APPROVAL SHEET

SBB SERIES

4-Terminal Shunt Resistor

Version	Date	Description of amendment	Draft	Checked
A1.0	01-Mar-2022	First edition	邹文鉴	胡紫阳
A1.1	30-Oct-2024	Updated descriptions in the durability test. Modified tape information on product packaging.	林明月	邓小辉

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1.Product Description

Product name:SBB series

Description:SBB series 4-Terminal 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, tolerance,Other and resistance value.

Example: SBB-K-1F-y

Type	Element Material	Resistance Value	Tolerance		Other
SBB	M=Manganin K=Karma	1 Unit：mΩ	D=±0.5% F=±1% G=±2% J=±5%	y=Out（外折） n=In（外折）	

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

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

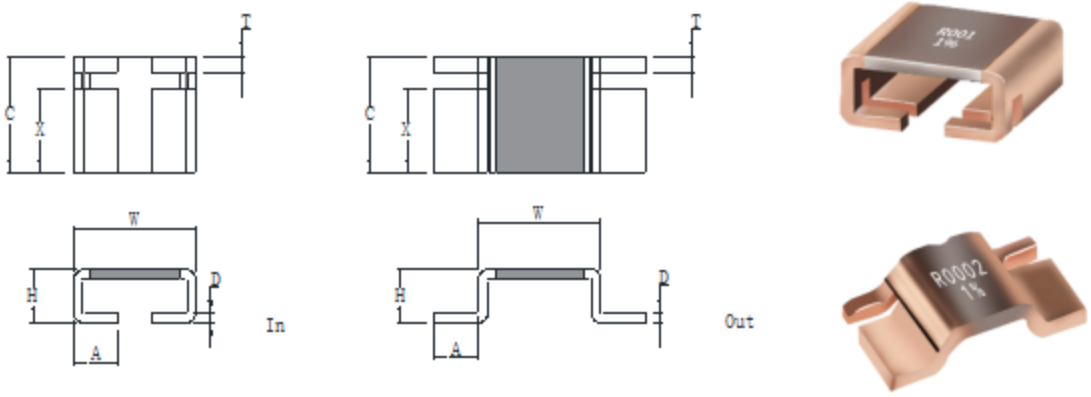
(3) **Resistance:**1

(4) **Tolerance**：D=±0.5%;F=±1%;G=±2%;J=±5%

(5) y=Out（外折）；n=In（内折）

(6) **Other:**

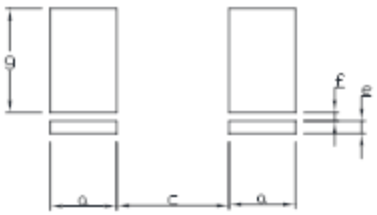
1.2 Products Dimension



Type	Size	W (mm)	A (mm)	C (mm)	X (mm)	T (mm)	H (mm)	Value (mΩ)
SBB-M/K	In	6.9±0.3	2.5±0.2	6.6±0.3	4.8±0.4	0.9±0.1	3±0.5	0.2-5
SBB-M/K	Out							

1.3 PCB-layout (Reflow-soldering)

Solder pad type	a	c	e	f	g
In	2.9	2	0.9	0.8	5.6
Out	4	5.5	0.9	0.8	5.6



2. Technical Data

Size	Element Material	Resistance (mΩ)	Rthi (℃/W)	D±0.1 (mm)	TCR (ppm/℃)	P70 °C (W)
Out	M	0.2	3	1.05	±75	5
		0.3	4	1.06	±75	10
		0.5	6	0.67	±75	8
		0.7	8	0.48	±75	7
		1	13	0.33	±75	6
	K	1.5	13	0.67	±50	5
		2	16	0.47	±50	5
		3	19	0.34	±50	5
		4	-	0.4	±50	4
		5	-	0.4	±50	3
In	M	0.3	4	0.40	±75	10
		0.5	5	0.67	±75	8
		1	10	0.33	±75	6
	K	2	14	0.50	±50	5
		3	19	0.34	±50	5
		4	-	0.4	±50	4
		5	-	0.4	±50	3

