BRCS2305MAQ
Rev.A Feb.-2025

DATA SHEET

描述 / Descriptions

SOT-23 塑封封装 P 道 MOS 场效应管。

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

特征 / Features

沟槽功率 MOSFET 技术，低导通电阻，低栅极电荷，符合 AEC-Q101 标准高可靠性要求，无卤产品。

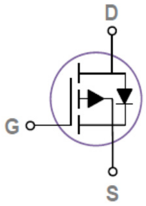
Trench Power MOSFET technology, Low $R_{DS(ON)}$,Low Gate Charge, Qualified to AEC-Q101 Standards for High Reliability, HF Product.

用途 / Applications

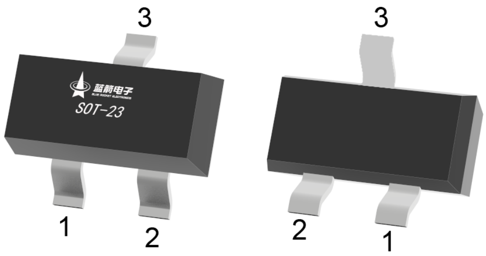
主要用于显示屏驱动，满足汽车应用的严格要求。

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



PIN1 : G PIN 2 : S PIN 3 : D

印章代码 / Marking

Marking	Q305

极限参数 / Absolute Maximum Ratings(Ta=25℃)

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		$I_D(T_C=25℃)$	-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	℃
Junction-to-Ambient	t≤10	$R_{θJA}$	90	℃/W
Junction-to-Ambient	Steady-State		125	
Junction-to-Lead	Steady-State	$R_{θJL}$	80	

电性能参数 / Electrical Characteristics(Ta=25℃)

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=-250μA	-20	-23		V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ I_D=-250μA	-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	mΩ
	$R_{DS(on)2}$	V_{GS}=-2.5V I_D=-3.0A		45	60	mΩ
	$R_{DS(on)3}$	V_{GS}=-1.8V I_D=-2.0A		63	85	mΩ
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-20V V_{GS}=0V			1	μA
Gate–Body Leakage.	I_{GSS}	V_{GS}=±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℃)

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=2.22Ω R_{GEN}=3Ω		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

