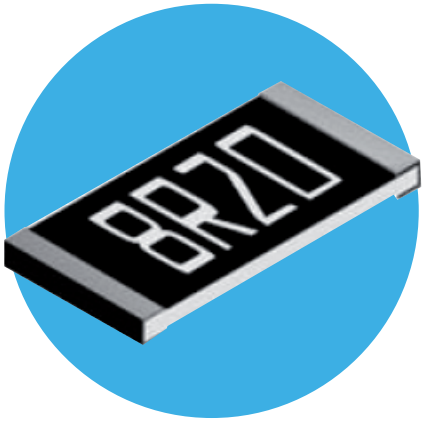
Resistors

General Purpose Precision Surface Mount Resistors

GPCF Series

- Precision metal film technology
- Ohmic range 10R – 100K
- Precision to ±0.1% and 25ppm/°C
- Load life stability and humidity to 0.5%



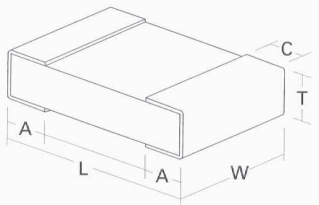
All parts are Pb-free and comply with EU Directive 2011/65/EU (RoHS2)

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/°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	°C	-55 to 155			

Physical Data

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

TT Electronics reserves the right to make changes in product specification without notice or liability.
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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	300 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)

G	P	C	F	0	6	0	3			-	1	K	5	4	B	T	5
1				2			3				4				5	6	

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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