

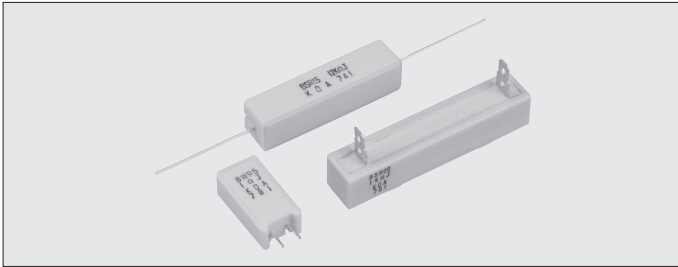
POWER TYPE



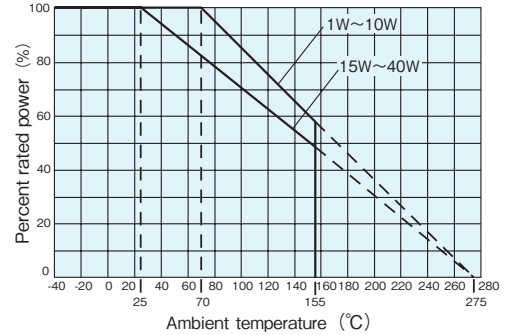
BGR ■ Rectangular Type Wirewound Resistors With Glass Core

BWR ■ Rectangular Type Wirewound Resistors With Ceramic Core

BSR ■ Rectangular Type Metal Oxide Film Resistors



Derating Curve



For resistors operated at an ambient temperature or higher, the power shall be derated in accordance with the above derating curve.

Ratings

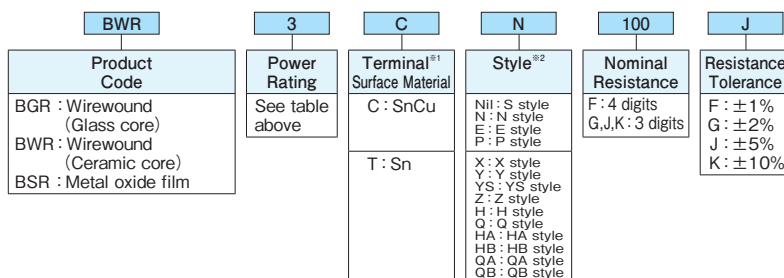
Type	Power Rating	Resistance Range (Ω) E24				Style & Weight (g/1pcs)														
		F : ±1%	G : ±2%	J : ±5%	K : ±10%	S	N	E	P	X	Y	YS	Z	H	Q	HA	HB	QA	QB	
BWR1	1W	1~56	0.22~75	0.1~75	—	1.3	—	—	—	—	—	—	—	—	—	—	—	—	—	
BWR2	2W	1~160	0.22~200	0.1~200	—	2.1	3.9	—	—	—	—	—	—	—	—	—	—	—	—	
BWR3	3W	1~300	0.22~390	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	Rated Ambient Temperature	Max. Working Voltage (V)		Max. Overload Voltage (V)		T.C.R. (×10 ⁻⁶ /K)			Operating Temp. Range
			BSR	BGR·BWR	BSR	BGR·BWR	BWR	BSR	BGR	
BWR1	1W	+70°C	—	E=√P·R	—	E=√P·R·10	±100	±300	±250	-40°C~+155°C
BWR2	2W		250							
BWR3	3W		300							
BWR5	5W		350							
BWR7	7W		500							
BWR10	10W		700							
BWR15	15W		700							
BWR20	20W	+25°C	750	—	—	—	—	—	—	
BGR30	30W		—							
BGR40	40W		—							

Rated voltage = √Power Rating × Resistance value or Max. working voltage, whichever is lower.
Please consult with us in advance about custom-made products.

Type Designation

Example



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

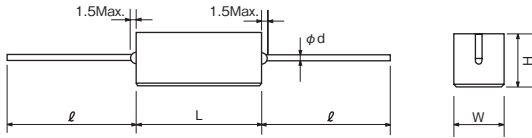
High Power Type Resistors

Features

- High-power resistor.
- Using flame-retardant/insulated ceramic case.
- Excellent in anti-pulse and inrush current.
- Products meet EU-RoHS requirements.

