

features

- High power resistor
- Use flame-retardant insulated ceramic case
- Products with lead-free terminations meet EU RoHS requirements. EU RoHS regulation is not intended for Pb-glass contained in electrode, resistor element and glass.
- Excellent with anti-pulse and inrush current



applications and ratings

Type	Power Rating	Resistance Range (Ω) E24				Style & Weight (g/1 piece)													
		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	3.9	—	—	—	—	—	—	—	—	—	—	—	—
BWR3	3W	1~300	0.22~390	0.1~390	—	3.9	5.9	—	—	—	—	—	—	—	—	—	—	—	—
BWR5	5W	1~300	0.22~390	0.1~390	—	5.1	7.2	5.7	5.6	—	—	—	—	—	—	—	—	—	—
BWR7	7W	1~360	0.22~390	0.1~390	—	7.5	10.8	—	—	—	—	—	—	—	—	—	—	—	—
BWR10	10W	1~390	0.22~390	0.1~390	—	10.2	15.0	—	—	—	—	—	—	—	—	—	—	—	—
BWR15	15W	1~390	0.22~390	0.1~390	—	18.8	—	—	—	—	—	—	—	—	—	—	—	—	—
BWR20	20W	1~390	0.22~390	0.1~390	—	23.3	—	—	—	—	—	—	—	—	—	—	—	—	—
BGR5	5W	—	—	10~390	0.39~9.1	—	—	—	—	6.1	7.6	6.6	7.6	—	6.2	—	—	—	—
BGR7	7W	—	—	10~390	0.39~9.1	—	—	—	—	8.2	9.1	7.8	9.1	—	7.8	—	—	—	—
BGR10	10W	—	—	10~390	0.39~9.1	—	—	—	—	11.0	12.4	10.4	11.4	9.9	10.7	13.6	—	14.5	—
BGR15	15W	—	—	10~390	0.51~9.1	—	—	—	—	18.8	—	—	20.5	18.4	18.6	24.4	27.5	24.6	27.7
BGR20	20W	—	—	10~390	0.51~9.1	—	—	—	—	22.3	—	—	24.0	21.9	22.1	27.9	31.0	28.1	31.3
BGR30	30W	—	—	10~390	2.2~9.1	—	—	—	—	—	—	—	—	59.3	59.6	73.9	73.5	74.2	73.8
BGR40	40W	—	—	10~390	2.2~9.1	—	—	—	—	—	—	—	—	70.4	70.6	85.0	84.6	85.2	84.8
BSR2	2W	—	—	430~13k	—	2.1	3.8	—	—	—	—	—	—	—	—	—	—	—	—
BSR3	3W	—	—	430~27k	—	3.9	5.9	—	—	—	—	—	—	—	—	—	—	—	—
BSR5	5W	—	—	430~51k	—	5.1	7.2	5.7	—	6.1	7.6	6.6	7.6	—	6.2	—	—	—	—
BSR7	7W	—	—	430~56k	—	7.4	10.8	—	—	8.2	9.1	7.8	9.1	—	7.8	—	—	—	—
BSR10	10W	—	—	430~75k	—	10.2	15.0	—	—	11.0	12.4	10.4	11.4	10.9	10.7	13.7	—	14.5	—
BSR15	15W	—	—	430~56k	—	18.8	—	—	—	18.5	—	—	20.5	18.4	18.6	24.4	27.5	24.6	27.7
BSR20	20W	—	—	430~56k	—	23.3	—	—	—	22.0	—	—	24.0	21.9	22.1	27.9	31.0	28.1	31.3

Type	Power Rating	Max. Working Voltage (V)		Max. Overload Voltage (V)		T.C.R. (x10 ⁻⁶ /K)			Rated Ambient Temperature	Operating Temperature Range					
		BSR	BGR,BWR	BSR	BGR,BWR	BWR	BSR	BGR							
BWR1	1W	—	E=√P•R	—	E=√P•R•10	±100	—	±250	+70°C	-40°C to +155°C					
B□R2	2W	250		500											
B□R3	3W	300		600											
B□R5	5W	350		700											
B□R7	7W	500		1000											
B□R10	10W	700		1400											
B□R15	15W	700		1400											
B□R20	20W	750		1500											
BGR30	30W	—		—			—				—	—	—	+25°C	
BGR40	40W	—		—			—				—	—	—		

