

CARBON FILM RESISTORS CR/FCR SERIES

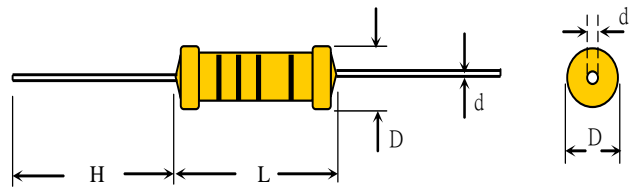
Feature

- Industry's lowest cost
- Excellent long term stability
- Used in all kinds of application
- Standard Value: 10R-10Meg in E24 series
- Standard tolerance: +/-5%
- Flameproof coating available (As FCR type)
- Operating Temperature : -55°C ~+125°C

Material

Element: Deposited Carbon Film
 Core: High Purity Ceramic Al₂O₃
 Termination: Standard solder-plated copper lead
 Coating: Epoxy, (FCR is grey silicone)

Dimension



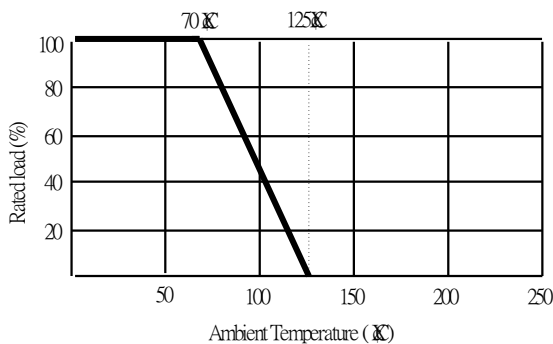
General Specification

| TYPE | DIMENSION(mm) | | | | POWER RATING | MAXIMUM WORKING VOLTAGE | MAXIMUM OVERLOAD VOLTAGE | RESISTANCE RANGE ± 5% |
|-------|---------------|---------|----------|--------|--------------|-------------------------|--------------------------|-----------------------|
| | L | D | H | d±0.05 | | | | |
| CR125 | 3.2±0.2 | 1.6±0.2 | 27.0±3.0 | 0.45 | 1/8W | 200V | 400V | 1Ω -10MΩ |
| CR025 | 6.0±0.5 | 2.3±0.3 | 27.0±3.0 | 0.55 | 1/4W | 250V | 500V | 0.1Ω -22MΩ |
| CR050 | 9.0±0.5 | 3.9±0.5 | 27.0±3.0 | 0.64 | 1/2W | 350V | 700V | 0.1Ω -22MΩ |
| CR100 | 11.0±1.0 | 4.0±0.5 | 33.0±3.0 | 0.75 | 1W | 500V | 1000V | 0.1Ω -22MΩ |
| CR200 | 15.0±1.0 | 5.0±0.5 | 33.0±3.0 | 0.75 | 2W | 500V | 1000V | 0.1Ω -22MΩ |
| CR300 | 17.0±1.0 | 6.0±0.5 | 33.0±3.0 | 0.75 | 3W | 500V | 1000V | 0.1Ω -20MΩ |

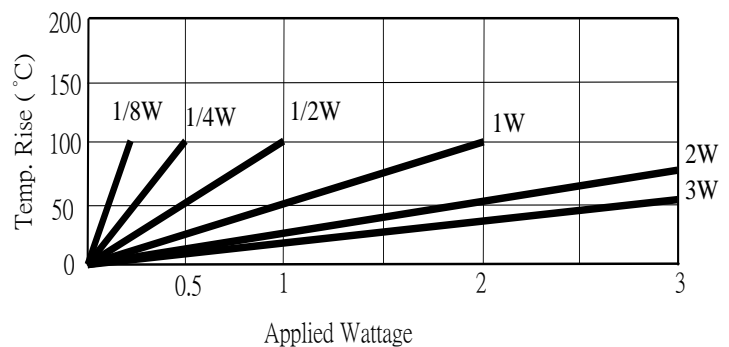
* Maximum Working Voltage determined by $E = \sqrt{P \cdot R}$, where E should not exceed value listed in column above.

**Maximum Overload Voltage equals to 2.5XE, but should not exceed value listed in column above.

Derating Curve



Temperature Rise



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Characteristics

| Item | Requirement | Test Method |
|---------------------------------|--|---|
| Short Time Overload | $\pm(0.75\%+0.05\Omega)$ | JIS-C-5201-1 5.5 RCWV*2.5 or Max. overload voltage for 5 seconds |
| Insulation Resistance | $> 1000M\Omega$ | JIS-C-5201-1 5.6 Apply 100VDC for 1 minute |
| Endurance | $\pm(3\%+0.05\Omega)$ | JIS-C-5201-1 7.10 70 \pm 2 $^{\circ}$ C, Max. RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5hrs "OFF" |
| Damp Heat with Load | $\leq 100K\Omega \pm 3\%$ $\geq 100K\Omega \pm 5\%$ | JIS-C-5201-1 7.9 40 \pm 2 $^{\circ}$ C, 90~95% R.H. RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5hrs "OFF" |
| Solderability | 90% min. Coverage | JIS-C-5201-1 6.5 245 \pm 5 $^{\circ}$ C for 3 seconds |
| Dielectric Withstanding Voltage | By Type | JIS-C-5201-1 5.7 Apply Max. Overload Voltage for 1 minute |
| Temperature Coefficient | $< 100K\Omega +350ppm\sim 500ppm$ $100K\Omega\sim 1M\Omega -0ppm\sim 700ppm$ $> 1 M\Omega -0ppm\sim 1500ppm$ | Resistance value at room temperature and room Temperature+100 $^{\circ}$ C |
| Pulse Overload | $\pm(1\%+0.05\Omega)$ | JIS-C-5201-1 5.8 4 times RCWV for 10000 cycles with 1 second "ON" and 25 seconds "OFF" |
| Resistance To Solvent | No deterioration of coatings and markings | JIS-C-5201-1 6.9 Trichroethane for 1 min. with ultrasonic |
| Terminal Strength | Tensile: ≥ 2.5 kg | Direct Load for 10 seconds In the direction off the terminal leads |