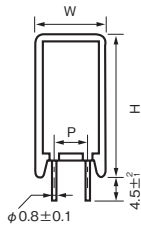
Dimensions

① S Style

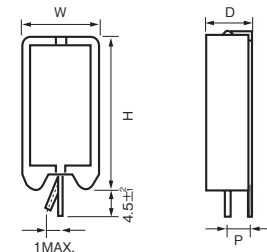


Type	Dimensions (mm)				
	L	W	H	$\ell \pm 3$	$d \pm 0.1$
BWR1C	13±1.0	5.5±1.0	5.5±1.0	30	0.6
BWR2C · BSR2C	18±1.5	6.3±1.0	6.3±1.0		
BWR3C · BSR3C	22±1.5	8.0±1.0	8.0±1.0	35	0.8
BWR5C · BSR5C		9.5±1.0	9.5±1.0		
BWR7C · BSR7C	48±1.5				
BWR10C · BSR10C					
BWR15C · BSR15C	63.5±1.5	12.5±1.5	12.5±1.5		

② N Style

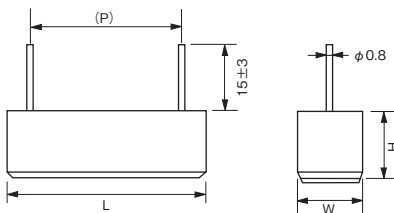


③ E Style



Type	Dimensions (mm)			
	W±1	D±1	H±1.5	P±0.2
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

④ P Style

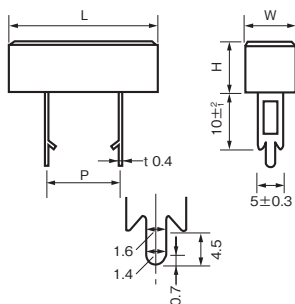


Type	Dimensions (mm)			
	L	W±1.5	H±1.5	(P)
BWR5CP	23±1.5	9.5	9.5	20

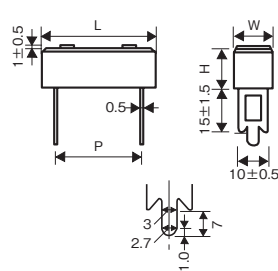
Parenthesized dimensions are for reference.
Please refrain from using these parts as a board-insertion type.
Only soldering doesn't have enough joint strength.
Additional fixation is recommended.

⑤ X Style

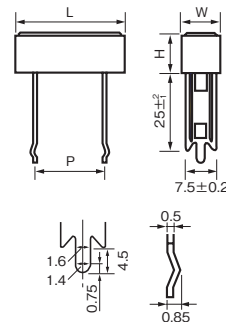
(5W~10W)



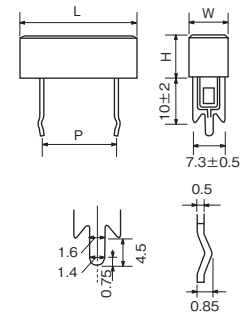
(15W, 20W)



⑥ Y Style



⑦ YS Style



Type	Dimensions (mm)			
	L±1.5	W	H±1.0	P±1.5
BGR5TX · BSR5TX · BGR5TY · BSR5TY · BGR5TYS · BSR5TYS	27	9.5±1	9.5	15
BGR7TX · BSR7TX · BGR7TY · BSR7TY · BGR7TYS · BSR7TYS	35			22.5
BGR10TX · BSR10TX · BGR10TY · BSR10TY · BGR10TYS · BSR10TYS	48	12.5±1.5	12.5	35
BGR15TX · BSR15TX				32.5
BGR20TX · BSR20TX	63.5			47.5

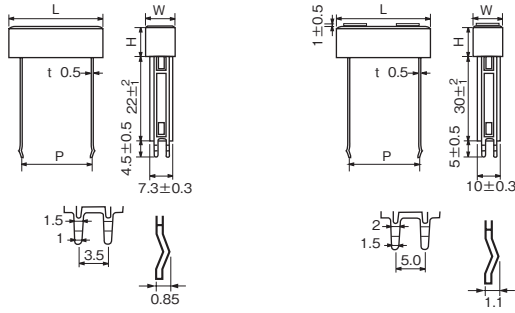
POWER TYPE

■ Dimensions

⑧ Z Style

(5W~10W)

