APPROVAL SHEET

SBN SERIES

Alloy Shunt Resistors

Version	Date	Description of amendment	Draft	Checked
A1.0	01-Mar-2022	First edition	邹文鉴	胡紫阳
A1.1	15-May-2025	Modified the product size diagram, technical parameters, durability testing, and tape packaging, and added product storage information.	江志俊	邓小辉

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1.Product Description

Product name:SBN series

Description:SBN series Alloy Shunt Resistor provide precise current sensing with low TCR and high power, ideal for automotive and industrial applications.

1.1 Part Number Explanation

The part number of the high power precision resistor is identified by the type name, Element Material, Other,tolerance,and resistance value.

Example: SBN-K-15F-t

Type	Element Material	Resistance Value	Tolerance	Size
SBN	K=Karma M=Manganin F=FeCrAl	15 Unit：mΩ	F=±1% G=±2% J=±5%	=4312 t=4320

(1) **Type name:** SBN series

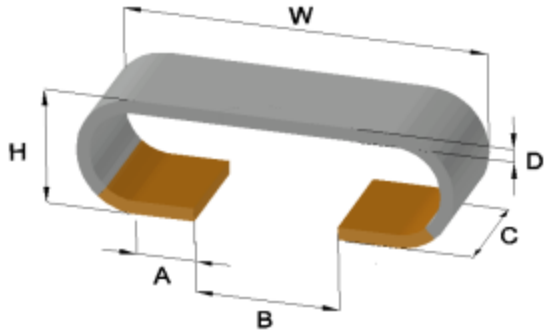
(2) **Element Material:**K=Karma;M=Manganin;F=FeCrAl

(3) **Resistance Value:**15

(4) **Tolerance：**F=±1%;G=±2%;J=±5%

(5) **Size:**=4312;t=4320

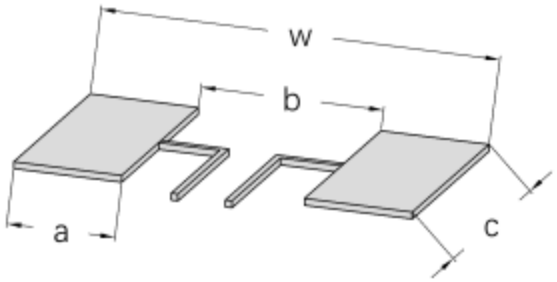
1.2 Products Dimension



(Unit： mm)

Type	Size	Resistor (mΩ)	A (mm)	B (mm)	C (mm)	D (mm)	H (mm)	W (mm)
SBN-K/M/F Series	4312	2~50	2.8±0.3	4.2±0.5	3.1±0.3	0.12~0.86	2.7-4.0	11±0.5
	4320	1~25			6.1±0.4	0.14~0.67		

1.3 Pcb-layout(Reflow-soldering)



Solder Pad Type	Size	Resistor (mΩ)	w (mm)	c (mm)	a (mm)	b (mm)
SBN-K/M/F Series	4312	2-50	13.2±0.3	3.6+0.2/0	5±0.1	3.2±0.1
	4320	1-25		6.5+0.2/0		

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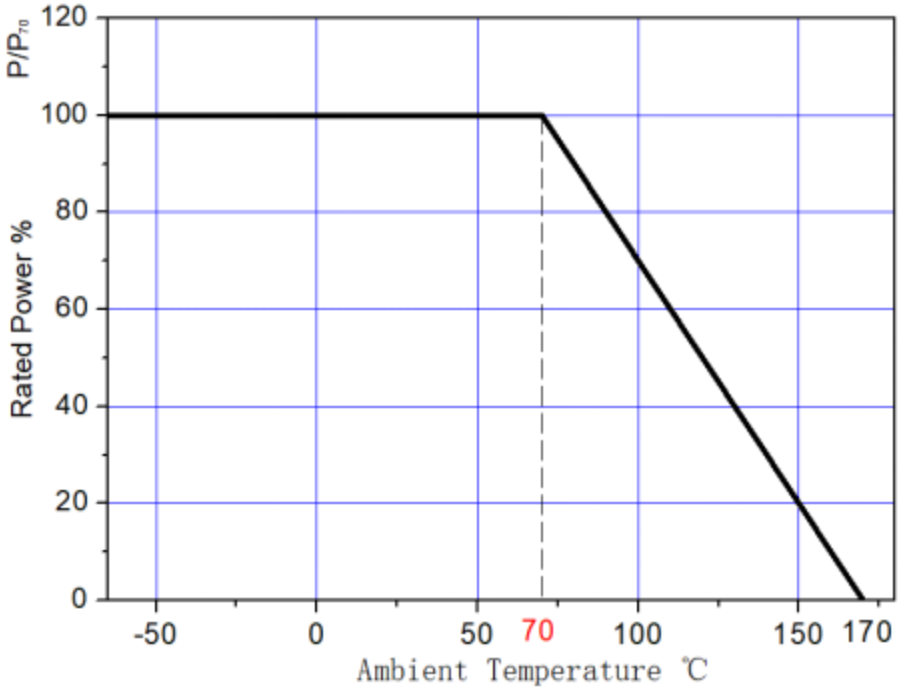
2. Technical Data

