Alloy Shunt Resistors – ASR Series

Features

Tolerance ±5%,±2% ,±1% and ±0.5%

Operating Temperature range
-65℃~170℃

Electron beam welding

Ideal for pulse application

Low Inductance ＜3nH

RoHS Compliant

Customizable

AEC-Q200 qualified

Applications

Frequency conversion drive, servo drive system

High current battery management system

Automobile electronic control unit

automobile oil pump drive

DC/DC, DC/AC power modules

Automatic control system

Industrial instrument and equipment

Ordering information

ASR	-K	-5	-1	F	
Yezhan Type	Element Material	Dimension	Resistance Value(mΩ)	Tolerance	Other
ASR	S: CuMnSn M: Manganin K: Karma F: FeCrAl	3: 2512 5: 3920 7: 5930		J: ±5% G: ±2% F: ±1% D: ±0.5%	

Notice

Scope

This specification is available for Alloy Shunt Resistors

Standard measuring conditions

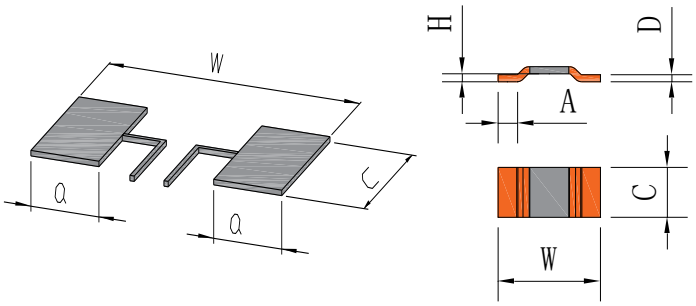
Temperature 20±2℃, Humidity 65±5%.Being no doubt about the judgment, measurements can be made within the following Temperature5~35℃, Humidity 45~85%.

PCB product dimensions and pcb - layout (Reflow - soldering)

(Unit: mm)

Type	Size	W (mm)	A (mm)	C (mm)	H (mm)	Tolerance (mΩ)
ASR-S/M/K/F-3	2512	6.3±0.2	1.2±0.2	3.1±0.3	0.5±0.1	0.2~5
ASR-S/M/K/F-5	3920	10.0±0.2	2.2±0.2	5.1±0.4		0.2~5
ASR-S/M/K/F-7	5930	15.0±0.3	4.2±0.3	7.6±0.4		0.1~3

Solder pad type	w	c	a
ASR-S/M/K/F-3	7	3.4	1.8
ASR-S/M/K/F-5	11	6.2	2.7
ASR-S/M/K/F-7	16	8.75	5.2



Size	Element Material	Resistance (mΩ)	Rthi (℃/W)	D±0.1 (mm)	TCR (ppm/℃)	P70 °C (W)
2512	S	0.2	3	1.4	±175	6
	M	0. 3	5	1.5	±175	6
		0. 5	6	0.93	±115	6
		1	10	0.45	±100	5
	K/F	1.2	-	1.08	±70	6
		1.5	-	0.86	±70	5
		2	15	0.65	±70	5
		2.5	-	0.5	±70	4
		3	24	0.43	±70	4
		4	27	0.31	±70	3
		5	40	0.28	±70	3
3920	M	0.2	3	1.64	±200	12
		0. 3	3.5	1.37	±150	10
		0.4	-	0.97	±100	9
		0. 5	7	0.83	±70	9
		0.7	9	0.55	±70	8
		1	10	0.4	±50	7
	K/F	1	7	1.16	±50	8
		1.5	-	0.75	±50	6
		2	14.5	0.56	±50	6
		2.5	-	0.47	±50	5
		3	22	0.37	±50	5
		4	24	0.28	±50	5
		5	-	0.28	±50	4

