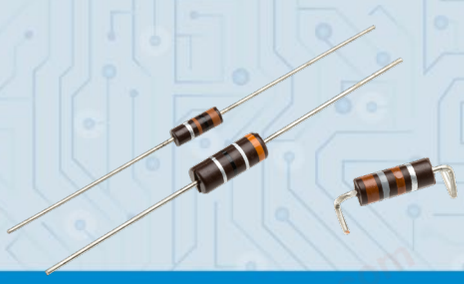
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BWS Series Datasheet

Insulated Wirewound Resistors | Axial and SMD Version
Fiberglass core | Bakelite Moulded case

ORDERING CODE - Example

New SAP Part Nr.:

BWS	110	K	T	-	73-	150R	AA
Serie	* Power rating	Tol.	Pack-Code	TCR	Forming type	R Value	Special
		J = ±5% **K** = ±10%	**T** = Tape (ammo pack)	- Base on spec.	**73-** Inner Taping dimension **ZB-** Z version		**AA** = Standard

Historical VTM Part Nr.:

BW234 – 0	10	T	150R
Type	Tol.	Pack-Code	R Value
	±10% = K	T = Tape (ammo pack)	

RZB4	6720	K	K	-	13	150R
Type	Size	Tol.	K = Blister tape reel	TC	Reel diam.	R Value

APPLICATIONS

- Automotive
- Industrial
- Power & Energy
- Consumer & Electronics
- Computer & Peripherals

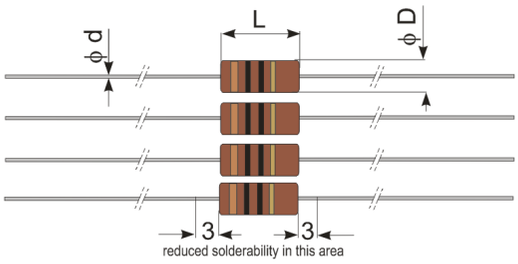
FEATURES

- Precision Type
- "Z" preforming ; Other preforming available
- High insulation voltage
- RoHs & REACH Compliant

ELECTRICAL SPECIFICATIONS

Type			BWS110	BWS210
Historical Part Number		AXIAL	BW234-0	BW235-0
		SMD	RZB4	RZB5
Nominal Power Rating	* P_{25}	[W]	1,1	2,1
	P_{70}		0,75	1,5
Resistance Range		[Ω]	0R1 … 1K2	0R1 … 2K4
			(Other values upon request)	
E-Series (preferred)			E24 (5%) ; E12 (10%)	
Tolerances		±[%]	J = 5% ; K = 10%	
Temperature Coefficient		$\pm[10^{-6*}K^{-1}]$	Depends on the value, please check the table below	
Working Temperature Range		[ºC]	-55 … +175	
Thermal Resistance		$[KW^{-1}]$	140	80
Insulation Resistance IEC60115-1 clause 4.6		[MΩ]	$> 10^4$	
Max. Working Voltage		$[V]_{RMS}$	$\sqrt{P_{70} \times R}$	
Dielectric Withstanding Voltage IEC115-1 clause 4.7 (1[min])		$[V]_{RMS}$	700	1000

DIMENSIONS [mm]



Type	*Historical P/N:*	L ±0,2	Ø D ±0,2	Ø d ±0,02
BWS110	BW234 - 0	9,9	3,6	0,8
BWS210	BW235 - 0	14,3	5,7	1,0 *

* Special lead diameter 0,8mm available

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BWS Series Datasheet

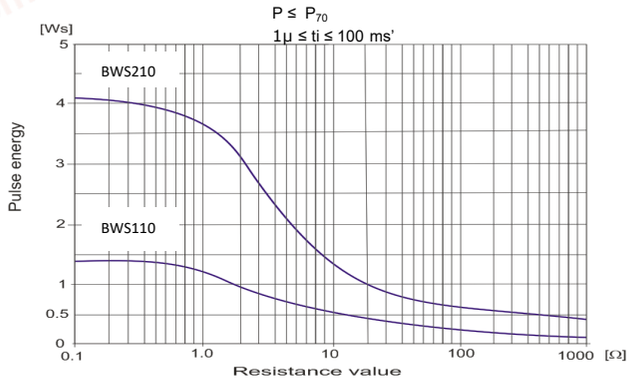
PERFORMANCE DATA

Type		BWS110	BWS210
Historical Part Number	AXIAL	BW234-0	BW235-0
	SMD	RZB4	RZB5
Derating Linear	[ºC]	70…175 (0W)	
Climatic Category		55/175/56	
Failure Rate *(Total, ϑ_0, max, 60[%] cont. lev.)*	[10^{-9} h^{-1}]	appr. 100 depends on value	
Endurance *IEC60115-1 clause 4.25* *(P_{70} @ 70[°C], 1000[h])*	±[%]	5,0	
Damp Heat, Steady State *IEC60115-1 clause 4.24* *(40[°C], 93[% r.h.], 56[d])*	±[%]	2,0	
Climatic Sequence *IEC60115-1 clause 4.23*	±[%]	2,0	
Resistance to Soldering Heat *IEC60115-1 clause 4.18* *($260^{\pm5}$[°C], $10^{\pm1}$[s])*	±[%]	0,2	
Surge Test *IEC61000-4-5*	±[%]	2,0	
Terminal Strength	±[%]	1,0	
Terminal Tensile Strength	[N]	40	
Solderability *IEC60068-2-20* *($245^{\pm5}$[ºC] $3^{\pm0,5}$[s])*		Solder bath method (> 95% coverage)	
Marking *IEC60062*		Color code	

