



## BOCHEN 3296W series variable resistor volume control

### Short Description:

Cermet Trimmer Potentiometer 3296W Electrical Characteristics Standard Resistance Range 10Ω~5MΩ  
 Resistance Rolerance ±10% ±5% (customization) Terminal Resistance ≤1%R or 2Ω Insulation Resistance  
 $R1 \geq 1G\Omega$  Rated Power 0.5W ( 300V max) Withstand Voltage 101.3kPa 600V 8.5kPa 360V  
 Contact Resistance Variation (CRV) ≤3%R or 3Ω Effective Electrical Travel 30±2 cycles  
 Environment Characteristics Temperature Range -55°C~+125°C Temperature Coefficient  
 ±250, ±100ppm/°C C...

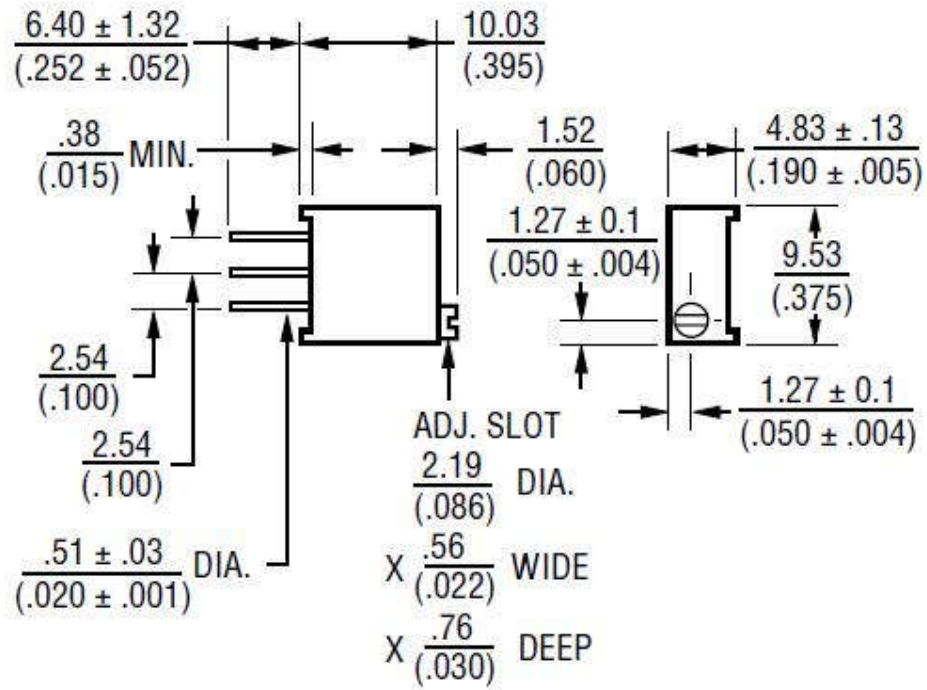
### Product Detail

### Product Tags

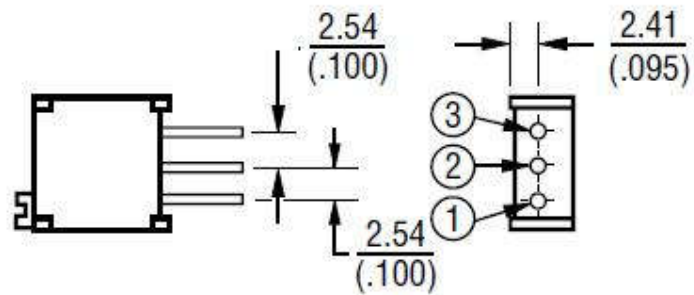
Cermet Trimmer Potentiometer 3296W		
Electrical Characteristics	Standard Resistance Range	10Ω~5MΩ
	Resistance Rolerance	±10% ±5% (customization)
	Terminal Resistance	≤1%R or 2Ω
	Insulation Resistance	$R1 \geq 1G\Omega$
	Rated Power	0.5W ( 300V max)
	Withstand Voltage	101.3kPa 600V 8.5kPa 360V
	Contact Resistance Variation (CRV)	≤3%R or 3Ω

