

# R75 2 - R75 L

MKP Series

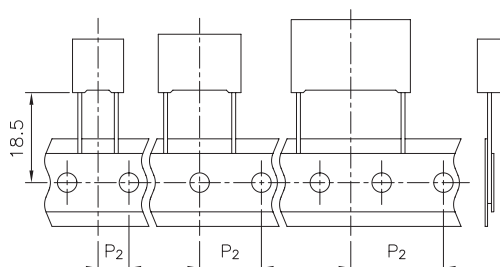
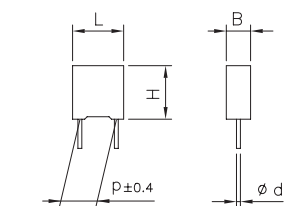
## METALLIZED POLYPROPYLENE FILM CAPACITOR

**Typical applications:** This special release is specifically designed for application in series with the main (Capacitive power supply), with particular protection against severe ambient conditions.

### BEST FITTING COMPONENTS IN TERMS OF BOTH SIZE & PERFORMANCES

PRODUCT CODE: **R752 (Digit 12: 0 to 9)**

**R75L Digit 12: 0 to 9)**



|         |           |          |
|---------|-----------|----------|
| Ød±0.05 | 15≤p≤27.5 | p = 37.5 |
|         | 0.8       | 1.0      |

All dimensions are in mm.

### PRODUCT CODE SYSTEM

The part number, comprising 14 digits, is formed as follows:

|   |   |   |   |   |   |   |   |   |    |    |    |    |    |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| R | 7 | 5 |   |   |   |   |   |   |    |    |    | -  |    |

Digit 1 to 3 Series code.

Digit 4 a.c. rated voltage:

2 = 230V L = 250V

Digit 5 Pitch:

I=15mm; N= 22.5 mm;

R=27.5mm; W=37.5mm

Digit 6 to 9 Digits 7 - 8 - 9 indicate the first three digits of Capacitance value and the 6th digit indicates the number of zeros that must be added to obtain the Rated Capacitance in pF.

Digit 10 to 11 Mechanical version and/or packaging (table 1)

Digit 12 Identifies the dimensions and electrical characteristics (0 to 9).

Digit 13 Internal use.

Digit 14 Capacitance tolerance: K=10%; M=20%

Tolerance ± 5% (J) available upon request

Table 1

| Standard packaging style      | Lead length<br>(mm) | Taping style           |               |               | Ordering code<br>(Digit 10 to 11) |
|-------------------------------|---------------------|------------------------|---------------|---------------|-----------------------------------|
|                               |                     | P <sub>2</sub><br>(mm) | Fig.<br>(No.) | Pitch<br>(mm) |                                   |
| AMMO-PACK                     |                     | 12.70                  | 2             | 15.0          | DQ                                |
| AMMO-PACK                     |                     | 19.05                  | 3             | 22.5          | DQ                                |
| REEL Ø 355mm                  |                     | 12.70                  | 2             | 15.0          | GY                                |
| REEL Ø 500mm                  |                     | 12.70                  | 2             | 15.0          | CK                                |
| REEL Ø 500mm                  |                     | 19.05                  | 3             | 22.5/27.5     | CK                                |
| Loose, short leads            | 4 <sup>+2</sup>     |                        |               |               | AA                                |
| Loose, long leads<br>(p≥15mm) | 30 <sup>+5</sup>    |                        |               |               | 40                                |
|                               | 25 <sup>+2/-1</sup> |                        |               |               | 50                                |

Note: Ammo-pack is the preferred packaging for taped version.

### GENERAL TECHNICAL DATA

**Dielectric:** polypropylene film.

**Plates:** aluminium layer deposited by evaporation under vacuum.

**Winding:** non-inductive type.

**Leads:** tinned wire.

**Protection:** plastic case, thermosetting resin filled.

Box material is solvent resistant and flame retardant according to UL94 V0.

**Marking:** manufacturer's logo, series (R75), dielectric code (MKP), capacitance, tolerance, A.C. rated voltage, manufacturing date code.