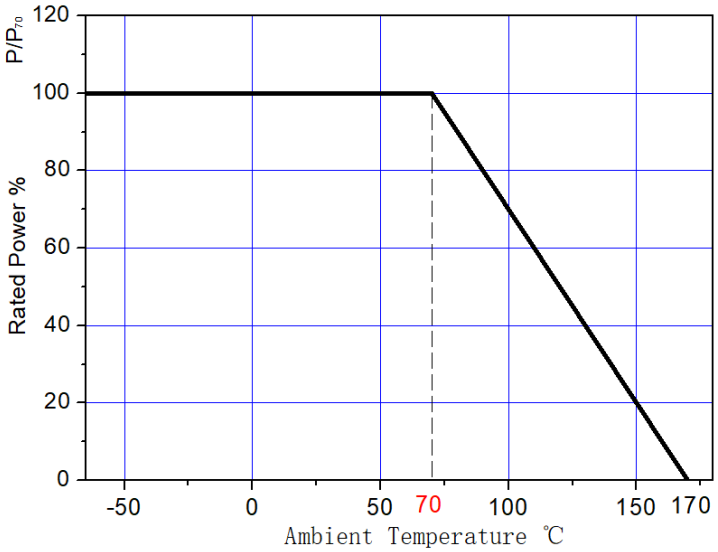
Size	Element Material	Resistance (mΩ)	Rthi (℃/W)	D±0.1 (mm)	TCR (ppm/℃)	P70 ℃ (W)
5930	S	0.1	2	2.0	±200	15
	M	0. 2	3	1.5	±100	15
		0.25	-	1.2	±100	12
		0.3	-	0.98	±100	10
		0.35	-	0.83	±100	10
		0.4	-	0.75	±100	10
		0. 5	3.5	0.6	±75	10
		0.6	-	0.5	±75	10
		0.75	6	0.41	±75	10
	K/F	1	7	0.86	±50	9
		1.5	10	0.61	±50	8
		2	13	0.4	±50	7
		2.5	-	0.34	±50	7
		3	17.5	0.29	±50	7

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

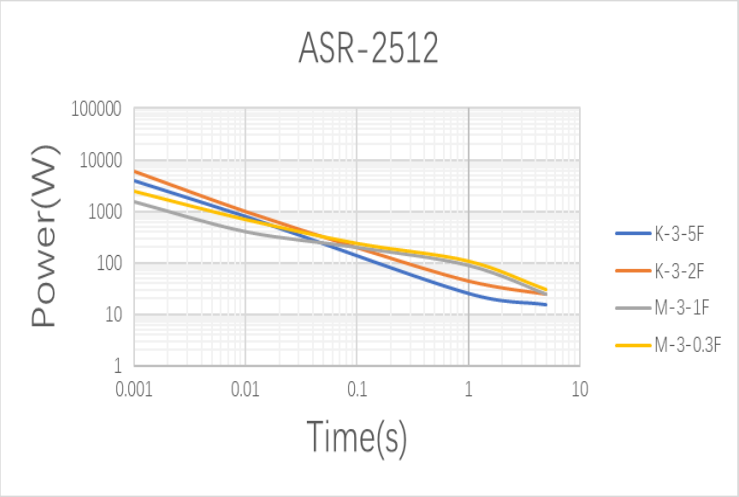
1. Note:
The TCR of some products can be down to ≤20 ppm/℃，refer to ASHP Series .

