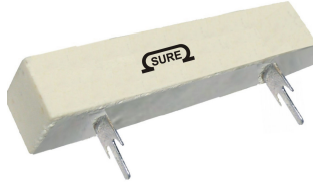



**SURE RESISTORS**
**SURE CERAMIC TYPE MOUNTED WIREWOUND RESISTOR - SBP**
**FEATURES**


- High Power dissipation in small volume
- Very stable mounting
- Non – flammable
- High pulse load handling capabilities
- High heat and moisture resistance
- Wire Wound
- Various terminal styles

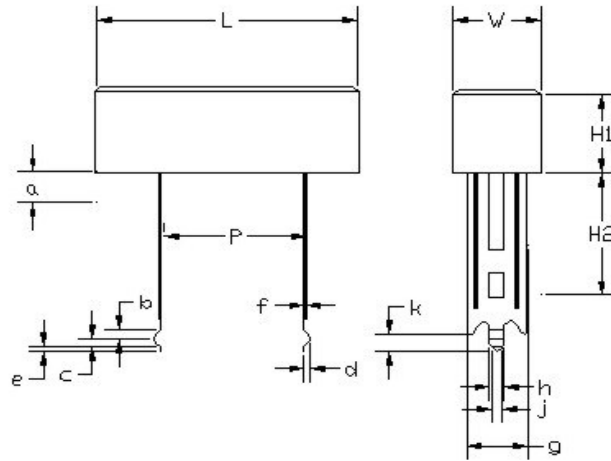
**QUICK REFERENCE DATA**

	SBP05	SBP08	SBP10	SBP15	SBP20
Resistance range, Series And tolerance	E24 Series				
± 10 %	0.005 Ω - 0.05 Ω				
± 5 %	0.06 Ω - 100 KΩ				
Maximum dissipation At T amb = 70 ° C	05 W	08 W	10 W	15 W	20 W
Limiting Voltage	Sq. Rt (Pn x R)				
Temperature coefficient	R < 10 Ω: 0 to 600 ppm/ ° C R ≥ 10 Ω: - 80 to + 140 ppm/° C				
Insulation voltage	> 2000 V				
Maximum permissible Body temperature	275 ° C				
Basic specification	IEC60115-1				
Operating temperature	- 25 ° C to + 155 ° C				
Stability Δ R/Rmax after Load	± 5.0% + 0.1Ω				
Climatic tests	± 3.0% + 0.1Ω				
Short time overload	± 2.0% + 0.1Ω				

**TECHNOLOGY**

SBP: The resistive element is a wire that is wound on a high grade porcelain rod. The terminals have fully welded construction to provide a good mechanical and electrical contact. To ensure a flexible assembling process, the resistors are offered in various terminals styles, such as long or short. The resistor body and lead ends are housed within a rectangular ceramic case which is non-flammable will not melt even at high overloads and is resistant to most commonly used cleaning solvents, in accordance with IEC 60068-2-45.

**MECHANICAL DATA**



Mechanical data

Watt	L	W	H1	H2	P
05	25.0 ± 1.0	9.5 ± 1.0	10.0 ± 1.0	10.0 ± 1.5 OR 25.0 ± 1.5	15.0 ± 1.0
08	38.0 ± 1.0	9.5 ± 1.0	9.0 ± 1.0	10.0 ± 1.5 OR 25.0 ± 1.5	28.0 ± 1.0
10	46.0 ± 1.0	9.5 ± 1.0	9.5 ± 1.0	10.0 ± 1.5 OR 25.0 ± 1.5	35.0 ± 1.0
15	50.0 ± 1.0	12.5 ± 1.0	12.5 ± 1.0	15.0 ± 1.5 OR 30.0 ± 1.5	32.5 ± 1.5
20	63.0 ± 1.5	12.5 ± 1.0	12.5 ± 1.0	15.0 ± 1.5 OR 30.0 ± 1.5	47.5 ± 1.5

Dimensions unless specified in mm

Table 2. Mechanical data.

