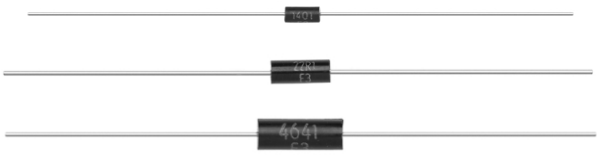
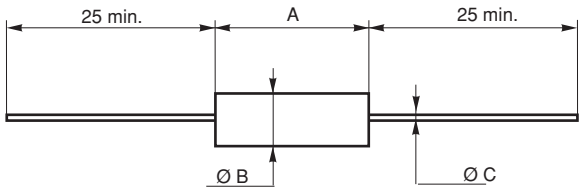
# Molded Metal Film Very High Stability and Precision Resistors



## FEATURES

- 0.1W to 2W at 70°C
- NF C 83-230
- CECC 40 100
- Very high stability: drift <0.1% after 1000 hours
- Reduced total excursion: high initial precision (to ± 0.1%) with low temperature coefficient (down to ± 15ppm/°C)
- High reliability
- These models of this series have been the first ones qual ified by the CNES for spatial applications (certificate N°4 dated October 22, 1972)
- Wide range ohmic values 1Ω to 5MΩ
- Accurate dimensions, high insulation and great mechanical strength
- High climatic performances: – 65°C/+ 155°C/56 days
- Matching tolerance: 0.1%
- Tracking T.C.: 5ppm/°C

## DIMENSIONS in millimeters




| SERIES / DIMENSIONS | RCMA 02 | RCMA 05 | RCMA 08 | RCMA 1 | RCMA 2 | RCMA 4 |
|---|---|---|---|---|---|---|
| A max. | 6.7 | 10.4 | 16.5 | 19.3 | 29 | 54 |
| Ø B max. | 2.5 | 3.66 | 6.4 | 6.4 | 10.2 | 10.2 |
| Ø C | 0.6 | 0.6 | 0.8 | 0.8 | 0.8 | 0.8 |
| Unit weight in g | 0.26 | 0.46 | 1.3 | 1.5 | 4.4 | 13 |

## TECHNICAL SPECIFICATIONS

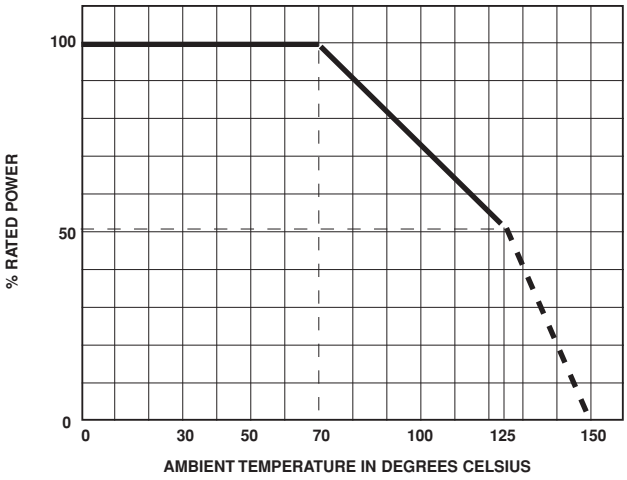
| VISHAY SFERNICE SERIES | | RCMA 02 | RCMA 05 | RCMA 08 | RCMA 1 | RCMA 2 | RCMA 4 |
|---|---|---|---|---|---|---|---|
| NF C 83-230 | | RS58P K4 | RS63P K4 | RS68P | – | – | – |
| CECC 40 100-803 | | BE | CE | DE | – | – | – |
| Power Rating at 70°C | | 0.125W | 0.250W | 0.500W | 0.75W | 1W | 2W |
| Resistance Value Range in Relation to – Tolerance – Temperature Coefficient | K3 ± 0.2% | 10Ω 332kΩ | 10Ω 332kΩ | 10Ω 1MΩ | 10Ω 1MΩ | 10Ω 1MΩ | 10Ω 2.5MΩ |
| | ± 0.5% ± 1% | 1Ω 1MΩ | 1Ω 1MΩ | 1Ω 1.5MΩ | 1Ω 2MΩ | 1Ω 2.5MΩ | 1Ω 5MΩ |
| | K4 ± 0.1% ± 0.2% | 10Ω 332kΩ | 10Ω 332kΩ | 10Ω 1MΩ | 10Ω 1MΩ | 10Ω 1MΩ | 10Ω 2.5MΩ |
| | ± 0.5% ± 1% | 1Ω 1MΩ | 1Ω 1MΩ | 1Ω 1.5MΩ | 1Ω 2MΩ | 1Ω 2.5MΩ | 1Ω 5MΩ |
| | K5 ± 0.1% ± 0.2% | 10Ω 332kΩ | 10Ω 332kΩ | 10Ω 750kΩ | 10Ω 750kΩ | 10Ω 1MΩ | 10Ω 2MΩ |
| | ± 0.5% ± 1% | 10Ω 1MΩ | 10Ω 1MΩ | 10Ω 1.5MΩ | 10Ω 2MΩ | 10Ω 2.5MΩ | 10Ω 2.5MΩ |
| Maximum Voltage | | 300V | 350V | 400V | 500V | 600V | 800V |
| Critical Resistance | | 720kΩ | 490kΩ | 320kΩ | 333kΩ | 360kΩ | 320kΩ |
| Temperature Coefficient | rated in the range – 55°C/+ 155°C | K3 ≤ ± 50ppm/°C | | | K4 ≤ ± 25ppm/°C | | |
| | typical in the range 0°C/+ 155°C | K5 ≤ ±15ppm/°C | | | | | |
| Insulation Resistance | | > $10^7$MΩ | | | | | |
| Voltage Coefficient | | 0.0001% Volt | | | | | |
| Environmental Specifications | | – 65°C/+ 155°C/56 days | | | | | |

