

# General Purpose Carbon Film Resistors

GCF Series

- Drop in replacement for CF/CR
- Low cost
- Extensive resistance range
- Wide range of sizes and power ratings
- RoHS compliant



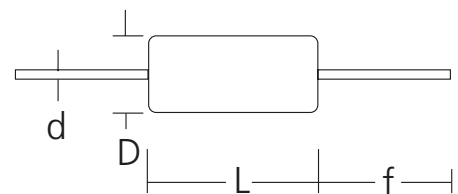
## Electrical Data

		GCF1/8	GCF1/4	GCF1/4S	GCF1/2	GCF1/2S	GCF1	GCF1S	GCF2	GCF2S	GCF3S	
Power rating @70°C	watts	0.125	0.25	0.25	0.5	0.5	1	1	2	2	3	
Resistance range	ohms	1R0-1M0	1R0-10M	1R0-1M0	1R0-10M	1R0-10M	1R0-10M	1R0-10M	1R0-10M	1R0-10M	1R0-10M	
Limiting element voltage	volts	200	250	200	350	250	500	400	500	500	500	
Max overload voltage	volts	400	500	400	700	500	1000	700	1000	800	1000	
Dielectric withstanding voltage	volts	300	500	300	700	500	1000	700	1000	700	1000	
TCR	ppm/°C							<10R	:	0±350		
								<10R ~ <60K	:	0 ~ -500		
								<60K ~ <200K	:	0 ~ -700		
								<200K ~ <1M0	:	0 ~ -1000		
								<1M0K ~ 10M	:	0 ~ -1500		
Resistance tolerance	%							± 5				
Standard values								E24				
Ambient temperature range	°C							-55 to +155				

Note: 'S' denotes smaller body size - see physical data

## Physical Data

	L max	D max	f min	d ± 0.10	PCB mounting centres	min. Bend Radius	Wt. nom.
GCF1/8	3.5	1.85	25	0.5	7.6	0.5	0.1
GCF1/4	6.8	2.5	25	0.55	10.2	0.55	0.3
GCF1/4S	3.5	1.85	25	0.5	7.6	0.5	0.1
GCF1/2	10	3.5	25	0.6	15.2	0.6	0.55
GCF1/2S	6.8	3	25	0.55	10.2	0.55	0.35
GCF1	16	5.5	25	0.8	20.3	1.2	1.0
GCF1S	12	5	25	0.63	17.8	0.6	0.65
GCF2	17.5	6.5	25	0.8	22.9	1.2	1.2
GCF2S	16	5.5	25	0.8	20.3	1.2	1.0
GCF3S	17.5	6.5	25	0.8	22.9	1.2	1.2



### General Note

Welwyn Components reserves the right to make changes in product specification without notice or liability. All information is subject to Welwyn's own data and is considered accurate at time of going to print.

## Construction

A carbon film is deposited onto a ceramic former. Plated steel caps are then fitted before the resistor is adjusted to value by a helical cut in the film. Termination wires are then welded to the caps and the body of the resistor is protected with an epoxy coating.

## Terminations

**Material** Hot tin dipped copper wire.

**Strength** The terminations meet the requirements of IEC 68.2.21

**Solderability** The terminations meet the requirements of IEC 115-1, Clause 4.17.3.2

## Marketing

Resistance value and tolerance are identified in accordance with IEC 62 4-band colour code.

## Solvent Resistance

The body protection and marking are resistant to all normal industrial cleaning solvents suitable for printed circuits.

## Performance Data

		Maximum Change
Load life	$\Delta R\%$	3
Load life in humidity	$\Delta R\%$	5
Temperature rapaid change	$\Delta R\%$	1 + 0.05 $\Omega$
Derating from rated power at 70°C		Zero at 155°C
Short term overload	$\Delta R\%$	1 + 0.05 $\Omega$
Terminal strength		No evidence of mechanical damage
Resistance to solder heat	$\Delta R\%$	1 + 0.05 $\Omega$
Solderability		Minimum of 95% coverage
Resistance to solder heat		No deterioration of protective coating and marking
Insulation resistance	min	1000M
Dielectric withstanding		No evidence of flahover, mechanical damage, arcing of insulation breakdown

## Packaging

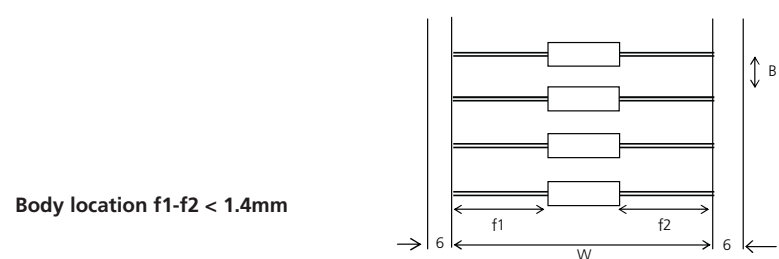
All GCF resistors are supplied ammo tape packed ready for loading on to automatic sequencing and insertion machines.

Component wires will not protrude beyond the outside edge of the tapes.

Alternative packaging available by request

GCF	1/8	1/4	1/4S	1/2	1/2S	1	1S	2	2S	3S
W	52	52	52	52	52	52	52	67	67	67
B	5	5	5	5	5	10	5	10	10	10

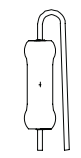
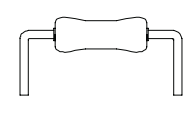
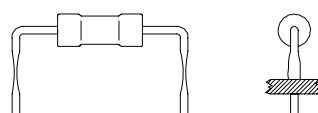


**Body location f1-f2 < 1.4mm**

## Application Notes

If the resistors are to dissipate full rated power, it is recommended that the terminations should not be soldered closer than 4mm from the body. Due to operating temperature limits imposed by some PCB materials, derating may be necessary.

GCF resistors can also be supplied with radial, goalpost or lancet pre-formed leads. Consult Factory for details.

Radial	Goalpost	Lancet
		

## Ordering Procedure

Example: GCF1/4 small size at 10 kilohms and 5% tolerance and ammo packed in a box with a standard quantity of 5000pcs.

**GCF1 / 4S - 10K J A5**

Type \_\_\_\_\_

Value (use IEC62 code) \_\_\_\_\_

Tolerance (use IEC62 code) \_\_\_\_\_

Packing \_\_\_\_\_

A5	Ammo Pack	GCF1/8, GCF1/4, GCF1/4S, GCF1/2S,	5000 / Box
A1		GCF1/2, GCF1, GCF1S, GCF2S	1000 / Box
A05		GCF2, GCF3S	500 / Box