Rated voltage= √Power Rating × Resistance value or Max. working voltage, whichever is lower.
 □ Represents the space to designate product type via character G, W, or S.
 Please consult with us in advance about custom-made products.

rectangular type wirewound resistors with glass core
 rectangular type wirewound resistors with ceramic core
 rectangular type metal oxide film resistors

ordering information

BWR	3	C	N	100	J
Type	Power Rating	Termination¹ Material	Style	Nominal Resistance	Tolerance
BGR: Wirewound (glass core) BWR: Wirewound (ceramic core) BSR: Metal oxide film	See table	C: SnCu	Blank: S style ² N: N style E: E style P: P style	+1%: 3 significant figures + 1 multiplier "R" indicates decimal on values <100Ω +2%, +5%, +10%: 2 significant figures + 1 multiplier "R" indicates decimal on values <10Ω	F: ±1% G: ±2% J: ±5% K: ±10%
		T: Sn	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		

¹ Lead-Free plated terminal symbols.
C (SnCu) N, E, S and P styles
T (Sn) X, Y, YS, Z, H, and Q styles

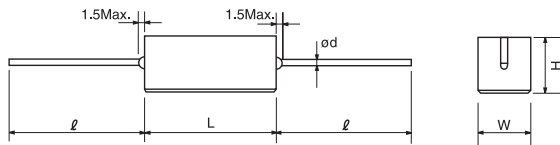
² No indication on style means S style.

Contact us if you have a request for environmentally hazardous materials other than the substance specified by EU RoHS.

Leaded resistors

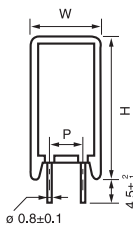
dimensions and construction

S Style

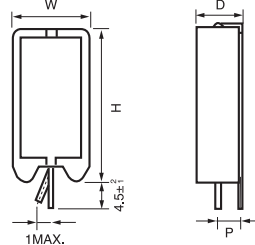


Type	Dimensions millimeters				
	L	W	H	l	d
BWR1C	13.0±1.0	5.5±1.0	5.5±1.0	30.0±3.0	0.6±0.1
BWR2C, BSR2C	18.0±1.5	6.3±1.0	6.3±1.0	35.0±3.0	0.8±0.1
BWR3C, BSR3C	22.0±1.5	8.0±1.0	8.0±1.0		
BWR5C, BSR5C	35.0±1.5	9.5±1.0	9.5±1.0		
BWR7C, BSR7C	48.0±1.5	12.5±1.2	12.5±1.2		
BWR10C, BSR10C	63.5±1.5	12.5±1.5	12.5±1.5		

N Style



E Style

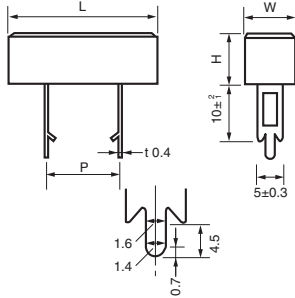


Type	Dimensions millimeters			
	W±1	D±1	H±1.5	P ⁺² ₋₁
BWR2CN, BSR2CN	11	7	20.5	5
BWR3CN, BSR3CN	12	8	25	
BWR5CN, BSR5CN	13	9	25.5	
BWR7CN, BSR7CN			38.5	
BWR10CN, BSR10CN	16	12	35	7.5
BWR5CE, BSR5CE	9.5	9.5	23.5	5

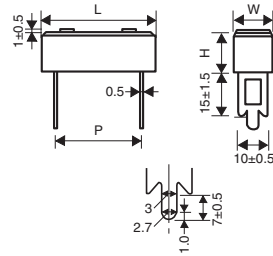
rectangular type wirewound resistors with glass core
 rectangular type wirewound resistors with ceramic core
 rectangular type metal oxide film resistors

dimensions and construction (continued)

