

# 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

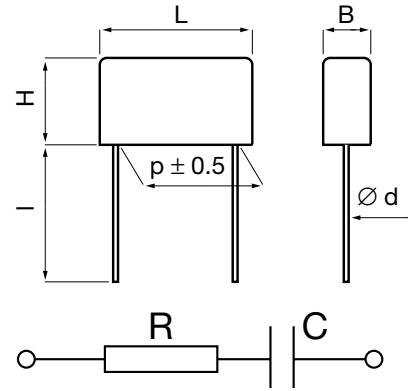
## CONSTRUCTION

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

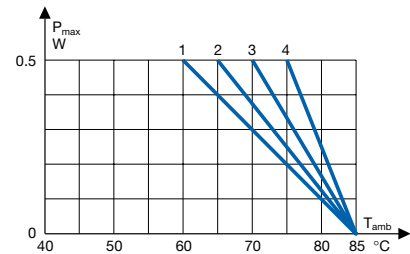
<b>Rated voltage</b>	250 VAC 50/60 Hz, 630 VDC
<b>Capacitance range</b>	0.047 – 0.47 $\mu\text{F}$
<b>Capacitance tolerance</b>	$\pm 20\%$
<b>Resistance range</b>	22 – 470 $\Omega$
<b>Resistance tolerance</b>	$\pm 30\%$
<b>Peak pulse voltage</b>	1000 V
<b>Temperature range</b>	–40 to +85°C
<b>Climatic category</b>	40/085/56/B
<b>Approvals</b>	S, N, D, FI, VDE, SEV, UL
<b>Series resistance</b>	The series resistance is defined at 1 kHz for RC $\geq 50 \mu\text{s}$ and at 100 kHz for RC $< 50 \mu\text{s}$ .
<b>Insulation resistance</b>	$\geq 3000 \text{ M}\Omega$ for C $\leq 0.33 \mu\text{F}$ $\geq 1000 \text{ s}$ for C $> 0.33 \mu\text{F}$ Measured at 500 VDC after 60 s, +23°C
<b>Pulse current</b>	Max 12 A repetitive. Max 20 A peak for occasional transients.
<b>Test voltage between terminals</b>	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.
<b>In DC applications</b>	Recommended voltage $\leq 630 \text{ VDC}$ .
<b>Power ratings</b>	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

I: standard: 30 +5/-0 mm (code R30)  
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

<b>Vibration</b>	IEC 60068-2-6, Test Fc	3 directions at 2 hour each 10 – 500 Hz at 0.75 mm or 98 m/s <sup>2</sup>	No visible damage, No open or short circuit
<b>Bump</b>	IEC 60068-2-29, Test Eb	4000 bumps at 390 m/s <sup>2</sup>	No visible damage, No open or short circuit
<b>Solderability</b>	IEC 60068-2-20, Test Ta	Solder globule method	Wetting time for d $\leq 0.8 < 1 \text{ s}$ for d $> 0.8 < 1.5 \text{ s}$
<b>Active flammability</b>	EN 132400		
<b>Passive flammability</b>	IEC 60384-14 (1993), EN 132400		
<b>Humidity</b>	IEC 60068-2-3, Test Ca	+40°C and 90 – 95% R.H.	56 days