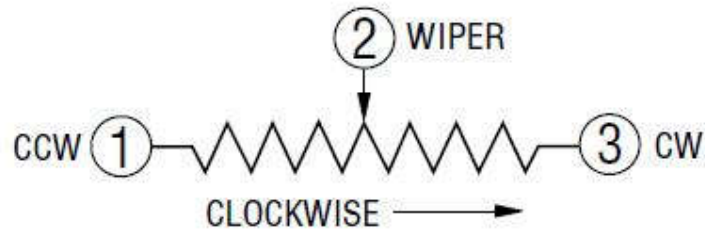
	Effective Electrical Travel	30±2 cycles
Environment Characteristics	Temperature Range	-55°C~+125°C
	Temperature Coefficient	±250, ±100ppm/°C
	Collision (390m/S2, 4000 times)	ΔR≤±1%R
	Vibration (10-500HZ, 0.75mm or 98m/ 6h)	ΔR≤±1%R, ΔUab/Uac≤±2%R
	Temperature Variation	ΔR≤±2%R,ΔUab/Uac≤±1%R
	Climate Category	ΔR≤± 3%R, R1≥100MΩ
	Electrical Endurance (70°C,0.5W,1000h)	ΔR≤± 3%R
	Mechanical Endurance (200 cycles)	ΔR≤± 3%R
	Steady Damp-Heat	ΔR≤± 3%R, R1≥100MΩ
Physical Characteristics	Total Mechanical Travel	30±2 cycles
	Starting Torque	≤36mN.m
	Clutch Torque	≤36mN.m

## Common Dimensions



## 3296W






---

DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

TOLERANCES:  $\pm \frac{0.25}{(.010)}$  EXCEPT WHERE NOTED

### Quick Details

Model Number: 3296

Type: Trimming Potentiometer

Manufactured in Guosheng

Place of Origin: Sichuan, China

Brand Name: BOCHEN

Technology: Cermet

Resistance: 10ohm-2Mohm

Resistance Tolerance:  $\pm 5\%$ ,  $\pm 10\%$

Rated Power: 0.5W

Max. Operating Voltage: 300V

Operating Temperature:  $-55^{\circ}\text{C} \sim +125^{\circ}\text{C}$

Terminal Resistance:  $\leq 2 \text{ ohm}$

Contact Resistance Variation:  $\leq 3\%R$  or 3ohm

Insulation Resistance:  $R1 \geq 1\text{Gohm}$

Withstand Voltage: 101.3 KPa 600V; 8.5 KPa 360V

Effective Electrical Travel:  $30 \pm 2$  Cycles

Temperature Coefficient:  $\pm 250 \pm 100\text{ppm}/^{\circ}\text{C}$

Color: Blue

Key words: variable resistor volume control

Model: BOCHEN 3296 Potentiometer

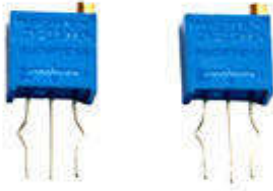
### Product Description

*BOCHEN 3296 series variable resistor volume control, manufactured in Guosheng*

#### *Specification of Cermet Trimmer 3296*

<i>Electrical Characteristics</i>	<i>Range of nominal resistance</i>	$10\Omega\sim 5M\Omega$
	<i>Resistance tolerance</i>	$\pm 10\%$ $\pm 5\%$ (customization)
	<i>Terminal resistance</i>	$\leq \pm 1\%R$ or $2\Omega$
	<i>Contact resistance variation (CRV)</i>	$\leq \pm 1\%R$ or $3\Omega$
	<i>Insulation resistance</i>	$\geq 1G\Omega$ (100V AC)
	<i>Withstand voltage</i>	640V (DC or AC peak value)
	<i>Effective electrical travel</i>	30 $\pm$ 2 cycles
<i>Environment Characteristics</i>	<i>Rated power</i>	0.5W (300V max)
	<i>Temperature range</i>	-55 $^{\circ}$ C~+125 $^{\circ}$ C
	<i>Temperature Coefficient</i>	$\pm 250, \pm 100\text{ppm}/^{\circ}\text{C}$
	<i>Collision (390m/S2, 4000 times)</i>	$\Delta R \leq \pm 1\%R$
	<i>Vibration (10-500HZ, 0.75mm, 6h)</i>	$\Delta R \leq \pm 1\%R, \Delta U_{ab}/U_{ac} \leq \pm 2\%R, \text{Electrical break} \leq 100\mu\text{S}$
	<i>Temperature variation (-55<math>^{\circ}</math>C/30min, +125<math>^{\circ}</math>C/30min, 5 cycles)</i>	$\Delta R \leq \pm 2\%R, \Delta U_{ab}/U_{ac} \leq \pm 2\%R$
	<i>Climate category (IEC68-2-2)</i>	$\Delta R \leq \pm (5\%R + 0.1\Omega), \text{Insulation Resistance} \geq 100M\Omega$
	<i>Electrical endurance (0.5W, 1000h)</i>	$\Delta R \leq \pm (5\%R + 0.1\Omega), \text{CRV} \leq \pm 3\%R$ or $5\Omega$
	<i>Mechanical endurance (200 cycles)</i>	