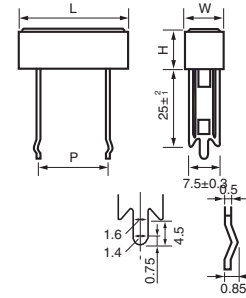
X Style (5W, 7W, 10W)



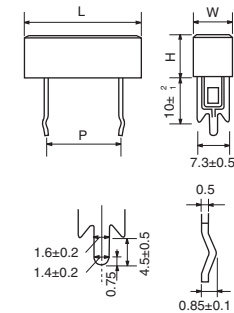
(15W, 20W)



Y Style

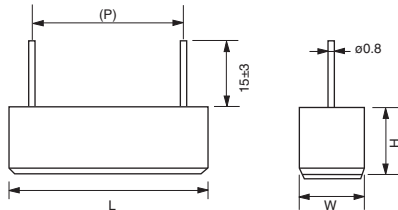


YS Style



Type	Dimensions millimeters			
	L±1.5	W±1.0	H±1.0	P±1.5
BGR5TX, BSR5TX, BGR5TY, BSR5TY, BGR5TYS, BSR5TYS	27	9.5	9.5	15
BGR7TX, BSR7TX, BGR7TY, BSR7TY, BGR7TYS, BSR7TYS	35			22.5
BGR10TX, BSR10TX, BGR10TY, BSR10TY, BGR10TYS, BSR10TYS	48	12.5	12.5	35
BGR15TX, BSR15TX	63.5			32.5
BGR20TX, BSR20TX				47.5

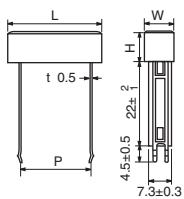
P Style



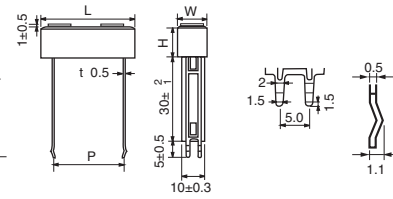
Type	Dimensions millimeters			
	L	W	H	(P)
BWR5CP	23.0±1.5	9.5±1.5	9.5±1.5	20

Parenthesized dimensions are for reference.
 Please refrain from using these parts as a board-insertion type.
 * Soldering only does not allow enough joint strength.
 Additional fixation is recommended.

Z Style (5W, 7W, 10W)



(15W, 20W)

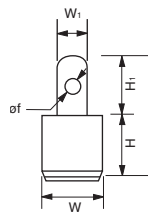
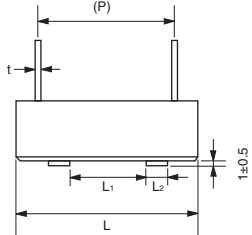


Type	Dimensions millimeters			
	L±1.5	W±1.0	H±1.0	P
BGR5TZ, BSR5TZ	27	9.5	9.5	15 ⁺⁶ ₋₂
BGR7TZ, BSR7TZ	35			22.5 ⁺⁶ ₋₂
BGR10TZ, BSR10TZ	48	12.5	12.5	35 ⁺⁶ ₋₂
BGR15TZ, BSR15TZ	63.5			32.5 ⁺⁴ ₋₀
BGR20TZ, BSR20TZ				47.5 ⁺⁴ ₋₀

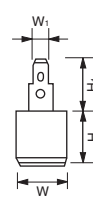
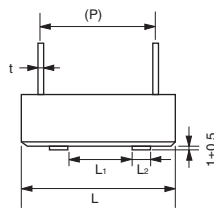
rectangular type wirewound resistors with glass core
 rectangular type wirewound resistors with ceramic core
 rectangular type metal oxide film resistors

dimensions and construction (continued)

