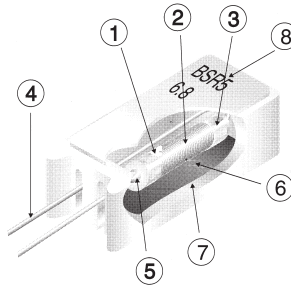


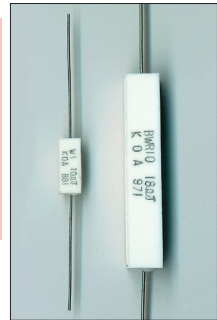
**WIREWOUND  
RECTANGULAR TYPE  
BWR • BGR**

**METAL OXIDE  
RECTANGULAR TYPE  
BSR**



**STRUCTURE**

- 1 Core  
BGR : glass  
BWR, BSR : ceramic
- 2 Resistive element  
BGR, BWR: : wirewound  
BSR : metal oxide
- 3 Steel cap (Cu, Sn plated)
- 4 Lead wire
- 5 Welding joint
- 6 Special potting material
- 7 Steatite ceramic case
- 8 Marking



**IDENTIFICATION**

PRODUCT CODE	COATING COLOR	MARKING
B□□R	None (Ceramic)	Alpha Numeric (Type, Power Rating, R-value, Tolerance, Manufacturer and Production Number)

All these products have Pb-free terminations and meet EU-RoHS requirements. BWR and BSR also meet China-RoHS requirements.

**TYPE DESIGNATION (HOW TO ORDER)**

BWR	3	C	N	100	J
PRODUCT CODE BWR, BGR, BSR	POWER RATING Unit: Watt 1...40	TERMINATION SURFACE MATERIAL C: SnCu (N, E, S and P-styles) T: Sn (Lug-styles)	STYLE See below table 'no indication' means S-style	NOMINAL RESISTANCE F: 4 digits G, J, K: 3 digits	RESISTANCE TOLERANCE F, G, J, K

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

**FEATURES**

- Resistors for high power ratings (up to 40 W)
- High power wirewound resistors available in tolerance ±1%
- Flame retardant resistors with ceramic case
- BGR = Rectangular wirewound resistor with glass core
- BWR = Rectangular wirewound resistor with ceramic core
- BSR = Rectangular metal oxide film resistor on ceramic core
- Rated ambient temperature: +25°C / +70°C
- Operating temperature range: -40°C ... +155°C

Please consult KOA about custom-made products

**RATING**

TYPE	POWER RATING*	T.C.R (ppm/K)			MAX.** WORKING VOLTAGE	MAX.*** OVERLOAD VOLTAGE	RATED AMBIENT TEMP.
		BWR	BGR	BSR			
BWR 1	1 W						+70°C
B□□R 2	2 W				250 V	500 V	
B□□R 3	3 W				300 V	600 V	
B□□R 5	5 W	± 100		± 300	350 V	700 V	
B□□R 7	7 W				500 V	1000 V	
B□□R 10	10 W		± 250		700 V	1400 V	
B□□R 15	15 W				750 V	1500 V	
B□□R 20	20 W						+25°C
BGR 30	30 W						
BGR 40	40 W						

\*\*BGR/BWR:  $E = \sqrt{P \cdot R}$  \*\*\*BGR/BWR:  $E = \sqrt{P \cdot R T0}$   
□□: Enter W, G or S

