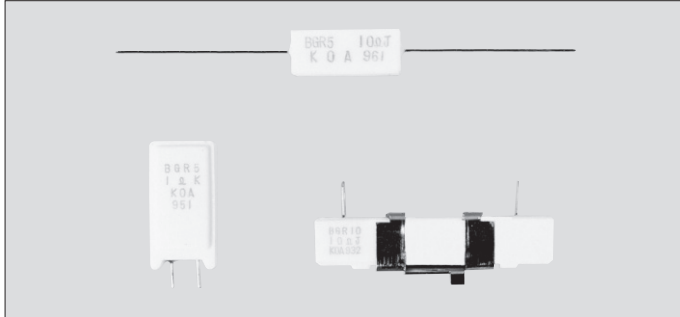


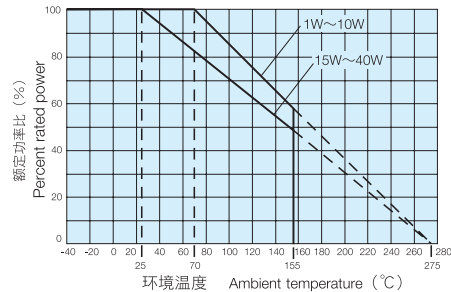
## BGR 角形绕线电阻器 (玻璃芯) Rectangular Type Wirewound Resistors With Glass Core

## BWR 角形绕线电阻器 (陶瓷芯) Rectangular Type Wirewound Resistors With Ceramic Core

## BSR 角形金属氧化膜电阻器 Rectangular Type Metal Oxide Film Resistors



■ 负荷特性曲线 Derating Curve



### ■ 额定值 Ratings

型号 Type	额定功率 Power Rating	电阻值范围 Resistance Range (Ω) E24				形状以及重量 Style & Weight (g/1pcs)														
		F: ±1%	G: ±2%	J: ±5%	K: ±10%	S	N	E	P	X	Y	YS	Z	H	Q	HA	HB	QA	QB	
BWR1	1W	1~56	0.22~75	0.1~75	-	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BWR2	2W	1~160	0.22~200	0.1~200	-	2.1	3.2	-	-	-	-	-	-	-	-	-	-	-	-	-
BWR3	3W	1~300	0.22~390	0.1~390	-	3.7	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-
BWR5	5W	1~300	0.22~390	0.1~390	-	5.7	6.6	5.7	5.6	-	-	-	-	-	-	-	-	-	-	-
BWR7	7W	1~360	0.22~390	0.1~390	-	7.7	10.0	-	-	-	-	-	-	-	-	-	-	-	-	-
BWR10	10W	1~390	0.22~390	0.1~390	-	11.3	15.2	-	-	-	-	-	-	-	-	-	-	-	-	-
BWR15	15W	1~390	0.22~390	0.1~390	-	18.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BWR20	20W	1~390	0.22~390	0.1~390	-	22.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BGR5	5W	-	-	10~390	0.39~9.1	-	-	-	-	6.5	7.2	6.8	6.5	-	-	-	-	-	-	-
BGR7	7W	-	-	10~390	0.39~9.1	-	-	-	-	8.3	9.0	8.5	8.3	-	-	-	-	-	-	-
BGR10	10W	-	-	10~390	0.39~9.1	-	-	-	-	11.5	12.0	11.7	12.0	10.8	-	14.5	-	-	-	-
BGR15	15W	-	-	10~390	0.51~9.1	-	-	-	-	18.0	-	-	18.5	16.5	16.8	22.5	25.5	22.8	25.8	-
BGR20	20W	-	-	10~390	0.51~9.1	-	-	-	-	23.0	-	-	24.0	22.0	22.2	28.0	31.0	28.2	31.2	-
BGR30	30W	-	-	10~390	2.2~9.1	-	-	-	-	-	-	-	59.6	-	73.5	83.8	-	-	-	-
BGR40	40W	-	-	10~390	2.2~9.1	-	-	-	-	-	-	-	69.6	-	83.5	93.8	-	-	-	-
BSR2	2W	-	-	430~13k	-	2.1	3.2	-	-	-	-	-	-	-	-	-	-	-	-	-
BSR3	3W	-	-	430~27k	-	3.7	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-
BSR5	5W	-	-	430~39k	-	5.7	6.6	5.7	-	6.5	7.2	6.8	6.5	-	-	-	-	-	-	-
BSR7	7W	-	-	430~56k	-	7.7	10.0	-	-	8.3	9.0	8.5	8.3	-	-	-	-	-	-	-
BSR10	10W	-	-	430~75k	-	11.3	15.2	-	-	11.5	12.0	11.7	12.0	10.8	-	14.5	-	-	-	-
BSR15	15W	-	-	430~56k	-	18.5	-	-	-	18.0	-	-	18.5	16.5	-	22.5	25.5	-	-	-
BSR20	20W	-	-	430~56k	-	22.5	-	-	-	23.0	-	-	24.0	22.0	-	28.0	31.0	-	-	-

