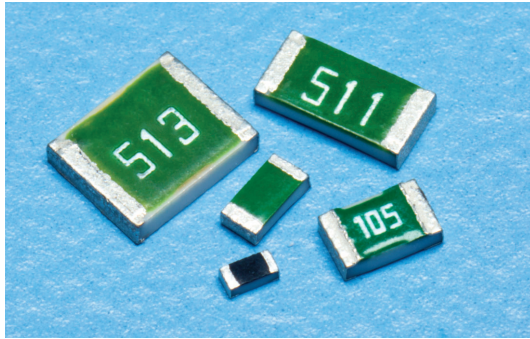




**THE DATASHEET OF  
SG73S2ATTD1800F**



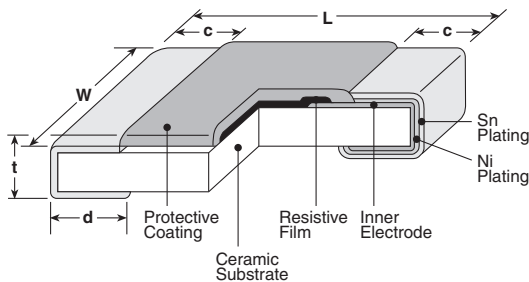
**anti-surge endured surge voltage  
thick film chip resistor**



**features**

- Superior to RK73B/RK73H series in surge withstanding voltage and high power
- ESD withstanding; down to  $\pm 0.5\%$  tolerance
- Suitable for both reflow and flow solderings
- Products with lead-free terminations meet EU RoHS requirements. EU RoHS regulation is not intended for Pb-glass contained in electrode, resistor element and glass.
- AEC-Q200 Tested

**dimensions and construction**



Type (Inch Size Code)	Dimensions inches (mm)				
	L	W	c	d	t
SG73S1E (0402)	.039 <sup>+0.004</sup> <sub>-.002</sub> (1.0 <sup>+0.1</sup> <sub>-0.05</sub> )	.02±.002 (0.5±0.05)	.006±.004 (0.15±0.1)	.010 <sup>+0.002</sup> <sub>-.004</sub> (0.25 <sup>+0.05</sup> <sub>-0.1</sub> )	.014±.002 (0.35±0.05)
SG73S1J (0603)	.063±.008 (1.6±0.2)	.031±.004 (0.8±0.1)	.012±.004 (0.3±0.1)	.012±.004 (0.3±0.1)	.018±.004 (0.45±0.1)
SG73S1J AT (0603)			.014±.006 (0.35±0.15)	.02±.008 (0.5±0.2)	
SG73S2A (0805)	.079±.008 (2.0±0.2)	.049±.004 (1.25±0.1)	.012 <sup>+0.008</sup> <sub>-.004</sub> (0.3 <sup>+0.2</sup> <sub>-0.1</sub> )	.012 <sup>+0.008</sup> <sub>-.004</sub> (0.3 <sup>+0.2</sup> <sub>-0.1</sub> )	.02±.004 (0.5±0.1)
SG73S2A AT (0805)			.018±.010 (0.45±0.25)	.024±.008 (0.6±0.2)	
SG73S2B (1206)	.126±.008 (3.2±0.2)	.063±.008 (1.6±0.2)	.016 <sup>+0.008</sup> <sub>-.004</sub> (0.4 <sup>+0.2</sup> <sub>-0.1</sub> )	.016 <sup>+0.008</sup> <sub>-.004</sub> (0.4 <sup>+0.2</sup> <sub>-0.1</sub> )	.024±.004 (0.6±0.1)
SG73S2B AT (1203)			.022±.014 (0.55±0.35)	.031±.008 (0.8±0.2)	
SG73S2E SG73S2E1 (1210)			.016 <sup>+0.008</sup> <sub>-.004</sub> (0.4 <sup>+0.2</sup> <sub>-0.1</sub> )	.016 <sup>+0.008</sup> <sub>-.004</sub> (0.4 <sup>+0.2</sup> <sub>-0.1</sub> )	

**ordering information**

SG73S	2B		T	TD	1001	F
Type	Size	Characteristic	Termination Material	Packaging	Nominal Resistance	Tolerance
SG73S	1E 1J 2A 2B 2E 2E1	Nil: Standard A: Heat shock resistance *1	T: Sn	TP: 0402, 0603, 0805: 7" 2mm pitch punch paper TD: 0603, 0805, 1206, 1210: 7" 4mm pitch punched paper TE: 0805, 1206, 1210: 7" 4mm embossed plastic	$\pm 0.5\%$ , $\pm 1\%$ : 3 significant figures + 1 multiplier "R" indicates decimal on value <100 $\Omega$ $\pm 2\%$ , $\pm 5\%$ : 2 significant figures + 1 multiplier "R" indicates decimal on value <10 $\Omega$	D: $\pm 0.5\%$ F: $\pm 1\%$ G: $\pm 2\%$ J: $\pm 5\%$

\*1 With type A, only T is available as the terminal surface material.

Contact us when you have control request for environmental hazardous material other than the substance specified by EU RoHS.