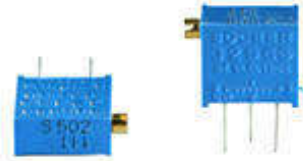
		$\Delta R \leq \pm (10\%R + 0.5\Omega)$ , $CRV \leq \pm 3\%R$ or $5\Omega$
	<i>Steady damp heat (IEC68-2-3, Ca, 96h)</i>	$\Delta R \leq \pm (5\%R + 0.1\Omega)$ , <i>Insulation Resistance</i> $\geq 100M\Omega$
<i>Physical Characteristics</i>	<i>Total mechanical travel</i>	$30 \pm 2$ cycles
	<i>Starting torque</i>	$\leq 36mN.m$



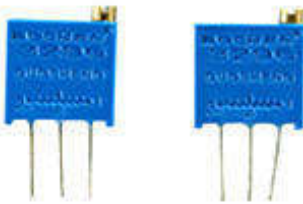
BOCHEN 3296C



BOCHEN 3296P



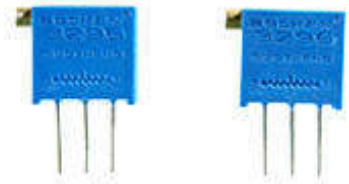
BOCHEN 3296S



BOCHEN 3296W



BOCHEN 3296W-B



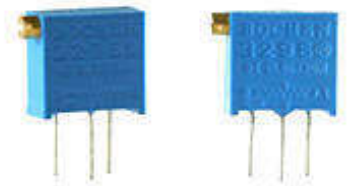
BOCHEN 3296X



BOCHEN 3296X-B



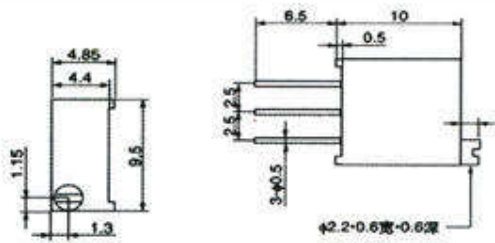
BOCHEN 3296Y



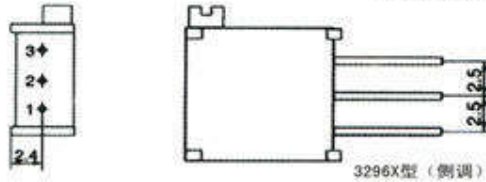
BOCHEN 3296Z



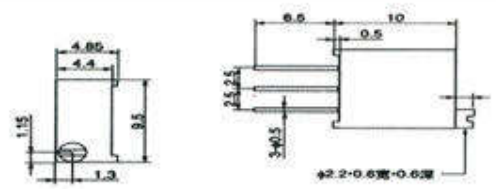
*Shape Dimension:*



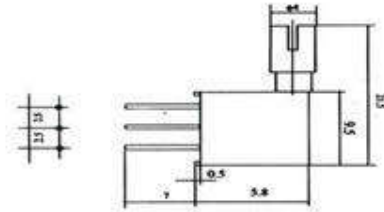
共有尺寸图



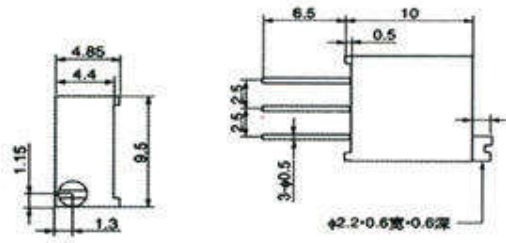
3296X型 (侧调)



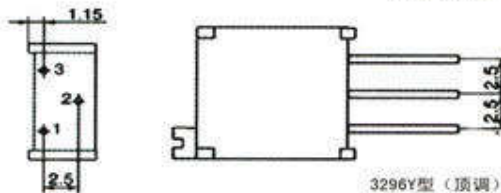
共有尺寸图



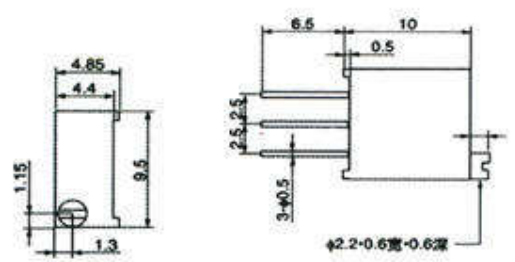
3296-A (侧调)