H Style

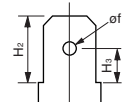
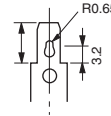


Q Style



(15W, 20W)

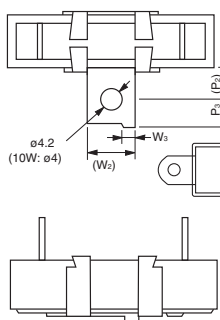
(5W, 7W, 10W, 30W, 40W)



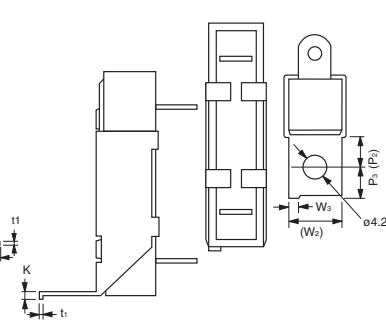
Type	Dimensions millimeters											
	L	L ₁	L ₂	W	W ₁	H	H ₁	H ₂	(H ₃)	(P)	t	(øf)
BGR10TH, BSR10TH	48±1.5	25±1.0	4.5	9.5±1.0	5.0	9.5±1.0	7.0±1.0	—	—	35	0.4	2.0
BGR15TH, BSR15TH			7.0	12.5±1.2	6.0	12.5±1.2	8.5±1.0			34.5		
BGR20TH, BSR20TH	63.5±2	40±1.2	10.0	19.0±1.5	7.5	19.0±1.5	11.0±1.0	—	—	49.5	0.5	3.0
BGR30TH	75±2.5									56		
BGR40TH	90±2.5	—	—	9.5±1.0	4.75	9.5±1.0	10.5±1.0	6.5	3.3	71	0.5	2.2
BGR5TQ, BSR5TQ	27±1.5									15.0		
BGR7TQ, BSR7TQ	35±1.5	25±1.0	4.5	12.5±1.2	4.75	12.5±1.2	13.0±1.0	6.35	—	22.5	0.5	—
BGR10TQ, BSR10TQ	48±1.5									35.0		
BGR15TQ, BSR15TQ	63.5±2	7.0	7.0	12.5±1.2	4.75	12.5±1.2	13.0±1.0	6.35	—	34.5	0.5	—
BGR20TQ, BSR20TQ										49.5		
BGR30TQ	75±2.5	40±1.2	10.0	19.0±1.5	6.3	19.0±1.5	12.0±1.0	8.0	4.1	56	0.8	1.7
BGR40TQ	90±2.5									71		

Parenthesized dimensions are for reference.

HA, QA Style



HB, QB Style



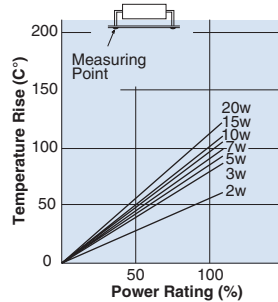
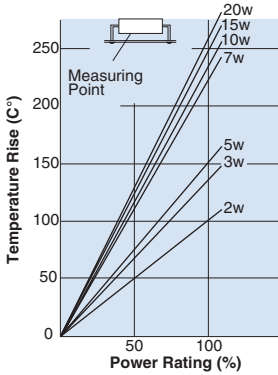
Type	Dimensions millimeters					
	(P ₂)	P ₃	(W ₂)	W ₃	K	t ₁
BGR10THA, BSR10THA, BGR10TQA, BSR10TQA	8.0	6.0±1.0	12.0	3.0±0.3	2.8±0.3	0.6
BGR15THA, BSR15THA, BGR15TQA, BSR15THB, BSR15THB, BGR15TQB, BSR15TQA, BSR15TQB					3.0±0.3	0.8
BR20THA, BSR20THA, BGR20TQA BGR20THB, BSR20THB, BGR20TQB, BSR20TQA, BSR20TQB						
BGR30THA, BGR30THB, BGR30TQA, BGR30TQB	10.0	8.0±1.0	18.0	3.0±0.3	3.0±0.3	0.8
BGR40THA, BRG40THB, BGR40TQA, BGR40TQB						

Parenthesized dimensions are for reference.