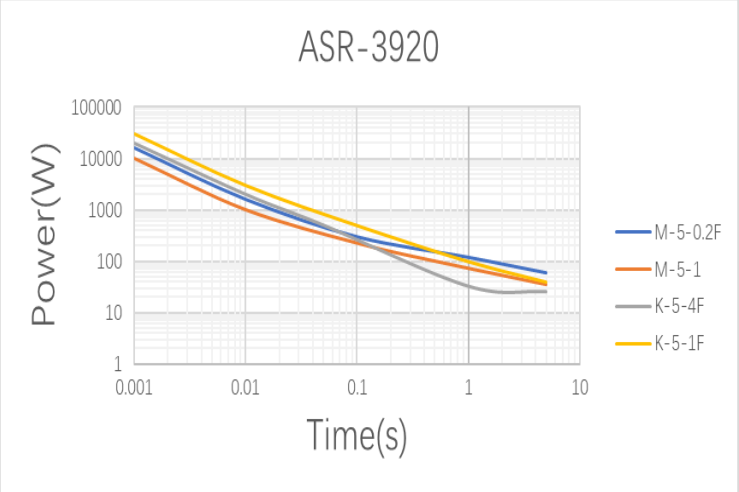
Performance Data

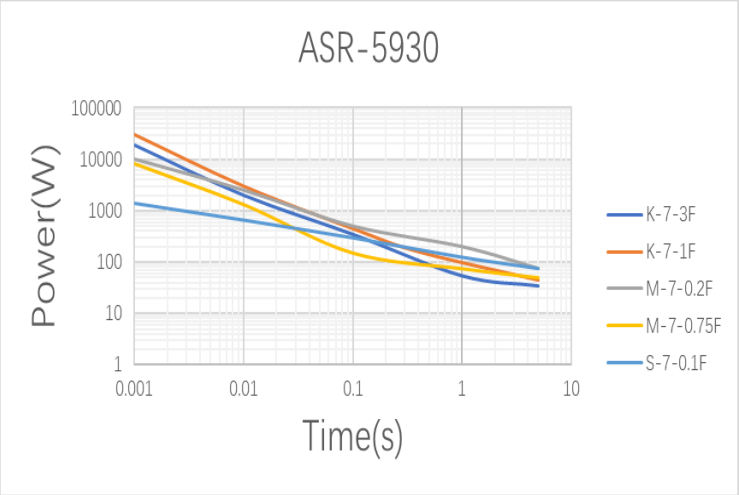
Power Derating



Pulse curve


ASR-2512
Power(W)
100000
10000
1000
100
10
1
0.001
0.01
0.1
1
10
Time(s)
K-3-5F
K-3-2F
M-3-1F
M-3-0.3F


ASR-3920
Power(W)
100000
10000
1000
100
10
1
0.001
0.01
0.1
1
10
Time(s)
M-5-0.2F
M-5-1
K-5-4F
K-5-1F


ASR-5930
Power(W)
100000
10000
1000
100
10
1
0.001
0.01
0.1
1
10
Time(s)
K-7-3F
K-7-1F
M-7-0.2F
M-7-0.75F
S-7-0.1F

Endurance Test

Iterms	Additional Requirements	Reference	Limits
Temperature Cycling	1000 Cycles(-55℃ to +125℃)	JESD22 Method JA-104	±0.5%
High Temperature Exposure	100hrs.@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	Condition D Steady State TA=125℃ at rated power.	MIL-STD-202 Method 108	±0.5%
Solderability	245℃±5℃,5s±0.5s	J-STD-002C	95% Coverage Minimum
Vibration	5 g's for 20 min, 12 cycles each of 3 orientations. Note: Use 8"X5" PCB .031" thick 7 secure points on one long side and 2 secure 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 Soldering Heat	260℃±5℃，10s±1s	MIL-STD-202 Method 210	±0.5%
Short Time Overload	5×Rated power for 5 s	MIL-STD-202 Method 301	±0.5%
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%
ESD	1) Direct Contact (DC): ±6kV; 2) Air Discharge (AD): ±12kV, ±16kV, ±25kV;	AEC-Q200-002 REV-B,	±0.5%
Board Flex	1) PCB board size(H×W×T): 100mm ×40mm ×1.6mm. 2) Press tool: r = 340mm, Width = 20mm. 3) Deformation displacement: 2mm. 4) Duration: 60 (+5) s.	AEC-Q200-005 REV A,	±0.5%
Terminal Strength	1) Press tool: A pointed thruster with a radius of 0.5 mm. 2) Shear force: 17.7N. 3) Duration: 60 (+1) seconds.	AEC-Q200-006 REV A	±0.5%

