

# BR2N7002LK2

Rev.C Oct.-2023

## 描述 / Descriptions

SOT-23 塑封封装 N 沟道 MOS 场效应管。  
N-CHANNEL MOSFET in a SOT-23 Plastic Package.

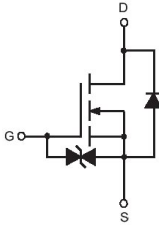
## 特征 / Features

灵敏的控制级触发电流和很低的维持电流。静电保护达 2KV，无卤产品。  
Sensitive gate trigger current and Low Holding current.ESD protected up to 2KV,HF Product.

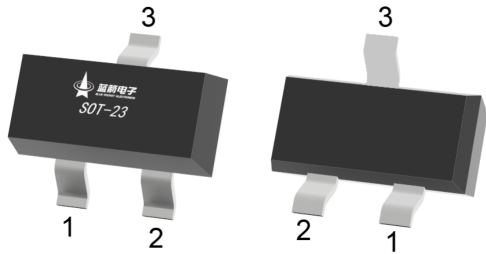
## 用途 / Applications

用作一般的开关和相位控制。  
Intended for use in general purpose switching and phase control 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	702LK
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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 <sub>DSS</sub>	60	V
Drain Current - Continuous	I <sub>D</sub> (Ta=25°C)	360	mA
	I <sub>D</sub> (Ta=100°C)	230	
Drain Current - Pulsed(Note 1)	I <sub>DM</sub>	1200	mA
Gate-Source Voltage - Continuous	V <sub>GSS</sub>	±20	V
Power Dissipation	P <sub>D</sub>	350	mW
Junction Temperature Range	T <sub>j</sub>	150	°C
Storage Temperature Range	T <sub>stg</sub>	-55~150	°C
Thermal resistance from junction to Ambient (Note 2)	R <sub>θJA</sub>	300	°C/W
Thermal resistance from junction to solder point	R <sub>θJSP</sub>	92	

Note 1) Pulse Width 10us, Duty Cycle 1%

Note 2) Surface-mounted on FR4 board using 1 sq in pad size with 1 oz Cu

**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 <sub>DSS</sub>	V <sub>GS</sub> =0 I <sub>D</sub> =250μA	60			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>GS</sub> =0 V <sub>DS</sub> =60V			1.0	μA
Gate-Source Leakage current	I <sub>GSS</sub>	V <sub>DS</sub> =0V V <sub>GS</sub> =±20V			±10	μA
Static Drain-Source On-Resistance	R <sub>DS(on)(1)</sub>	V <sub>GS</sub> =10V I <sub>D</sub> =0.5A		1.1	1.44	Ω
	R <sub>DS(on)(2)</sub>	V <sub>GS</sub> =4.5V I <sub>D</sub> =0.02A		1.2	2.25	
	R <sub>DS(on)(3)</sub>	V <sub>GS</sub> =2.5V I <sub>D</sub> =0.1A		1.6	4.05	
	R <sub>DS(on)(4)</sub>	V <sub>GS</sub> =1.8V I <sub>D</sub> =0.01A		2.7	6	
Drain-Source Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V I <sub>S</sub> =500mA			1.2	V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> I <sub>D</sub> =250μA	0.5	0.9	1.0	V
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, f=1MHz, V <sub>DS</sub> =20V		25	50	pF
Output Capacitance	C <sub>oss</sub>			11	25	
Reverse Transfer Capacitance	C <sub>rss</sub>			2.5	5	
Total Gate Charge	Q <sub>G(TOT)</sub>	V <sub>GS</sub> =4.5V, V <sub>DS</sub> =10V; I <sub>D</sub> =200 mA		0.7		nC
Threshold Gate Charge	Q <sub>G(TH)</sub>			0.1		
Gate-to-Source Charge	Q <sub>GS</sub>			0.3		
Gate-to-Drain Charge	Q <sub>GD</sub>			0.1		

## 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	$t_{d(ON)}$	$V_{GS}=10V, V_{DD}=25V,$ $I_D=500mA, R_G=25\Omega$		12.2		ns
Rise Time	$t_r$			9.0		
Turn-Off Delay Time	$t_{d(OFF)}$			55.8		
Fall Time	$t_f$			29		