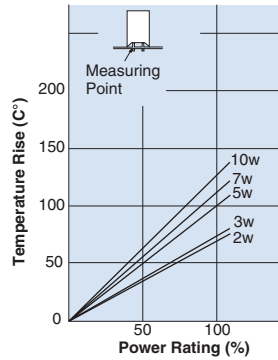
rectangular type wirewound resistors with glass core
 rectangular type wirewound resistors with ceramic core
 rectangular type metal oxide film resistors

Temperature Rise

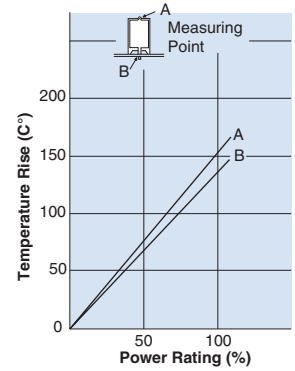
S Style



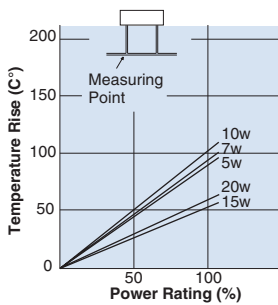
N Style



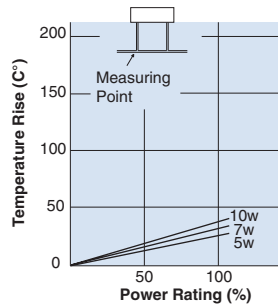
E Style



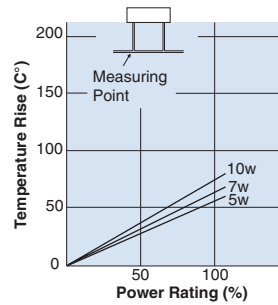
X Style



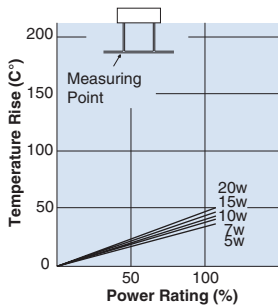
Y Style



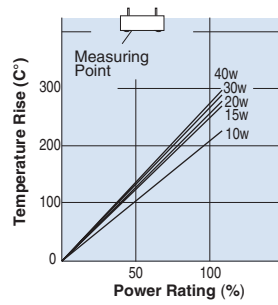
YS Style



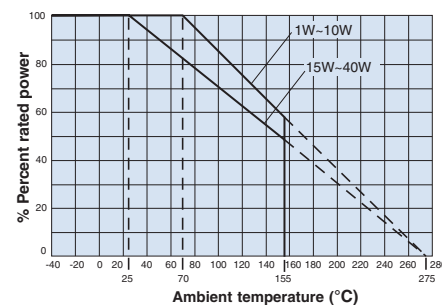
Z Style



H, Q Style



Derating Curve



environmental applications

Performance Characteristics

Parameter	Requirement $\Delta R \pm \%$		Test Method
	Limit	Typical	
Resistance	Within specified tolerance	—	25°C
T.C.R.	Within specified T.C.R.	—	+25°C/-55°C and +25°C/+125°C
Resistance to Solder Heat	1%: BWR, BSR 2%: BGR	0.8%: BWR 1.7%: BGR 0.9%: BSR	350°C \pm 10°C for 3.5 seconds
Moisture Resistance	3%: BWR, BGR 5%: BSR	2.4%: BWR 2.55%: BGR 4.5%: BSR	Power rating x 1/10, 40°C, 90 - 95% RH, 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle
Endurance @ 25°C or 70°C	3%: BWR 5%: BGR, BSR	2.4%: BWR 4.25%: BGR 4.5%: BSR	Rated voltage, 25°C or 70°C, 1000 hours, 1.5 hours ON/ 0.5 hours OFF cycle

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

6/26/20