KOA SPEER ELECTRONICS, INC.

RoHS COMPLIANT

spec sheet

SS-239 R4
AHA 12/05/07

Low Resistance Flat Chip Resistors
Type SR73

ISO 9000:2000 CERTIFIED
TS-16949 CERTIFIED

1. Scope

This specification applies to chip resistors (SR73) produced by KOA Corporation.

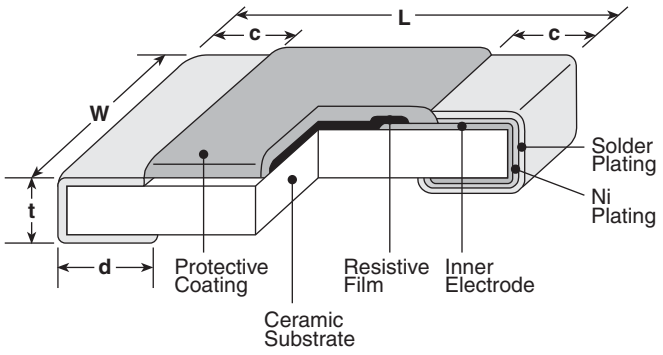
2. Type Designation

The type designation shall be in the following form:

SR73	2B	T	TD	1R00	F
Size	Size	Termination Material	Packaging	Nominal Resistance	Tolerance
	1E 1J 2A 2B 2E 2H 3A	T: Sn (Other termination styles may be available, please contact factory for options)	TP: 2mm Pitch Punched Paper Tape (0402, 0603 & 0805) TD: 7" Paper Tape (0603, 0805, 1206 & 1210) TDD: 10" Paper Tape (0603, 0805, 1206 &1210) TE: 7" Punched Plastic (0805, 1206, 1210, 2010 & 2512) TED: 10" Punched Plastic (0805, 1206, 1210, 2010 & 2512)	±2%, ±5%: 2 significant figures + 1 multiplier "R" indicates decimal on value <10Ω ±1%: 3 significant figures + 1 multiplier "R" indicates decimal on value <100Ω All values less than 0.1Ω (100mΩ) are expressed in mΩ with "L" as decimal Example: 20mΩ = 20L0	D: ±0.5% F: ±1% G: ±2% J: ±5%

3. Dimensions and Structure

3-1 Dimensions



Type (Inch Size Code)	Dimensions inches (mm) L	W	c	d	t
1E (0402)	.039 $^{+.004}_{-.002}$ (1.0 $^{+0.1}_{-0.05}$)	.02 $^{+.004}_{-.002}$ (0.5 $^{+0.1}_{-0.05}$)	.01±.004 (0.25±0.1)	.01±.004 (0.25±0.1)	.014±.002 (0.35±0.05)
1J (0603)	.063±.008 (1.6±0.2)	.031 $^{+.006}_{-.004}$ (0.8 $^{+0.15}_{-0.1}$)	.014±.004 (0.35±0.1)	.014±.004 (0.35±0.1)	.018±.004 (0.45±0.1)
2A (0805)	.079±.008 (2.0±0.2)	.049±.004 (1.25±0.1)	.016±.008 (0.4±0.2)	.012 $^{+.008}_{-.004}$ (0.3 $^{+0.2}_{-0.1}$)	.02±.004 (0.5±0.1)
2B (1206)	.126±.008 (3.2±0.2)	.063±.008 (1.6±0.2)	.02±.012 (0.5±0.3)	.016 $^{+.008}_{-.004}$ (0.4 $^{+0.2}_{-0.1}$)	.024±.004 (0.6±0.1)
2E (1210)		.102±.008 (2.6±0.2)			
2H (2010)	.197±.008 (5.0±0.2)	.098±.008 (2.5±0.2)		.025±.005 (0.65±0.15)	
3A (2512)	.248±.008 (6.3±0.2)	.122±.008 (3.1±0.2)			