**RATING**

TYPE	POWER RATING*	RESISTANCE RANGE AND TOLERANCE • E24				STYLE													
		F(±1%)	G(±2%)	J(±5%)	K(10%)	S	N	E	P	X	Y	YS	Z	H	Q	HA	HB	QA	QB
BWR 1	1 W	1 Ω... 56 Ω	0.22 Ω... 75 Ω	0.1 Ω... 75 Ω	-	○	-	-	-	-	-	-	-	-	-	-	-	-	-
BWR 2	2 W	1 Ω... 160 Ω	0.22 Ω... 200 Ω	0.1 Ω... 200 Ω	-	○	○	-	-	-	-	-	-	-	-	-	-	-	-
BWR 3	3 W	1 Ω... 300 Ω	0.22 Ω... 390 Ω	0.1 Ω... 390 Ω	-	○	○	-	-	-	-	-	-	-	-	-	-	-	-
BWR 5	5 W	1 Ω... 300 Ω	0.22 Ω... 390 Ω	0.1 Ω... 390 Ω	-	○	○	○	○	-	-	-	-	-	-	-	-	-	-
BWR 7	7 W	1 Ω... 360 Ω	0.22 Ω... 390 Ω	0.1 Ω... 390 Ω	-	○	○	-	-	-	-	-	-	-	-	-	-	-	-
BWR 10	10 W	1 Ω... 390 Ω	0.22 Ω... 390 Ω	0.1 Ω... 390 Ω	-	○	○	-	-	-	-	-	-	-	-	-	-	-	-
BWR 15	15 W	1 Ω... 390 Ω	0.22 Ω... 390 Ω	0.1 Ω... 390 Ω	-	○	○	-	-	-	-	-	-	-	-	-	-	-	-
BWR 20	20 W	1 Ω... 390 Ω	0.22 Ω... 390 Ω	0.1 Ω... 390 Ω	-	○	-	-	-	-	-	-	-	-	-	-	-	-	-
BGR 5	5 W	-	-	10 Ω... 390 Ω	0.39 Ω... 9.1 Ω	-	-	-	-	○	○	○	○	-	-	-	-	-	-
BGR 7	7 W	-	-	10 Ω... 390 Ω	0.39 Ω... 9.1 Ω	-	-	-	-	○	○	○	○	-	-	-	-	-	-
BGR 10	10 W	-	-	10 Ω... 390 Ω	0.39 Ω... 9.1 Ω	-	-	-	-	○	○	○	○	-	-	-	-	-	-
BGR 15	15 W	-	-	10 Ω... 390 Ω	0.51 Ω... 9.1 Ω	-	-	-	-	○	○	○	○	-	-	-	-	-	-
BGR 20	20 W	-	-	10 Ω... 390 Ω	0.51 Ω... 9.1 Ω	-	-	-	-	○	○	○	○	-	-	-	-	-	-
BGR 30	30 W	-	-	10 Ω... 390 Ω	2.2 Ω... 9.1 Ω	-	-	-	-	-	-	-	-	○	○	○	○	○	○
BGR 40	40 W	-	-	10 Ω... 390 Ω	2.2 Ω... 9.1 Ω	-	-	-	-	-	-	-	-	-	○	○	○	○	○
BSR 2	2 W	-	-	430 Ω... 13 kΩ	-	○	○	-	-	-	-	-	-	-	-	-	-	-	-
BSR 3	3 W	-	-	430 Ω... 27 kΩ	-	○	○	-	-	-	-	-	-	-	-	-	-	-	-
BSR 5	5 W	-	-	430 Ω... 39 kΩ	-	○	○	○	-	○	○	○	○	-	-	-	-	-	-
BSR 7	7 W	-	-	430 Ω... 56 kΩ	-	○	○	-	-	○	○	○	○	-	-	-	-	-	-
BSR 10	10 W	-	-	430 Ω... 75 kΩ	-	○	○	-	-	○	○	○	○	-	-	-	-	-	-
BSR 15	15 W	-	-	430 Ω... 56 kΩ	-	○	○	-	-	○	○	○	○	-	-	-	-	-	-
BSR 20	20 W	-	-	430 Ω... 56 kΩ	-	○	-	-	-	○	-	○	○	-	-	-	-	-	-

\* For resistors operated in higher ambient temperature than rated, power rating shall be derated like shown in "DERATING CURVE" on page 143.  
Rated voltage = √ Power rating x resistance value or max. working voltage, whichever is lower.

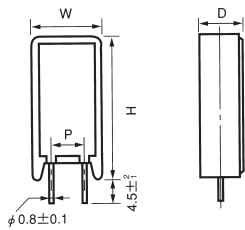
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Specifications given herein may be changed at any time without prior notice. Please confirm technical specifications before you order/use.