型号 Type	额定功率 Power Rating	最高使用电压 (V) Max. Working Voltage		最高过载电压 (V) Max. Overload Voltage		电阻温度系数 T.C.R. (×10 <sup>-6</sup> /K)			额定周围温度 Rated Ambient Temp.	使用温度范围 Operating Temp. Range
		BSR	BGR • BWR	BSR	BGR • BWR	BWR	BSR	BGR		
BWR1	1W	-	-	-	-	-	-	-	+70°C	-40°C~+155°C
BWR2	2W	250	-	500	-	-	-			
BWR3	3W	300	-	600	-	-	-			
BWR5	5W	350	-	700	-	-	-			
BWR7	7W	500	-	1000	-	-	-			
BWR10	10W	700	-	1400	-	-	-			
BWR15	15W	700	-	1400	-	-	-			
BWR20	20W	750	-	1500	-	-	-			
BGR30	30W	-	-	-	-	-	-			
BGR40	40W	-	-	-	-	-	-			

额定电压是√额定功率×公称电阻值所算出的值或表中最高使用电压两者中小的值为额定电压。

关于定制产品请和我们事先商谈

Rated voltage = √Power Rating × Resistance value or Max. working voltage, whichever is lower.

Please consult with us in advance about custom-made products.

### ■ 品名构成 Type Designation

实例 Example

<b>BWR</b>	<b>3</b>	<b>C</b>	<b>N</b>	<b>100</b>	<b>J</b>
品种 Product Code	额定功率 Power Rating	端子表面材料*1 Terminal Surface Material	形状*2 Style	公称电阻值 Nominal Resistance	阻值允许偏差 Resistance Tolerance
BGR: 玻璃芯卷线 Wirewound (Glass core) BWR: 陶瓷芯卷线 Wirewound (Ceramic core) BSR: 氧化金属膜 Metal oxide film	上述参照 See table above	C: SnCu  T: Sn	空档: S style Nil: S style N: N style E: E style P: P style  X: X style Y: Y style YS: YS style Z: Z style H: H style Q: Q style HA: HA style HB: HB style QA: QA style QB: QB style	F: 4 digits G, J, K: 3 digits	F: ±1% G: ±2% J: ±5% K: ±10%

※1 不含铅产品的记号。 Lead-Free plated terminal symbols. C (SnCu): N, E, S and P styles T (Sn): X, Y, YS, Z, H and Q styles

※2 对于S式样, 没有相应内容。 No indication on style means S style.

预知关于此产品含有的环境有害物质详情 (除EU-RoHS以外), 请与我们联系。

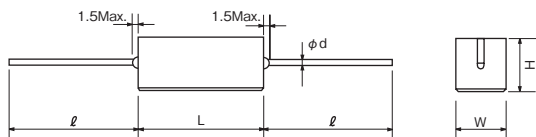
Contact us when you have control request for environmental hazardous material other than the substance specified by EU-RoHS.