## ARTICLE TABLE

Capacitance $\mu\text{F}$	Resistance $\Omega$	Max dimensions in mm				Quantity per package			Weight g	Approvals						Article code	
		B	H	L	p	R30 pcs	R06 pcs	reel taped pcs		s	z	D	E	VDE	SEV		UL
0.047	47	7.3	13.0	19.0	15.2	400	800	400	3.0	√	√	√	√	√	√	√	PMR209MB5470M047R30
0.047	100	7.3	13.0	19.0	15.2	400	800	400	3.0	√	√	√	√	√	√	√	PMR209MB5470M100R30
0.10	22	7.6	14.0	24.0	20.3	250	1500	250	4.0	√	√	√	√	√	√	√	PMR209MC6100M022R30
0.10	33	7.6	14.0	24.0	20.3	250	1500	250	4.0	√	√	√	√	√	√	√	PMR209MC6100M033R30
0.10	47	7.6	14.0	24.0	20.3	250	1500	250	4.0	√	√	√	√	√	√	√	PMR209MC6100M047R30
0.10	68	7.6	14.0	24.0	20.3	250	1500	250	4.0	√	√	√	√	√	√	√	PMR209MC6100M068R30
0.10	100	7.6	14.0	24.0	20.3	250	1500	250	4.0	√	√	√	√	√	√	√	PMR209MC6100M100R30
0.10	150	11.3	16.5	24.0	20.3	150	1500	180	7.0	√	√	√	√	√	√	√	PMR209MC6100M150R30
0.10	220	11.3	16.5	24.0	20.3	150	1500	180	7.0	√	√	√	√	√	√	√	PMR209MC6100M220R30
0.10	330	11.3	16.5	24.0	20.3	150	1500	180	7.0	√	√	√	√	√	√	√	PMR209MC6100M330R30
0.10	470	11.3	16.5	24.0	20.3	150	1500	180	7.0	√	√	√	√	√	√	√	PMR209MC6100M470R30
0.22	22	11.3	16.5	24.0	20.3	150	1500	180	7.0	√	√	√	√	√	√	√	PMR209MC6220M022R30
0.22	33	11.3	16.5	24.0	20.3	150	1500	180	7.0	√	√	√	√	√	√	√	PMR209MC6220M033R30
0.22	47	11.3	16.5	24.0	20.3	150	1500	180	7.0	√	√	√	√	√	√	√	PMR209MC6220M047R30
0.22	68	11.3	16.5	24.0	20.3	150	1500	180	7.0	√	√	√	√	√	√	√	PMR209MC6220M068R30
0.22	100	11.3	16.5	24.0	20.3	150	1500	180	7.0	√	√	√	√	√	√	√	PMR209MC6220M100R30
0.22	150	11.3	16.5	24.0	20.3	150	1500	180	7.0	√	√	√	√	√	√	√	PMR209MC6220M150R30
0.22	220	11.3	16.5	24.0	20.3	150	1500	180	7.0	√	√	√	√	√	√	√	PMR209MC6220M220R30
0.22	330	12.1	19.0	30.5	25.4	100	800		10.0	√	√	√	√	√	√	√	PMR209ME6220M330R30
0.22	470	15.3	22.0	30.5	25.4	75	600		15.0	√	√	√	√	√	√	√	PMR209ME6220M470R30
0.47	33	15.3	22.0	30.5	25.4	75	600		15.0	√	√	√	√	√	√	√	PMR209ME6470M033R30
0.47	47	15.3	22.0	30.5	25.4	75	600		15.0	√	√	√	√	√	√	√	PMR209ME6470M047R30
0.47	68	15.3	22.0	30.5	25.4	75	600		15.0	√	√	√	√	√	√	√	PMR209ME6470M068R30
0.47	100	15.3	22.0	30.5	25.4	75	600		15.0	√	√	√	√	√	√	√	PMR209ME6470M100R30
0.47	150	15.3	22.0	30.5	25.4	75	600		15.0	√	√	√	√	√	√	√	PMR209ME6470M150R30
0.47	220	15.3	22.0	30.5	25.4	75	600		15.0	√	√	√	√	√	√	√	PMR209ME6470M220R30

## APPROVALS/REFERENCE DOCUMENTS

Certification Body	Specification	Approval reference
S	EN 132400	9528104
N	EN 132400	P951 03084
D	EN 132400	304424
F	EN 132400	184789-01
VDE	EN 132400	91805
SEV	EN 132400	00-1929
UL	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

The article code for the standard part is given in the article table. For other options, see page 21.

## 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  $L \geq 24$  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 be specified when ordering and the quantity is 2 x the given quantity.