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4. Standard Applications

Part Designation*	Power Rating @ 70°C	T.C.R. (ppm/°C) Max.	Resistance Range** E-24, E-96 (D±0.5%)	E-24, E-96 (F±1%)	E-24 (G±2%)	E-24 (J±5%)	Absolute Maximum Working Voltage	Maximum Overload Voltage (5 Secs. Max.)	Operating Temperature Range
SR731E (0402)	1/8W (.125W) 1/6W (.166W[2])	±200	—	0.51Ω - 10Ω***	0.51Ω - 10Ω	0.51Ω - 10Ω	1.11V	2.79V	-55°C to +150°C
		±300	—	0.2Ω - 0.47Ω***	0.2Ω - 0.47Ω	0.2Ω - 0.47Ω			
		±500	—	0.1Ω - 0.18Ω***	0.1Ω - 0.18Ω	0.1Ω - 0.18Ω			
SR731J (0603)	1/5W (.2W)	±200	—	0.1Ω - 10Ω	0.1Ω - 10Ω	0.1Ω - 10Ω	1.41V	3.53V	
SR732A (0805)	1/4W (.25W) 1/3W (.33W[2])	±100	0.15Ω - 10Ω	0.1Ω - 10Ω	—	—	1.58V	3.95V	
		±200	—	—	0.1Ω - 10Ω	0.1Ω - 10Ω			
		±500	—	—	—	0.051Ω - 0.091Ω			
		±800	—	—	—	0.030Ω - 0.047Ω			
SR732B (1206)	1/3W (.33W) 1/2W (.5W[2])	±100	0.15Ω - 10Ω	0.1Ω - 10Ω	—	—	1.81V	4.54V	
		±200	—	—	0.1Ω - 10Ω	0.1Ω - 10Ω			
		±500	—	—	—	0.056Ω - 0.091Ω			
		±800	—	—	—	0.030Ω - 0.051Ω			
SR732E (1210)	1/2W (.5W) 2/3W (.66W[2])	±100	—	0.1Ω - 10Ω	—	—	2.23V	5.59V	
		±200	—	—	0.1Ω - 10Ω	0.047Ω - 10Ω			
		±500	—	—	—	0.036Ω - 0.043Ω			
		±1000	—	—	—	0.024Ω - 0.033Ω			
SR732H (2010)	3/4W (.75W)	±100	—	0.1Ω - 10Ω	—	—	2.73V	6.84V	
		±200	—	—	0.1Ω - 10Ω	0.1Ω - 10Ω			
		±500	—	—	—	0.056Ω - 0.091Ω			
		±800	—	—	—	0.033Ω - 0.051Ω			
SR733A (2512)	1W	±100	—	0.1Ω - 10Ω	—	—	3.16V	7.90V	
		±200	—	—	0.1Ω - 10Ω	0.1Ω - 10Ω			
		±500	—	—	—	0.056Ω - 0.091Ω			
		±800	—	—	—	0.039Ω - 0.051Ω			

* Parenthesis indicate EIA package size codes. ** See Appendix D for available decade values. *** 1E (F: ±1%) E-24 values only.

[1] Power Rating for SR731E 0.91Ω - 10Ω = 1/10 (0.1W)

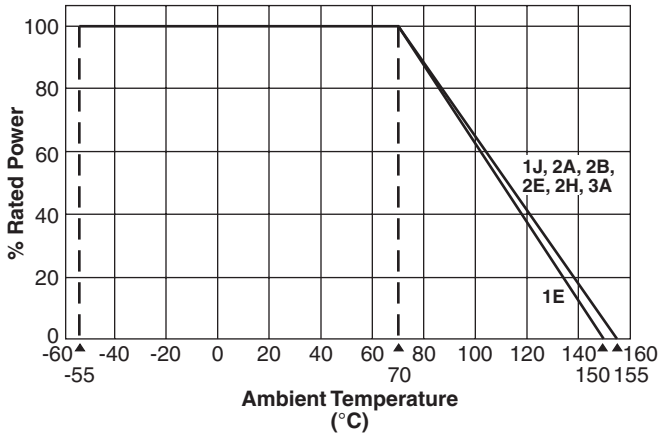
[2] Please contact factory for limitation of Surface Mount Temp. Rise