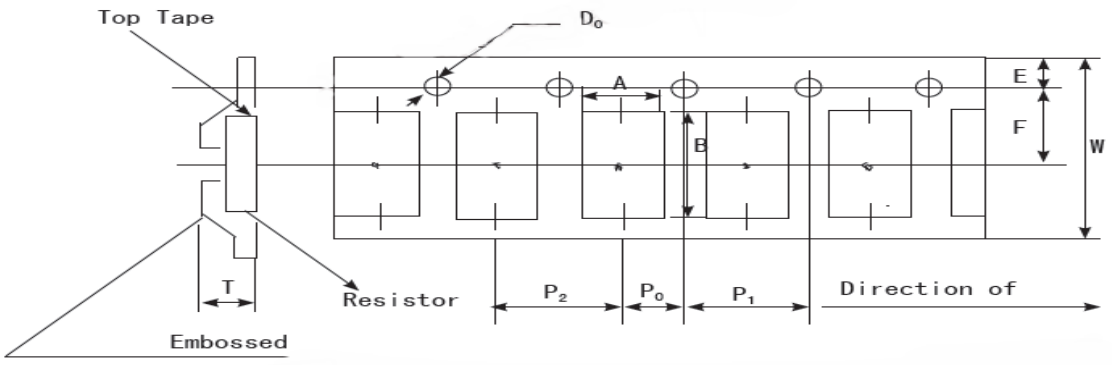
Iterms	Additional Requirements	Reference	Limits
Flame Retardance	1) Test current: 100%, 115%, 130%, 150% (rated current). 2) Test duration: 1h. The following constitutes a failure: 1) A flame over 3.0 seconds duration; 2) An explosion; 3) A temperature above 350℃ sustained for over 10 seconds.	AEC-Q200-001 REV B	>10s for 350℃
Resistance to Solvents	1) Solvent a: 1 part (by volume) of isopropyl alcohol reagent grade and 3 parts (by volume) of a mixture of 80% (by volume) of kerosene and 20% (by volume) ethylbenzene. 2) Solvent c: 9 parts (by volume) of D-limonene and 1 part of surfactant. 3) Solvent d: 42 parts (by volume) of water 1 part (by volume) of propylene glycol monomethyl ether 1 part (by volume) of monoethanolamine.	MIL-STD-202H 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.

Marking

R001 1%
R001：1mΩ Value 1%: ±1% Tolerance
0m45 1%
0m45：0.45mΩ Value：1% ±1% Tolerance

Packaging

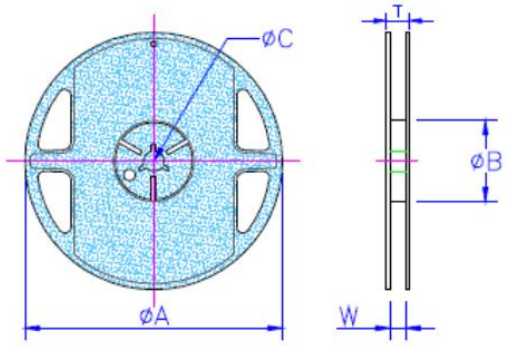
Embossed plastic Tape Specifications (Unit：mm)



Size	A±0.1	B±0.1	W±0.3	E±0.1	F±0.1	P_0±0.1	P_1±0.1	P_2±0.1	D_0±0.1		*Quantity (pcs)
2512	3.5	6.7	12	1.75	5.5	2	4	4	1.50		3000
2512-0.2/0.3	3.7	6.9	16	1.75	7.5	2	4	8	1.50		1000
3920	5.8	10.5	24	1.75	11.5	2	4	12	1.50		2500
5930	8.6	16	24	1.75	11.5	4	4	12	1.50		2000

* Special quantity

P/N	2512-0.2	2512-0.3	2512-0.5	2512-1.5	3920-0.2	3920-0.3	5930-0.1	5930-0.2	5930-0.3
*Quantity (pcs)	1000	1000	2000	2000	2000	1500	1000	1000	1500



Size	2512	2512-0.2/0.3	3920	5930
φA	178	203	330	330
φB	60	60	100	100
φC	13	13	13	13
W	12.5	16.5	24.5	24.5
T	21	21	29	29