**OTHER DIMENSIONS**

a	b	c	d	e	f	g
$5.0 \pm 0.5$	$1.5 \pm 0.1$	$1.8 \pm 0.1$	$1.0 \pm 0.1$	$0.80 \pm 0.1$	$0.5 \pm 0.02$	$7.3 \pm 0.3$

h	j	k
$1.5 \pm 0.1$	$1.4 \pm 0.1$	$4.5 \pm 0.2$

Dimensions unless specified in mm

**ELECTRICAL CHARACTERISTICS****DERATING**

The power that the resistor can dissipate depends on the operating temperature.

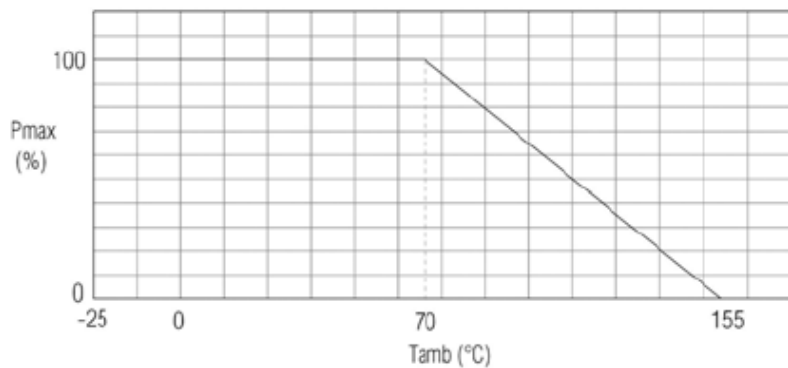
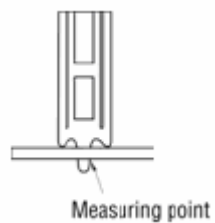


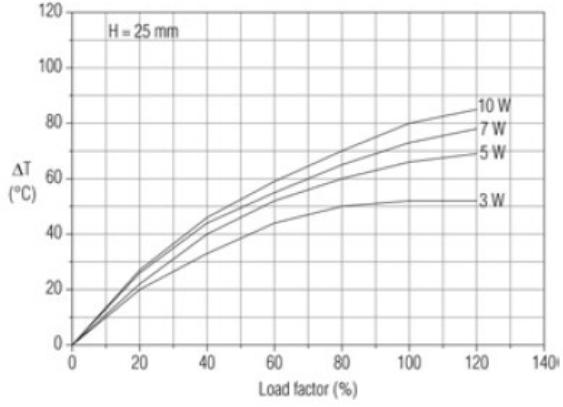
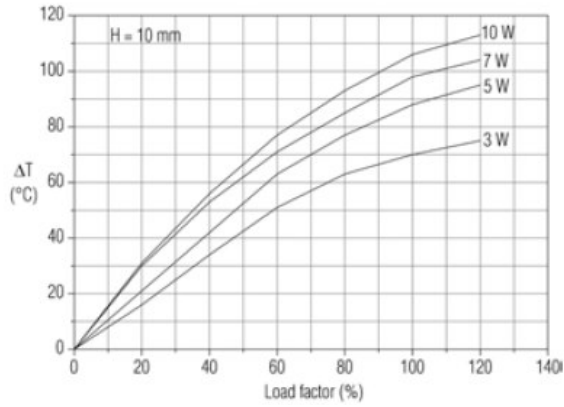
Fig. 2 Maximum dissipation ( $P_{max}$ ) in percentage of rated power as a function of the ambient temperature ( $T_{amb}$ )