5. Rating

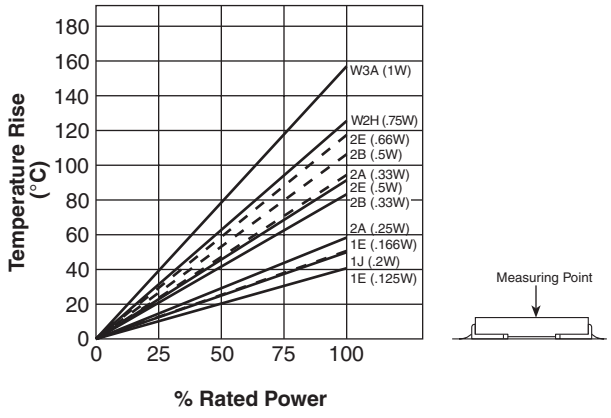
5-1 Rating

For temperature in excess of 70°C, the load shall be derated in accordance with the following figure.

Derating Curve



Surface Temperature Rise



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5-2 Voltage Rating

Resistors shall have a rated direct-current (DC) continuous working voltage or approximate sine-wave root-mean-square (RMS) continuous working voltage at commercial-line frequency and waveform corresponding to the power rating, as determined from the following formula:

$$E = \sqrt{P \times R}$$

Where:
E = Rated voltage (V)
P = Rated power (W)
R = Nominal resistance (Ω)

In no case shall be rated DC or R.M.S. continuous working voltage be greater than the applicable maximum value.

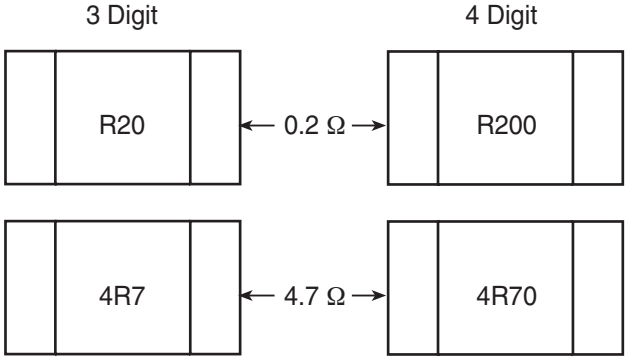
6. Body and Marking

Type	Tolerance	Coating Color	Marking Color
SR73	D (±0.5%) F (±1%)	Indigo	White/ 4 digit
SR73	G (±2%) J (±5%)	Indigo	White/ 3 digit

Marking: a effective number and a multiplier. R means a decimal point.

7. Marking Method

D, F	4 digit	This character indicate Ω unit and express 4 effective numbers. R means a decimal point.
G, J	3 digit	This character indicate Ω unit and express 3 effective numbers. R means a decimal point.



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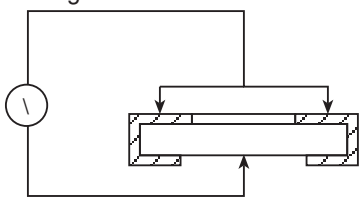
8. Characteristics

8-1 Mechanical Characteristics

Item	Requirement	Test Methods (JIS C 5202)
Withstanding Soldering Heat	No visual damage ± 1.0%	6.10 260°C ± 5°C 10 ± 1 sec.
Solderability	More than 95% of the surface of the termination must be covered new solder	6.11 230°C ± 5°C 3 ± 0.5 sec.
Termination Strength	± 1.0%	6.1.4 **1) Bending** 2A, 2B Circuit board bending 5mm Circuit board bending 2mm **2) Shear** **3) Pull-off strength**
Vibration	± 0.5%	6.3 Condition A Each direction / 2hrs
Withstanding Solvent	No visual & mechanical damage	**1)** 4.2 and 4.9 **2)** MIL-STD-202F Test method 215

8-2 Electrical Characteristics

Item	Requirement	Test Methods (JIS C 5202)
Resistance	Within tolerance	5.1 Measuring Voltage A, 25 °C
Resistance of Temperature Coefficient	Within specified R.T.C -55°C/125°C	5.2 Condition B
Short Time Overload	± 2.0%	5.5 Condition A
Intermittent Overload	± 5.0%	5.8 **Applied Voltage:** RV x 2.5
Insulation	Above 10^4 MΩ	5.5 500V DC The following sketch: 