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

***Note: 1.The TCR of some products can be down to 20 ppm/℃，refer to SBBP Series .**

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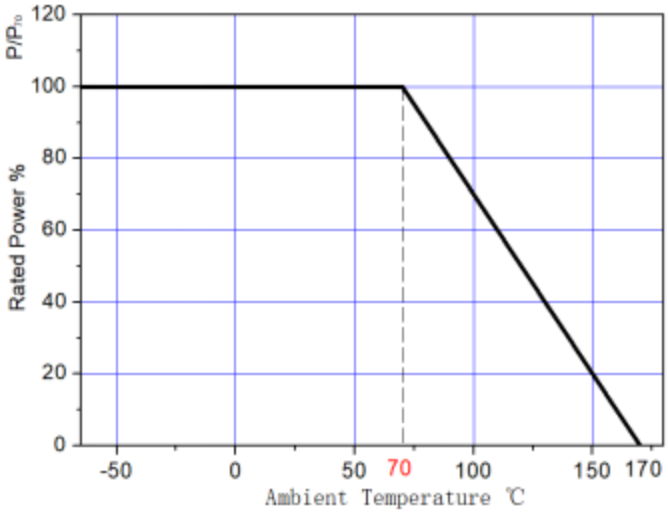
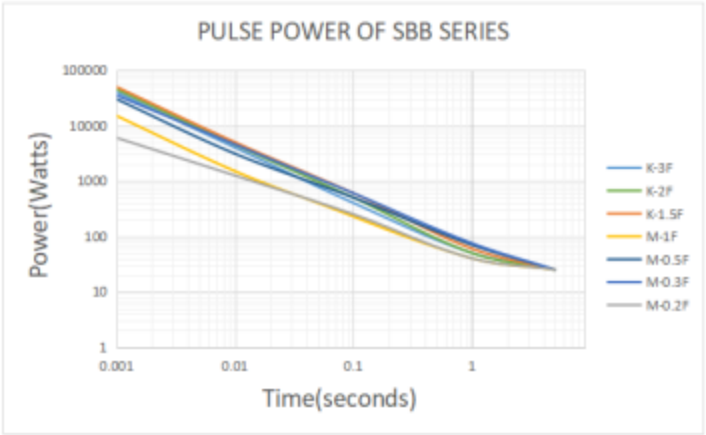
3. Power Derating



4.Pulse curve



5. Endurance Test

Iterms	Additional Requirements	Reference	Limits
Temperature Cycling	1000 Cycles(-55°C to +155°C), unpowered. Minimum dwell time 15min. at each temperature extreme.m	JESD22 Method JA-104	±0.5%

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	aximum transition time1 min. . Measurement atleast 24hoursafter tes t conclusion .		
High Temperature Exposure	1000 hrs. (T=170°C) , unpowered. Measurement at 24± 4 hoursafter test conclusion .	MIL-STD-202 Method 108	±0.5%
Biased Humidity	1000hrs. (85℃/85%RH) . Note: Specify conditions: 10% of rate power. Measurement at 24± 4 hoursafter test conclusion	MIL-STD-202Method 103	±0.5%
High Temperature Operating Life	1000 hrs.(T=125°C). Rate power was applied to the produc ts intermittently: 90 minutes ON and 3 0 minutes OFF . Measurement at 24± 4 hoursafter test conclusion .	MIL-STD-202 Method 108	±0.5%
Solderability	Weld bath temperature 245°C±5° C,duration5±0.5S .	J-STD-002C	95% Coverage Mini mum
Vibration	5 g's for 20 min, 12 cycles each of 3 o rientations. Note: Use 8"X5" PCB .031" thick 7 se cure points on one long side and 2 se cure points at corners of opposite sides. Parts mounted within 2" from any secure point. Test from 10-2000 Hz.	MIL-STD-202 Method 204	±0.5%
Resistance to Sold ering Heat	250℃±5℃ , 30s±5s	MIL-STD-202 Method 210	±0.5%
ESD	1) Direct Contact (DC): ±6kV; 2) Air Discharge (AD): ±12kV, ± 16kV, ±25kV;	AEC-Q200-002 REV-B,	±0.5%