电参数曲线图 / Electrical Characteristic Curve

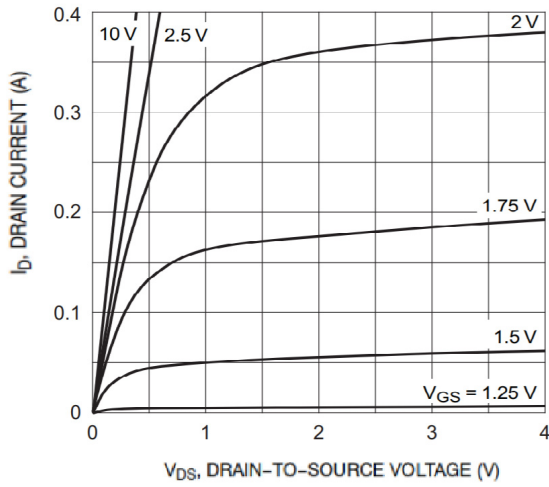


Figure 1. On-Region Characteristics

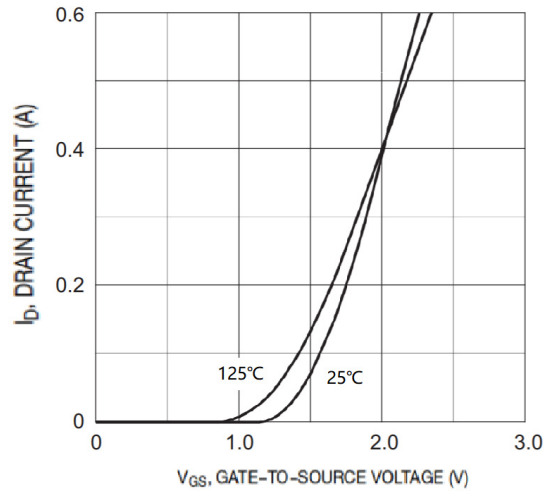


Figure 2. Transfer Characteristics

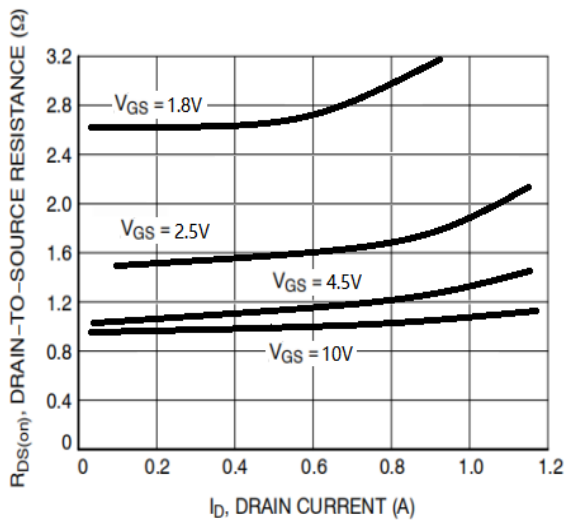


Figure 3. On-Resistance vs. Drain Current and Temperature

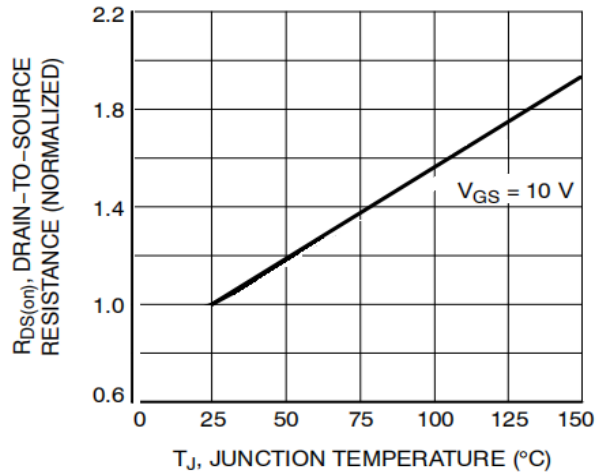