**APPLICATION INFORMATION**

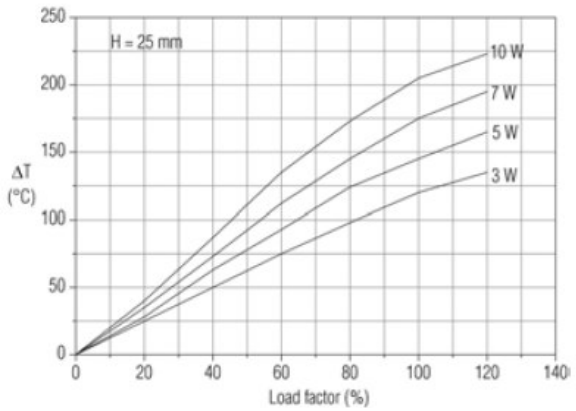
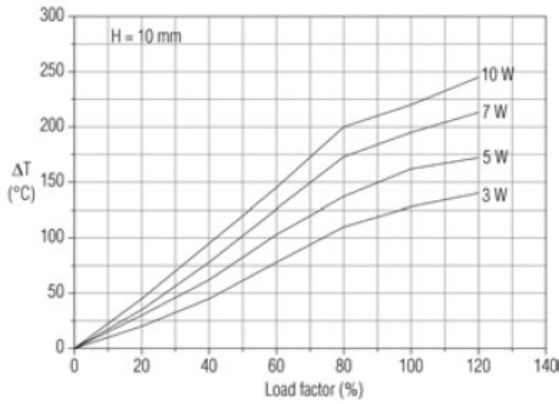
The temperature rise of the terminal (solder spot) and the resistor body (hot spot) as a function of load for terminal styles



Solder Spot



Hot Spot



**TESTS AND REQUIREMENTS**

Essentially all tests are carried out in accordance with the schedule of IEC publications 60115 – 1, category 25/155/56 (rated temperature range - 25 to + 155 °C; damp heat, long term, 56 days and along the lines of IEC publications 60068

2) "Recommended basic climatic and mechanical robustness testing procedure for electronic components" and under standard atmosphere conditions according to IEC 60068-1 sub clause 5.3, unless otherwise specified.

In some instances deviations from IEC applications were necessary for our specified method.

TEST	PROCEDURE	REQUIREMENTS
Insulation resistance	500 V (DC) during 1 minute; V-block method	$R_{ins \min} 100 \text{ M}\Omega$
Voltage proof on insulation	1000 V (RMS) during 1minute; V-block method	No damage $\Delta R/R_{\max} \pm 0.5\% + 0.05 \Omega$
Temperature coefficient	Between - 25 °C and + 155 °C: RMW: $R < 10 \Omega$ : $R \geq 10 \Omega$ :  RMF:	0 to 600 ppm/°C - 80 to + 140 ppm/°C  $\pm 250 \text{ ppm/}^\circ\text{C}$
Short time overload	Room temperature $P = 10 \times P_n, 5 \text{ s}, V_{\max}$ for: RMF03 $\leq 1500 \text{ V}$ RMF05 $\leq 2000 \text{ V}$ RMF07 $\leq 2500 \text{ V}$ RMF10 $\leq 3000 \text{ V}$	$\Delta R/R_{\max} \pm 2\% + 0.1 \Omega$
Robustness of resistor body	Load $200 \pm 10 \text{ N}$	No damage $\Delta R/R_{\max} \pm 0.5\% + 0.05\Omega$
Robustness of termination		No damage
Tensile all samples	Load $45 \text{ N}; 10 \text{ s}$	
Solderability (after ageing)	16 h at 155 °C; leads immersed in flux 600, $2 \pm 0.5 \text{ s}$ in a solder bath at $235 \pm 5 \text{ }^\circ\text{C}$	Good tinning; ( $\geq 95\%$ covered) No visible damage
Resistance to soldering heat	Thermal shock: 3 s, 350 °C	$\Delta R/R_{\max} \pm 1\% + 0.05\Omega$
Rapid change of temperature	30 minutes at -25 °C and 30 minutes at +155 °C; 5 cycles	No visual damage $\Delta R/R_{\max} \pm 1\% + 0.05\Omega$
Vibration	Frequency 10 a 55 Hz, displacement 0.75 mm or acceleration 10 g, three directions; total 6 h (3x2 h)	No damage $\Delta R/R_{\max} \pm 1\% + 0.05\Omega$