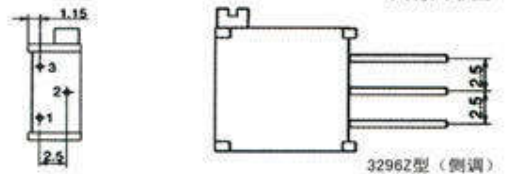
共有尺寸图



3296Y型 (顶调)

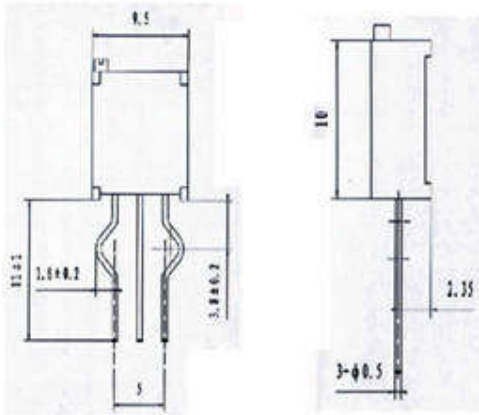


共有尺寸图

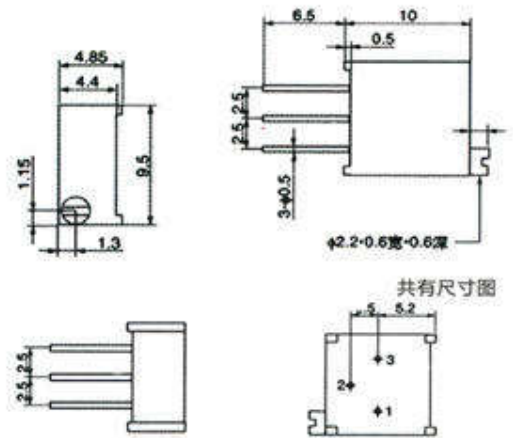


3296Z型 (侧调)



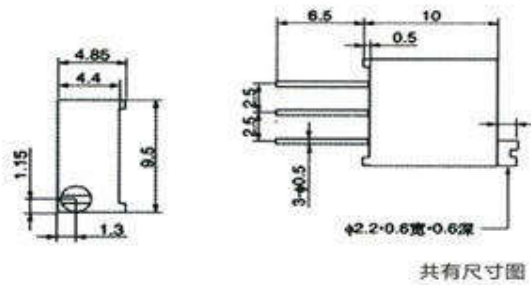


3296-C (顶调)

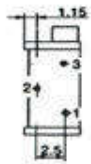


共有尺寸图

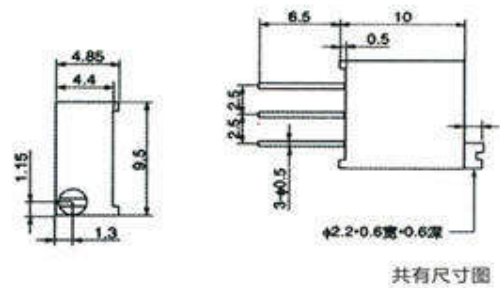
3296P型 (侧调)



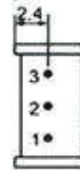
共有尺寸图



3296S型 (侧调)