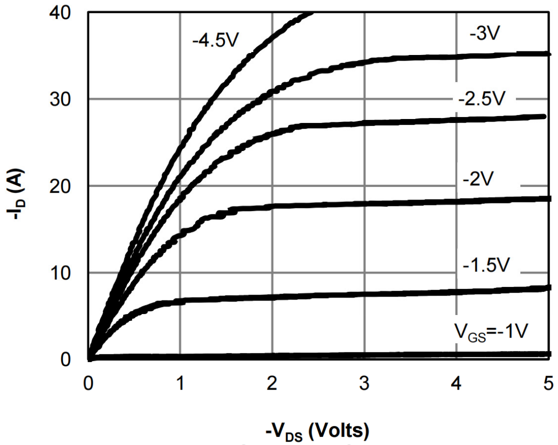


Figure 1: On-Region Characteristics

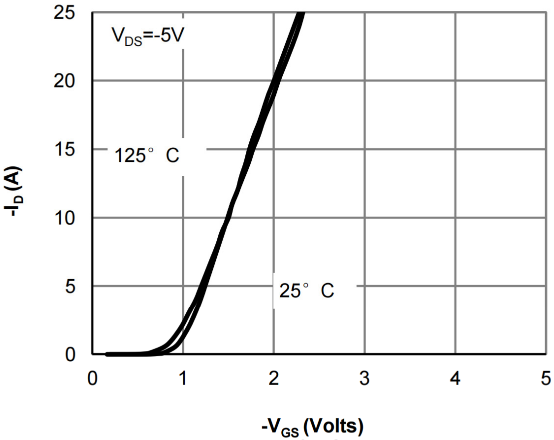


Figure 2: Transfer Characteristics

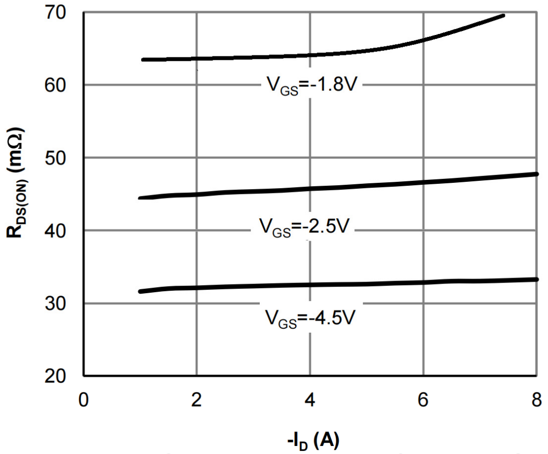


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

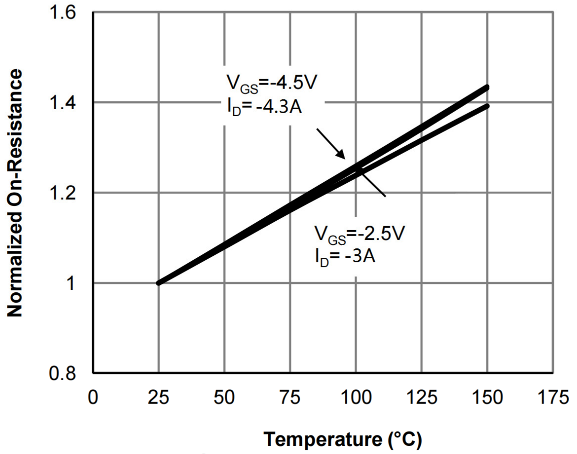


Figure 4: On-Resistance vs. Junction Temperature

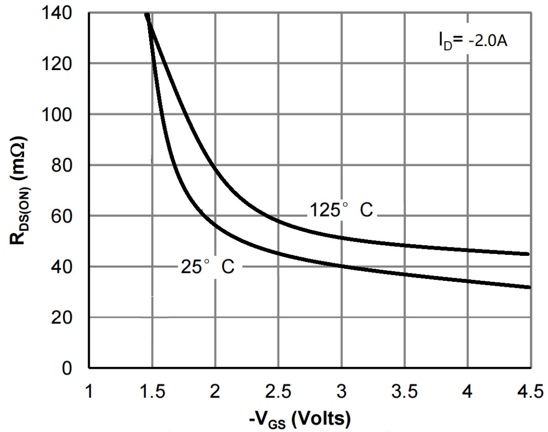


Figure 5: On-Resistance vs. Gate-Source Voltage

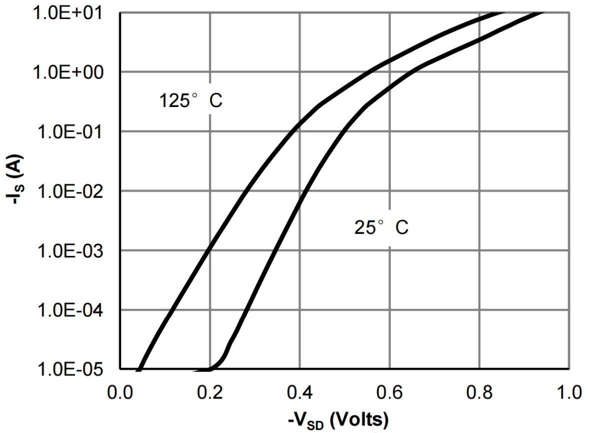


