

## Type S Series

### Key Features

Low Profile  
Design

Tape and reel  
packaging

Wide Value  
range

Up to 3W  
Power



With this robust wire wound resistor, one design concept allows an engineer to choose from three styles (Lo Ohm, Power, or Ultra Precision) while staying within the new standard circuit board land pattern guidelines now accepted by the wirewound resistor industry. Each size offers low profile case design with flexible tinned copper terminations for reliable solder joints. All styles utilise a fully welded construction technique. These features allow the S Series to withstand the higher temperatures associated with reflow, vapour phase, or infrared (IR) manufacturing processes without degradation.

### Characteristics – Electrical

	SL – Low Ohm	SP - Power	SU - Precision
Resistance Values S-05	--	R01 – 400R	--
Resistance Values S-1	R005 – R075	R10 – 5K0	1R0 – 300K
Resistance Values S-2	R005 – R099	R10 – 10K	1R0 – 1M0
Resistance Values S-3	R005 – R099	R10 – 45K	1R0 – 2M0
Standard Value Grid	E24	E96	E192
Resistance Tolerance	1%, 3%, 5%	0.1% to 5%	0.005% to 1%
Resistance Tolerance (S05)	--	<1R 1%-5% 1R-100R 0.1%-5% >100R .05%-5%	--
Power Rating S-05 @ 70°C	--	0.5W	--
Power Rating S-1 @ 25°C	1W	1.5W	0.125W
Power Rating S-2 @ 25°C	2W	2.5W	0.25W
Power Rating S-3 @ 25°C	3W	3.5W	0.5W
Derating	See Below Chart		
Max. Operating Voltage S-05	--	$\sqrt{P \times R}$	--
Max. Operating Voltage S-1	$\sqrt{P \times R}$	58V	100V
Max. Operating Voltage S-2	$\sqrt{P \times R}$	127V	300V
Max. Operating Voltage S-3	$\sqrt{P \times R}$	212V	400V

## Environmental Characteristics

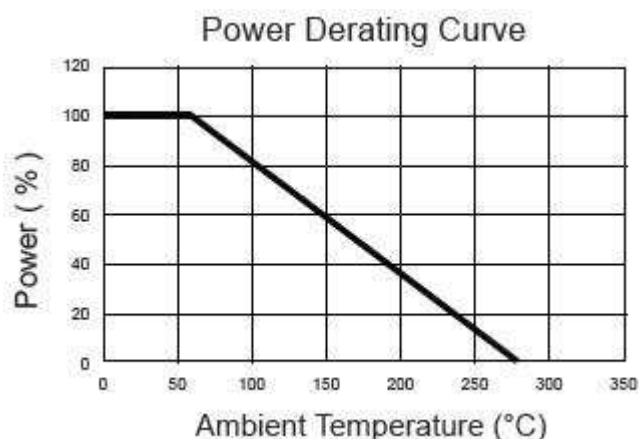
	Method	Typical $\Delta R$
Resistance to solder heat	260°C for 10 seconds	$\pm 0.1\%$ (SP05 $\pm 0.5\% = 0.05\Omega$ )
Load Life	2000 hours at rated power at 25°C	$\pm 0.2\%$ (SP05 $\pm 1.0\% + 0.05\Omega$ )
Moisture Resistance	240 hours with humidity ranging from 80% RH to 98% RH.	$\pm 0.1\%$ (SP05 $\pm 1.0\% + 0.05\Omega$ )
Thermal Shock	-55°C for 15 minutes no load.	$\pm 0.1\%$ (SP05 $\pm 0.5\% + 0.05\Omega$ )
Short Term Overload	5 times rated power for 5 seconds	$\pm 0.1\%$ (SP05 $\pm 0.5\% + 0.05\Omega$ )
Dielectric Withstand	1000v	
Solderability	95% coverage within 1/16" of contact point.	
Flammability	UL 94V-0	