Figure 4 On-Resistance Variation with Temperature

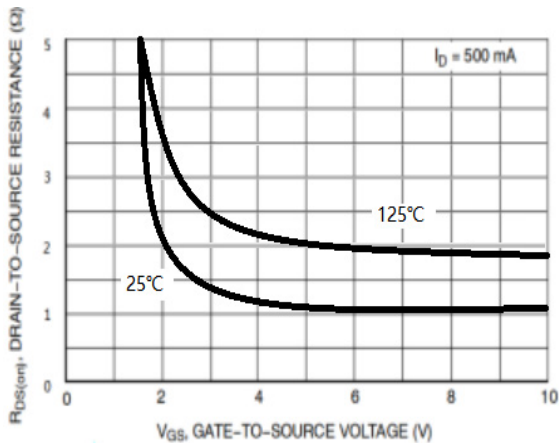


Figure 5. On-Resistance vs. Gate-to-Source Voltage

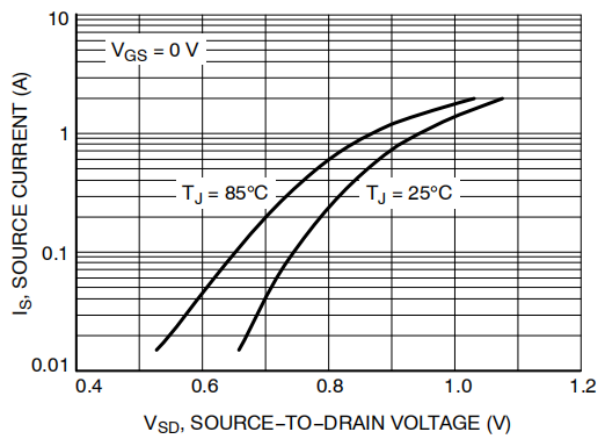


Figure 6 Diode Forward Voltage vs. Current

电参数曲线图 / Electrical Characteristic Curve

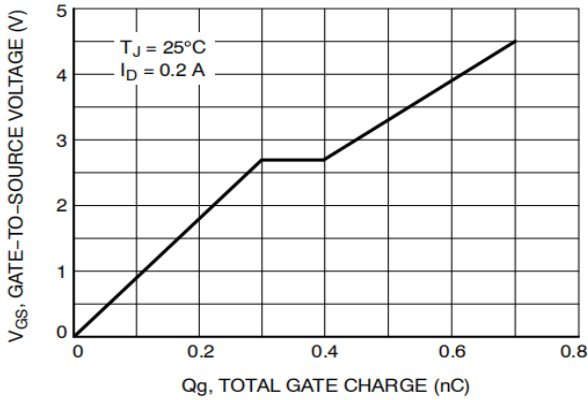


Figure 7. Gate-to-Source and Drain-to-Source Voltage vs. Total Charge