Size	Element Material	Resistance (mΩ)	D (mm)	TCR (ppm/℃)	P70 °C (W)
4312	F	20	0.33	±40	2
	M	2	0.59	±50	3
			0.86	±70	
		3	0.39	±50	
		4	0.51	±50	2
		5	0.39		3
			0.4		
		6	0.28		
		8	0.25		
		9	0.2	±70	
			0.22	±50	
	K	10	0.62	±40	
		12	0.5	±50	
		13	0.47	±40	
		15	0.4		
				±50	2
		16	0.38	±40	4
		17	0.35		2
		20	0.3		
		30	0.2		
		40	0.15		
		50	0.12		

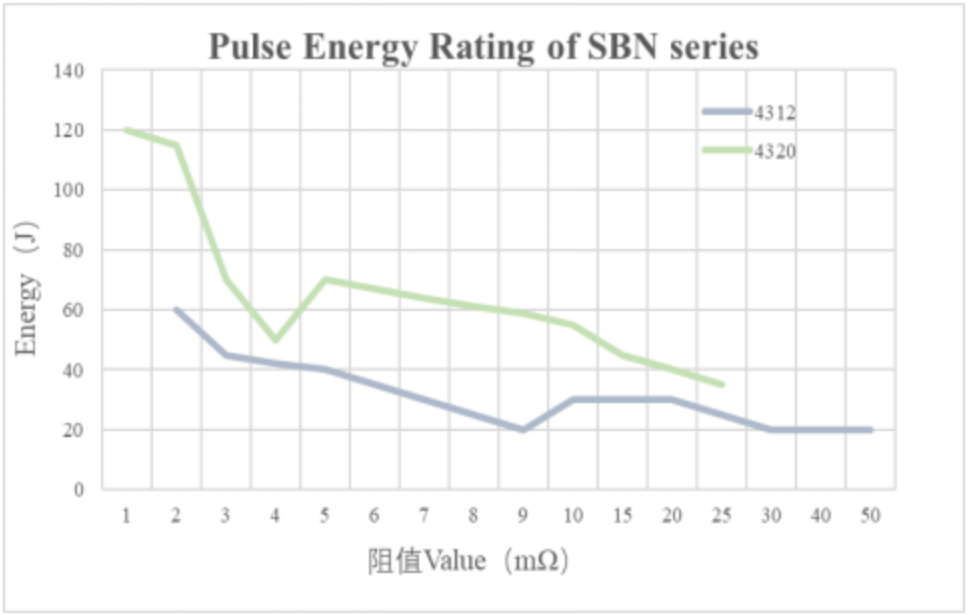
4320	F	5	0.67		5
		10	0.33		
		13	0.26		
		15	0.23		
		20	0.17		
	M	1	0.35	±70	
			0.37	±50	
		2	0.51		
		3	0.34		
		3.5	0.3		
		4	0.27		7
		5	0.2		5
4320	K	5	0.62	±40	5
		5.5	0.54	±50	3
		6	0.5		5
		7	0.43		
		8	0.38		
		10	0.3	±40	
		15	0.2		
		16			
		20	0.14	±50	
		25	0.15	±40	

*TCR（ppm/℃）： Test conditions at 20℃~120℃.