Reference standards MIL-STD 202

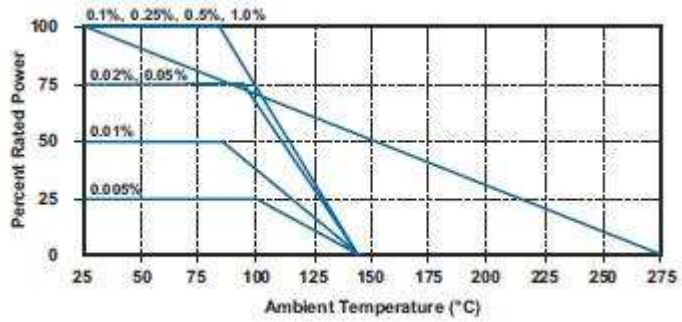
## Temperature Coefficient of Resistance (TCR)

Range	L	P	U
R005 - R20	<100PPM	--	--
R10 - R99	--	$\pm 90\text{ppm}$ SP05 on application	--
1R0 - 10R	--	$\pm 50\text{ppm}$	$\pm 25\text{ppm}$
11R - 100R	--	$\pm 30\text{ppm}$ (SP05 $\pm 20\text{PPM}$ )	$\pm 10\text{ppm}$
102R and over	--	$\pm 20\text{ppm}$	$\pm 10\text{ppm}$

## Derating Curve (SP05 only)

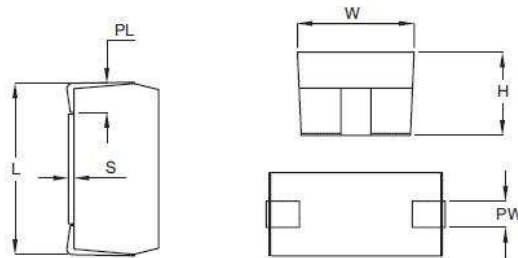


### Derating Curve S1, S2, S3



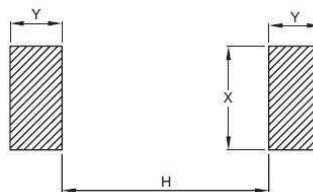
Note: U Style derates to 145°C. All others derate to 275°C

### Dimensions



Type	Length (L) ±0.38	Width (W) ±0.13	Height (H) ±0.38	Stand Off (S) ±0.13	Pad Width (PW) ±0.38	Pad Length (PL) ±0.25	Flat Lead Thickness ±0.05
SP05	5.1	3.3±0.4	2.8±0.4	0.13	1.5±0.4	1.0±0.4	0.15
S*1	6.48	3.81	2.84	0.13	1.27	0.89	0.15
S*2	11.6	5.84	5.33	0.13	1.65	1.78	0.15
S*3	14.6	6.98	6.48	0.13	1.9	1.27	0.15

### PCB Layout



Type	H	X	Y
SP05	3.2	2.5	1.6
S*1	3.81	1.65	2.16
S*2	7.11	2.29	2.92
S*3	11.8	2.67	2.41

## Packaging

Product supplied on tape and reel in the following quantities:

Type	7" REEL	13" REEL
SP05	650	3000
S*1	750	2000
S*2	--	1000
S*3	--	500

## Cleaning

After soldering use cleaning solvents such as chlorosen, dyefreon, suitable aqueous or semi aqueous cleaner.

## Storage

To prevent damage to the electrode, be sure to observe the following cautions for storage.

- Store in 40°C maximum ambient temperature, and 70% maximum R.H.
- For maximum possible shelf life do not disturb polythene sleeve until you are ready to use.
- Store where there are no harmful gases containing sulphur or chlorine.

S	P	1	1R0	J	T
Common Part	Resistor Type	Case Size	Resistance Value	Resistance tolerance	Pack Style
S – Surface Mount Wirewound Resistor	L – Low Ohmic P – Power U - Precision	05 – 1/2W 1 – 1W 2 – 2W 3 – 3W	R10 – 0.1Ω 1R0 - 1Ω 1K0 – 1KΩ	K ±10% J ±5% E ±3% F ±1% D ±0.5% C ±0.25% B ±0.1% A ±0.05% Q ±0.02% T ±0.01% Z ±0.005%	T – 7" REEL R – 13" REEL