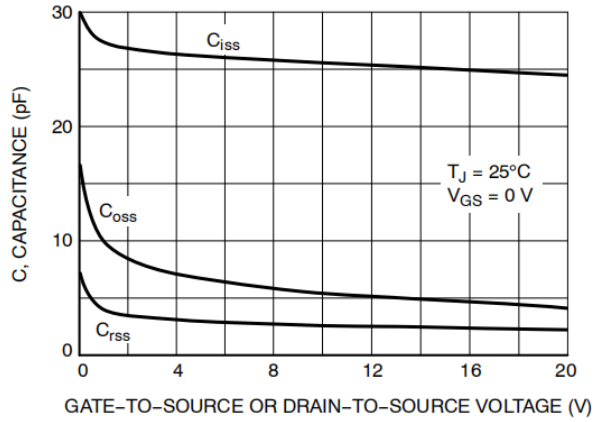


Figure 8. Capacitance Variation

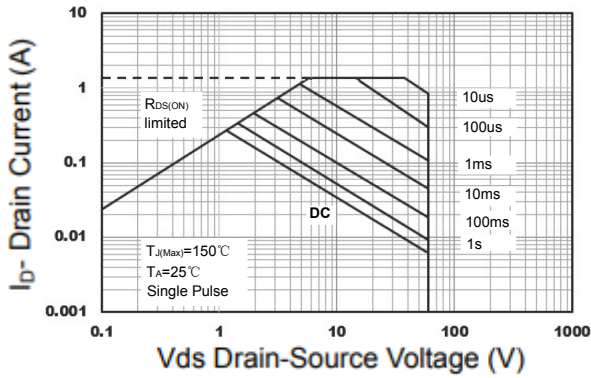


Figure 9 : Safe Operation Area

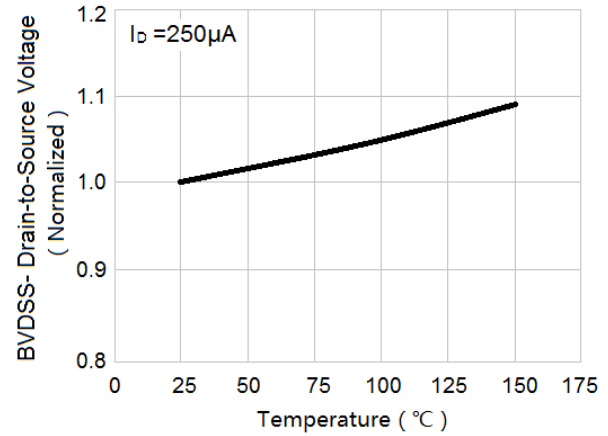


Figure 10 : Breakdown Voltage vs. Temperature

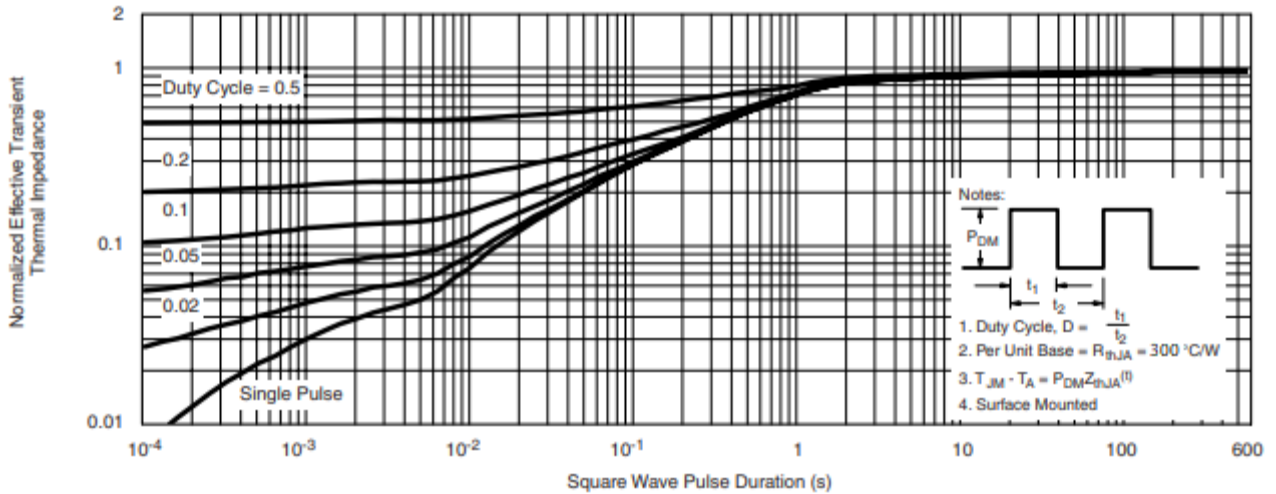
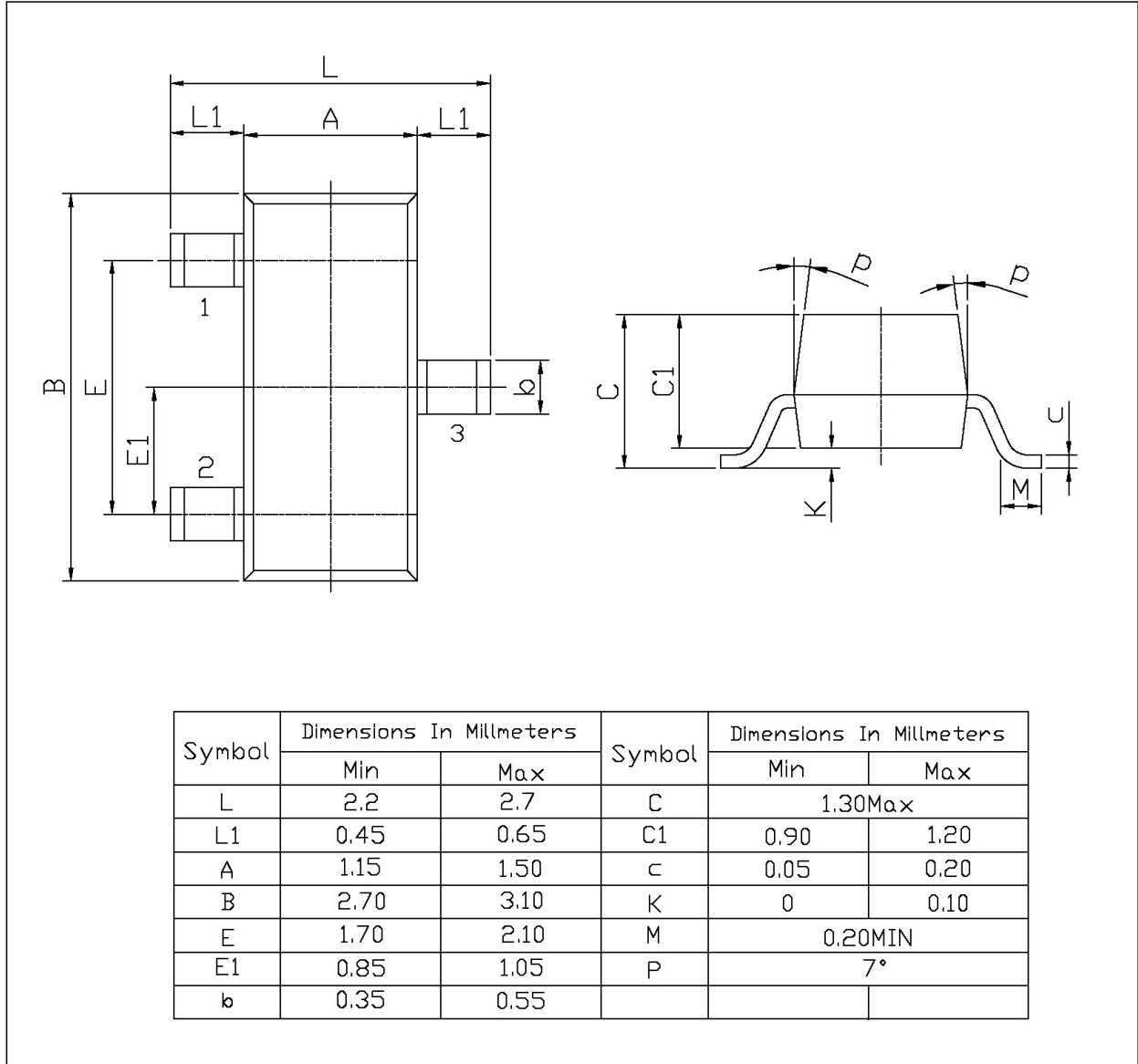


