

BRCS2305MCQ

Rev.B Apr.-2023

描述 / Descriptions

SOT23-3 塑封封装 P 道 MOS 场效应管。
P- CHANNEL MOSFET in a SOT23-3 Plastic Package.

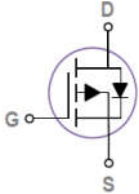
特征 / Features

沟道技术，功率场效应晶体管，符合 AEC-Q101 标准高可靠性要求，无卤产品。
Trench FET@ Power MOSFET, Qualified to AEC-Q101 Standards for High Reliability, HF Product.

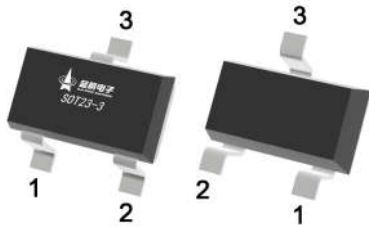
用途 / Applications

主要用于显示屏驱动，满足汽车应用的严格要求。
Primarily the display screen drive 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	Q305
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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}	± 12	V
Drain Current – Continuous	$I_D(T_C=25^\circ C)$	-4.3	A
Pulsed Drain Current	I_{DM}	-18	A
Power Dissipation	P_D	1.3	W
Operating and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ C$
Junction-to-Ambient	$t \leq 10$	90	$^\circ C/W$
Junction-to-Ambient	Steady-State		
Junction-to-Lead	Steady-State		
	$R_{\theta JA}$	125	
	$R_{\theta JL}$	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	$V_{(BR)DSS}$	$V_{GS}=0V$ $I_D=-250\mu A$	-20	-23		V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=-250\mu A$	-0.4	0.75	-1.0	V
Static Drain–Source On–Resistance	$R_{DS(on)1}$	$V_{GS}=-4.5V$ $I_D=-4.3A$		33	40	m Ω
	$R_{DS(on)2}$	$V_{GS}=-2.5V$ $I_D=-3.0A$		45	60	m Ω
	$R_{DS(on)3}$	$V_{GS}=-1.8V$ $I_D=-2.0A$		63	85	m Ω
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-20V$ $V_{GS}=0V$			1	μA
Gate–Body Leakage.	I_{GSS}	$V_{GS}=\pm 12V$ $V_{DS}=0V$			± 0.1	μA
Drain–Source Diode Forward Voltage	V_{SD}	$I_S=-1A$ $V_{GS}=0V$			-1.2	V
Gate Resistance	R_g			22		Ω
Input Capacitance	C_{iss}	$V_{DS}=-5V$ $V_{GS}=0V$ $f=1.0MHz$		450		pF
Output Capacitance	C_{oss}			220		
Reverse Transfer Capacitance	C_{rss}			90		
Total Gate Charge	$Q_{g(4.5V)}$	$V_{GS}=-4.5V$ $V_{DS}=-10V$ $I_D=-4.3A$		8.8		nC
Gate Source Charge	Q_{gs}			1.2		
Gate Drain Charge	Q_{gd}			2.5		

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
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=-4.5V$ $V_{DS}=-10V$ $R_L=2.22\Omega$ $R_{GEN}=3\Omega$		12		ns
Turn-On Rise Time	t_r			11.3		
Turn-Off Delay Time	$t_{d(off)}$			80		
Turn-Off Fall Time	t_f			32		