## ■ 特点 Features

- 大功率型电阻器
- 陶瓷壳难燃性 / 绝缘性电阻器
- 耐脉冲防止突入电流性能优异
- 端子无铅品, 对应欧盟RoHS。电极、电阻膜层、玻璃中所含铅玻璃, 不包含在欧盟RoHS指令中。
- High-power resistor.
- Using frame-retardant/insulated ceramic case.
- Excellent in anti-pulse and inrush current.
- Products meet EU-RoHS requirements. EU-RoHS regulation is not intended for Pb-glass contained in glass.

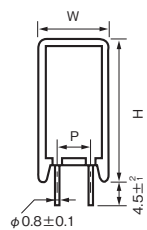
## ■ 外形尺寸 Dimensions

### ① S Style

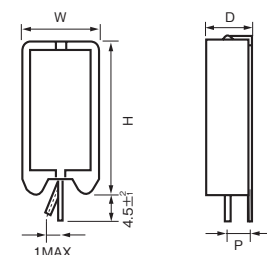


型号 Type	尺寸 Dimensions (mm)						
	L	W	H	$\phi \pm 3$	$d \pm 0.1$		
BWR1	13 $\pm$ 1.0	5.5 $\pm$ 1.0	5.5 $\pm$ 1.0	30	0.6		
BWR2·BSR2	18 $\pm$ 1.5	6.3 $\pm$ 1.0	6.3 $\pm$ 1.0				
BWR3·BSR3	22 $\pm$ 1.5	8.0 $\pm$ 1.0	8.0 $\pm$ 1.0				
BWR5·BSR5		9.5 $\pm$ 1.0	9.5 $\pm$ 1.0				
BWR7·BSR7	35 $\pm$ 1.5					12.5 $\pm$ 1.2	12.5 $\pm$ 1.2
BWR10·BSR10							
BWR15·BSR15	48 $\pm$ 1.5	12.5 $\pm$ 1.2	12.5 $\pm$ 1.2				
BWR20·BSR20	63.5 $\pm$ 1.5	12.5 $\pm$ 1.5	12.5 $\pm$ 1.5				

### ② N Style

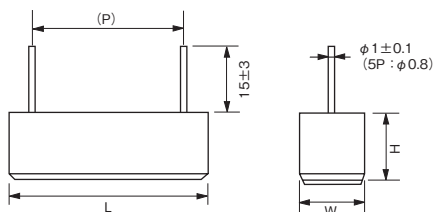


### ③ E Style



型号 Type	尺寸 Dimensions (mm)			
	W $\pm$ 1	D $\pm$ 1	H $\pm$ 1.5	P2 $\pm$ 2
BWR2N·BSR2N	11	7	20.5	5
BWR3N·BSR3N	12	8	25	
BWR5N·BSR5N	13	9	25.5	
BWR7N·BSR7N			38.5	
BWR10N·BSR10N	16	12	35	7.5
BWR5E·BSR5E	9.5	9.5	23.5	5

### ④ P Style

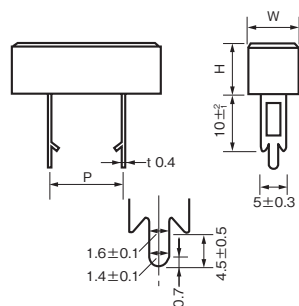


型号 Type	尺寸 Dimensions (mm)			
	L	W $\pm$ 1.5	H $\pm$ 1.5	(P)
BWR5P	23 $\pm$ 1.5	9.5	9.5	20

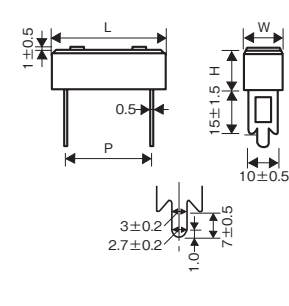
( ) 内的尺寸为参考值。  
 Parenthesized dimensions are for reference.  
 请不要插入电路板中使用。  
 只对产品焊接, 产品会因为外部受力而焊接强度不足, 所以请另外检讨其他固定方法。  
 Please refrain from using these parts as a board-insertion type.  
 Only soldering doesn't have enough joint strength.  
 Additional fixation is recommended.