*Storage Temperature : 25 \pm 3 $^{\circ}$ C ; Humidity < 80%RH

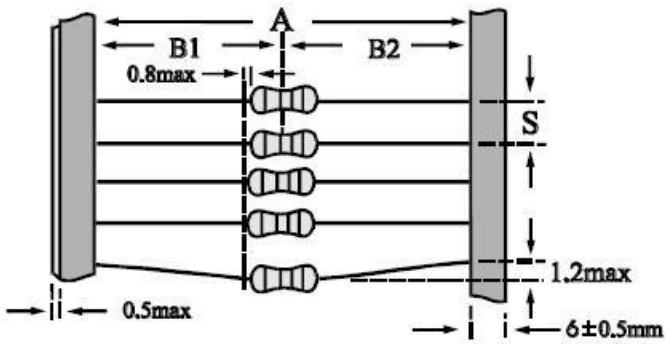
Part Numbering

| | | | | | |
|--------------|-------------|--------------------------|--------------|-----------------|----------------------|
| <u>CR125</u> | <u>J</u> | <u>P</u> | <u>TB</u> | <u>=</u> | <u>10R</u> |
| ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| Type/Power | Tol. | Style | Package | ppm | Resistance |
| CR125 | J= \pm 5% | P=Pana-sert | B=Bulk | =Based on spec. | 10R = 10 Ω |
| CR025 | | V=Avi-sert | TB=Tape/box | | 1K2R = 1.2K Ω |
| CR050 | | M=Goal-post | TR=Tape/reel | | 1MR= 1M Ω |
| CR100 | | F=Lead forming | | | |
| CR200 | | MB=Lead forming | | | |
| CR300 | | (omit if not applicable) | | | |

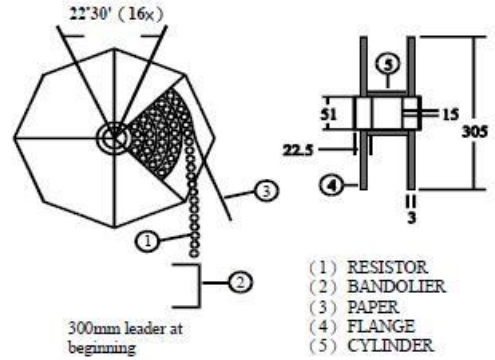
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Taping/Packing Specification

Packing Methods



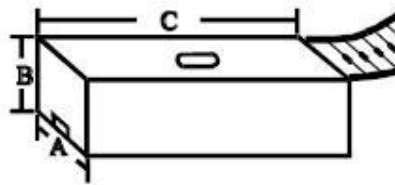
Reel Packing



- (1) RESISTOR
- (2) BANDOLIER
- (3) PAPER
- (4) FLANGE
- (5) CYLINDER

| TYPE | PACKING METHOD | | | REEL PACKING | |
|-------|----------------|-------|----|-------------------|------|
| | A | B1-B2 | S | Across Flange (A) | Q'TY |
| | | Max | | | |
| CR125 | 52+1/-0 | 1.2 | 5 | 72 | 5000 |
| CR025 | 52+1/-0 | 1.2 | 5 | 72 | 5000 |
| CR050 | 52+1/-0 | 1.2 | 5 | 72 | 2000 |
| CR100 | 52+1/-0 | 1.2 | 5 | 72 | 1000 |
| | 73+1/-0 | 1.5 | 5 | 72 | 1000 |
| CR200 | 52+1/-0 | 1.2 | 10 | 95 | 1000 |
| | 73+1/-0 | 1.5 | 10 | 95 | 1000 |
| CR300 | 73+1/-0 | 1.5 | 10 | 95 | 1000 |

Ammo Packing



| TYPE | PACKING METHOD | | | AMMO PACKING | | | |
|-------|------------------|----------|----|--------------|--------|-----|------|
| | A | B1-B2 | S | A | B | C | Q'TY |
| | | Max | | | | | |
| CR125 | 52+1/-0 | 1.2 | 5 | 80 | 68 | 255 | 5000 |
| CR025 | 52+1/-0 | 1.2 | 5 | 75 | 22 | 267 | 1000 |
| | | 1.2 | 5 | 85 | 103 | 263 | 5000 |
| CR050 | 52+1/-0 | 1.2 | 5 | 85 | 95 | 263 | 2000 |
| CR100 | 52+1/-0, 73+1/-0 | 1.2, 1.5 | 5 | 85,103 | 102,85 | 263 | 1000 |
| CR200 | 52+1/-0, 73+1/-0 | 1.2, 1.5 | 10 | 85, 103 | 102,95 | 265 | 1000 |
| CR300 | 73+1/-0 | 1.2, 1.5 | 10 | 103 | 75 | 265 | 1000 |