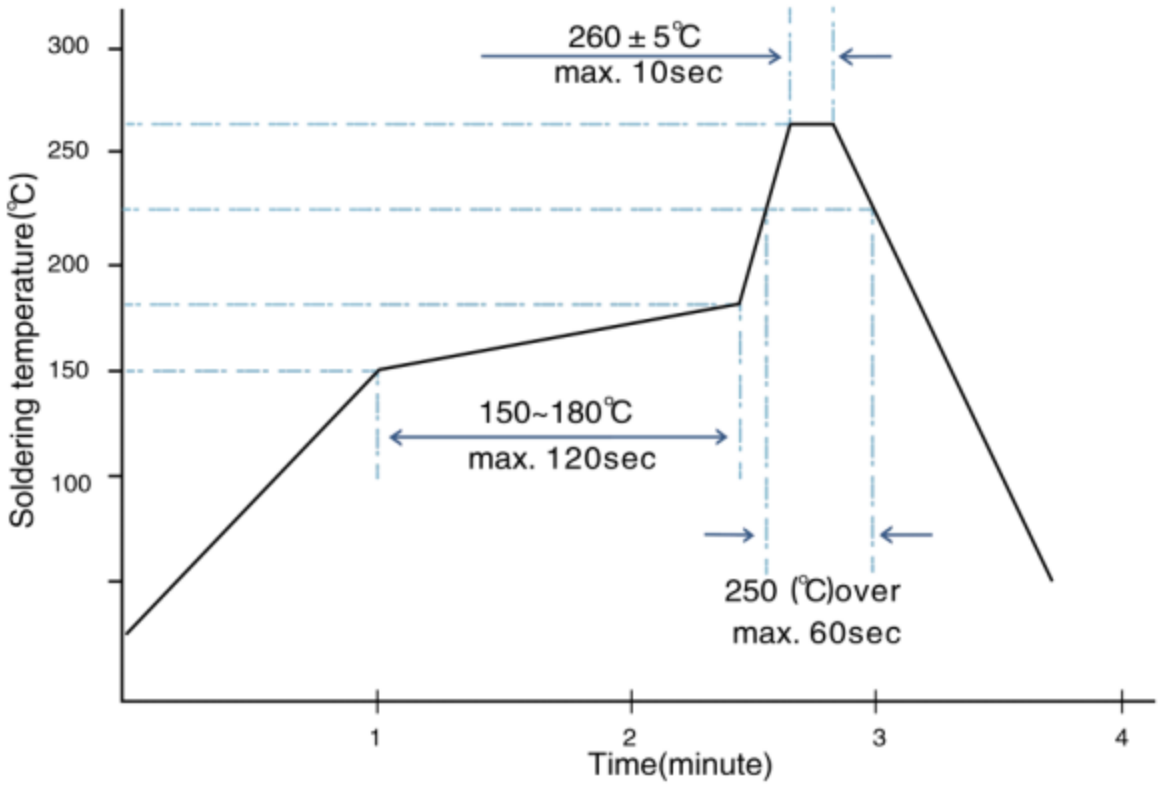
3. Power Derating



4.Pulse power curve



5.A soldering temperature profile is recommended



6. Endurance Test

Iterms	Additional Requirements	Reference	Limits
Temperature Cycling	1000 Cycles(-55℃ to +150℃)	JESD22 Method JA-104	±0.5%

High Temperature Exposure	1000hrs.@T=170℃.Unpowered.	MIL-STD-202 Method 108	±0.5%
Biased Humidity	1000hrs 85℃/85%RH。 Note:Specified conditions:10% of operating power.	MIL-STD-202 Method 103	±0.5%
Operational Life	1000hrs at rated power,125℃,1.5hrs"ON",0.5hrs"OFF"	MIL-STD-202 Method 108	±0.5%
Solderability	245℃±5℃,5s±0.5s	MIL-STD-202 Method 208H	95% Coverage Minimum
Resistance to Soldering Heat	250℃± 5℃,30s± 5s	MIL-STD-202 Method 210	±0.5%
Vibration	20 min.(5 g's) , test from10Hz-2000 Hz, 12 cycles each of 3 orientations .	MIL-STD-202 Method 204	±0.5%
Low Temperature Exposure	-55℃±2℃，1000hrs	/	±0.5%

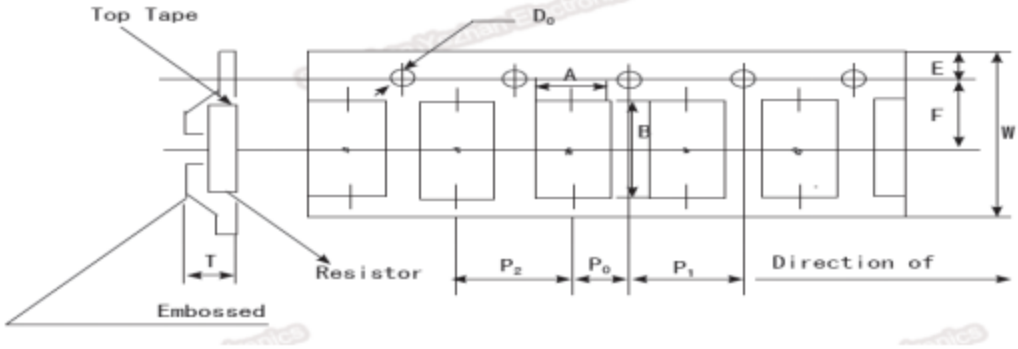
7.Marking

Mark	Explanation

R001 F	R001：1mΩ (Value 阻值) F：±1% (Tolerance 精度)

8.Packing

Embossed plastic Tape Specifications Unit/mm



Size	Resistance Alloy	Resistance Range (mΩ)	A± 0.1	B± 0.1	W± 0.3	E± 0.1	F± 0.1	P0± 0.1	P1± 0.1	P2± 0.1	D0± 0.1	T± 0.1	Quantity (pcs)
4312	F	20	3.7	11.3	24	1.75	11.5	2	4	8	1.50	3.7	2000
	M	2	3.7	11.3	24	1.75	11.5	2	4	8	1.50	3.7	2000
		3	3.7	11.3	24	1.75	11.5	2	4	8	1.50	3.7	2000
		4	3.7	11.3	24	1.75	11.5	2	4	8	1.50	3.7	2000