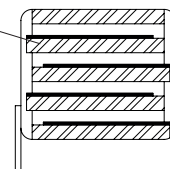
**Climatic category:** 55/105/56 IEC 60068-1

**Operating temperature range:** -55 to +105°C

**Related documents:** IEC 60384-16

### Winding scheme

single sided metallized  
polypropylene film



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MKP Series

## METALLIZED POLYPROPYLENE FILM CAPACITOR

PRODUCT CODE: **R752 (Digit 12: 0 to 9)**  
**R75L (Digit 12: 0 to 9)**

| Rated Cap. | 230Vac / 400Vdc*<br>Std dimensions |      |      |      | Max dv/dt<br>(V/μs) | Max K <sub>0</sub><br>(V <sup>2</sup> /μs) | Part Number     |
|------------|------------------------------------|------|------|------|---------------------|--------------------------------------------|-----------------|
|            | B                                  | H    | L    | p    |                     |                                            |                 |
| 0.033 μF   | 4.0                                | 9.0  | 13.0 | 10.0 | 1000                | 800 E3                                     | R752F 2330--0-- |
| 0.100 μF   | 6.0                                | 12.0 | 13.0 | 10.0 | 1000                | 800 E3                                     | R752F 3100--0-- |
| 0.082 μF   | 5.0                                | 11.0 | 18.0 | 15.0 | 700                 | 560 E3                                     | R752I 2820--0-- |
| 0.10 μF    | 5.0                                | 11.0 | 18.0 | 15.0 | 700                 | 560 E3                                     | R752I 3100--0-- |
| 0.15 μF    | 6.0                                | 12.0 | 18.0 | 15.0 | 700                 | 560 E3                                     | R752I 3150--0-- |
| 0.18 μF    | 6.0                                | 12.0 | 18.0 | 15.0 | 700                 | 560 E3                                     | R752I 3180--0-- |
| 0.22 μF    | 7.5                                | 13.5 | 18.0 | 15.0 | 700                 | 560 E3                                     | R752I 3220--0-- |
| 0.27 μF    | 8.5                                | 14.5 | 18.0 | 15.0 | 700                 | 560 E3                                     | R752I 3270--0-- |
| 0.33 μF    | 8.5                                | 14.5 | 18.0 | 15.0 | 700                 | 560 E3                                     | R752I 3330--0-- |
| 0.47 μF    | 10.0                               | 16.0 | 18.0 | 15.0 | 700                 | 560 E3                                     | R752I 3470--0-- |
| 0.27 μF    | 6.0                                | 15.0 | 26.5 | 22.5 | 250                 | 200 E3                                     | R752N 3270--0-- |
| 0.33 μF    | 6.0                                | 15.0 | 26.5 | 22.5 | 250                 | 200 E3                                     | R752N 3330--0-- |
| 0.47 μF    | 7.0                                | 16.0 | 26.5 | 22.5 | 250                 | 200 E3                                     | R752N 3470--0-- |
| 0.56 μF    | 8.5                                | 17.0 | 26.5 | 22.5 | 250                 | 200 E3                                     | R752N 3560--0-- |
| 0.68 μF    | 10.0                               | 18.5 | 26.5 | 22.5 | 250                 | 200 E3                                     | R752N 3680--0-- |
| 0.82 μF    | 10.0                               | 18.5 | 26.5 | 22.5 | 250                 | 200 E3                                     | R752N 3820--0-- |
| 1.0 μF     | 11.0                               | 20.0 | 26.5 | 22.5 | 250                 | 200 E3                                     | R752N 4100--0-- |
| 1.5 μF     | 13.0                               | 22.0 | 26.5 | 22.5 | 250                 | 200 E3                                     | R752N 4150--0-- |
| 0.47 μF    | 9.0                                | 17.0 | 32.0 | 27.5 | 130                 | 104 E3                                     | R752R 3470--0-- |
| 0.56 μF    | 9.0                                | 17.0 | 32.0 | 27.5 | 130                 | 104 E3                                     | R752R 3560--0-- |
| 0.68 μF    | 9.0                                | 17.0 | 32.0 | 27.5 | 130                 | 104 E3                                     | R752R 3680--0-- |
| 0.82 μF    | 9.0                                | 17.0 | 32.0 | 27.5 | 130                 | 104 E3                                     | R752R 3820--0-- |
| 1.0 μF     | 11.0                               | 20.0 | 32.0 | 27.5 | 130                 | 104 E3                                     | R752R 4100--0-- |
| 1.2 μF     | 11.0                               | 20.0 | 32.0 | 27.5 | 130                 | 104 E3                                     | R752R 4120--0-- |
| 1.5 μF     | 13.0                               | 22.0 | 32.0 | 27.5 | 130                 | 104 E3                                     | R752R 4150--0-- |
| 1.8 μF     | 13.0                               | 22.0 | 32.0 | 27.5 | 130                 | 104 E3                                     | R752R 4180--0-- |
| 2.2 μF     | 14.0                               | 28.0 | 32.0 | 27.5 | 130                 | 104 E3                                     | R752R 4220--0-- |
| 2.7 μF     | 18.0                               | 33.0 | 32.0 | 27.5 | 130                 | 104 E3                                     | R752R 4270--0-- |
| 3.3 μF     | 18.0                               | 33.0 | 32.0 | 27.5 | 130                 | 104 E3                                     | R752R 4330--0-- |
| 3.9 μF     | 18.0                               | 33.0 | 32.0 | 27.5 | 130                 | 104 E3                                     | R752R 4390--0-- |
| 4.7 μF     | 22.0                               | 37.0 | 32.0 | 27.5 | 130                 | 104 E3                                     | R752R 4470--0-- |
| 1.8 μF     | 11.0                               | 22.0 | 41.5 | 37.5 | 70                  | 56 E3                                      | R752W 4180--0-- |
| 2.2 μF     | 13.0                               | 24.0 | 41.5 | 37.5 | 70                  | 56 E3                                      | R752W 4220--0-- |
| 2.7 μF     | 13.0                               | 24.0 | 41.5 | 37.5 | 70                  | 56 E3                                      | R752W 4270--0-- |
| 3.3 μF     | 16.0                               | 28.5 | 41.5 | 37.5 | 70                  | 56 E3                                      | R752W 4330--0-- |
| 3.9 μF     | 16.0                               | 28.5 | 41.5 | 37.5 | 70                  | 56 E3                                      | R752W 4390--0-- |
| 4.7 μF     | 19.0                               | 32.0 | 41.5 | 37.5 | 70                  | 56 E3                                      | R752W 4470--0-- |
| 5.6 μF     | 19.0                               | 32.0 | 41.5 | 37.5 | 70                  | 56 E3                                      | R752W 4560--0-- |
| 6.8 μF     | 20.0                               | 40.0 | 41.5 | 37.5 | 70                  | 56 E3                                      | R752W 4680--0-- |