For further information on packaging, please refer to Appendix A

## applications and ratings

Part Designation	Power Rating	Rated Ambient Temp.	Rated Terminal Part Temp.	T.C.R. (ppm/°C) Max.	Resistance Range (Ω)			Maximum Working Voltage	Maximum Overload Voltage	Operating Temp. Range
					(E-24)/E-96 (D±0.5%)	(E-24)/E-96 (F±1%)	(E-24) (G±2%, J±5%)			
SG73S1E (0402)	0.125W	70°C	125°C	±200	10 - 1M	1 - 1M	1 - 10M	75V	100V	-55°C to +155°C
	0.2W* <sup>2</sup>		105°C							
SG73S1J (0603)	0.2W	70°C	135°C	±100	510 - 576k	510 - 576k	510 - 560k	150V	200V	
			±100* <sup>1</sup>	10 - 499	1 - 499	1 - 470				
	0.33W* <sup>2</sup>	70°C	125°C	±100	510 - 576k	510 - 576k	510 - 560k			
			±100* <sup>1</sup>	10 - 499	1 - 499	1 - 470				
SG73S2A (0805)	0.25W	70°C	125°C	±200	10 - 1M	1 - 1M	1 - 10M	400V	600V (800V)* <sup>3</sup>	
	0.5W* <sup>2</sup>		100°C							
SG73S2B (1206)	0.33W	70°C	125°C	±200	10 - 1M	1 - 1M	1 - 10M	200V	400V	
	0.75W* <sup>2</sup>		105°C							
SG73S2E (1210)	0.5W	70°C	125°C	±200	10 - 1M	1 - 1M	1 - 10M	200V	400V	
	0.75W* <sup>2</sup>		110°C							
SG73S2E1 (1210)	1W	70°C	95°C	±200	10 - 1M	1 - 1M	1 - 10M	200V	400V	

Parentheses indicate EIA package size codes.

\*<sup>1</sup> Cold T.C.R. (-55°C ~ +25°C) is +150 x 10<sup>-6</sup>/K

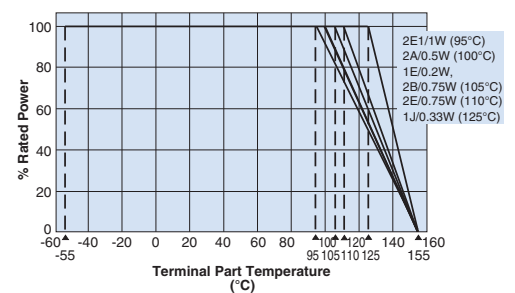
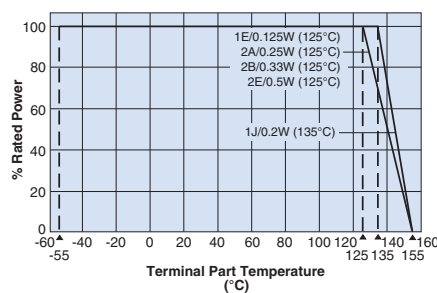
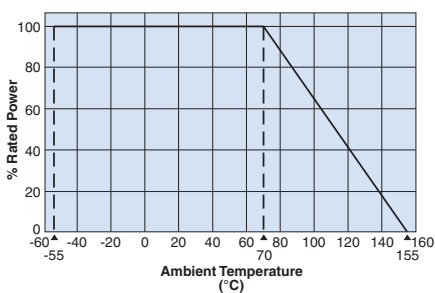
Rated voltage =  $\sqrt{\text{Power rating} \times \text{resistance value}}$  or max. working voltage, whichever is lower

Please contact KOA Speer for how to handle a specific surge/pulse

If any questions should arise whether to use the "Rated Ambient Temperature" or the "Rated Terminal Part Temperature," please give priority to the "Rated Terminal Part Temperature." Prior to use and for more details refer to "Introduction of the derating curves on the terminal part temperature" in the beginning of the catalog. \*<sup>2</sup> If you want to use the rated power of \*<sup>2</sup>, \*<sup>3</sup> please reference below. \*<sup>3</sup> Applies when power rating is 0.4W or lower.

## environmental applications

### Derating Curve



For resistors operated at an ambient temperature of 70°C or above, a power rating shall be derated in accordance with the derating curve.

For resistors operated at a terminal part temperature of described for each size or above, a power rating shall be derated in accordance with the derating curve.

Please refer to "Introduction of the derating curve based on the terminal part temperature" in the beginning of our catalog before use.

If you want to use the rated power of \*<sup>2</sup>, \*<sup>3</sup> please use the derating curve based on the terminal part temperature on the right hand side.

