

# BRCS5N10MCQ

Rev.A Jan.-2025

## 描述 / Descriptions

SOT23-3 塑封封装 N 道场效应管。

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

## 特征 / Features

$V_{DS}=100V$        $I_D=5A$

$R_{DS(on)1}@10V \leq 175m\Omega$  (Type.120m $\Omega$ )

$R_{DS(on)2}@4.5V \leq 235m\Omega$  (Type.150m $\Omega$ )

符合 AEC-Q101 标准高可靠性要求，无卤产品。

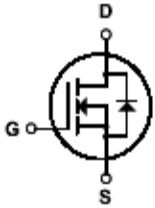
Qualified to AEC-Q101 Standards for High Reliability, HF Product.

## 用途 / Applications

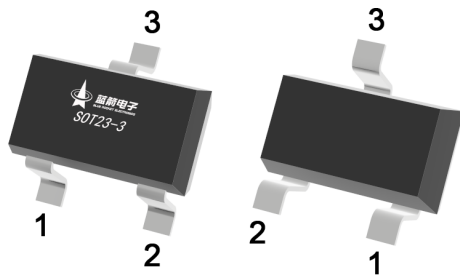
适用电视机等开关电源电路，满足汽车应用的严格要求。

Power management in TV Inverter. Power Switch, 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

Q5N1

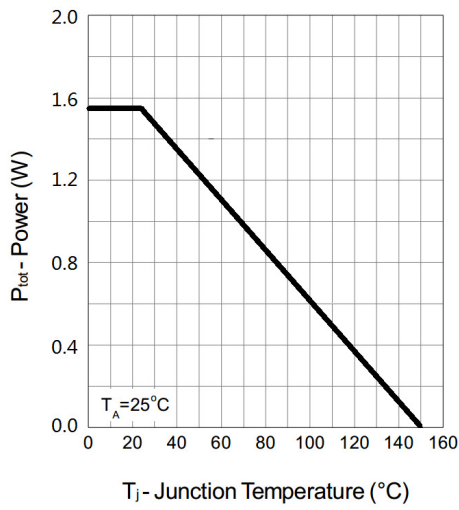
**极限参数 / Absolute Maximum Ratings(Ta=25°C)**

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Drain-Source Voltage	V <sub>DSS</sub>	100	V
Gate-Source Voltage	V <sub>GSS</sub>	±20	V
Maximum Drain Current - Continuous	I <sub>D</sub>	5.0	A
Drain Current- Pulsed	I <sub>DM</sub>	15	A
Power Dissipation	P <sub>D</sub>	1.55	W
Maximum Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature Range	T <sub>STG</sub>	-55 to 150	°C
Maximum Resistance –Junction to Ambient	R <sub>θJA</sub>	80.7	°C/W

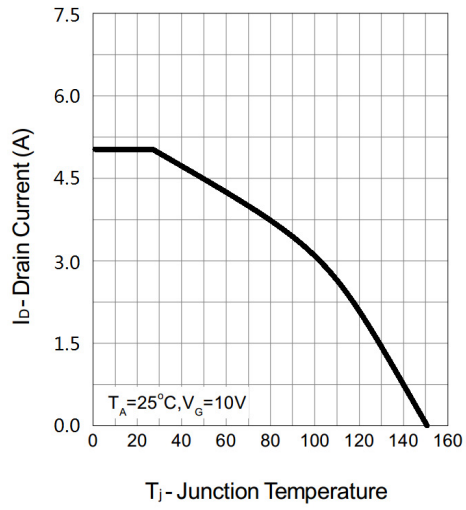
**电性能参数 / Electrical Characteristics(Ta=25°C)**