(15W, 20W)



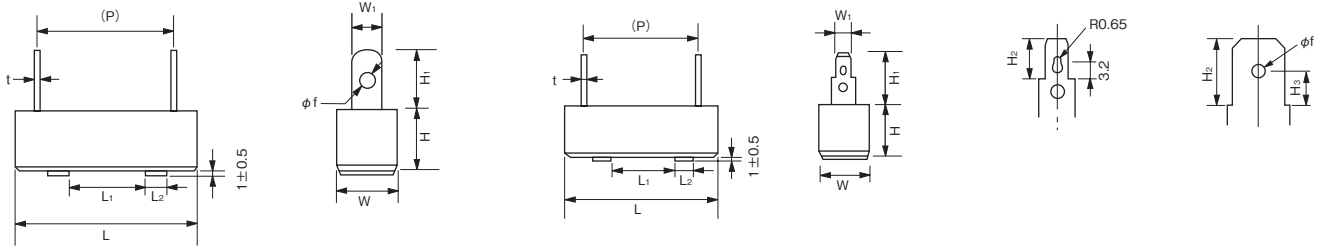
Type	Dimensions (mm)			
	L±1.5	W±1.0	H	P
BGR5TZ·BSR5TZ	27	9.5	9.5±1	15 ^{+0.6} _{-0.2}
BGR7TZ·BSR7TZ	35			22.5 ^{+0.6} _{-0.2}
BGR10TZ·BSR10TZ	48			35 ^{+0.6} _{-0.2}
BGR15TZ·BSR15TZ	63.5	12.5	12.5±1.5	32.5 ^{+0.4} _{-0.0}
BGR20TZ·BSR20TZ				47.5 ^{+0.4} _{-0.0}

⑨ H Style

⑩ Q Style

(15W, 20W)

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

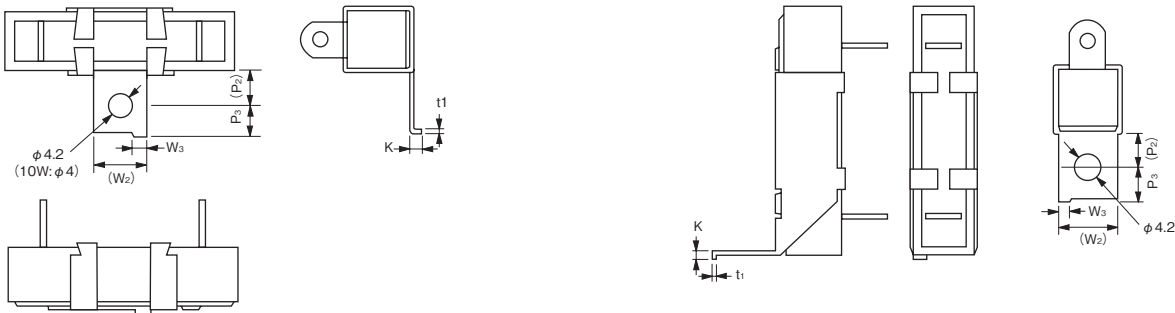


Type	Dimensions (mm)												
	L	L ₁	L ₂	W	W ₁	H	H ₁ ±1.0	H ₂	(H ₃)	(P)	t	(φf)	
BGR10TH·BSR10TH	48±1.5	25±1.0	4.5	9.5±1.0	5.0	9.5±1.0	7.0	—	—	35	0.4	2.0	
BGR15TH·BSR15TH			7.0	12.5±1.2	6.0	12.5±1.5	8.5						
BGR20TH·BSR20TH			7.0	12.5±1.2	6.0	12.5±1.5	8.5						
BGR30TH	75±2.5	40±1.2	10.0	19.0±1.5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

Parenthesized dimensions are for reference.

