

## 描述 / Descriptions

TO-92 塑封封装单向可控硅。Thyristor in a TO-92 Plastic Package.

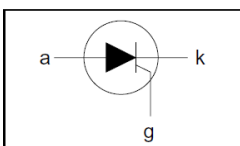
## 特征 / Features

该管的正向导通电压低和浪涌电流承受力高的特点,可控硅自身功耗低、可靠性高可在较差环境下工作。these devices are optimized in forward voltage drop and inrush current capabilities, for reduced power losses and high reliability in harsh environments.

## 用途 / Applications

X02 系列单向可控硅适合高灵敏控制应用,如:漏电保护器、低功率过压保护器、电容性的点火线路。The X02 SCR series is suitable for all applications where the available gate current is limited, such as ground fault circuit interruptors, over voltage crowbar protection in low power supplies, capacitive ignition circuits.

## 内部等效电路 / Equivalent Circuit



## 引脚排列 / Pinning



PIN 1 : Anode      PIN 2 : Gate      PIN 3 : Cathode

## 放大及印章代码 / $h_{FE}$ Classifications & Marking

见印章说明。See Marking Instructions.

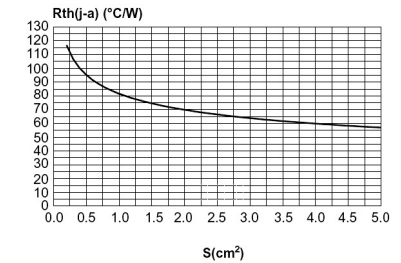
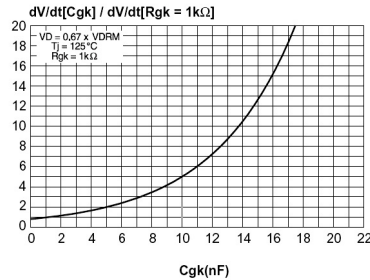
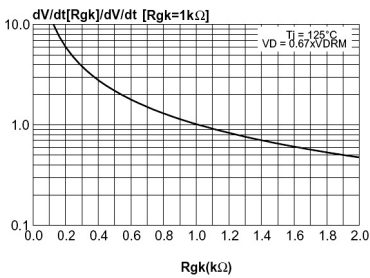
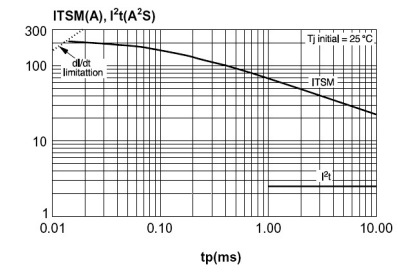
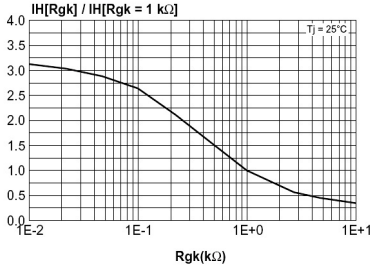
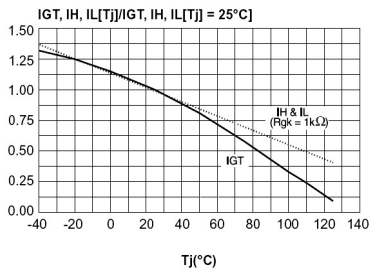
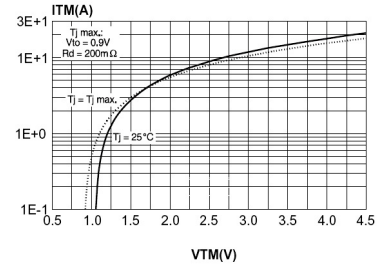
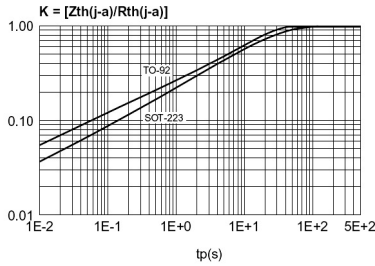
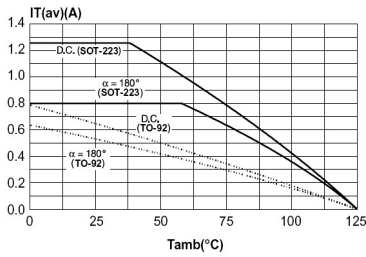
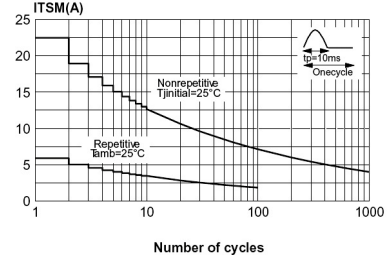
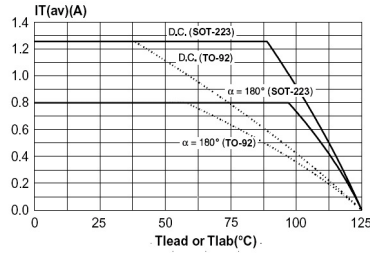
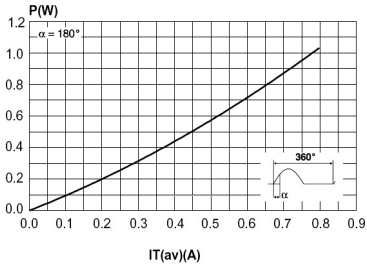
**极限参数 / Absolute Maximum Ratings(Ta=25°C)**