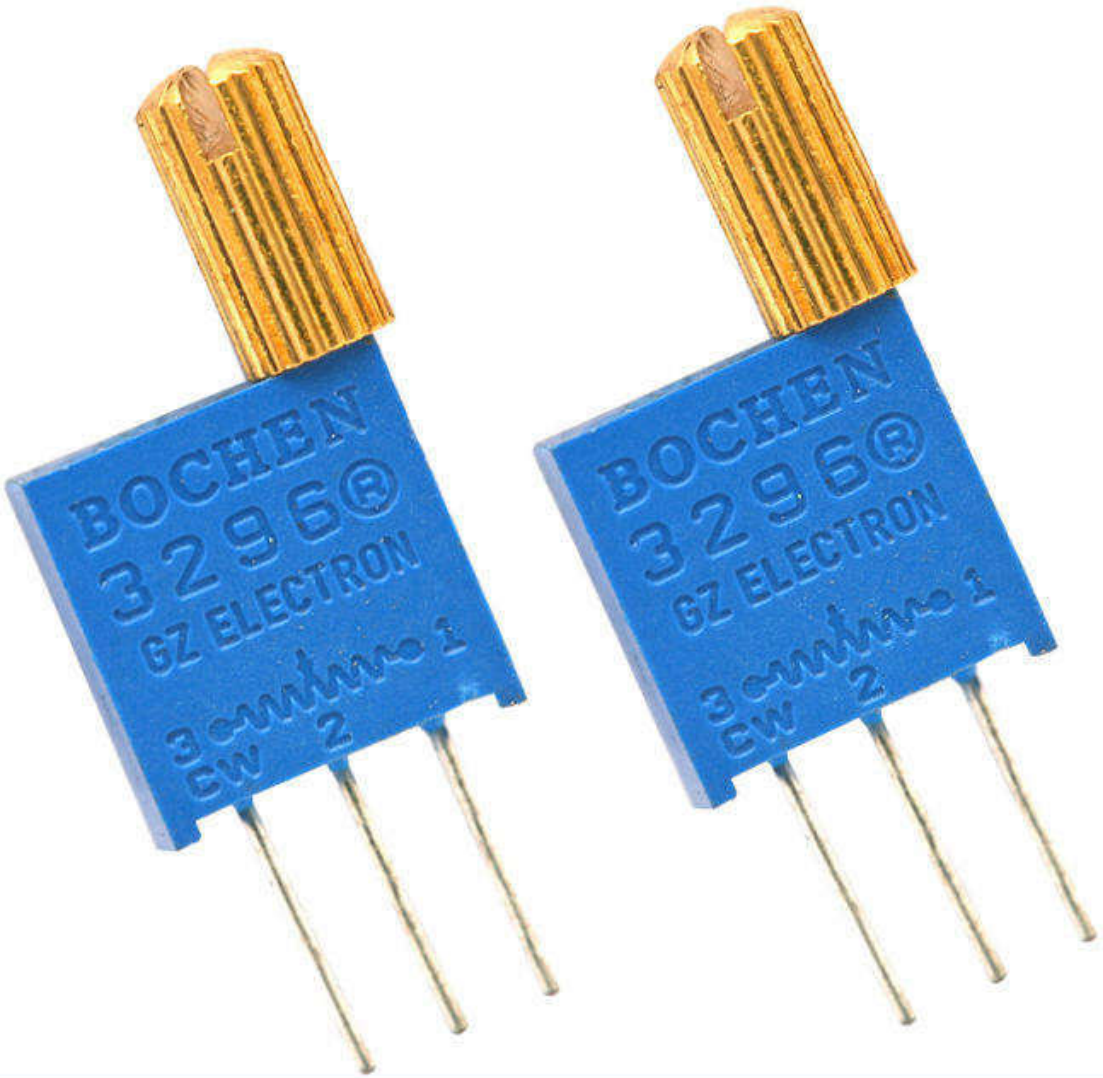


共有尺寸图



3296W型 (顶调)

Gold Supplier | Supplier Assessment



**BOCHEN**

*GS Technology*

*Our other products:*

<p><b>WX118</b></p> 	<p><b>RV24YN</b></p> 	<p><b>WXD3-13</b></p> 	<p><b>WXD3-12</b></p> 
<p><b>WX110</b></p> 	<p><b>WX111</b></p> 	<p><b>WX112</b></p> 	<p><b>WH148-1A-1</b></p> 
<p><b>WH148-1A-2</b></p> 	<p><b>WH148-1A-3</b></p> 	<p><b>WH148-1A-4</b></p> 	<p><b>WTH118</b></p> 

<b>Carbon film resistor</b>	<b>RF flange resistor</b>	<b>Ceramic wirewound resistor</b>	<b>Gold aluminum resistor</b>
			
<b>Boat aluminum resistor</b>	<b>Cement Resistor</b>	<b>Aluminum braking resistor</b>	<b>SMD resistor</b>
			

### **Company Information**

*Chengdu Guosheng Technology Co., Ltd is a specialized enterprise engaging in trimming potentiometers, wire-wound potentiometer series, wire-wound resistor series, and precision resistors. It is a high-tech enterprise appraised by state.*

*Our products under the "BOCHEN" brand that have been widely applied in the fields of instruments, meters and apparatuses, post and telecommunications, electricity power, railway signals, aviation and aerospace.*

*We have attained ISO9001 certificate, and passed the TUV and RoHS, which adheres to the environmental standards of the EU. With excellent product quality, advanced facility, abundant technology, strict management and good service, win customers' high praise and faith!*

*Besides our own main products, we are also pleased to offer customers other extra products and service as their requirement, such as LED Lighting Products or any other consumer electronics and quality supervision commissioner in China.*

*We aren't just selling good products, but also offering integrated service! Please contact us for more information. Thanks!*

## **1 Product standard**

3296 type glass glaze preset potentiometer detailed specification

GB/T15298-94

## **2 Ratings and characteristics**

### 2.1 Product appearance and installation method

Installation method: Insert the lead end of the potentiometer into the hole of the printed board, stick it tightly, and fix it with soldering.

