

# PMR209

615 286

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

- 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

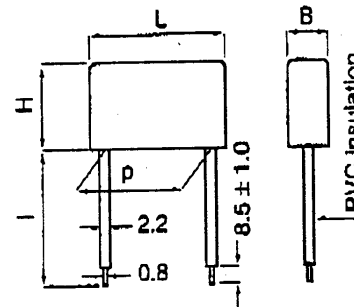
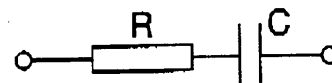
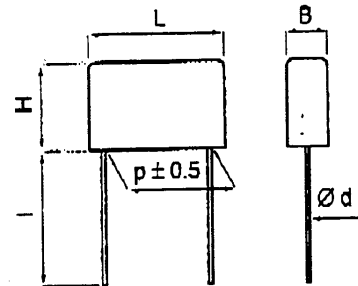
## CONSTRUCTION

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

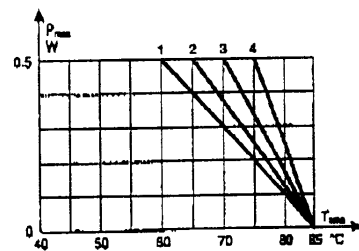
Rated voltage	250 VAC 50/60 Hz, 630 VDC
Capacitance range	0.047 – 0.47 $\mu\text{F}$
Capacitance tolerance	$\pm 20\%$
Resistance range	22 – 470 $\Omega$
Resistance tolerance	$\pm 30\%$
Peak pulse voltage	1000 V
Temperature range	-40 to +85 $^{\circ}\text{C}$
Climatic category	40/085/56/B
Approvals	S, 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 $\leq 0.33 \mu\text{F}$ $\geq 1000 \text{ s}$ for C $> 0.33 \mu\text{F}$ Measured at 500 VDC after 60 s, +23 $^{\circ}\text{C}$
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 $^{\circ}\text{C}$ . 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 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 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 $\leq 0.8 < 1 \text{ s}$ for d $> 0.8 < 1.5 \text{ s}$
Active flammability	EN 132400		
Passive flammability	IEC 60384-14 (1993), EN 132400		
Humidity	IEC 60068-2-3, Test Ca	+40 $^{\circ}\text{C}$ and 90 – 95% R.H.	56 days

ARTICLE TABLE

Capacitance µF	Resistance Ω	Max dimensions in mm				Quantity per package			Weight g	Approvals						Article code 1st block	
		B	H	L	p	R30 pcs	R06 pcs	reel taped pcs		z	o	q	e	VDE	SEV		UL
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

<b>1st block</b> See article table Pos. 13, capacitance tolerance code: M = ± 20% Pos. 14-16 Resistance value in Ω	<b>2nd block</b> 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 be specified when ordering and the quantity is 2 x the given quantity.