参数 Parameter	符号 Symbol	测试条件 Test Conditions		数值 Rating	单位 Unit
RMS on-state current	$I_{T(RMS)}$	$T_c=55^\circ\text{C}$		1.25	A
Repetitive peak off-state voltages	$V_{DRM}/V_{RRM}$			600 800	V
Average on-state current	$I_{T(AV)}$	$T_c=55^\circ\text{C}$		0.8	A
Non-repetitive peak on-state current	$I_{TSM}$	$T_c=25^\circ\text{C}$	$t_p=8.3\text{ms}$	25	A
			$t_p=10\text{ms}$	22.5	A
$I^2t$ for fusing	$I^2t$	$t_p=10\text{ms}$	$T_c=25^\circ\text{C}$	2.5	$\text{A}^2\text{S}$
Average gate power dissipation	$P_{G(AV)}$	$T_c=125^\circ\text{C}$		0.2	W
Peak gate current	$I_{GM}$	$t_p=20\mu\text{s}$	$T_c=125^\circ\text{C}$	1.2	A
Critical rate of rise of off-state voltage	$dl/dt$	$F=60\text{Hz}$ $T_c=125^\circ\text{C}$	$t_r \leq 100\text{ns}$	50	$\text{A}/\mu\text{s}$
Junction Temperature	$T_j$			-40~125	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$			-40~150	$^\circ\text{C}$

**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
Repetitive peak off-state current	$I_{DRM}$	$V_{DRM}=V_{RRM}$ $R_{GK}=1\text{K}\Omega$	$T_c=25^\circ\text{C}$			5	$\mu\text{A}$
Repetitive peak off-state current	$I_{RRM}$		$T_c=125^\circ\text{C}$			500	
Repetitive peak on-state voltage	$V_{TM}$	$I_{TM}=2.5\text{A}$ $T_c=25^\circ\text{C}$	$t_p=380\mu\text{s}$			1.45	V
Gate trigger current	$I_{GT}$	$V_D=12\text{V}$	$R_L=140\Omega$	20		50	$\mu\text{A}$
Holding current	$I_H$	$I_T=50\text{mA}$	$R_{GK}=1\text{K}\Omega$			5	mA
Latching current	$I_L$	$I_G=1\text{mA}$	$R_{GK}=1\text{K}\Omega$			6	mA
Gate trigger voltage	$V_{GT}$	$V_D=12\text{V}$	$R_L=140\Omega$			0.8	V
On-state voltage	$V_{GD}$	$V_D=V_{DRM}$ $R_{GK}=1\text{K}\Omega$	$R_L=3.3\text{K}\Omega$ $T_c=125^\circ\text{C}$	0.1			V
Off-state leakage current	$V_{RG}$	$I_{RG}=10\mu\text{A}$		8			V
Critical rate of rise of off-state voltage	$dv/dt$	$V_D=67\%V_{RRM}$ $R_{GK}=1\text{K}\Omega$ $T_c=110^\circ\text{C}$		15			$\text{V}/\mu\text{s}$