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Mechanical Shock	1) Pulse waveform: Half-Sine pulse. 2) Accelerate peak: 100g. 3) Pulse duration: 6ms. 4) Orientation & Shock time: ±X, ±Y, ±Z; 3 times each orientation, total 18 times	MIL-STD-202H Method 213	±0.5%
Resistance to Solvents	Note: Add Aqueous wash chemical - OKEM Clean or equivalent.Do not use banned solvents .	MIL-STD-202 Method 215	There was no missing, faded, smeared, blurred, or shifted (dislodged) with the marks. There was no crack, separation, crazing, swelling, softening, degradation on the samples.
Flame Retardance	1) Test power: 100%, 115%, 130%, 150% (Rate power) ; 2) Test duration: 1h .	AEC-Q200-001	The temperature is not higher than 350 °C for more than 10 seconds, no flame, no explosion.

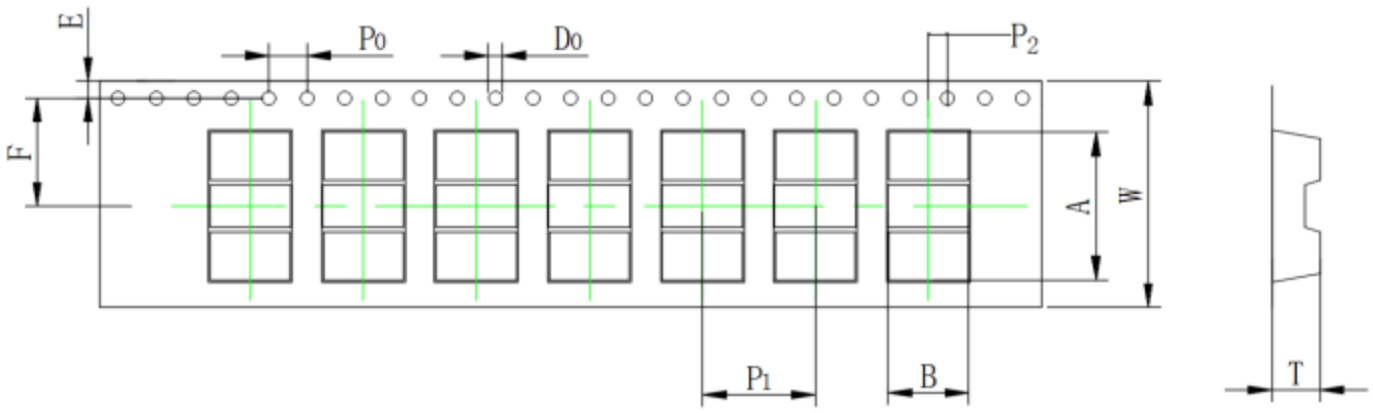
6.Marking

Mark	Explanation
R001F	R001：1mΩ (Value 阻值) F：±1% (Tolerance 精度)

R001 1%	R001：1mΩ (Value 阻值) 1%：±1% (Tolerance 精度)
0m50F	0m50：0.5mΩ (Value 阻值) F：±1% (Tolerance 精度
0m50 1%	0m50：0.5mΩ (Value 阻值) 1%：±1% (Tolerance 精度

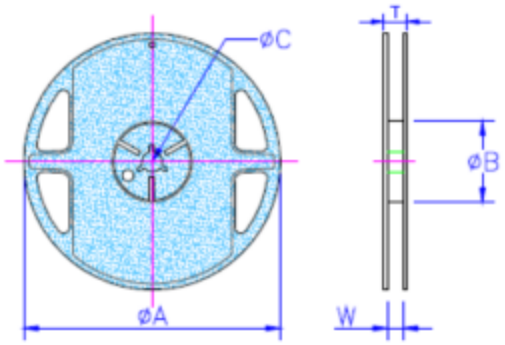
7.Packing

Embossed plastic Tape Specifications



Unit/mm

Size	A± 0.1	B± 0.1	W± 0.3	E± 0.3	F± 0.1	P0± 0.1	P1± 0.1	P2± 0.1	D0± 0.1	T±0.1	Quantity (pcs)
In	7.5	8	16	1.75	7.5	4	12	2	1.5	3.75	1000
Out	7.1	12.8	24	1.75	11.5	4	12	2	1.5	3.6	1000



Size	In	Out
ΦA	330	330
ΦB	100	100
ΦC	13	13
W	16.5	24.5
T	21	29

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

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