### ⑤ X Style

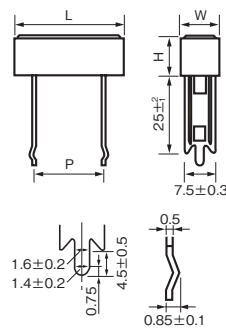
(5W~10W)



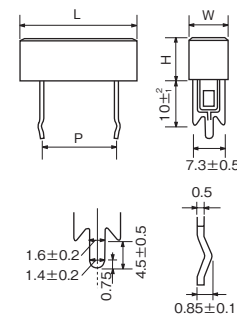
(15W, 20W)



### ⑥ Y Style



### ⑦ YS Style



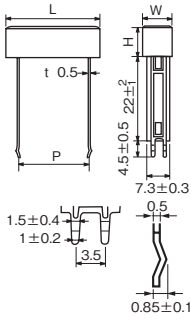
型号 Type	尺寸 Dimensions (mm)		
	L $\pm$ 1.5	W·H $\pm$ 1.0	P $\pm$ 1.5
BGR5X·BSR5X·BGR5Y·BSR5Y·BGR5YS·BSR5YS	27	9.5	15
BGR7X·BSR7X·BGR7Y·BSR7Y·BGR7YS·BSR7YS	35		22.5
BGR10X·BSR10X·BGR10Y·BSR10Y·BGR10YS·BSR10YS	48	12.5	35
BGR15X·BSR15X	63.5		32.5
BGR20X·BSR20X			47.5

# POWER TYPE

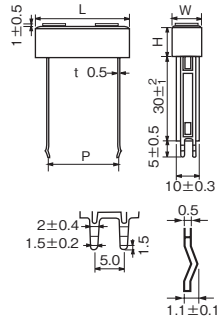
## ■ 外形尺寸 Dimensions

### ⑧ Z Style

(5W~10W)

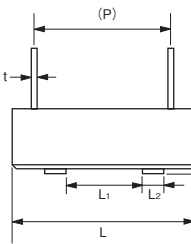


(15W, 20W)

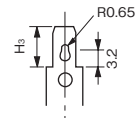
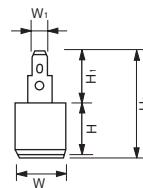
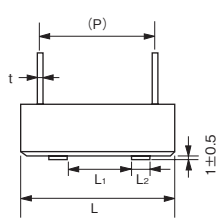
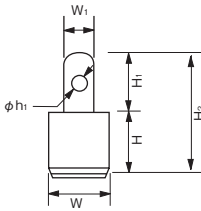


型号 Type	尺寸 Dimensions (mm)		
	L±1.5	W·H±1.0	P
BGR5Z·BSR5Z	27	9.5	15 <sup>+0.2</sup> <sub>-0.2</sub>
BGR7Z·BSR7Z	35		22.5 <sup>+0.6</sup> <sub>-0.2</sub>
BGR10Z·BSR10Z	48		35 <sup>+0.6</sup> <sub>-0.2</sub>
BGR15Z·BSR15Z	63.5	12.5	32.5 <sup>+0.4</sup> <sub>-0.0</sub>
BGR20Z·BSR20Z			47.5 <sup>+0.4</sup> <sub>-0.0</sub>

### ⑨ H Style



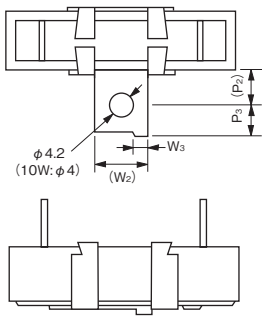
### ⑩ Q Style



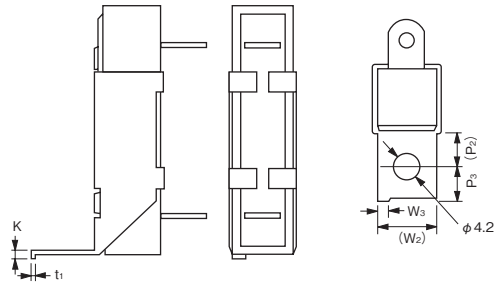
型号 Type	尺寸 Dimensions (mm)											
	L	L1	L2	W	W1	H	H1	H2	H3	(P)	t	φ h1
BGR10H·BSR10H	48±1.5	25±1	4.5	9.5±1.0	5	9.5±1.0	6 <sup>+0.2</sup> <sub>-0.0</sub>	16.5 <sup>+2.1</sup> <sub>-0.0</sub>	—	35	0.4	2.0
BGR15H·BSR15H			7	12.5±1.2	6	12.5±1.5	7.5 <sup>+0.2</sup> <sub>-0.0</sub>	21 <sup>+2.1</sup> <sub>-0.0</sub>		32.5		2.5
BGR20H·BSR20H			10	19±1.5	7.5	19±1.5	10 <sup>+0.2</sup> <sub>-0.0</sub>	30 <sup>+2.5</sup> <sub>-1.5</sub>		47.5		3.0
BGR30H	75±2.5	40±1.2	10	19±1.5	7.5	19±1.5	10 <sup>+0.2</sup> <sub>-0.0</sub>	30 <sup>+2.5</sup> <sub>-1.5</sub>	—	56	0.5	—
BGR40H	90±2.5									71		
BGR15Q	48±1.5	25±1	7	12.5±1.2	4.75	12.5±1.5	12 <sup>+0.2</sup> <sub>-0.0</sub>	25 <sup>+2.1</sup> <sub>-0.0</sub>	6.35	32.5	0.5	—
BGR20Q	63.5±2									47.5		

( ) 内的尺寸为参考值。Parenthesized dimensions are for reference.

### ⑪ HA · QA Style



### ⑫ HB · QB Style

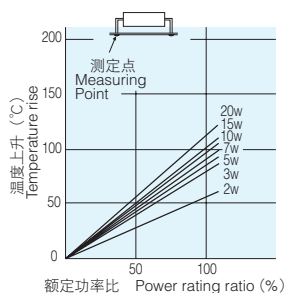
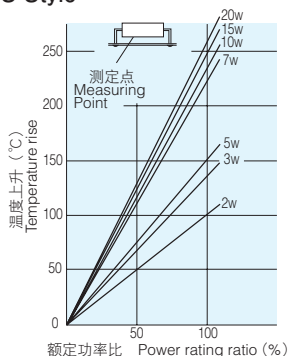


型号 Type	尺寸 Dimensions (mm)					
	(P2)	P3±1	(W2)	W3±0.3	K±0.3	t
BGR10HA·BSR10HA	8.0	6	12	3.0	2.8	0.6
BGR15HA·BSR15HA·BGR15QA						0.8
BGR15HB·BSR15HB·BGR15QB						
BGR20HA·BSR20HA·BGR20QA						
BGR20HB·BSR20HB·BGR20QB	10	8	18	3.0	3.0	0.8
BGR30HA						
BGR30HB						
BGR40HA	10	8	18	3.0	3.0	0.8
BGR40HB						

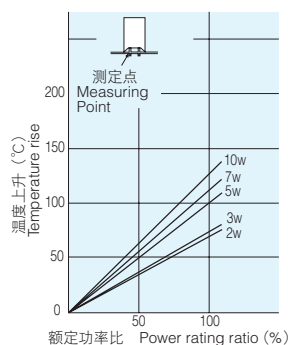
( ) 内的尺寸为参考值。  
Parenthesized dimensions are for reference.