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	BV <sub>DSS</sub>	V <sub>GS</sub> =0V I <sub>DS</sub> =250μA	100			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =100V V <sub>GS</sub> =0V			1	μA
Gate–Body Leakage.	I <sub>GSS</sub>	V <sub>GS</sub> =±20V V <sub>DS</sub> =0V			±10	μA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> I <sub>DS</sub> =250μA	1		3	V
Static Drain–Source On–Resistance	R <sub>DS(on)(1)</sub>	V <sub>GS</sub> =10V I <sub>D</sub> =5A		120	175	mΩ
	R <sub>DS(on)(2)</sub>	V <sub>GS</sub> =4.5V I <sub>D</sub> =2A		150	235	mΩ
Drain-Source Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V I <sub>F</sub> =1A			1.3	V
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =0V V <sub>GS</sub> =25V f=1.0MHz		200		pF
Output Capacitance	C <sub>oss</sub>			150		pF
Reverse Transfer Capacitance	C <sub>rss</sub>			30		pF
Turn–On Delay Time	t <sub>d(on)</sub>	I <sub>DS</sub> =1A V <sub>GEN</sub> =10V V <sub>DD</sub> =30V R <sub>L</sub> =30Ω R <sub>G</sub> =6Ω		11		ns
Turn–On Rise Time	t <sub>r</sub>			10		ns
Turn–Off Delay Time	t <sub>d(off)</sub>			21		ns
Turn–Off Fall Time	t <sub>f</sub>			5		ns
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =50V V <sub>GS</sub> =10V I <sub>DS</sub> =5A		9.5		nC
Gate- Source Charge	Q <sub>gs</sub>			1.9		nC
Gate- Drain Charge	Q <sub>gd</sub>			2.1		nC

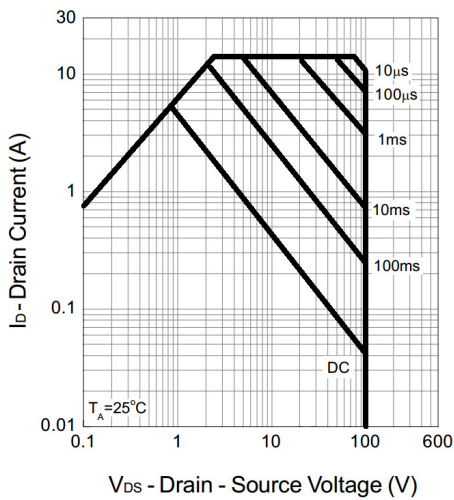
## 电参数曲线图 / Electrical Characteristic Curve