电参数曲线图 / Electrical Characteristic Curve

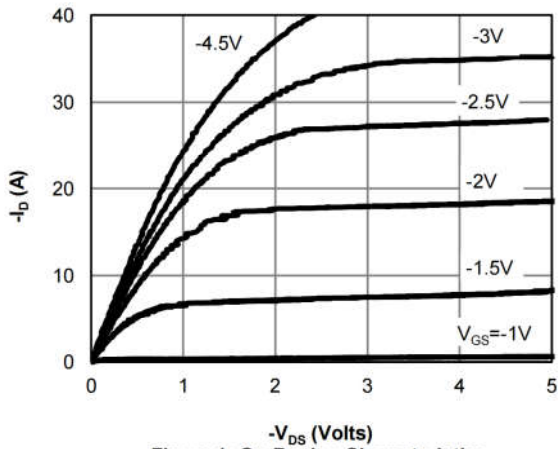


Figure 1: On-Region Characteristics

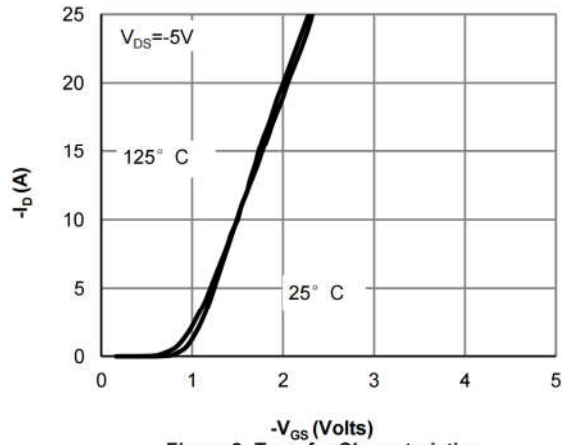


Figure 2: Transfer Characteristics

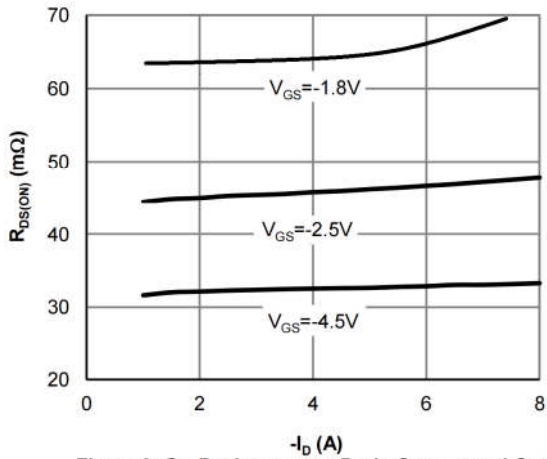


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

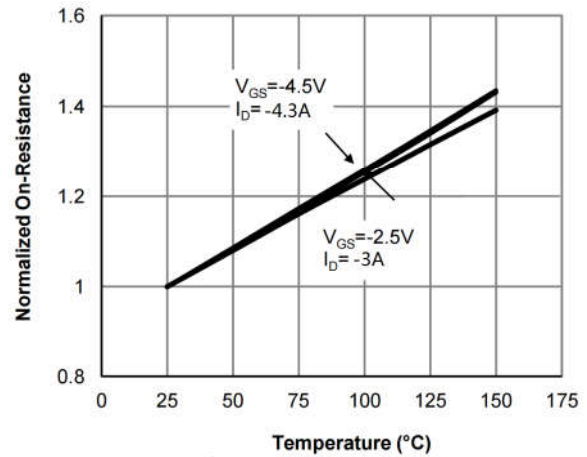