Undergoes European Quality Insurance System (CECC)

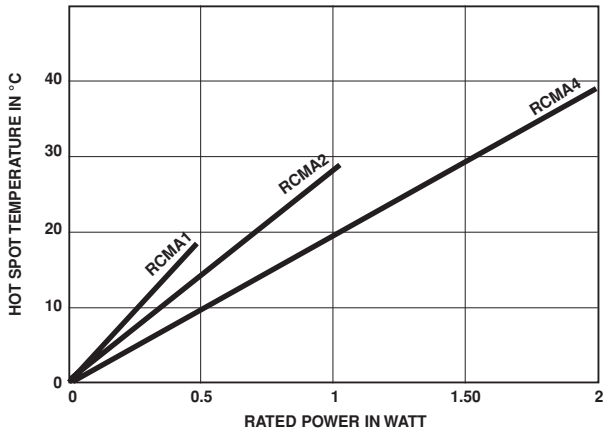
## PERFORMANCE

| NF C 83-230 - CECC 40 100 | | | TYPICAL VALUES AND DRIFTS |
|---|---|---|---|
| **TESTS** | **CONDITIONS STD 202** | **REQUIREMENTS** | |
| **Load Life at max. Category Temperature** | 1000 h at 125°C 50% of Pn | ≤ ± 1%<br>Insulation resist. >1GΩ | ± 0.25% or 0.05Ω |
| **Short Time Overload** | 2.5 Um/5 s<br>limited to 2 Un | ≤ ± (0.25% + 0.05Ω) | ± 0.1% or 0.05Ω |
| **Damp Heat Humidity (Steady State)** | 56 days<br>with low load | ≤ ± (1% + 0.05Ω)<br>Insulation resist. >1GΩ | ± 0.2% or 0.05Ω |
| **Rapid Temperature Change** | – 55°C + 155°C | ≤ ± (0.25% + 0.05Ω) | ± 0.1% or 0.05Ω |
| **Climatic Sequence** | – 65°C + 155°C | ≤ ± (1% + 0.05Ω)<br>Insulation resist. >1GΩ | ± 0.25% or 0.05Ω<br>Insulation resist. 106MΩ |
| **Terminal Strength** | Pull - Twist - 2 bends | ≤ ± (0.25% + 0.05Ω) | ± 0.05% or 0.05Ω |
| **Vibration** | 10 to 500Hz | ≤ ± (0.25% + 0.05Ω) | ± 0.05% or 0.05Ω |
| **Soldering (Thermal Shock)** | + 260°C 10 s | ≤ ± (0,25% + 0.05Ω) | ± 0.05% or 0.05Ω |
| **Load Life** | cycle 90'/30'<br>1000 h at Pn at 70°C | ≤ ± (1% + 0.05Ω)<br>Insulation resist. > 1GΩ | ± 0.1% or 0.05Ω |
| **Shelf Life** | 1 year<br>ambient temperature | – | ± 0.1% or 0.05Ω |

## POWER RATING CHART




## TEMPERATURE RISE




## PRACTICAL OPERATING TOLERANCES

Tables 2 and 3 show the basic characteristics and max. values under different stresses. In fact, the values and drifts are maintained to within narrower limits.

| **Temperature coefficient between – 10°C and + 70°C** | **K5 ≤ ± 10ppm/°C K4 ≤ ± 15ppm/°C** | |
|---|---|---|
| LONG LIFE<br>90'/30' cycles<br>ambient temperature 70°C | **1000 hours at Pr** | **± 0.05%** |
| | 10.000 hours at Pr | ± 0.15% |

So, in operation under the specified conditions (Pr at 70°C) the total drift (load life + T.C.) of a RCMA K4 does not exceed ± 0.25%.

## SPECIAL APPLICATIONS

Temperature coefficient tracking to 5ppm/°C.

Tolerance matching to 0.05%.

Selection of positive or negative T.C. in temperature range of – 20°C to + 125°C.

For these applications and other requirements consult VISHAY SFERNICE.

## MARKING

Printed: SFERNICE trademark, series, style (due to lack of space RCMA 02 is printed MA 02), ohmic value (in Ω), tolerance (in %), temperature coefficient, manufacturing date.

## ORDERING INFORMATION

| RCMA | 02 | | 100kΩ | ± 0.1% | K5 | AMMO-PACK |
|---|---|---|---|---|---|---|
| SERIES | STYLE | SPECIAL DESIGN<br>Method N°<br>Optional | OHMIC VALUE | TOLERANCE | TEMPERATURE COEFFICIENT | PACKAGING<br>Ammo-pack: Tape in a box or tape and reel |