Figure 6: Body-Diode Characteristics

电参数曲线图 / Electrical Characteristic Curve

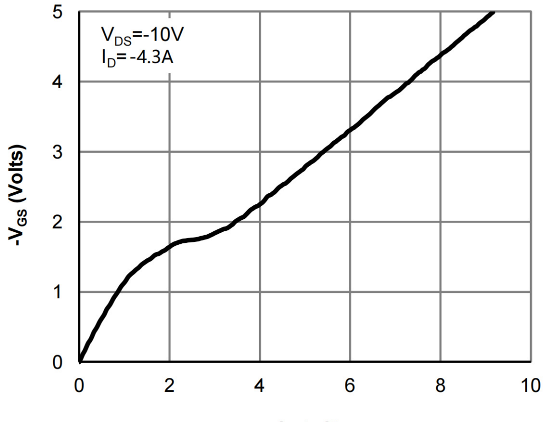


Figure 7: Gate-Charge Characteristics

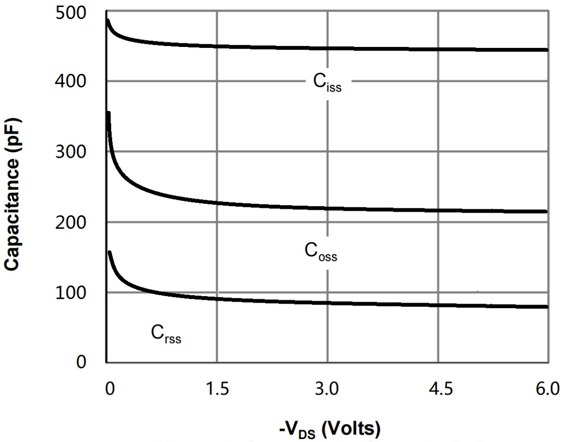
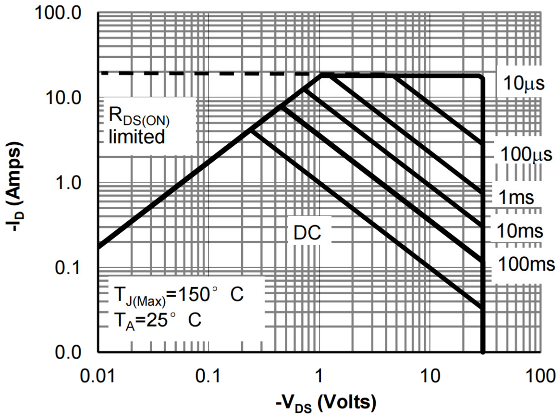


Figure 8: Capacitance Characteristics



V_{GS}> or equal to -1.8V
Figure 9: Maximum Forward Biased Safe Operating Area

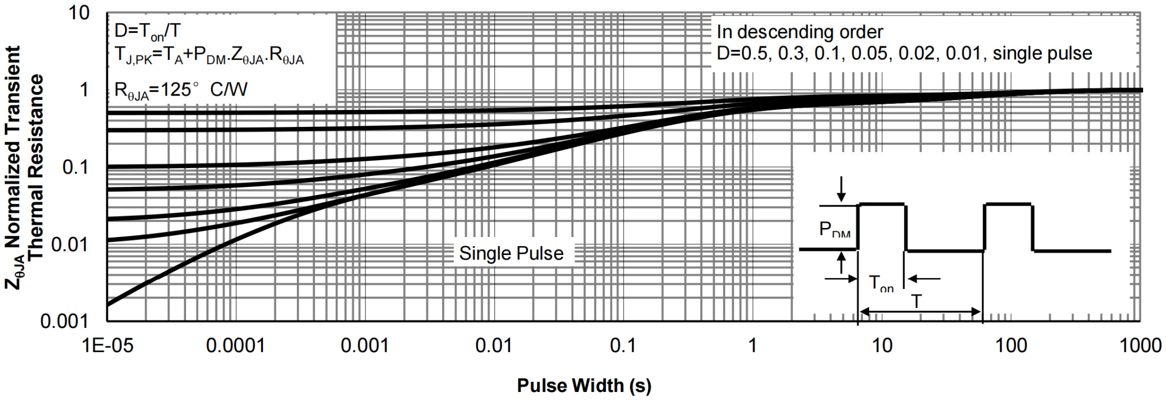
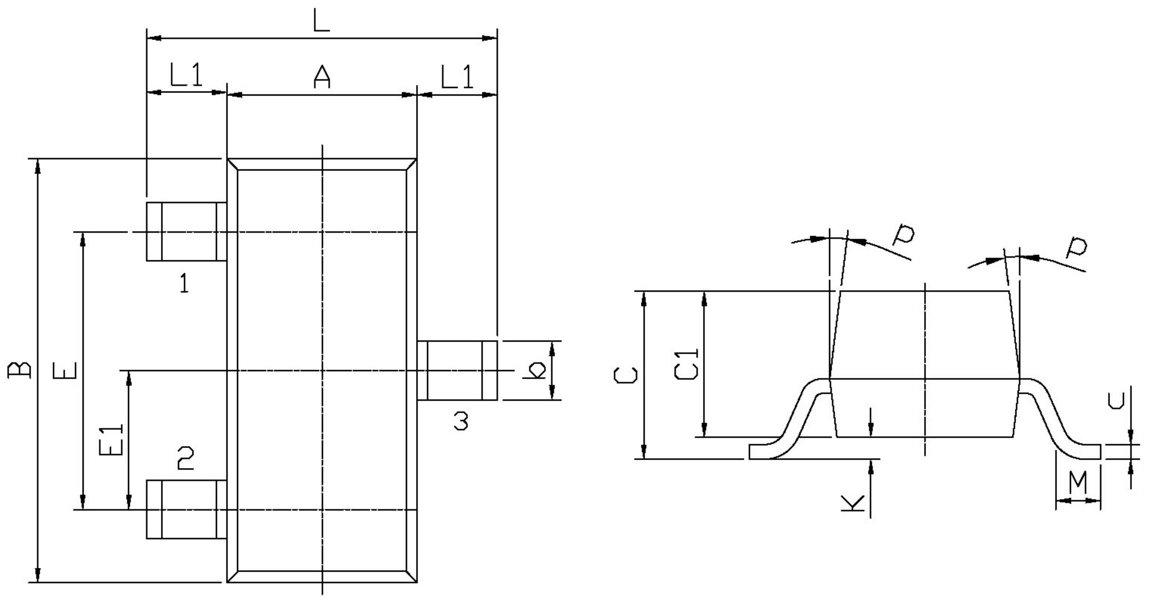