Product appearance: see appendix A.

### 2.2 Rated power consumption: 0.5w

### 2.3 Nominal resistance range and resistance series

Nominal resistance range:  $100\Omega\sim 1M\Omega$

Resistance series: E3 series in IEC63 are preferred, and one significant digit is taken, namely 1, 2, 5.

### 2.4 Resistance tolerance: $\pm 10\%$

### 2.5 Temperature coefficient of resistance

$TCR \leq \pm 250 \times 10^{-6} / ^\circ C$

(User needs, can provide  $TCR \leq \pm 100 \times 10^{-6} / ^\circ C$ )

### 2.6 Limit voltage of resistor body: 315V (DC or AC effective value).

2.7 Limit current of moving contact: 100mA

2.8 Withstand voltage (AC peak voltage with a frequency of 40~60Hz)

Under normal atmospheric pressure: 640V

Under low pressure 8.5KPa (85mbar): 450V

2.9 Climate category: 55/125/04

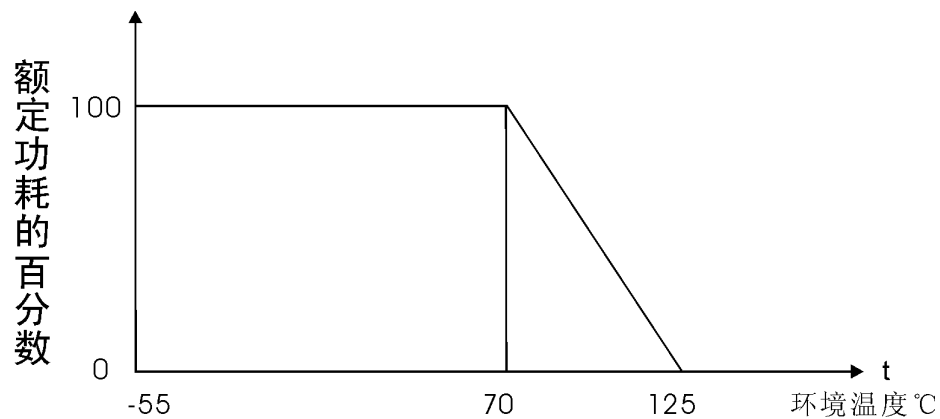
2.10 Total mechanical stroke:  $28 \pm 2$  laps

2.11 Stability level: 10%

2.12 Starting torque:  $\leq 35 \text{mN}\cdot\text{m}$

2.13 Cycles of load and wear resistance: 200 weeks

2.14 Power reduction curve



### 3 signs

3.1 The potentiometer should be marked: product trademark, product model, resistance code

3.2 The potentiometer package label should indicate: product trademark, product model, resistance code,

quantity, production year, month, detailed specification code, operator code, and ordering unit

4 See Table 1 for test items (parts), test conditions and performance requirements

表 1

GB/T15298-94 条款和试验项目	试验条件	性能要求
4.6 Resistance of resistor		±10%
4.7 Terminal resistance	Rab  Rbc	≤5Ω 或 2%R (取其大者)  ≤5Ω 或 2%R (取其大者)
4.5 Continuity	用三用表电阻档测量。电位器动触点转速每分钟 2~5 周	阻值变化应适当地平滑并且是单向的。
4.15 Rotating noise	用 CRV 测试仪测量, 以恒定电流 Ib 通过电位器的动触点, 动触点的转速每分钟 2~5 周	≤3Ω 或 2%R (取其大者)
4.32 Solderability	槽焊法 温度: 235±5°C 持续时间: 2±0.5S	检查引出端, 焊料应容易流动并润湿引出端
4.14 Resistance temperature characteristics	-55°C/20°C 20°C/70°C 20°C/125°C	ΔR/R≤±2.60 ΔR/R≤±1.80 ΔR/R≤±3.20

4.30 Leading end strength	对引出端施加 5N 拉力， 作用时间 10±IS。 外观检查 电阻体阻值	无可见损伤 $\Delta \leq \pm (5\%R + 0.1\Omega)$
4.34 Temperature change	将电位器动触点调在总机械行程的 40%~60%之间	