Figure 4: On-Resistance vs. Junction Temperature

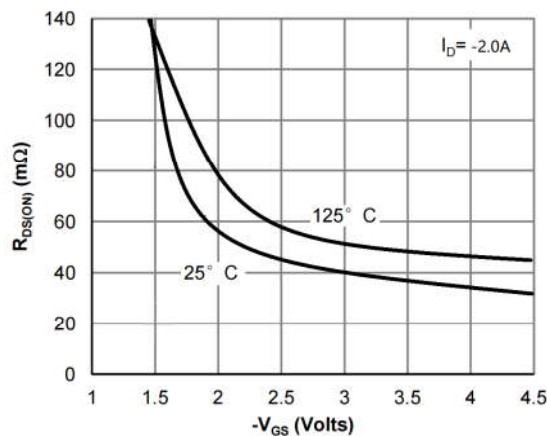


Figure 5: On-Resistance vs. Gate-Source Voltage

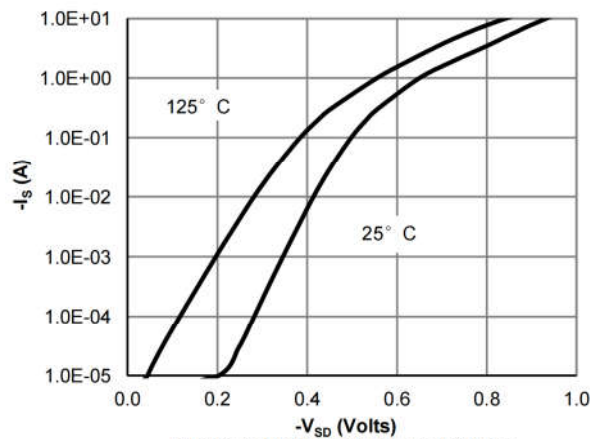


Figure 6: Body-Diode Characteristics

电参数曲线图 / Electrical Characteristic Curve

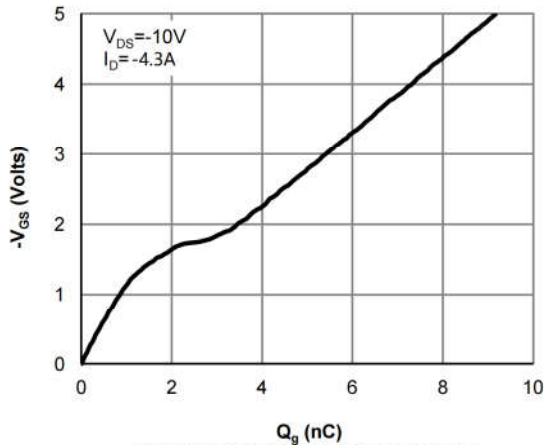