TEMPERATURE COEFFICIENT

New P/Nr. Type	Historical P/Nr:	Temperature Coefficient (ppm K-1)					
		TC ±1000	TC ±800	TC ±600	TC ±400	TC ±300	TC ±150
BWS110	BW234 – 0	———	———	0R1 … 0R15	———	0R16 … 0R62	0R68 … 1K2
BWS210	BW235 – 0	0R1 … 0R16	0R18 … 0R68	———	0R75 … 2K4	———	———

PULSE PERFORMANCE



The curves are expressing the range, where no substantial effects are caused of recurrent pulses.
A single pulse with a 3 – 5 times higher value will cause the destruction of the resistor

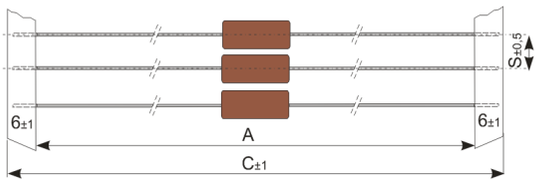
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BWS Series Datasheet

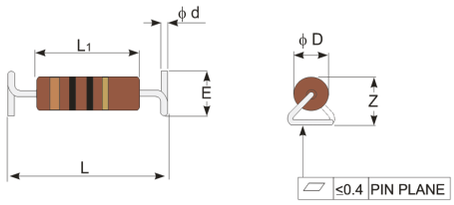
PACKAGING

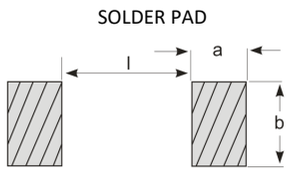
The standard packaging for BWS in axial type is taped, dimensions below.



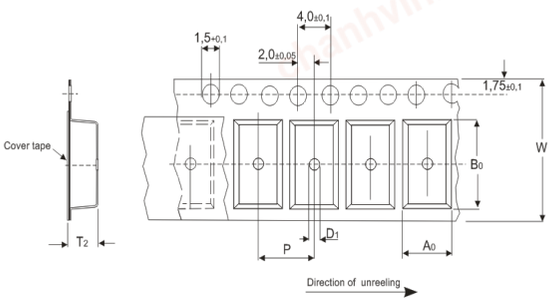
Type	Historical P/N:	Pack Code	Pieces	Forming Type (Inner Taping dim.)	A	C	S
BWS110	BW234 - 0	T = Taped Ammo pack	1000	73-	73	85	5
BWS210	BW235 - 0		1000		73	85	10

SMD LEAD CONFIGURATIONS

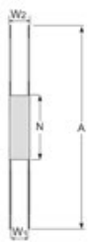


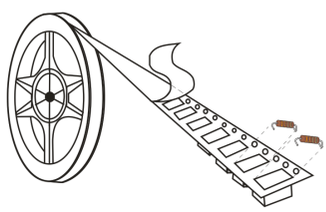


Type	Historical P/N	Size	L	L_1 ±0,2	Ø D ±0,2	Ø d ±0,02	E	Z max	l	a	b
BWS110	RZB4	6720	17,0±1,0	9,9	3,6	0,8	5,0±0,5	7,5	14	10	10
BWS210	RZB5	8424	20,9±1,0	14,3	5,7	1,0		8,0	16		









Type	A0	B0	W	D1	P	T2
BWS110	5,7	16,7	24	2,0	8	7,6
BWS210	6,0	21,4	32	2,0	12	8,1

Type	W1	W2	N	A
BWS110	25,4	29,5	90	330
BWS210	33,4	37,4	100	380

Type	Packaging	Pieces
BWS110	13(inch) Blister tape	1000
BWS210	15(inch) Blister tape	

Ordering Code for SMD :

BWS	110	J	K	-	ZB-	150R	AA
Serie	* Power rating	Tol.	Pack-Code	TCR	Forming type	R Value	Special
		J = ±5% **K** = ±10%	**K** = Blister Tape Reel	- Base on spec.	**ZB-** Z version		**AA** = Standard

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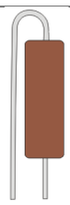
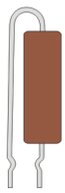
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BWS Series Datasheet

ALTERNATIVE LEAD CONFIGURATIONS

This type BWS is also available in a different pre-forming, as shown below, other's upon request.

THOUGH HOLE VERSION

			
Axial Goal Post (AG-)	Axial Goal Post Kink (AK-)	Radial (RD-)	Radial 2 Kink (RK-)