Figure 11 : Normalized Thermal Transient Impedance, Junction-to-Ambient

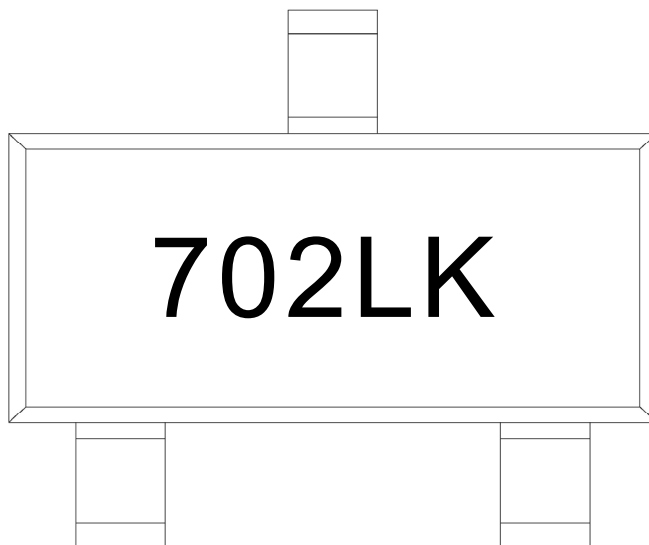
## 外形尺寸图 / Package Dimensions

SOT-23

单位: mm



印章说明 / Marking Instructions



说明：

702LK： 为型号代码

Note:

702LK: 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 150~180°C，时间 60~90sec;
- 2、峰值温度 245±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:150~180°C, Time:60~90sec.
- 2.Peak Temp.:245±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
SOT-23	3,000	10	30,000	6	180,000	7" ×8	180×120×180	390×385×205

**使用说明 / Notices**