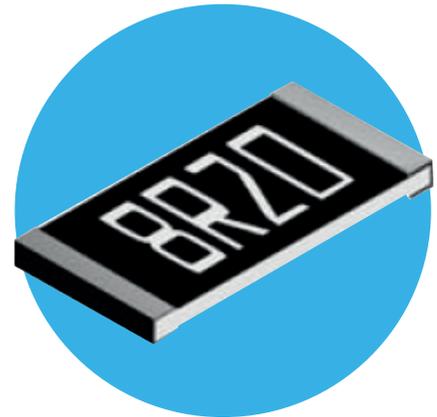


# General Purpose Precision Surface Mount Resistors

**GPCF Series**
**OBSOLETE**

- Precision metal film technology
- Ohmic range 10R – 100K
- Precision to  $\pm 0.1\%$  and 25ppm/ $^{\circ}\text{C}$
- Load life stability and humidity to 0.5%



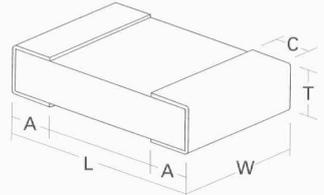
All parts are Pb-free and comply with EU Directive 2011/65/EU amended by (EU) 2015/863 (RoHS3)

## Electrical Data

		0402	0603	0805	1206
Power rating @70°C	watts	0.063	0.1	0.125	0.25
Limiting element voltage	volts	50	75	150	
Resistance range	ohms	10R – 100K			
Resistance tolerance	%	0.1, 1			
TCR (20 to 70°C)	ppm/ $^{\circ}\text{C}$	25, 50			
Values		E24 & E96 preferred. Other values may be available by request.			
Insulation resistance (100V, 60s)	ohms	1G min			
Voltage proof (60s)	volts	300		500	
Ambient temperature range	$^{\circ}\text{C}$	-55 to 155			

## Physical Data

	Dimensions (mm) & weight (mg)					
	L	W	T max	A	C	Wt nom
0402	$1.0 \pm 0.1$	$0.5 \pm 0.05$	0.45	$0.25 \pm 0.1$	$0.2 \pm 0.1$	0.65
0603	$1.6 \pm 0.1$	$0.8 \pm 0.15$	0.55	$0.3 \pm 0.2$	$0.3 \pm 0.2$	2.05
0805	$2.0 \pm 0.15$	$1.25 \pm 0.15$	0.65	$0.4 \pm 0.2$	$0.4 \pm 0.2$	4.25
1206	$3.1 \pm 0.15$	$1.55 \pm 0.15$	0.70	$0.45 \pm 0.2$	$0.5 \pm 0.3$	8.06



Wrap-around terminations  
(3 faces)

### Construction

A thin-film material is selectively deposited on a 96% alumina substrate together with metallic contacts at each end of the resistor. The unadjusted resistors are heat treated to give the required TCR and stability, then a precisely controlled laser trim process adjusts the resistance value. Epoxy protection is applied and wrap-around terminations are added and plated with nickel then tin. Each resistor is measured immediately before packing into tape.

### Terminations

The chips are supplied with 100% Sn matte plated wrap-around terminations suitable for soldering.

### Solderability

The terminations have an electroplated nickel barrier and tin coating. This ensures excellent 'leach' resistance properties and solderability.

### Marking

The 0402 chips are not marked. 3 digit marking is used on the 0603 size and 4 digit marking on larger sizes and E96 values.

### General Note

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GPCF Series

## Performance Data

Test	Conditions		Maximum (+0.05R)
Load life	1000 hours rated load @ 70°C	ΔR%	0.5
Humidity	240 hours @ 40°C, 90%RH	ΔR%	0.5
Short term overload	Lesser of 2.5 x rated power & 2 x LEV, for 5s	ΔR%	0.5
High temperature operation	96 hours at 155°C	ΔR%	0.5
Temperature cycle	5 cycles -55°C to 155°C	ΔR%	0.5
Resistance to solder heat	270°C for 10s	ΔR%	0.25
Solderability	245°C for 2s		95% minimum coverage

### Packaging

GPCF Resistors are supplied paper taped and reeled as per IEC 286-3.

### Application Notes

GPCF resistors are ideally suited for handling by automatic methods due to their rectangular shape and the small dimensional tolerances. Electrical connection to a ceramic substrate or to a printed circuit board can be made by reflow or wave soldering of wrap-around terminations.

Wrap-around terminations provide good leach properties and ensure reliable contact. Due to the robust construction, the GPCF can be immersed in the solder bath for 30 seconds at 260°C. This enables the resistor to be mounted on one side of a printed circuit board and wire-leaded components applied on the other side.

GPCF resistors themselves can operate at a maximum temperature of 155°C. For soldered resistors, the joint temperature should not exceed 110°C. This condition is met when the stated power levels at 70°C are used.

## Ordering Procedure

GPCF0603-1K54BT5 (0603, 1.54 kilohms, ±0.1%, ±25ppm/°C, Pb-free)



1 Type	2 Size	3 TCR	4 Value	5 Tolerance	6 Packing		
GPCF	0402	Blank = ±25ppm/°C	E24 = 3 characters E96 = 4 characters R = ohms K = kilohms	B = ±0.1%	T10	0402	10,000/reel
	0603	02 = ±50ppm/°C		F = ±1%	T5	0603, 0805, 1206	5000/reel
	0805						
	1206						

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