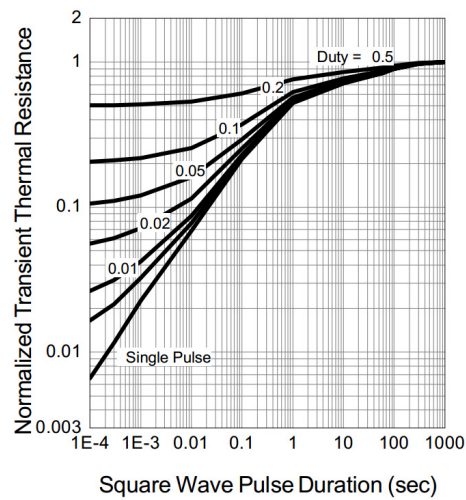
**Power Dissipation**



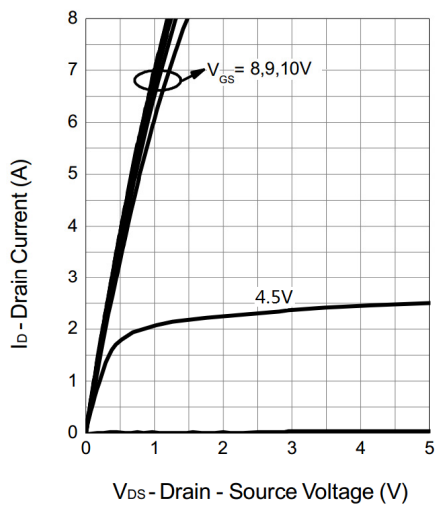
**Drain Current**



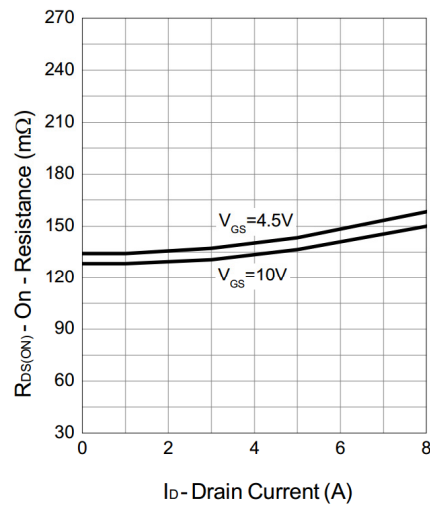
**Safe Operation Area**



**Thermal Transient Impedance**

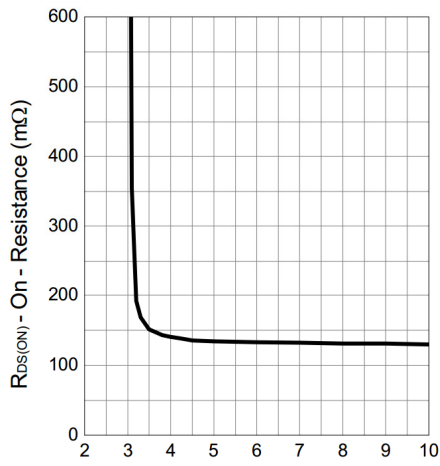


**Output Characteristics**



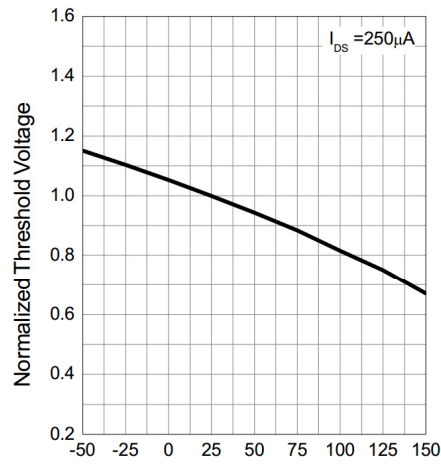
**Drain-Source On Resistance**

## 电参数曲线图 / Electrical Characteristic Curve



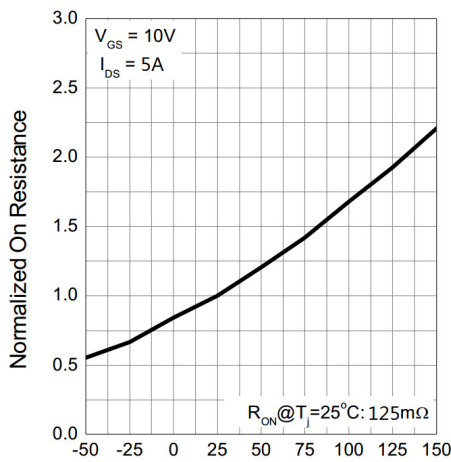
$V_{GS}$  - Gate - Source Voltage (V)

**Gate-Source On Resistance**



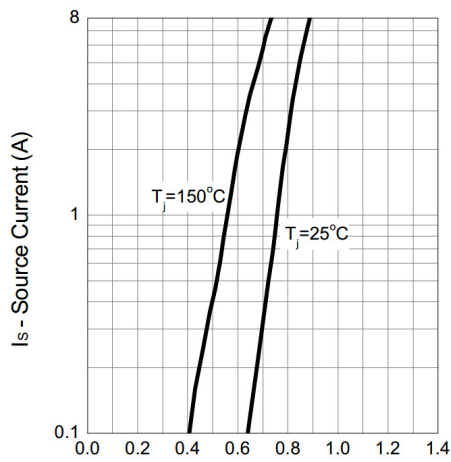
$T_j$  - Junction Temperature (°C)