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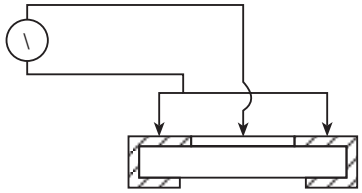
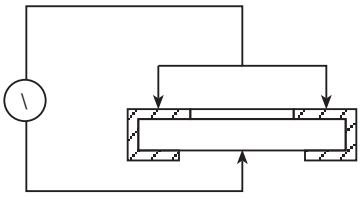
8-2 Electrical Characteristics (Continued)

Item	Requirement	Test Methods (JIS C 5202)
Insulation	Above 10^3 MΩ	5.6 500V DC The following sketch: 
Withstanding Voltage	± 0.5%	5.7 500V DC 60 ± 10/0 sec. The following sketch: 
Temperature Rise (Rated Load)	1) Surface temp. rise: 100°C≥ 2) ΔR ± 0.5%	5.4 1) Test board 90mm x 10mm x 1.6mm 2) Recommended land dimensions

8-3 Environmental Characteristics

Item	Requirement	Test Methods (JIS C 5202)
Thermal Shock (Air to Air)	± 1.0%	-40°C 30 minutes 125°C 30 minutes 100 cycles
High Temperature Exposure	± 1.0%	7.2 125 ± 3°C 1000 hrs.
Load Life in Humidity	± 2.0%	7.9 40 ± 2°C 90 ~ 95% RH 1000 hrs.
Load Life	± 2.0%	7.10 70 ± 3°C 1000 hrs.

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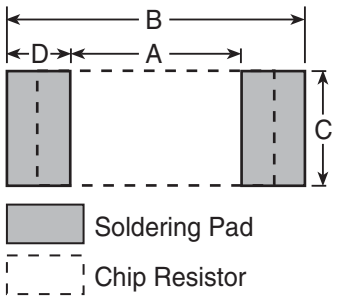
9. Recommended Land Dimensions

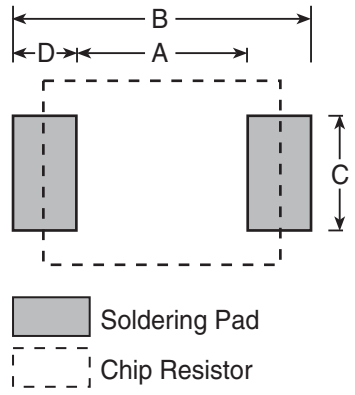
9-1 Flow Soldering



Dimensions in inches (mm)

Type	Style	Resistor Size	A	B	C	D
SR73	1 E	0.039 x 0.020 (1.0 x 0.5)	0.020 (0.5)	0.059 (1.5)	0.020 (0.5)	0.020 (0.5)
	1 J	0.063 x 0.031 (1.6 x 0.8)	0.039 (1.0)	0.094 (2.4)	0.031 (0.8)	0.028 (0.7)
	2 A	0.079 x 0.049 (2.0 x 1.25)	0.051 (1.3)	0.122 (3.1)	0.049 (1.25)	0.035 (0.9)
	2 B	0.126 x 0.063 (3.2 x 1.6)	0.087 (2.2)	0.173 (4.4)	0.063 (1.6)	0.043 (1.1)
	2 E	0.126 x 0.098 (3.2 x 2.5)	0.087 (2.2)	0.173 (4.4)	0.098 (2.5)	0.043 (1.1)
	2 H	0.197 x 0.098 (5.0 x 2.5)	0.138 (3.5)	0.248 (6.3)	0.098 (2.5)	0.055 (1.4)
	3 A	0.252 x 0.126 (6.4 x 3.2)	0.181 (4.6)	0.315 (8.0)	0.126 (3.2)	0.067 (1.7)

9-2 Reflow Soldering



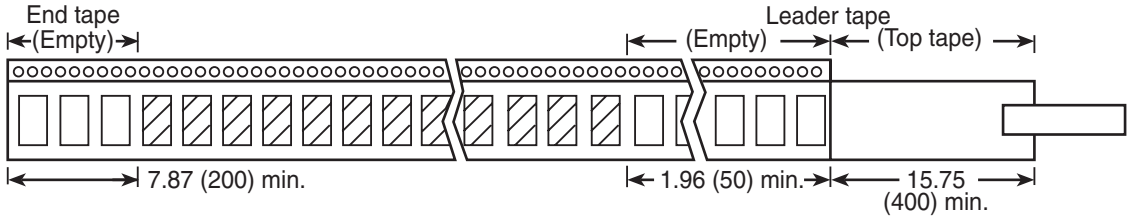
Dimensions in inches (mm)

