

# PMR209

- RC unit, class X2, metallized paper with integrated resistor
- 0.047 – 0.47  $\mu\text{F}$ , 22 – 470  $\Omega$ , 250 VAC, +85 °C

- Small dimensions
- Excellent self-healing properties. Ensures long life even when subjected to frequent overvoltages.
- High dU/dt capability.
- Self-extinguishing encapsulation.
- Good resistance to ionisation due to impregnated dielectric.
- The impregnated paper ensures excellent stability giving outstanding reliability properties, especially in applications having continuous operation.

## TYPICAL APPLICATIONS

RC unit for use in DC and AC applications for:

- contact protection
- interference suppression of contacts
- transient suppression

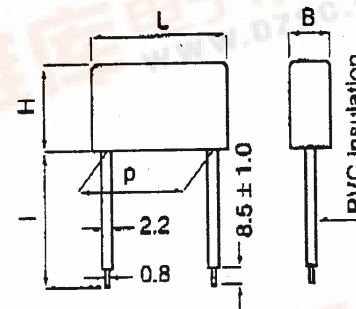
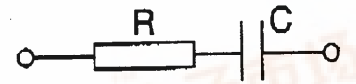
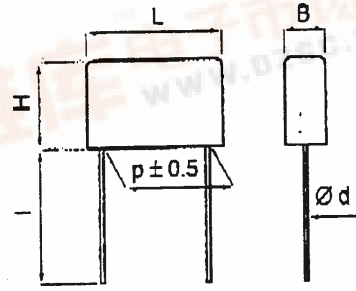
## CONSTRUCTION

Single layer metallized paper. Encapsulated and impregnated in self-extinguishing material meeting the requirements of UL 94V-0. The resistance in the metal layer is utilized as series resistance, integrated resistor.

## TECHNICAL DATA

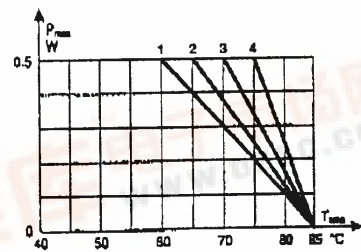
|                                |  |
|--------------------------------|--|
| Rated voltage                  | 250 VAC 50/60 Hz, 630 VDC  |
| Capacitance range              | 0.047 – 0.47 $\mu\text{F}$   |
| Capacitance tolerance          | $\pm 20\%$   |
| Resistance range               | 22 – 470 $\Omega$  |
| Resistance tolerance           | $\pm 30\%$   |
| Peak pulse voltage             | 1000 V   |
| Temperature range              | -40 to +85°C   |
| Climatic category              | 40/085/56/B  |
| Approvals                      | S, N, D, FI, VDE, SEV, UL  |
| Series resistance              | The series resistance is defined at 1 kHz for RC $\geq 50 \mu\text{s}$ and at 100 kHz for RC $< 50 \mu\text{s}$ .  |
| Insulation resistance          | $\geq 3000 \text{ M}\Omega$ for C $\leq 0.33 \mu\text{F}$<br>$\geq 1000 \text{ s}$ for C $> 0.33 \mu\text{F}$<br>Measured at 500 VDC after 60 s, +23°C   |
| Pulse current                  | Max 12 A repetitive. Max 20 A peak for occasional transients.  |
| Test voltage between terminals | The 100% screening factory test is carried out at 1800 VDC. The voltage level is selected to meet the requirements in applicable equipment standards. All electrical characteristics are checked after the test. |
| In DC applications             | Recommended voltage $\leq 630$ VDC.  |
| Power ratings                  | The average losses may reach 0.5 W provided the surface temperature does not exceed +85°C. For max. permitted power dissipation vs temperature, see derating curves.   |

| Curve | Dimensions |
|-------|------------|
| 1     | B = 7.3    |
| 2     | B = 7.6    |
| 3     | B = 11.3   |
| 4     | B = 15.3   |



d = 0.8 for p = 15.2 and 20.3  
1.0 for p = 25.4

l: standard: 30 +5/-0 mm uninsulated (code R30)  
 option: 30 +5/-0 mm insulated (code S)  
 option: short leads, tolerance +0/-1 mm (standard 6 mm, code R06)  
 Other lead lengths on request.



Maximum allowable power dissipation vs ambient temperature and case sizes.