Figure 7: Gate-Charge Characteristics

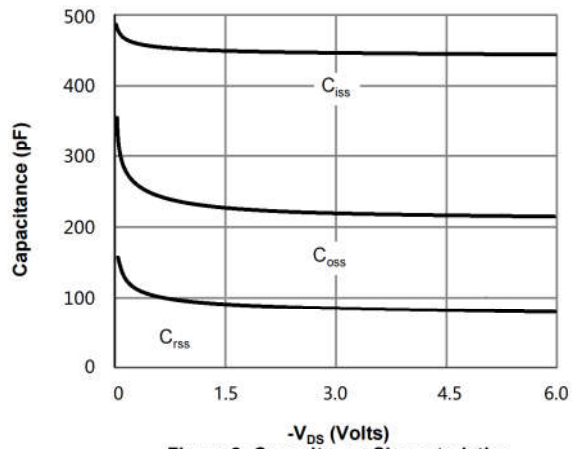


Figure 8: Capacitance Characteristics

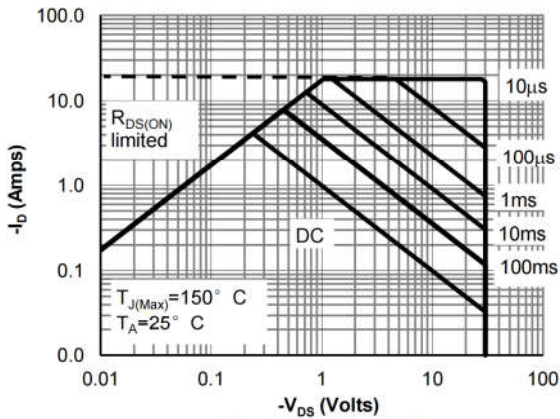


Figure 9: Maximum Forward Biased Safe Operating Area

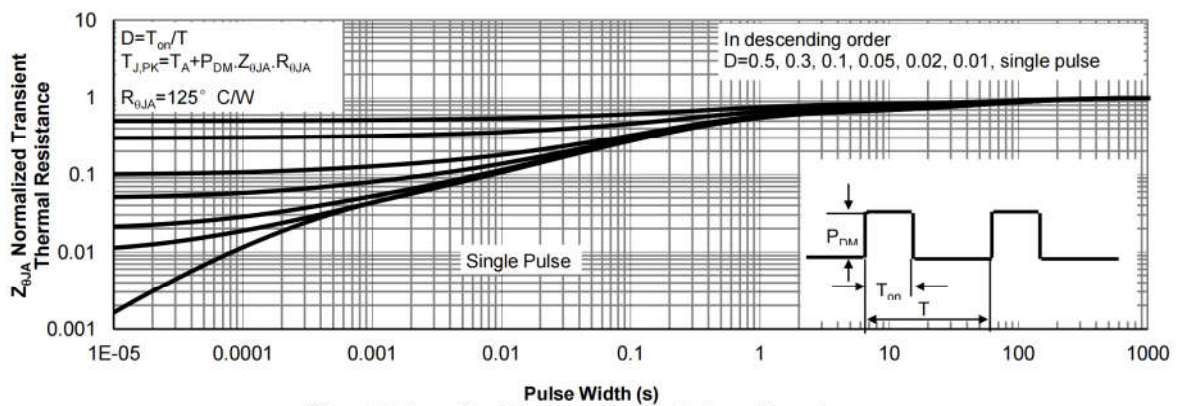
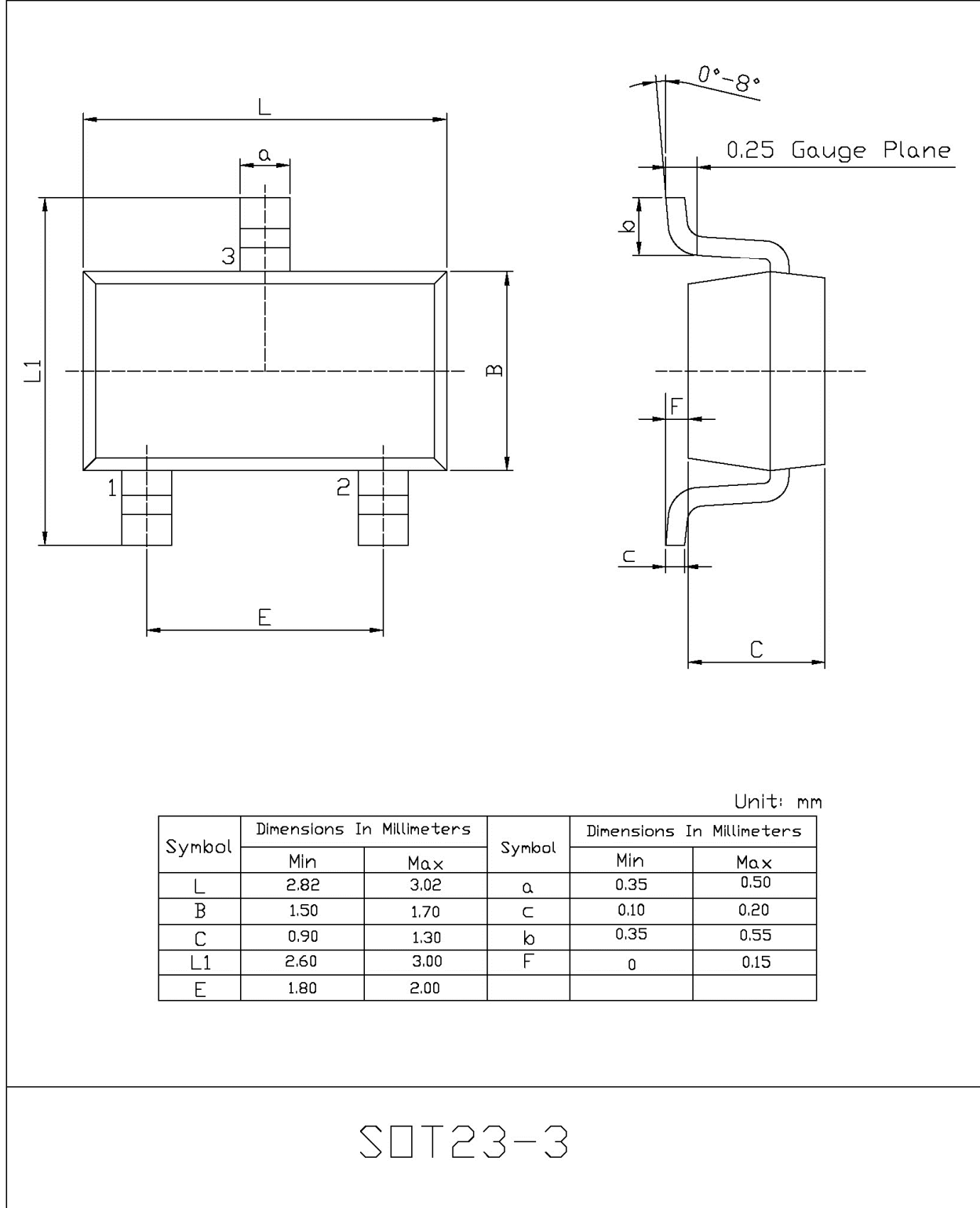
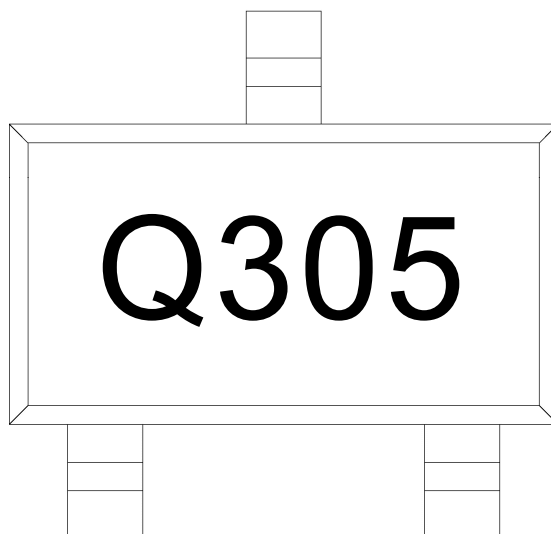