Type	Style	Resistor Size	A	B	C	D
SR73	1 E	0.039 x 0.020 (1.0 x 0.5)	0.020 (0.5)	0.051 (1.3)	0.012 (0.3)	0.016 (0.4)
	1 J	0.063 x 0.031 (1.6 x 0.8)	0.039 (1.0)	0.079 (2.0)	0.024 (0.6)	0.020 (0.5)
	2 A	0.079 x 0.049 (2.0 x 1.25)	0.051 (1.3)	0.098 (2.5)	0.041 (1.05)	0.024 (0.6)
	2 B	0.126 x 0.063 (3.2 x 1.6)	0.087 (2.2)	0.157 (4.0)	0.055 (1.4)	0.035 (0.9)
	2 E	0.126 x 0.098 (3.2 x 2.5)	0.087 (2.2)	0.157 (4.0)	0.091 (2.3)	0.035 (0.9)
	2 H	0.197 x 0.098 (5.0 x 2.5)	0.138 (3.5)	0.248 (6.3)	0.091 (2.3)	0.055 (1.4)
	3 A	0.252 x 0.126 (6.4 x 3.2)	0.181 (4.6)	0.315 (8.0)	0.118 (3.0)	0.067 (1.7)

10. Taping

10-1 Taped Configuration

Dimensions in inches (mm)



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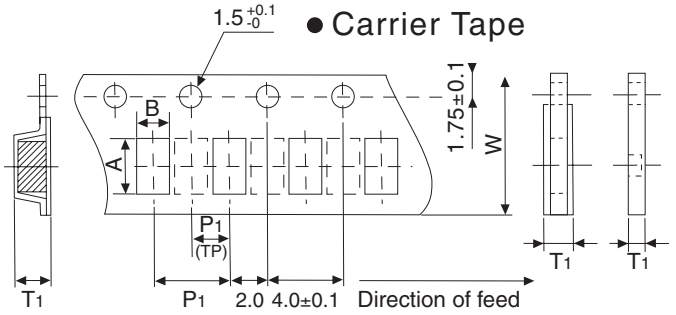
10-2 Dimensions of Punched Paper Tape



(Notes) Dotted lines are applicable to only "TP" and "TB."

