

# KV-OHM

## PROTOS ELECTROMECH PVT. LTD.

AN ISO 9001:2015 CERTIFIED COMPANY

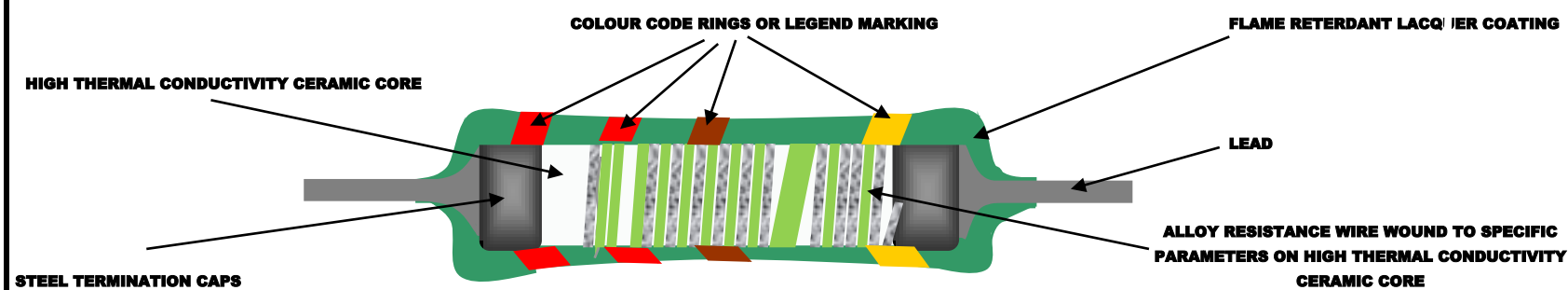
### SILICON COATED AXIAL WIREWOUND RESISTORS

Series : **SA**

#### Features:

- Flameproof Coating Compatible with UL standards.
- **1W to 12** Watts rating available.
- Industrial & Professional Application.
- TCR as low as **+15ppm/°C** available depending on application & resistance value.
- Low Tolerance upto **±0.25%** on request can be provided.
- Available in non-inductive style, Aryton- Perry winding for lowest reactive components
- **RoHS** Compliant directive 2002/95/EC
- Lead (Pb)-free solder contacts.

#### Construction :

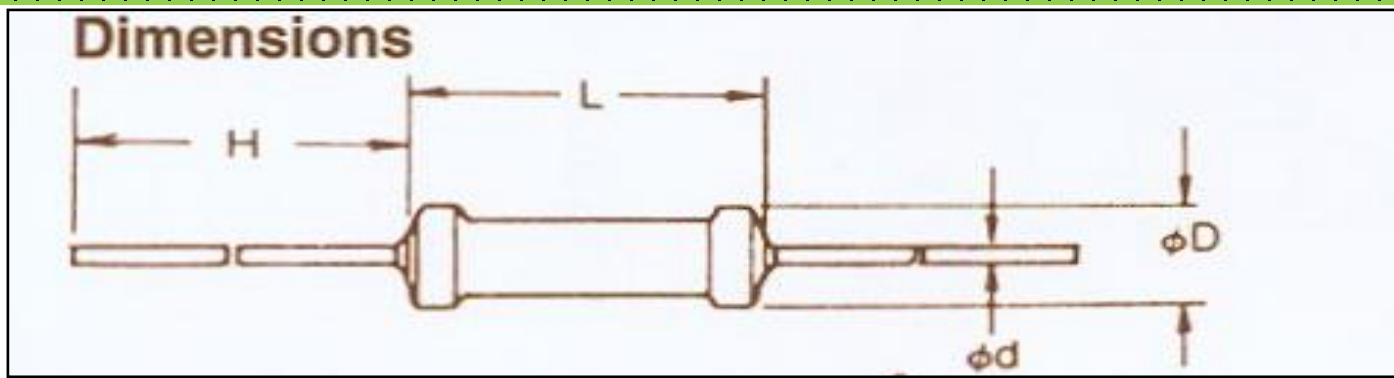


#### Technical specification:

DESCRIPTION	SERIES								
	SA1	SA2	SA3 MINI	3W	SA4	SA5	SA7	SA10	SA12
Resistance range *	0.01Ω ~ 500Ω	0.01Ω ~ 500Ω	0.01Ω ~ 500Ω	0.01Ω ~ 500Ω	0.01Ω ~ 500Ω	0.01Ω ~ 1KΩ	0.01Ω ~ 1KΩ	0.01Ω ~ 1KΩ	0.1Ω ~ 1KΩ
Resistance tolerance	±1% ~ ±5%								
Temperature coefficient	≤ 200 ppm/°C								
Maximum dissipation @ 70°C	1W	2W	3W	3W	4W	5W	7W	10W	12W
Maximum permissible voltage	$\sqrt{P \times R}$								
Climatic category	55/155/56								
Stability, R max.									
Load			△	R±(5.0 +0.10Ω )					
Climatic test			△	R±(5.0% +0.10Ω )					
Soldering			△	R±(0.5% +0.05Ω )					
Short time overload			△	R±(2.0% +0.10Ω )					