## ■ 温度上升 Temperature Rise (Ref.)

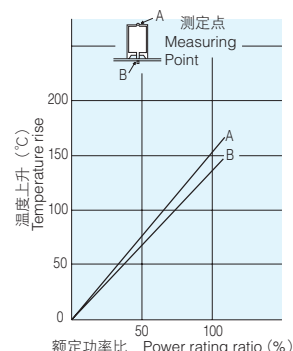
① S Style



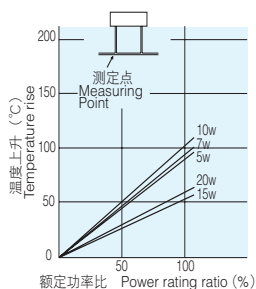
② N Style



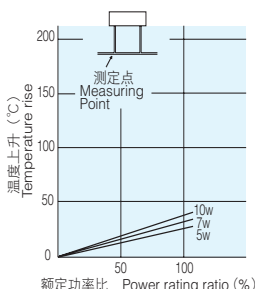
③ E Style



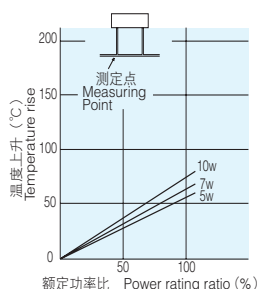
④ X Style



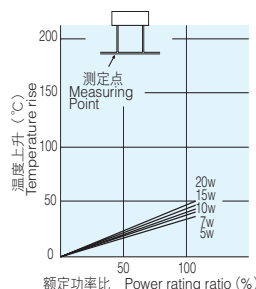
⑤ Y Style



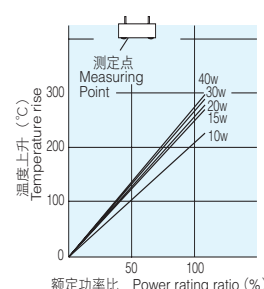
⑥ YS Style



⑦ Z Style



⑧ H Style



## ■ 性能 Performance

试验项目 Test Items	标准值 Performance Requirements $\Delta R \pm \%$		试验方法 Test Methods
	保证值 Limit	代表值 Typical	
电阻值 Resistance	在规定的允许偏差内 Within specified tolerance	-	25°C
电阻温度系数 T.C.R.	在规定的允许偏差内 Within specified tolerance	-	+25°C/-55°C and +25°C/+125°C
耐焊接热 Resistance to soldering heat	1: BWR, BSR 2: BGR	0.8: BWR 1.7: BGR 0.9: BSR	350°C ± 10°C, 3.5s
耐湿负荷 Moisture resistance	3: BWR, BGR 5: BSR	2.4: BWR 2.55: BGR 4.5: BSR	Power rating × 1/10, 40°C, 90%~95%RH, 1000h 1.5小时ON、0.5小时OFF的周期 1.5h ON/0.5h OFF cycle
在70°C时的耐久性 Endurance at 70°C	3: BWR 5: BGR, BSR	2.4: BWR 4.25: BGR 4.5: BSR	额定电压, 70°C, 1000小时, 1.5小时打开 / 0.5小时关闭的周期 Rated voltage, 70°C, 1000h, 1.5h ON/0.5h OFF cycle

## ■ 使用注意事项 Precautions for Use

- 焊剂等在本产品和安装的印刷电路板上附着离子性杂质时，其耐湿性・耐腐蚀性将受到影响。焊剂内有时含有氯・酸等离子性物质，为除去这些离子性物质应进行清洗。特别是使用无铅焊剂时，由于湿润性提高了，有时会含有大量离子性物质，所以在使用RMA系的焊锡或焊剂时，应充分进行清洗。并且，保管环境和安装条件、环境等，附着了汗・盐等离子性物质时，其耐湿性・耐腐蚀性也将受到影响。对于这种污染，为了除去这些离子性物质，应当进行清洗。
- 使用交流电路时，由于绕线构造，电路会产生电感成分和寄生容量，有可能发生振动等异常情况。在使用时请仔细考虑其他元件常数的离散情况。
- Ionic impurities such as flux etc. attached to these products or mounted onto PCB, negatively affect the moisture resistance, corrosion resistance, etc. The flux may contain ionic substances like chlorine, acid, etc. Wash thoroughly these ionic substances including sweat and salt. Confirm the reliability of washing and decide the dry conditions so that washing solvent is not to be remained inside the product after washing. Do not apply electricity to the product nor use the product itself until the drying is fully completed.
- In case of using them for an AC circuit, abnormal phenomena like oscillation etc. occasionally happen as they have an inductance or a parasitic capacitance because of their wiring structures. Use them by taking the dispersion of constants of other components into the consideration.

高功率型电阻器  
High Power Type Resistors