Type		Component Size (mm)			Carrier Tape	Quantity/ Reel (Pieces)	Taping (mm)					Reel Size
		L	W	T			A	B	W	P1	T1	
SR73	1E	1	0.5	0.35	TP	10000	1.15±0.1	0.65±0.1	8.0±0.2	2±0.05	0.45+0.2/-0	178
	1J	1.6	0.8	0.45	TP	10000	1.9±0.1	1.1±0.1	8.0±0.2	2±0.05	0.6+0.2/-0	178
					TD	5000	1.9±0.1	1.1±0.08	8.0±0.2	4.0±0.1	0.6+0.2/-0	178
					TDD	10000	1.9±0.1	1.1±0.1	8.0±0.2	4.0±0.1	0.6+0.2/-0	255
	2A	2	1.25	0.5	TP	10000	2.4±0.2	1.65±0.2	8.0±0.2	2±0.05	0.75+0.2/-0	178
					TD	5000	2.4±0.2	1.65±0.2	8.0±0.2	4.0±0.1	0.75+0.2/-0	178
					TE	4000	2.4±0.2	1.6±0.2	8.0±0.2	4.0±0.1	0.9±0.1	178
					TDD	10000	2.4±0.1	1.65±0.1	8.0±0.2	4.0±0.1	0.75+0.2/-0	255
					TED	10000	2.4±0.2	1.45±0.15	8.0±0.2	4.0±0.1	0.65±0.1	255
	2B	3.2	1.6	0.6	TD	5000	3.5±0.2	2±0.2	8.0±0.2	4.0±0.1	0.75+0.2/-0	178
					TE	4000	3.5±0.2	1.9±0.2	8.0±0.2	4.0±0.1	1.0±0.1	178
					TDD	10000	3.5±0.1	1.9±0.1	8.0±0.2	4.0±0.1	0.75+0.2/-0	255
					TED	10000	3.5±0.1	1.9±0.2	8.0±0.2	4.0±0.1	1.0±0.1	255
	2E	3.2	2.6	0.6	TD	5000	3.5±0.2	2.85±0.2	8.0±0.2	4.0±0.1	0.75+0.2/-0	178
					TE	4000	3.5±0.2	2.85±0.2	8.0±0.2	4.0±0.1	1.0±0.15	178
					TDD	10000	3.5±0.1	2.8±0.1	8.0±0.2	4.0±0.1	0.75+0.2/-0	255
					TED	10000	3.6±0.15	2.9±0.15	8.0±0.2	4.0±0.1	1.0±0.1	255
	2H	5	2.5	0.6	TE	4000	5.35±0.2	2.9±0.2	12.0±0.1	4.0±0.1	1.0±0.15	178
					TED	10000	5.4±0.2	2.9±0.2	12.0±0.1	4.0±0.1	0.85±0.1	255
	3A	6.3	3.1	0.6	TE	4000	6.65±0.2	3.44±0.2	12.0±0.1	4.0±0.1	1.0±0.15	178
					TED	10000	6.9±0.2	3.6±0.2	12.0±0.1	4.0±0.1	0.85±0.1	255

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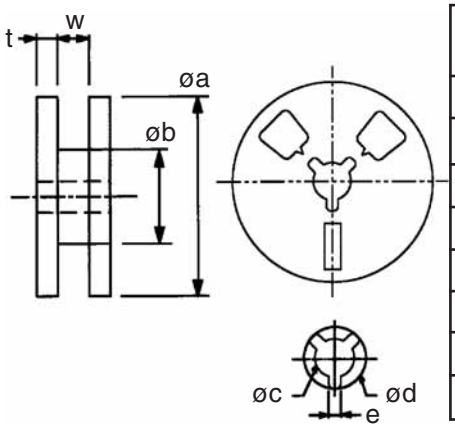
11-5 Dimensions of Reel

Dimensions in inches (mm)



Size Code	øa max. 7"	øa max. 10"	øb	w	t	øc	ød	e
1 H (0201)	7.008 (178)	10.039 (255)	3.150 (80 ± 2.0)	0.394 (10 ± 1.0)	.059 (1.5 ± 0.05)	0.512 (13 ± 0.5)	1.063 (27 ± 2.0)	.118 (3.0 ± 0.5)
1 E (0402)								
1 J (0603)								
2 A (0805)								
2 B (1206)			2.362 (60 ± 2.0)	0.551 (14 ± 1.0)			.827 (21 ± 2.0)	.079 (2.0 ± 0.5)
2 E (1210)								
2 H (2010)								
3 A (2512)								

Quantity per reel or reel size are requested to designate at the time of ordering.
Contents on label:

(1) Article number (SR73K2ATD J)
(2) Quantity
(3) Nominal Resistance and the chip marking [Ex: 0.2 Ω (R20)]
(4) Customer's code number (subject to change)
(5) Production lot number
(6) Manufacturer's name

10. Packing

Lot number (8 digits)

89	12	3001
Production year, month	Date	Additional day number

41~52	January 2006 ~ December 2006
53~64	January 2007 ~ December 2007

11. Packaging Method

Size Code	TE 7" Embossed Plastic	TP 7" Punched Paper	TD Punched Paper	TED 10" Embossed Plastic	TDD 10" Punched Paper
1 E (0402)	———	10,000	———	———	———
1 J (0603)	———	10,000	5,000	———	10,000
2 A (0805)	4,000	10,000	5,000	10,000	10,000
2 B (1206)	4,000	———	5,000	10,000	10,000
2 E (1210)	4,000	———	5,000	10,000	10,000
2 H (2010)	4,000	———	———	10,000	———
3 A (2512)	4,000	———	———	10,000	———

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