Mechanical version and packaging (Table1) \_\_\_\_\_  
Internal use \_\_\_\_\_  
Tolerance: K (±10%); M (±20%) \_\_\_\_\_

All dimensions are in mm

| Rated Cap. | 250Vac / 560Vdc*<br>Std dimensions |      |      |      | Max dv/dt<br>(V/μs) | Max K <sub>0</sub><br>(V <sup>2</sup> /μs) | Part Number     |
|------------|------------------------------------|------|------|------|---------------------|--------------------------------------------|-----------------|
|            | B                                  | H    | L    | p    |                     |                                            |                 |
| 0.010 μF   | 4.0                                | 9.0  | 13.0 | 10.0 | 1500                | 168 E4                                     | R75LF 2100--0-- |
| 0.015 μF   | 4.0                                | 9.0  | 13.0 | 10.0 | 1500                | 168 E4                                     | R75LF 2150--0-- |
| 0.022 μF   | 4.0                                | 9.0  | 13.0 | 10.0 | 1500                | 168 E4                                     | R75LF 2220--0-- |
| 0.033 μF   | 5.0                                | 11.0 | 13.0 | 10.0 | 1500                | 168 E4                                     | R75LF 2330--0-- |
| 0.047 μF   | 5.0                                | 11.0 | 13.0 | 10.0 | 1500                | 168 E4                                     | R75LF 2470--0-- |
| 0.068 μF   | 6.0                                | 12.0 | 13.0 | 10.0 | 1500                | 168 E4                                     | R75LF 2680--0-- |
| 0.056 μF   | 5.0                                | 11.0 | 18.0 | 15.0 | 900                 | 101 E4                                     | R75LI 2560--0-- |
| 0.068 μF   | 5.0                                | 11.0 | 18.0 | 15.0 | 900                 | 101 E4                                     | R75LI 2680--0-- |
| 0.082 μF   | 5.0                                | 11.0 | 18.0 | 15.0 | 900                 | 101 E4                                     | R75LI 2820--0-- |
| 0.10 μF    | 6.0                                | 12.0 | 18.0 | 15.0 | 900                 | 101 E4                                     | R75LI 3100--0-- |
| 0.15 μF    | 7.5                                | 13.5 | 18.0 | 15.0 | 900                 | 101 E4                                     | R75LI 3150--0-- |
| 0.18 μF    | 7.5                                | 13.5 | 18.0 | 15.0 | 900                 | 101 E4                                     | R75LI 3180--0-- |
| 0.22 μF    | 8.5                                | 14.5 | 18.0 | 15.0 | 900                 | 101 E4                                     | R75LI 3220--0-- |
| 0.27 μF    | 10.0                               | 16.0 | 18.0 | 15.0 | 900                 | 101 E4                                     | R75LI 3270--0-- |
| 0.33 μF    | 10.0                               | 16.0 | 18.0 | 15.0 | 900                 | 101 E4                                     | R75LI 3330--0-- |
| 0.22 μF    | 6.0                                | 15.0 | 26.5 | 22.5 | 300                 | 336 E3                                     | R75LN 3220--0-- |
| 0.27 μF    | 6.0                                | 15.0 | 26.5 | 22.5 | 300                 | 336 E3                                     | R75LN 3270--0-- |
| 0.33 μF    | 7.0                                | 16.0 | 26.5 | 22.5 | 300                 | 336 E3                                     | R75LN 3330--0-- |
| 0.47 μF    | 8.5                                | 17.0 | 26.5 | 22.5 | 300                 | 336 E3                                     | R75LN 3470--0-- |
| 0.56 μF    | 10.0                               | 18.5 | 26.5 | 22.5 | 300                 | 336 E3                                     | R75LN 3560--0-- |
| 0.68 μF    | 11.0                               | 20.0 | 26.5 | 22.5 | 300                 | 336 E3                                     | R75LN 3680--0-- |
| 0.82 μF    | 11.0                               | 20.0 | 26.5 | 22.5 | 300                 | 336 E3                                     | R75LN 3820--0-- |
| 1.0 μF     | 13.0                               | 22.0 | 26.5 | 22.5 | 300                 | 336 E3                                     | R75LN 4100--0-- |