Figure 10: Normalized Maximum Transient Thermal Impedance

外形尺寸图 / Package Dimensions

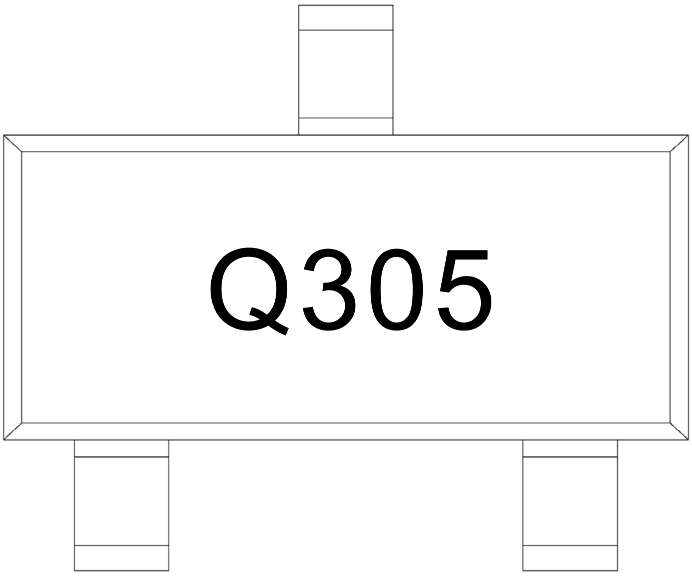
SOT-23

单位：mm



Symbol	Dimensions In Millmeters		Symbol	Dimensions In Millmeters	
	Min	Max		Min	Max
L	2.2	2.7	C	1.30Max	
L1	0.45	0.65	C1	0.90	1.20
A	1.15	1.50	c	0.05	0.20
B	2.70	3.10	K	0	0.10
E	1.70	2.10	M	0.20MIN	
E1	0.85	1.05	P	7°	
b	0.35	0.55			

印章说明 / Marking Instructions



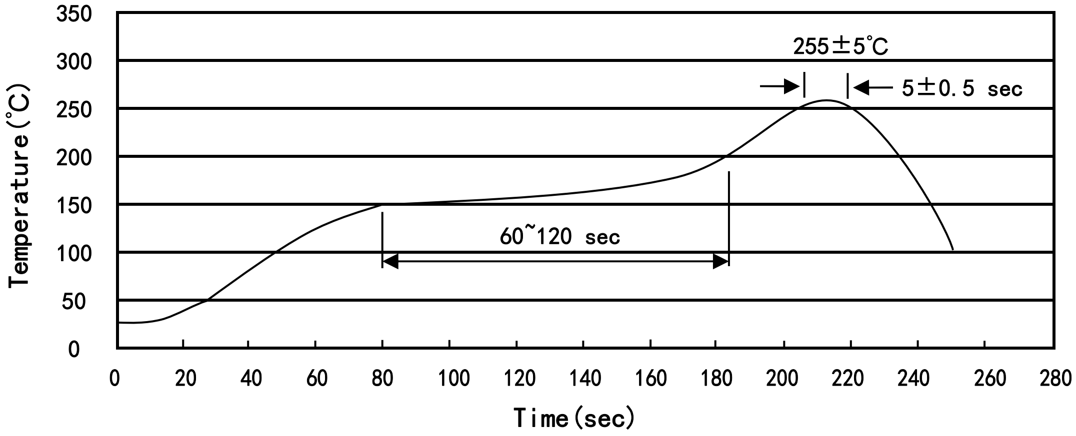
说明：

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 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℃，时间 60～120sec;	1.Preheating:150~200℃, Time:60~120sec.
2、峰值温度 255±5℃，时间持续为 5±0.5sec;	2.Peak Temp.:255±5℃, Duration:5±0.5sec.
3、焊接制程冷却速度为 2～10℃/sec.	3. Cooling Speed: 2~10℃/sec.

耐焊接热试验条件 / Resistance to Soldering Heat Test Conditions

温度：260±5℃　　时间：10±1 sec.　　Temp.:260±5℃　　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	4	120,000	7″ ×8	210×205×205	445×435×230

使用说明 / Notices