## ENVIRONMENTAL TEST DATA

|                      |                                |  |  |
|----------------------|--------------------------------|--|--|
| Vibration            | IEC 60068-2-6, Test Fc         | 3 directions at 2 hour each<br>10 – 500 Hz at 0.75 mm or 98 m/s <sup>2</sup> | No visible damage, No open or short circuit                  |
| Bump                 | IEC 60068-2-29, Test Eb        | 4000 bumps at 390 m/s <sup>2</sup>   | No visible damage, No open or short circuit                  |
| Solderability        | IEC 60068-2-20, Test Ta        | Solder globule method  | Wetting time for d $\leq 0.8 < 1$ s<br>for d $> 0.8 < 1.5$ s |
| Active flammability  | EN 132400                      |  |  |
| Passive flammability | IEC 60384-14 (1993), EN 132400 |  |  |



ARTICLE TABLE

| Capacitance<br>µF | Resistance<br>Ω | Max dimensions in mm |      |      |      | Quantity per package |            |                      | Weight<br>g | Approvals<br>S Z DE SH UL | Article code<br>1 st block |
|-------------------|-----------------|----------------------|------|------|------|----------------------|------------|----------------------|-------------|---------------------------|----------------------------|
|                   |                 | B                    | H    | L    | p    | R30<br>pcs           | R06<br>pcs | reel<br>taped<br>pcs |             |                           |                            |
| 0.047             | 47              | 7.3                  | 13.0 | 19.0 | 15.2 | 400                  | 800        | 400                  | 3.0         | √ √ √ √ √ √               | * PMR209MB5470M047         |
| 0.047             | 100             | 7.3                  | 13.0 | 19.0 | 15.2 | 400                  | 800        | 400                  | 3.0         | √ √ √ √ √ √               | * PMR209MB5470M100         |
| 0.10              | 22              | 7.6                  | 14.0 | 24.0 | 20.3 | 250                  | 1500       | 250                  | 4.0         | √ √ √ √ √ √               | * PMR209MC6100M022         |
| 0.10              | 33              | 7.6                  | 14.0 | 24.0 | 20.3 | 250                  | 1500       | 250                  | 4.0         | √ √ √ √ √ √               | * PMR209MC6100M033         |
| 0.10              | 47              | 7.6                  | 14.0 | 24.0 | 20.3 | 250                  | 1500       | 250                  | 4.0         | √ √ √ √ √ √               | * PMR209MC6100M047         |
| 0.10              | 68              | 7.6                  | 14.0 | 24.0 | 20.3 | 250                  | 1500       | 250                  | 4.0         | √ √ √ √ √ √               | * PMR209MC6100M068         |
| 0.10              | 100             | 7.6                  | 14.0 | 24.0 | 20.3 | 250                  | 1500       | 250                  | 4.0         | √ √ √ √ √ √               | * PMR209MC6100M100         |
| 0.10              | 150             | 11.3                 | 16.5 | 24.0 | 20.3 | 150                  | 1500       | 180                  | 7.0         | √ √ √ √ √ √               | * PMR209MC6100M150         |
| 0.10              | 220             | 11.3                 | 16.5 | 24.0 | 20.3 | 150                  | 1500       | 180                  | 7.0         | √ √ √ √ √ √               | * PMR209MC6100M220         |
| 0.10              | 330             | 11.3                 | 16.5 | 24.0 | 20.3 | 150                  | 1500       | 180                  | 7.0         | √ √ √ √ √ √               | * PMR209MC6100M330         |
| 0.10              | 470             | 11.3                 | 16.5 | 24.0 | 20.3 | 150                  | 1500       | 180                  | 7.0         | √ √ √ √ √ √               | * PMR209MC6100M470         |
| 0.22              | 22              | 11.3                 | 16.5 | 24.0 | 20.3 | 150                  | 1500       | 180                  | 7.0         | √ √ √ √ √ √               | * PMR209MC6220M022         |
| 0.22              | 33              | 11.3                 | 16.5 | 24.0 | 20.3 | 150                  | 1500       | 180                  | 7.0         | √ √ √ √ √ √               | * PMR209MC6220M033         |
| 0.22              | 47              | 11.3                 | 16.5 | 24.0 | 20.3 | 150                  | 1500       | 180                  | 7.0         | √ √ √ √ √ √               | * PMR209MC6220M047         |
| 0.22              | 68              | 11.3                 | 16.5 | 24.0 | 20.3 | 150                  | 1500       | 180                  | 7.0         | √ √ √ √ √ √               | * PMR209MC6220M068         |
| 0.22              | 100             | 11.3                 | 16.5 | 24.0 | 20.3 | 150                  | 1500       | 180                  | 7.0         | √ √ √ √ √ √               | * PMR209MC6220M100         |
| 0.22              | 150             | 11.3                 | 16.5 | 24.0 | 20.3 | 150                  | 1500       | 180                  | 7.0         | √ √ √ √ √ √               | * PMR209MC6220M150         |
| 0.22              | 220             | 11.3                 | 16.5 | 24.0 | 20.3 | 150                  | 1500       | 180                  | 7.0         | √ √ √ √ √ √               | * PMR209MC6220M220         |
| 0.22              | 330             | 12.1                 | 19.0 | 30.5 | 25.4 | 100                  | 800        |                      | 10.0        | √ √ √ √ √ √               | PMR209ME6220M330           |
| 0.22              | 470             | 15.3                 | 22.0 | 30.5 | 25.4 | 75                   | 600        |                      | 15.0        | √ √ √ √ √ √               | PMR209ME6220M470           |
| 0.47              | 33              | 15.3                 | 22.0 | 30.5 | 25.4 | 75                   | 600        |                      | 15.0        | √ √ √ √ √ √               | PMR209ME6470M033           |
| 0.47              | 47              | 15.3                 | 22.0 | 30.5 | 25.4 | 75                   | 600        |                      | 15.0        | √ √ √ √ √ √               | PMR209ME6470M047           |
| 0.47              | 68              | 15.3                 | 22.0 | 30.5 | 25.4 | 75                   | 600        |                      | 15.0        | √ √ √ √ √ √               | PMR209ME6470M068           |
| 0.47              | 100             | 15.3                 | 22.0 | 30.5 | 25.4 | 75                   | 600        |                      | 15.0        | √ √ √ √ √ √               | PMR209ME6470M100           |
| 0.47              | 150             | 15.3                 | 22.0 | 30.5 | 25.4 | 75                   | 600        |                      | 15.0        | √ √ √ √ √ √               | PMR209ME6470M150           |
| 0.47              | 220             | 15.3                 | 22.0 | 30.5 | 25.4 | 75                   | 600        |                      | 15.0        | √ √ √ √ √ √               | PMR209ME6470M220           |