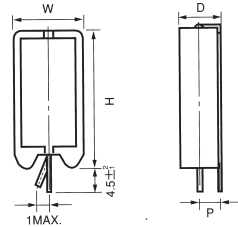
## WIREWOUND RECTANGULAR TYPE BWR • BGR

## METAL OXIDE RECTANGULAR TYPE BSR

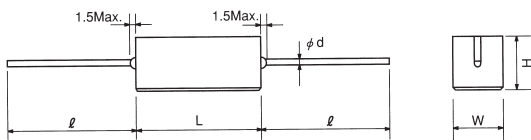
### N STYLE



### E STYLE



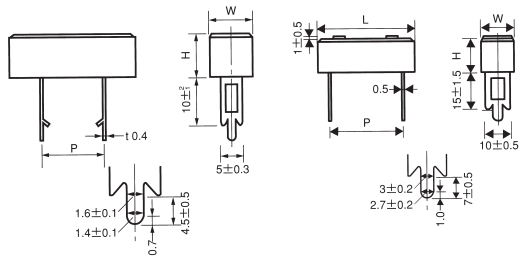
### S STYLE



### X STYLE

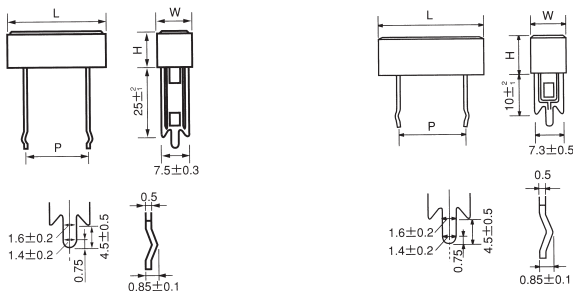
(5W~10W)

(15W, 20W)



### Y STYLE

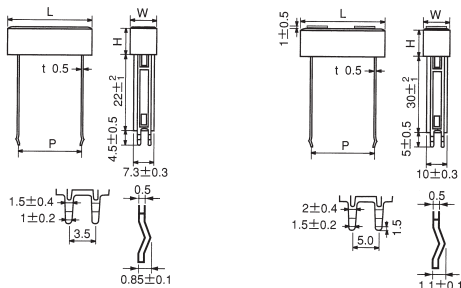
### YS STYLE



### Z STYLE

(5W~10W)

(15W, 20W)



### DIMENSIONS (mm)

TYPE	W ± 1	D ± 1	H ± 1.5	P <sup>+2</sup> / <sub>-1</sub>
BWR 2 N	11	7	20.5	5
BWR 3 N	12	8	25.0	
BWR 5 N	13	9	25.5	
BWR 7 N			38.5	
BWR 10 N	16	12	35.0	
BWR 5 E	9.5	9.5	23.5	5

□: W, S

Stick package (magazine) is available for 2N type

### DIMENSIONS (mm)

TYPE	L	W	H	l ± 3	d ± 0.1
BWR 1	13 ± 1.0	5.5 ± 1.0	5.5 ± 1.0	30	0.6
BWR 2	18 ± 1.5	6.3 ± 1.0	6.3 ± 1.0		
BWR 3	22 ± 1.5	8.0 ± 1.0	8.0 ± 1.0		
BWR 5	35 ± 1.5	9.5 ± 1.0	9.5 ± 1.0	35	0.8
BWR 7					
BWR 10	48 ± 1.5	12.5 ± 1.2	12.5 ± 1.2		
BWR 15	63.5 ± 1.5	12.5 ± 1.5	12.5 ± 1.5		
BWR 20					

□: W, S

### DIMENSIONS (mm)

TYPE	L	W • H	P
BWR 5 X	27 ± 1.5	9.5 ± 1.0	15.0 ± 1.5
BWR 5 Y			
BWR 5 YS			
BWR 5 Z			15.0 <sup>+6</sup> / <sub>-2</sub>
BWR 7 X			22.5 ± 1.5
BWR 7 Y	48 ± 1.5	12.5 ± 1.0	22.5 ± 1.5
BWR 7 YS			
BWR 7 Z			22.5 <sup>+6</sup> / <sub>-2</sub>
BWR 10 X	63.5 ± 1.5	12.5 ± 1.0	35.0 ± 1.5
BWR 10 Y			
BWR 10 YS			35.0 <sup>+6</sup> / <sub>-2</sub>
BWR 10 Z			32.5 ± 1.5
BWR 15 X			32.5 <sup>+4</sup> / <sub>-0</sub>
BWR 15 Z			47.5 ± 1.5
BWR 20 X			47.5 <sup>+4</sup> / <sub>-0</sub>
BWR 20 Z			47.5 <sup>+4</sup> / <sub>-0</sub>

□: G, S

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