**Gate Threshold Voltage**



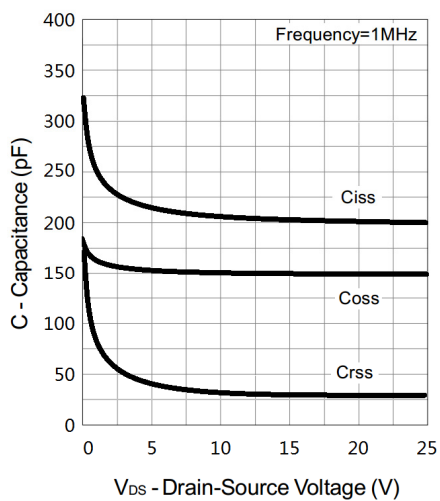
$T_j$  - Junction Temperature (°C)

**Drain-Source On Resistance**



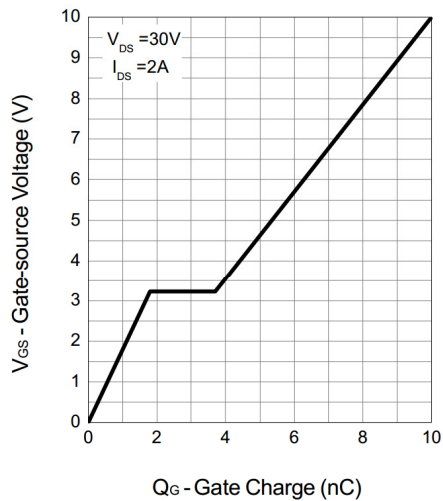
$V_{SD}$  - Source - Drain Voltage (V)

**Source-Drain Diode Forward**



$V_{DS}$  - Drain-Source Voltage (V)