		5	3.7	11.3	24	1.75	11.5	2	4	8	1.50	3.7	2000
		6	3.7	11.3	24	1.75	11.5	2	4	8	1.50	3.7	2000
		8	3.7	11.3	24	1.75	11.5	2	4	8	1.50	3.7	2000
		9	3.7	11.3	24	1.75	11.5	2	4	8	1.50	3.7	2000
	K	10	3.7	11.3	24	1.75	11.5	2	4	8	1.50	3.7	2000
		12	3.7	11.3	24	1.75	11.5	2	4	8	1.50	3.7	2000
4312	K	13	3.7	11.3	24	1.75	11.5	2	4	8	1.50	3.7	2000
		15	3.7	11.3	24	1.75	11.5	2	4	8	1.50	3.7	2000
		16	3.7	11.3	24	1.75	11.5	2	4	8	1.50	3.7	2000
		17	3.7	11.3	24	1.75	11.5	2	4	8	1.50	3.7	2000
		20	3.7	11.3	24	1.75	11.5	2	4	8	1.50	3.7	2000
		30	3.7	11.3	24	1.75	11.5	2	4	8	1.50	3.7	2000
		40	3.7	11.3	24	1.75	11.5	2	4	8	1.50	3.7	2000
		50	3.7	11.3	24	1.75	11.5	2	4	8	1.50	3.7	2000

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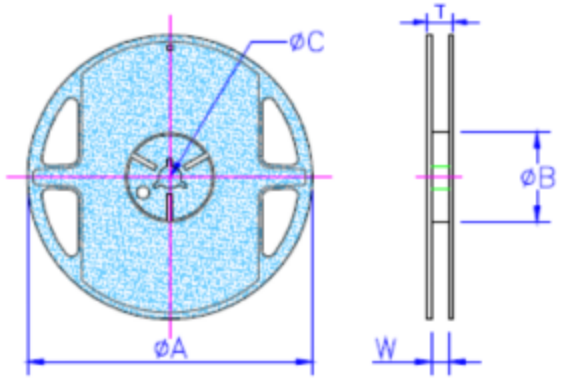
4320	F	5	6.5	11.5	24	1.75	11.5	2	4	12	1.5	4.0	1000
		10	6.5	11.5	24	1.75	11.5	2	4	12	1.5	4.0	1000
		13	6.5	11.5	24	1.75	11.5	2	4	12	1.5	4.0	1000
		15	6.5	11.5	24	1.75	11.5	2	4	12	1.5	4.0	1000
		20	6.5	11.5	24	1.75	11.5	2	4	12	1.5	4.0	1000
	M	1	6.5	11.5	24	1.75	11.5	2	4	12	1.5	4.0	1000
		2	6.5	11.5	24	1.75	11.5	2	4	12	1.5	4.0	1000
		3	6.5	11.5	24	1.75	11.5	2	4	12	1.5	4.0	1000
		3.5	6.5	11.5	24	1.75	11.5	2	4	12	1.5	4.0	1000
		4	6.5	11.5	24	1.75	11.5	2	4	12	1.5	4.0	1000
4320	M	5	6.5	11.5	24	1.75	11.5	2	4	12	1.5	4.0	1000
	K		6.5	11.5	24	1.75	11.5	2	4	12	1.5	4.0	1000
		5	6.5	11.5	24	1.75	11.5	2	4	12	1.5	4.0	1000
		5.5	6.5	11.5	24	1.75	11.5	2	4	12	1.5	4.0	1000

		6	6.5	11.5	24	1.75	11.5	2	4	12	1.5	4.0	1000
		7	6.5	11.5	24	1.75	11.5	2	4	12	1.5	4.0	1000
		8	6.5	11.5	24	1.75	11.5	2	4	12	1.5	4.0	1000
		10	6.5	11.5	24	1.75	11.5	2	4	12	1.5	4.0	1000
		15	6.5	11.5	24	1.75	11.5	2	4	12	1.5	4.0	1000
		16	6.5	11.5	24	1.75	11.5	2	4	12	1.5	4.0	1000
		20	6.5	11.5	24	1.75	11.5	2	4	12	1.5	4.0	1000
		25	6.5	11.5	24	1.75	11.5	2	4	12	1.5	4.0	1000



ize	φA	φB	φC	W	T
4312/4320	330	100	13	24.5	29

9. Storage of information

1. Storage conditions：

temperature：5℃-35℃

humidity level：≤65%RH

2. storage duration： 730天

This document is a product specification. Contents are subject to change without notice.

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