| 0.33 μF    | 9.0                                | 17.0 | 32.0 | 27.5 | 150                 | 168 E3                                     | R75LR 3330--0-- |
| 0.39 μF    | 9.0                                | 17.0 | 32.0 | 27.5 | 150                 | 168 E3                                     | R75LR 3390--0-- |
| 0.47 μF    | 9.0                                | 17.0 | 32.0 | 27.5 | 150                 | 168 E3                                     | R75LR 3470--0-- |
| 0.56 μF    | 9.0                                | 17.0 | 32.0 | 27.5 | 150                 | 168 E3                                     | R75LR 3560--0-- |
| 0.68 μF    | 11.0                               | 20.0 | 32.0 | 27.5 | 150                 | 168 E3                                     | R75LR 3680--0-- |
| 0.82 μF    | 11.0                               | 20.0 | 32.0 | 27.5 | 150                 | 168 E3                                     | R75LR 3820--0-- |
| 1.0 μF     | 13.0                               | 22.0 | 32.0 | 27.5 | 150                 | 168 E3                                     | R75LR 4100--0-- |
| 1.2 μF     | 13.0                               | 22.0 | 32.0 | 27.5 | 150                 | 168 E3                                     | R75LR 4120--0-- |
| 1.5 μF     | 13.0                               | 25.0 | 32.0 | 27.5 | 150                 | 168 E3                                     | R75LR 4150--0-- |
| 1.8 μF     | 18.0                               | 33.0 | 32.0 | 27.5 | 150                 | 168 E3                                     | R75LR 4180--0-- |
| 2.2 μF     | 18.0                               | 33.0 | 32.0 | 27.5 | 150                 | 168 E3                                     | R75LR 4220--0-- |
| 2.7 μF     | 18.0                               | 33.0 | 32.0 | 27.5 | 150                 | 168 E3                                     | R75LR 4270--0-- |
| 3.3 μF     | 22.0                               | 37.0 | 32.0 | 27.5 | 150                 | 168 E3                                     | R75LR 4330--0-- |
| 3.9 μF     | 22.0                               | 37.0 | 32.0 | 27.5 | 150                 | 168 E3                                     | R75LR 4390--0-- |
| 1.2 μF     | 11.0                               | 22.0 | 41.5 | 37.5 | 90                  | 101 E3                                     | R75LW 4120--0-- |
| 1.5 μF     | 13.0                               | 24.0 | 41.5 | 37.5 | 90                  | 101 E3                                     | R75LW 4150--0-- |
| 1.8 μF     | 13.0                               | 24.0 | 41.5 | 37.5 | 90                  | 101 E3                                     | R75LW 4180--0-- |
| 2.2 μF     | 16.0                               | 28.5 | 41.5 | 37.5 | 90                  | 101 E3                                     | R75LW 4220--0-- |
| 2.7 μF     | 16.0                               | 28.5 | 41.5 | 37.5 | 90                  | 101 E3                                     | R75LW 4270--0-- |
| 3.3 μF     | 19.0                               | 32.0 | 41.5 | 37.5 | 90                  | 101 E3                                     | R75LW 4330--0-- |
| 3.9 μF     | 19.0                               | 32.0 | 41.5 | 37.5 | 90                  | 101 E3                                     | R75LW 4390--0-- |
| 4.7 μF     | 20.0                               | 40.0 | 41.5 | 37.5 | 90                  | 101 E3                                     | R75LW 4470--0-- |
| 5.6 μF     | 20.0                               | 40.0 | 41.5 | 37.5 | 90                  | 101 E3                                     | R75LW 4560--0-- |
| 6.8 μF     | 24.0                               | 44.0 | 41.5 | 37.5 | 90                  | 101 E3                                     | R75LW 4680--0-- |
| 8.2 μF     | 24.0                               | 44.0 | 41.5 | 37.5 | 90                  | 101 E3                                     | R75LW 4820--0-- |
| 10.0 μF    | 30.0                               | 45.0 | 41.5 | 37.5 | 90                  | 101 E3                                     | R75LW 5100--0-- |