⑪ HA · QA Style

⑫ HB · QB Style

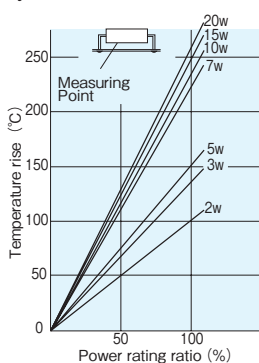


Type	Dimensions (mm)					
	(P ₂)	P ₂ ±1	(W ₂)	W ₃ ±0.3	K±0.3	t _i
BGR10THA·BSR10THA·BGR10TQA·BSR10TQA	8.0	6	12	3.0	2.8	0.6
BGR15THA·BSR15THA·BGR15TQA·BSR15TQA						0.8
BGR15THB·BSR15THB·BGR15TQB·BSR15TQB						
BGR20THA·BSR20THA·BGR20TQA·BSR20TQA	10	8	18	3.0	3.0	0.8
BGR20THB·BSR20THB·BGR20TQB·BSR20TQB						
BGR30THA·BGR30TQA						
BGR30THB·BGR30TQB						
BGR40THA·BGR40TQA						
BGR40THB·BGR40TQB						

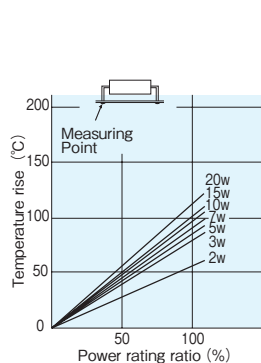
Parenthesized dimensions are for reference.

Temperature Rise (Ref.)

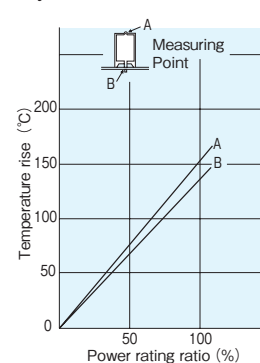
① S Style



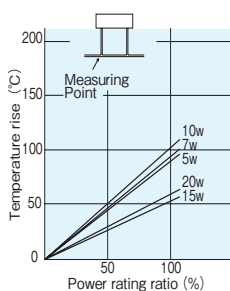
② N Style



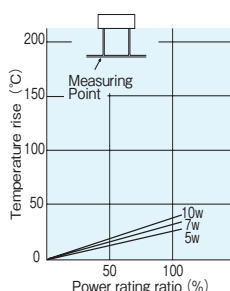
③ E Style



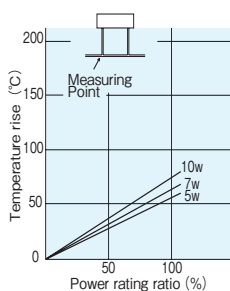
④ X Style



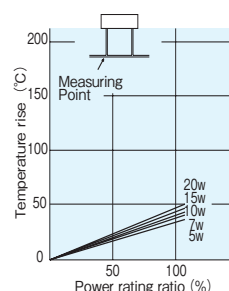
⑤ Y Style



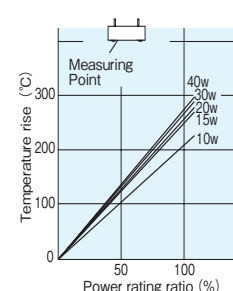
⑥ YS Style



⑦ Z Style



⑧ H, Q Style



Performance

Test Items	Performance Requirements $\Delta R \pm \%$		Test Methods
	Limit	Typical	
Resistance	Within specified tolerance	—	25°C
T.C.R.	Within specified T.C.R.	—	+25°C/+125°C
Resistance to soldering heat	1 : BWR, BSR 2 : BGR	0.8 : BWR 1.7 : BGR 0.9 : BSR	350°C ± 10°C, 3.5s 260°C ± 5°C, 10s
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 1.5h ON/0.5h OFF cycle
Endurance at 25°C or 70°C	3 : BWR 5 : BGR, BSR	2.4 : BWR 4.25 : BGR 4.5 : BSR	25°C or 70°C, rated voltage, 1000h, 1.5h ON/0.5h OFF cycle

Precautions for Use

- The products attached by ionic impurities negatively affects their moisture resistance, corrosion resistance, etc. Please pay careful attention to products handling as well as storage, mounting conditions and environment.
- When the pulse including surge is impressed to the resistor, it may cause disconnection. Please confirm us about the conditions for use in advance.
- 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.