\*) Also available with insulated leads (code S in ordering information).

APPROVALS/REFERENCE DOCUMENTS

| Country           | Specification | Approval reference |
|-------------------|---------------|--------------------|
| S = Sweden        | EN 132400     | 9528104            |
| N = Norway        | EN 132400     | P951 03084         |
| D = Denmark       | EN 132400     | 304424             |
| FI = Finland      | EN 132400     | 184789-01          |
| VDE = Germany     | EN 132400     | 91805              |
| SEV = Switzerland | EN 132400     | 95.7 71025.01      |
| UL = USA          | UL 1283       | E 100117           |

MARKING

- RIFA
- RIFA article code
- RC unit
- Rated capacitance and resistance
- Rated voltage
- X2
- SH, for self-healing
- Climatic category according to IEC 60068-1, appendix A
- Passive flammability class
- Circuit diagram
- Manufacturing code (year, month)

ORDERING INFORMATION

Article code

**1st block**  
See article table  
Pos. 13, capacitance tolerance code:  
M = ± 20%  
Pos. 14–16 Resistance value in Ω

**2nd block**  
Options:  
Short leads: e.g. 6 mm, add R06 in pos. 17–19.  
Insulated leads: add S in pos. 17.  
Reel taped: Add T0 or T1 in pos. 17–18.

PMR 2 0 9 MC 6 2 2 0 M 0 4 7 R 0 6  
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

PACKING

RC units in standard design (lead length 30 mm) and with L < 24 mm and lead length 5 or 6 mm are packed bulk in a box with dimensions 245 x 145 x 80 mm. Quantity/package as per article table. RC units with L ≥ 24 mm and lead length 5 or 6 mm are packed on trays piled in a box with dimensions 300 x 260 x 195 mm.

Quantity/package as per article table. Reels with taped capacitors are packed 10 in a box with dimensions 370 x 370 x 560 mm. The standard quantity/reel is for 360 mm reel. If 500 mm reel is required, it must