 2.Peak Temp.:255±5°C, Duration:5±0.5sec. |
| 3、焊接制程冷却速度为 2 ~ 10°C/sec. | 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	445×230×435

使用说明 / Notices