Mechanical version and packaging (Table1) \_\_\_\_\_  
Internal use \_\_\_\_\_  
Tolerance: K (±10%); M (±20%) \_\_\_\_\_

E12 Series available upon request

Note: If the working voltage (V) is lower than the rated voltage (V<sub>R</sub>), the capacitor may work at higher dv/dt. In this case the maximum value allowed is obtained multiplying the above value (see table dv/dt) with the ratio V<sub>R</sub>/V.  
The pulse characteristic K<sub>0</sub> depends on the voltage wave-form and in any case it cannot overcome the value given in the above table. The dv/dt test is carried out at 2 times the above values.

\*Not suitable for EMI filtering applications.

# R75 2 - R75 L

MKP Series

## METALLIZED POLYPROPYLENE FILM CAPACITOR

PRODUCT CODE: **R752 (Digit 12: 0 to 9)**  
**R75L (Digit 12: 0 to 9)**

### TEST METHOD AND PERFORMANCE

### ELECTRICAL CHARACTERISTICS

**Rated voltage ( $V_R$ ):** 230Vac (400Vdc) - 250Vac (560Vdc)

**Rated temperature ( $T_R$ ):** +85°C

**Temperature derated voltage:**

The following decreasing factor has to be applied on the rated voltage:

+85°C to +105°C: 2.00% per °C for  $V_R$  (d.c.)

+85°C to +105°C: 0.5% per °C for  $V_R$  (a.c.)

**Capacitance range:** 0.056  $\mu$ F to 10  $\mu$ F.

**Capacitance values:**

E12 series (IEC 60063 Norm).

**Capacitance tolerances** (measured at 1 kHz):

$\pm 10\%$  (K);  $\pm 20\%$  (M).