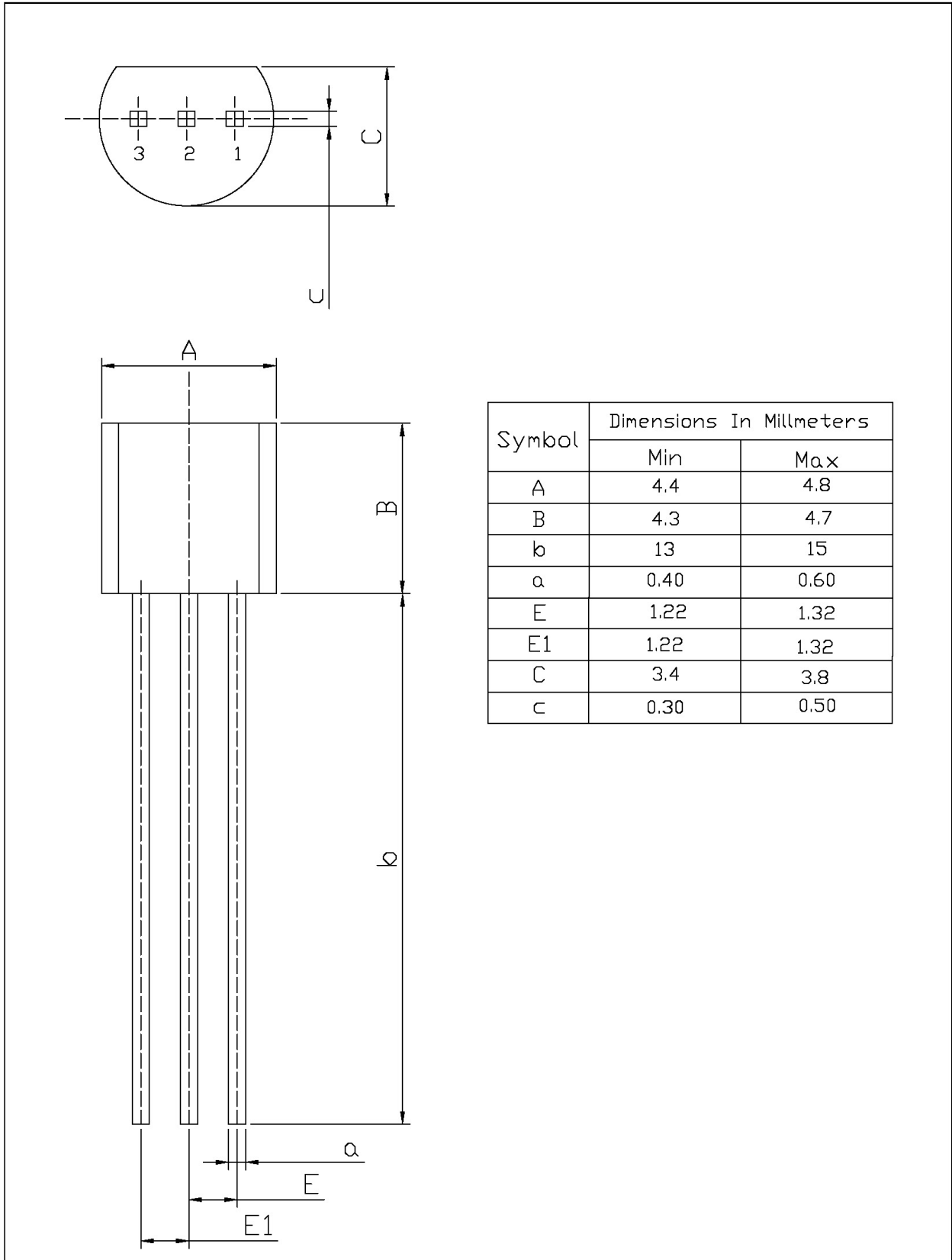
**电参数曲线图 / Electrical Characteristic Curve**



外形尺寸图 / Package Dimensions

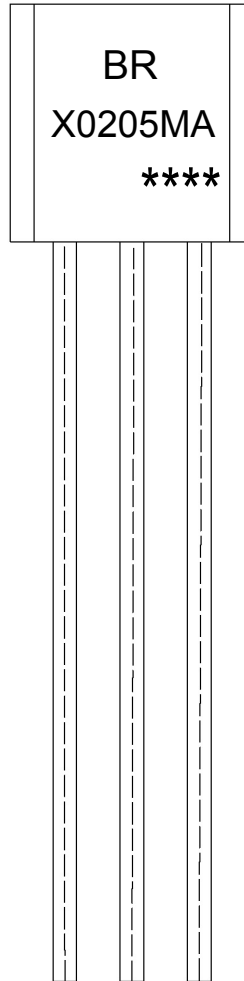
T0-92

Unit: mm



Symbol	Dimensions In Millimeters	
	Min	Max
A	4.4	4.8
B	4.3	4.7
b	13	15
a	0.40	0.60
E	1.22	1.32
E1	1.22	1.32
C	3.4	3.8
c	0.30	0.50

**印章说明 / Marking Instructions**



说明：

BR： 为公司代码

X0205MA： 为产品型号

\*\*\*\*： 为生产批号代码，随生产批号变化。

Note:

BR: Company Code.

X0205MA: Product Type.

\*\*\*\*: Lot No. Code, code change with Lot No.

**波峰焊温度曲线图(无铅) / Temperature Profile for Dip Soldering(Pb-Free)**



说明：

- 1、预热温度 25 ~ 150°C，时间 60 ~ 90sec;
- 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:25~150°C, Time:60~90sec.
- 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：270±5°C

时间：10±1 sec.

Temp.:270±5°C

Time:10±1 sec

**包装规格 / Packaging SPEC.**

散件包装 / BULK

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm3)		
	Units/Bag 只/袋	Bags/Inner Box 袋/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Bag 袋	Inner Box 盒	Outer Box 箱
TO-92	1,000	10	10,000	5	50,000	135×190	237×172×102	560×245×195
	1,000	10	10,000	10	100,000	135×190	237×172×102	560×245×375

编带包装 / AMMO

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm3)	
	Units/tape 只/纸带	Tape/Inner Box 纸带/盒	Rows/Inner Box 纸带层/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Inner Box 盒	Outer Box 箱
TO-92	3,000	1	120	10	30,000	328×230×42	小箱 480×346×235, 大箱 547×407×268

**使用说明 / Notices**