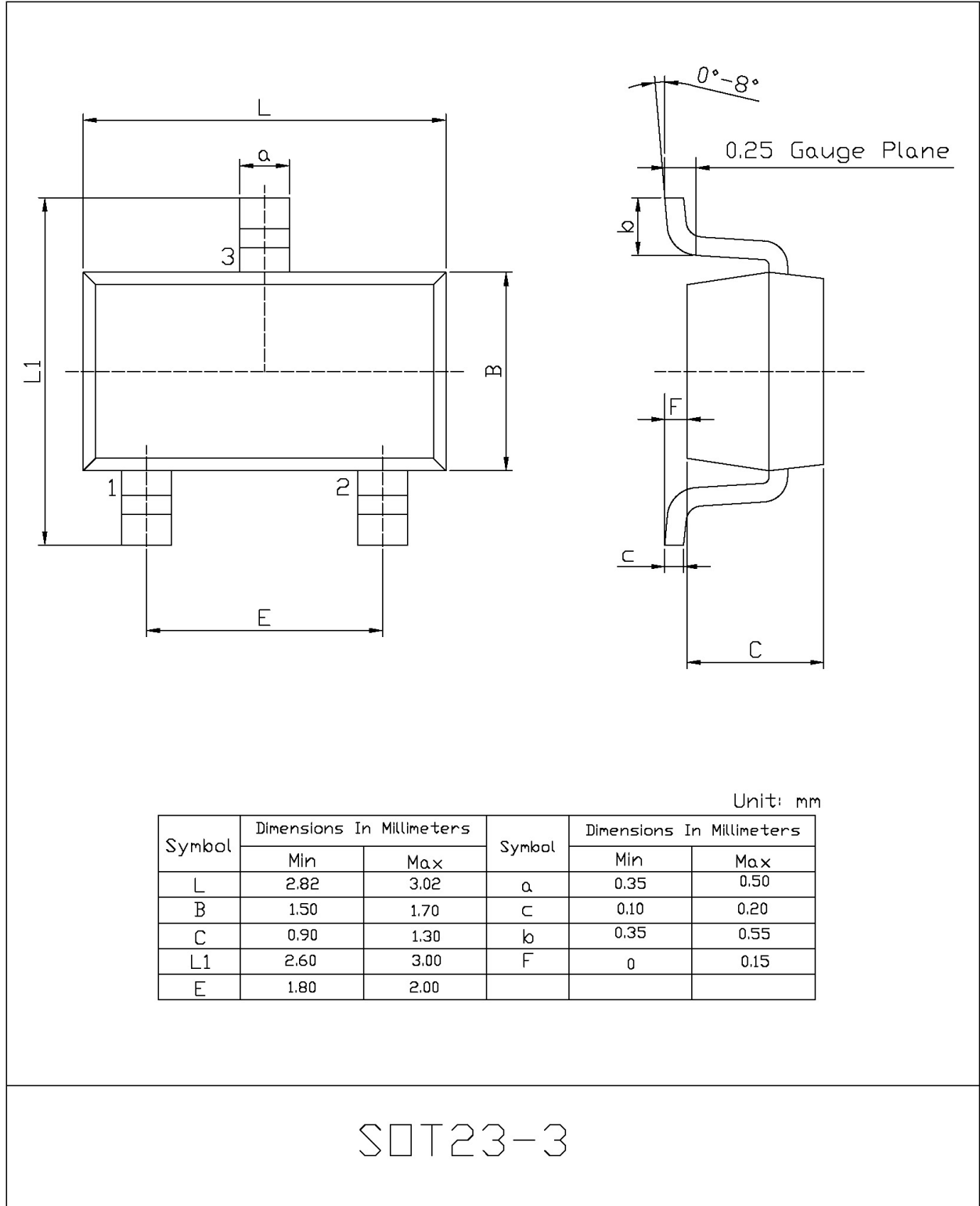
**Capacitance**



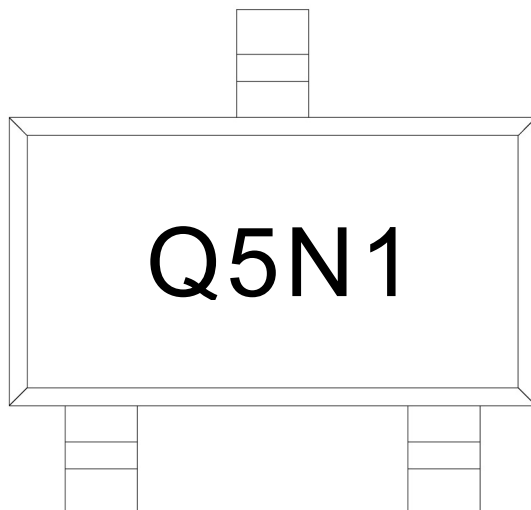
$Q_G$  - Gate Charge (nC)

**Gate Charge**

外形尺寸图 / Package Dimensions



**印章说明 / Marking Instructions**



说明：

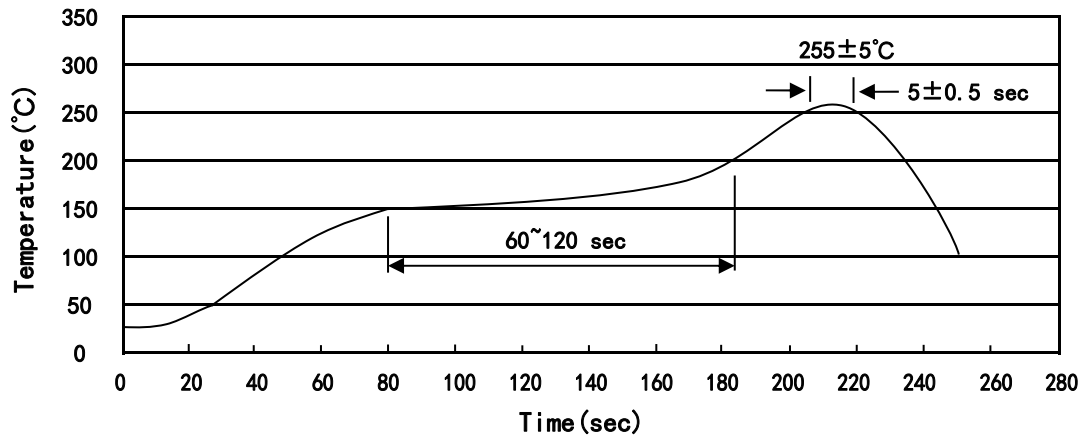
Q： 为汽车无卤产品标识

5N1： 为型号代码

Note:

Q: Automobile halogen-free product Code

5N1: Product Type 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 150~200°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 <sup>3</sup> )		
	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**