**Total self-inductance (L):** (Lead length ~2 mm)

|                  |    |      |      |      |
|------------------|----|------|------|------|
| Pitch (mm)       | 15 | 22.5 | 27.5 | 37.5 |
| L (nH) $\approx$ | 10 | 18   | 18   | 20   |

**Dissipation factor (DF):**

$\text{tg}\delta \times 10^{-4}$  at +25°C  $\pm 5^\circ\text{C}$

| kHz | $C \leq 0.1 \mu\text{F}$ | $0.1 < C \leq 1.0 \mu\text{F}$ | $1 < C \leq 3.3 \mu\text{F}$ | $3.3 < C \leq 10 \mu\text{F}$ |
|-----|--------------------------|--------------------------------|------------------------------|-------------------------------|
| 1   | $\leq 4$                 | $\leq 5$                       | $\leq 6$                     | $\leq 10$                     |
| 10  | $\leq 6$                 | $\leq 8$                       |                              |                               |
| 100 | $\leq 25$                |                                |                              |                               |

**Insulation resistance:**

**Test conditions**

Temperature: +25°C  $\pm 5^\circ\text{C}$

Voltage charge time: 1min

Voltage charge: 100Vdc

**Performance**

$\geq 1 \times 10^5 \text{ M}\Omega$  for  $C \leq 0.33 \mu\text{F}$  ( $5 \times 10^5 \text{ M}\Omega$ )\*

$\geq 30000 \text{ s}$  for  $C > 0.33 \mu\text{F}$  (150000 s)\*

\* Typical value.

**Test voltage between terminations:**

$1.6 \times V_R$  applied for 2 s at +25°C  $\pm 5^\circ\text{C}$

**Surge test:**

1500 Vpk (10 pulses) for 230Vac

1700 Vpk (10 pulses) for 250Vac

**Damp heat, steady state:**

**Test conditions 1st**

Temperature: +40°C  $\pm 2^\circ\text{C}$

Relative humidity (RH): 93%  $\pm 2\%$

Test duration: 56 days

**Performance**

Capacitance change  $|\Delta C/C|$ :  $\leq 2\%$

DF change ( $\Delta \text{tg}\delta$ ):  $\leq 10 \times 10^{-4}$  at 1kHz

Insulation resistance:  $\geq 50\%$  of initial limit.

**Test conditions 2nd**

Temperature: +40°C  $\pm 2^\circ\text{C}$

Relative humidity (RH): 93%  $\pm 2\%$

Test duration: 56 days

Voltage applied:  $V_R$

**Performance**

Capacitance change  $|\Delta C/C|$ :  $\leq 5\%$

DF change ( $\Delta \text{tg}\delta$ ):  $\leq 10 \times 10^{-4}$  at 1kHz

Insulation resistance:  $\geq 50\%$  of initial limit.

**Test conditions 3rd**

Temperature: +85°C  $\pm 2^\circ\text{C}$

Relative humidity (RH): 85%  $\pm 2\%$

Test duration: 250 h

Voltage applied:  $V_R$

**Performance**

Capacitance change  $|\Delta C/C|$ :  $\leq 5\%$

DF change ( $\Delta \text{tg}\delta$ ):  $\leq 10 \times 10^{-4}$  at 1kHz

Insulation resistance:  $\geq 50\%$  of initial limit.

**Endurance:**

**Test conditions**

Temperature: +85°C  $\pm 2^\circ\text{C}$

Test duration: 2000 h

Voltage applied:  $1.25 \times V_R$

**Performance**

Capacitance change  $|\Delta C/C|$ :  $\leq 5\%$

DF change ( $\Delta \text{tg}\delta$ ):  $\leq 10 \times 10^{-4}$  at 10kHz for  $C \leq 1 \mu\text{F}$

$\leq 10 \times 10^{-4}$  at 1kHz for  $C > 1 \mu\text{F}$

Insulation resistance:  $\geq 50\%$  of initial limit.

**Resistance to soldering heat:**

**Test conditions**

Solder bath temperature: +260°C  $\pm 5^\circ\text{C}$

Dipping time (with heat screen): 10 s  $\pm 1$  s

**Performance**

Capacitance change  $|\Delta C/C|$ :  $\leq 1\%$

DF change ( $\Delta \text{tg}\delta$ ):  $\leq 10 \times 10^{-4}$  at 10kHz for  $C \leq 1 \mu\text{F}$

$\leq 10 \times 10^{-4}$  at 1kHz for  $C > 1 \mu\text{F}$

Insulation resistance:  $\geq$  initial limit.

**Long term stability** (after two years):

**Storage:** standard environmental conditions (see page 12 of DC film capacitors catalogue)

**Performance**

Capacitance change  $|\Delta C/C|$ :  $\leq 0.5\%$

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