(3)

续表 1

GB/T15298-94 条款和试验项目	试验条件	性能要求
	-55°C下保持时间 30min 室温下保持时间(2-3)min +125°C下保持时间 30min 室温下保持时间(2-3)min 试验后恢复时间 2h  外观检查  输出比  电阻体阻值	无可见损伤  $\Delta \frac{U_{ab}}{U_{ac}} \leq \pm 5\%$  $\Delta R \leq \pm (5\%R + 0.1\Omega)$



<p>4.43.2 在 70°C时的电气耐久性</p>	<p>一半样品的电压加在 a 与 c 之间；另一半样品的动触点调在总电行程的 95%处, 电压加在 a 与 b 之间。</p> <p>持续时间 1000h</p> <p>在 48、500 和 1000h 时检查：</p> <p>外观检查</p> <p>a 与 c 之间的阻值</p> <p>a 与 b 之间 的阻值</p> <p>在 1000h 后检查：</p> <p>绝缘电阻</p> <p>转动噪声</p>	<p>无可见损伤，标志清晰</p> <p><math>\Delta R \leq \pm(10\%R+0.1\Omega)</math></p> <p><math>\Delta R \leq \pm(15\%R+0.1\Omega)</math></p> <p><math>\geq 1G\Omega</math></p> <p><math>\leq 5\Omega</math> 或 <math>3\%R</math></p> <p>(取其大者)</p>
-----------------------------	---	---

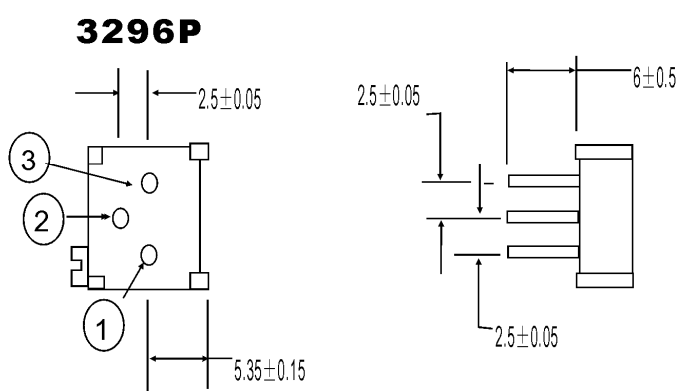
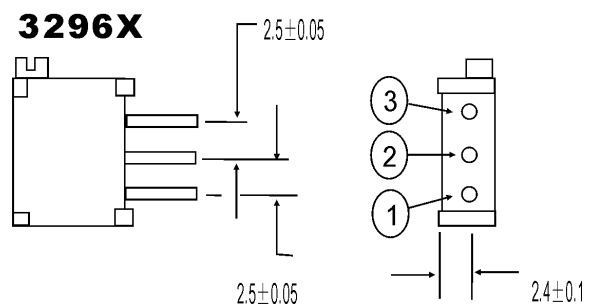
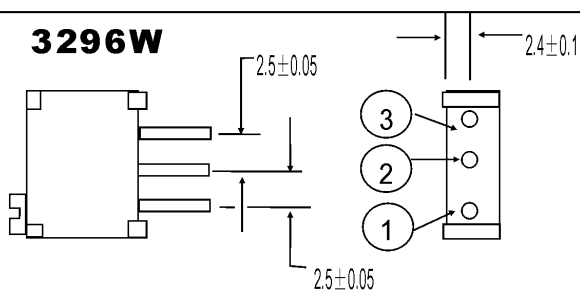
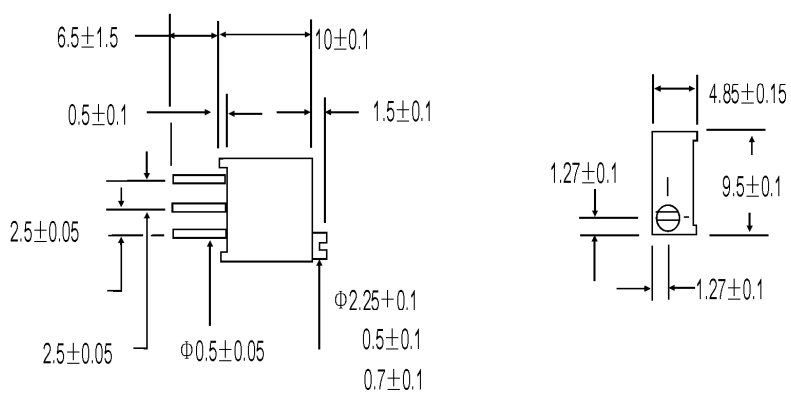
(4)