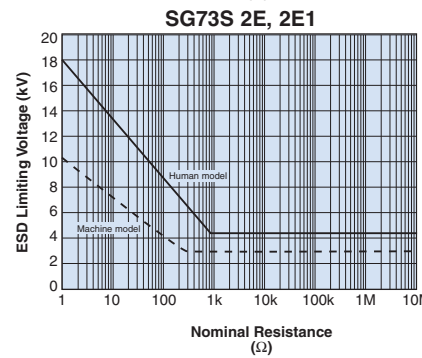
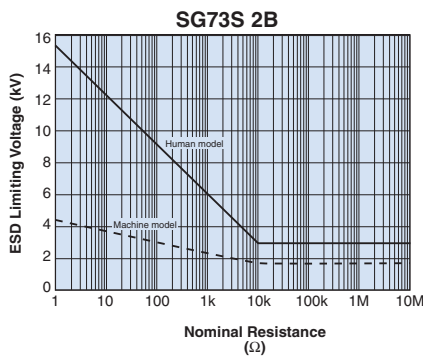
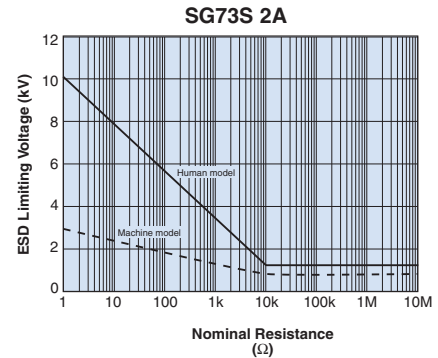
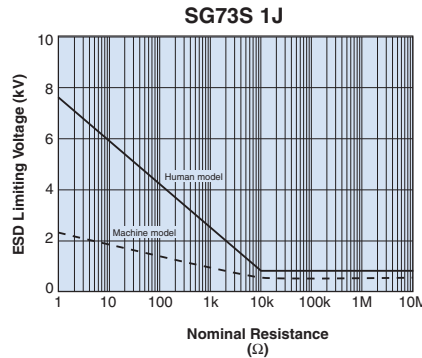
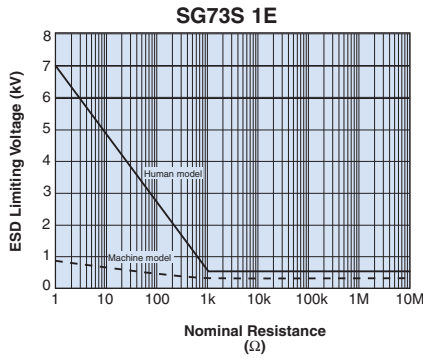
Additional environmental applications can also be found at [www.koaspeer.com](http://www.koaspeer.com)

Specifications given herein may be changed at any time without prior notice. Please confirm technical specifications before you order and/or use.

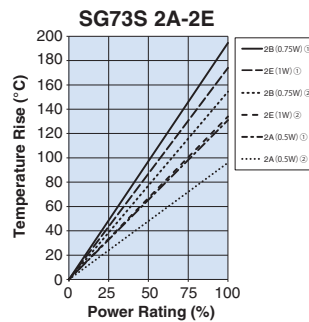
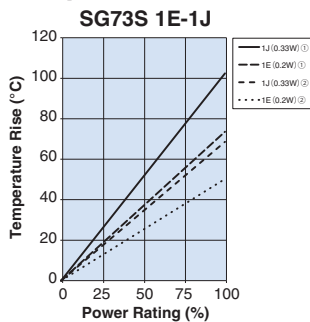
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**environmental applications** (continued)

**ESD Limiting Voltage**

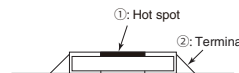


**Temperature Rise**



Regarding the temperature rise, the value of the temperature rises varies per conditions and board for use since the temperature is measured under our measuring conditions.

Measurement condition  
Room temperature: 25°C  
PCB: FR-4t = 1.6mm  
Cu foil thickness: 35µm



**Performance Characteristics**

Parameter	Requirement $\Delta R \pm(\%+0.1\Omega)$		Test Method
	Limit	Typical	
Resistance	Within specified tolerance	—	25°C
T.C.R.	Within specified T.C.R.	—	+25°C/-55°C and +25°C/+125°C
Overload (Short time)	±2%	±0.5%	Rated Voltage x 2.5 for 5 seconds (2A: 0.4W, 0.5W; 2B: 0.75W; 2E: 0.75W; 2E1: 1W rated voltage x 2 for 5 seconds)
Resistance to Solder Heat	±1%	±0.75%	260°C ± 5°C, 10 seconds ± 1 second
Rapid Change of Temperature	±0.5%: Characteristic (Nil) Standard ±1%: Characteristic (A) Heat Shock Resistance	±0.3%: Characteristic (Nil) Standard ±0.5%: Characteristic (A) Heat Shock Resistance	Characteristic (Nil) Standard: -55°C (30 min.)/+125°C (30 min.) 100 cycles Characteristic (A) Heat Shock Resistance: -55°C (30 min.)/+125°C (30 min.) 1000 cycles
Moisture Resistance	±3%	±0.75%	40°C ± 2°C, 90%~95%RH, 1000 hours; 1.5 hr ON, 0.5 hr OFF cycle
Endurance at 70°C	±3%	±0.75%	70°C ± 2°C, 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle
High Temperature Exposure	±1%	±0.3%	+155°C, 1000 hours

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11/09/23

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