Figure 10: Normalized Maximum Transient Thermal Impedance

外形尺寸图 / Package Dimensions



印章说明 / Marking Instructions



说明：

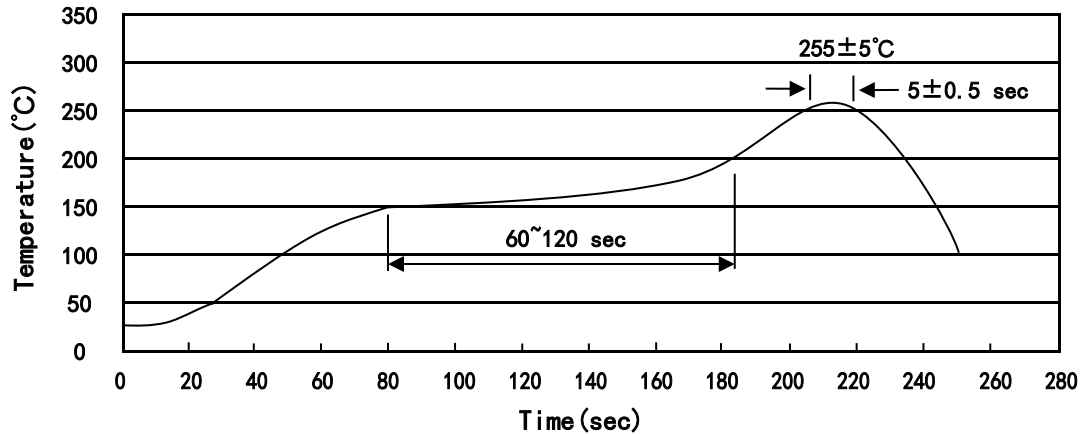
Q： 为汽车无卤产品标识

305： 为型号代码

Note:

Q: Automobile halogen-free product Code

305 : 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	445×230×435

使用说明 / Notices