续表 1

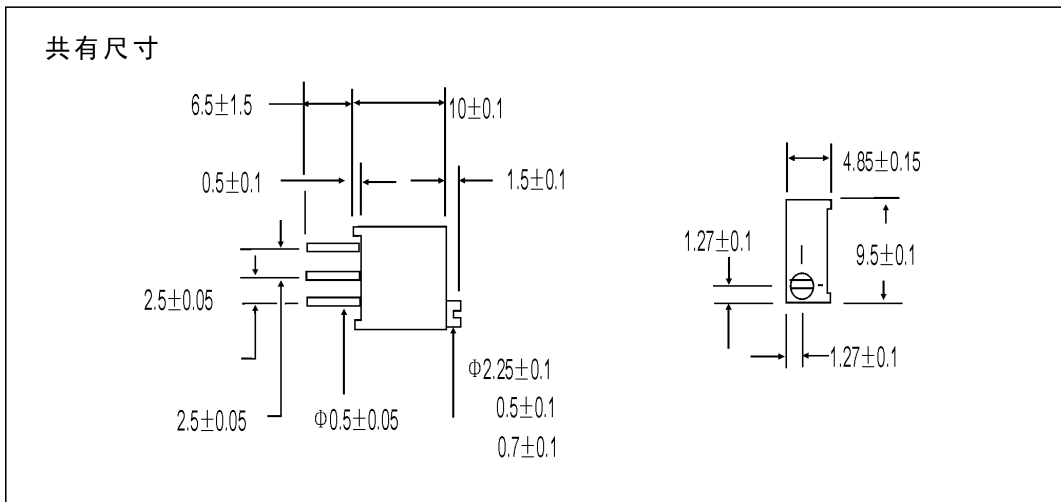
<p>GB/T15298-94 条款和试验项目</p>	<p>试 验 条 件</p>	<p>性 能 要 求</p>
<p>4.40 机械耐久性</p>	<p>周数：200</p> <p>动触点转速：每分钟 5~10 周</p> <p>外观检查</p> <p>电阻体阻值</p> <p>超支力矩</p> <p>转动噪声</p>	<p>无可见损伤</p> <p><math>\Delta R \leq \pm (10\%R+0.5\Omega)</math></p> <p><math>\leq 35mN \cdot m</math></p> <p><math>\leq 5\Omega</math> 或 <math>3\%R</math></p> <p>(取其大者)</p>

# 附录 A

共有尺寸



## 附录 A (续)

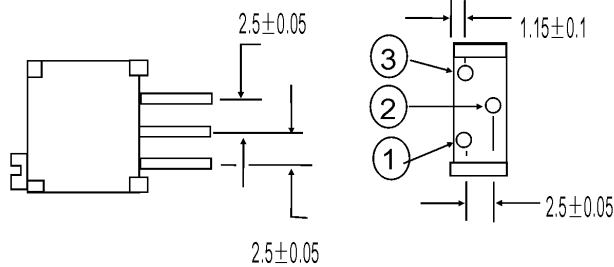


## 附录 B

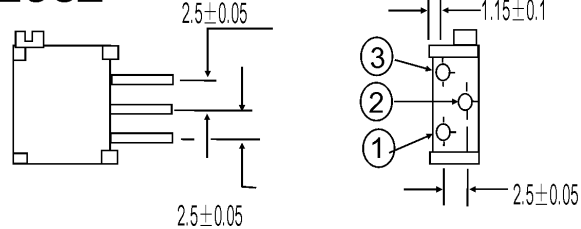
### 使用注意事项

· 由于电位器的额定功率是指整个电阻体都接入电路时，所规定的额定功率才适用，若只有部分电阻体接入电路，则允许使用功率应按阻值降低的相同比例降低。

#### 3296Y



#### 3296Z



R 使用阻值

$$P_{\text{允许使用功率}} = \frac{\quad}{\quad} P_{\text{额定功率}}$$

R 标称阻值

因此，为充分利用电位器的额定功率，建议电位器用作可变电阻时，所使用的电阻值应在电位器标称阻值的 50%~90%以内。

·消除阳极氧化，防止阻值变化

电位器作可变电阻器（作两端元件）使用，在直流工作时，电阻体与动触点之间的阳极氧化现象可能导致阻值发生变化、漂移，为有效防止此情况，请按下图将电位器的动触点接至电路的正极。