**\*Note :** Higher ohmic value other than resistance range & Non inductive type are available on request

## Dimensions :



## Physical Data:

### 1.0 GENERAL SPECIFICATION :

TYPE	WATT. @ 70°C	TOL.	TCR PPM/°C	DIMENSIONS (mm)				RESISTANCE RANGE
				L (± 1.5)	D (± 1.5)	d ± 0.05	H (MIN)	
SA 1	1W	±1%, ±5%	≤ ±200	12	4.0	0.8	25 min	0.01Ω ~ 500Ω
SA 2	2W	±1%, ±5%	≤ ±200	14	4.5	0.8	25 min	0.01Ω ~ 500Ω
SA 3 Mini	3W	±1%, ±5%	≤ ±200	16	5.0	0.8	25 min	0.01Ω ~ 500Ω
SA 3	3W	±1%, ±5%	≤ ±200	18	6.0	0.8	25 min	0.1Ω ~ 400Ω
SA 4	4W	±1%, ±5%	≤ ±200	22	6.0	0.8	25 min	0.01Ω ~ 500Ω
SA 5	5W	±1%, ±5%	≤ ±200	22	7.5	0.8	25 min	0.01Ω ~ 1KΩ
SA 7	7W	±1%, ±5%	≤ ±200	25	8.5	0.8	25 min	0.01Ω ~ 1KΩ
SA 10	10W	±1%, ±5%	≤ ±200	40	8.5	0.8	25 min	0.01Ω ~ 1KΩ
SA 12	12W	±1%, ±5%	≤ ±200	52	8.5	0.8	25 min	0.01Ω ~ 1KΩ

**Note :** Working voltage is  $\sqrt{P \times R}$  where P is power & R is resistance in Ohms

## Non Inductive Resistors :

Low inductance Aryton - perry winding type resistors are available in this series. For non- inductive type reduces maximum resistance values shown to 50% and the continuous working voltage to 70%.

## Flammability:

The resistor coating will not burn or emit incandescent particles under any condition of applied temperature or power overload.

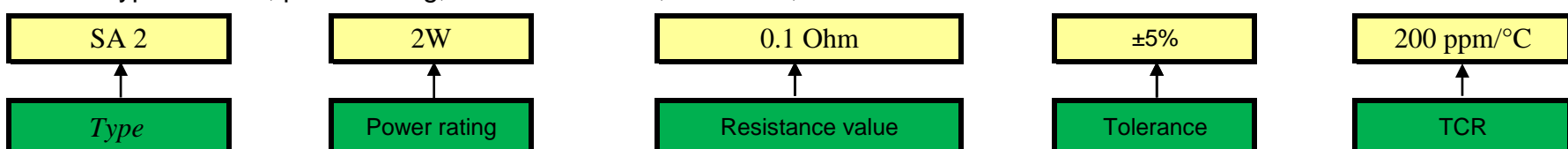
## Marking:

The SA type the nominal resistance & tolerance are marked on the resistor body using four coloured bands. OR marked using LEGEND marking; for e.g : KV-OHM

0E1 5W J

## Part Numbering Information:

**Part Number :** Type number, power rating, resistance value, tolerance, tcr.



**Examples:** PART NO. : SA 2, 2W, 0.1 Ohm, ±5%, 200ppm/°C

### Packing Information:

SA Type / series can be supplied in taped & bulk form. As well as some parts can be supplied in reel on request.

### Performance Data (Procedure & Requirements):

TEST	PROCEDURE	REQUIREMENTS
<b>Robustness Of Termination</b>		
1. Tensile Test	Load 10 N for 10 sec.	No visual damage
2. Bend Test	Load 5 N 90° , 180° , 90°	No visual damage
3. Torsion Test	3 X 360° in opposite directions	No visual damage $\Delta R/R$ max.: $\pm(0.50\% + 0.05 \Omega)$
<b>Solderability Test</b>	16 hrs steam or 16 hrs. at 155°C 10 sec. $\pm 0.5$ sec. in solder at 260° $\pm 5^\circ\text{C}$ Using flux	>95% coverage covered (good tinning) & no damage
<b>Resistance To Soldering Heat</b>	at 350°C for 3 sec., 2.5mm from the body	$\Delta R/R$ max.: $\pm(0.5\% + 0.05 \Omega)$
<b>Temperature Cycling</b>	30 minutes at -40°C & 30 minutes at 200°C Total 5 number of cycles.	No visual damage $\Delta R/R$ max.: $\pm(1.0\% + 0.05 \Omega)$
<b>Dry Heat Test</b>	16 hrs at 275°C	$\Delta R/R$ max.: $\pm(1.0\% + 0.05 \Omega)$
<b>Cold Test</b>	2 hrs at -55°C	$\Delta R/R$ max.: $\pm(0.50\% + 0.05 \Omega)$
<b>Short Time Overload</b>	5 X Rated power for 5 sec. upto 3W size 10 X Rated power for 5 sec. from 5W size to 10W size	$\Delta R/R$ max.: $\pm(2.0 + 0.05 \Omega)$
<b>Endurance @ 40°C</b>	1000 hrs. load with Pn (power nominal) 1.5 hr. ON & 0.5 hr. OFF	No visual damage $\Delta R/R$ max.: $\pm(5.0\% + 0.1 \Omega)$
<b>Endurance @ 70°C</b>	1000 hrs. load with 0.9Pn (power nominal) 1.5 hr. ON & 0.5 hr. OFF	No visual damage $\Delta R/R$ max.: $\pm(5.0\% + 0.1 \Omega)$
<b>Endurance @ Upper Category Temperature</b>	1000 hrs. at 275°C with no load	No visual damage $\Delta R/R$ max.: $\pm(5.0\% + 0.1 \Omega)$
<b>Temperature Rise Test</b>	Horizontally mounted, loaded with Pn	Hot spot temperature less than maximum body temperature
<b>Damp Heat Steady State</b>	56 days, 40°C; 90 to 95% Rh; dissipation $\leq 0.01Pn$	No visual damage $\Delta R/R$ max.: $\pm(5.0\% + 0.1 \Omega)$
<b>Temperature Coefficient</b>	At 25/-40/25 °C & 25/200/25 °C	Within specified limits
<b>Insulation Resistance</b>	V- Block method for 1 minute duration At 500 V dc	> 10 <sup>3</sup> M $\Omega$

### Derating Curve:

