

Metallized Polycarbonate Film Capacitor

Related Document: IEC 60 384-6

MAIN APPLICATIONS:

Storage, filter, timing and integrating circuits.

MARKING:

Manufacturer's logo/type/C-value/rated voltage/tolerance/date of manufacture

DIELECTRIC:

Polycarbonate film

ELECTRODES:

Vacuum deposited aluminum

COATING:

Plastic-wrapping, epoxy resin sealed

CONSTRUCTION:

Extended metallized film (refer to general information)

LEADS:

Tinned wire

IEC TEST CLASSIFICATION:

55/100/21, according to IEC 60068

OPERATING TEMPERATURE RANGE:

- 55°C to + 100°C

CAPACITANCE RANGE:

0.01µF to 10µF

CAPACITANCE TOLERANCES:

± 10% (K), ± 5% (J)

RATED VOLTAGES (U_R):

63 VDC, 100 VDC, 250 VDC, 400 VDC

PERMISSIBLE AC VOLTAGES (RMS) UP TO 60Hz:

40 VAC, 63 VAC, 160 VAC, 200 VAC

TEST VOLTAGE (ELECTRODE/ELECTRODE):

1.6 x U_R for 2 s

INSULATION RESISTANCE:

Measured at 100 VDC (63 VDC series measured at 50 VDC) after one minute

For C ≤ 0.33µF and U_R > 100 VDC:

30,000 MΩ minimum value (100,000 MΩ typical value)

For C ≤ 0.33µF and U_R ≤ 100 VDC:

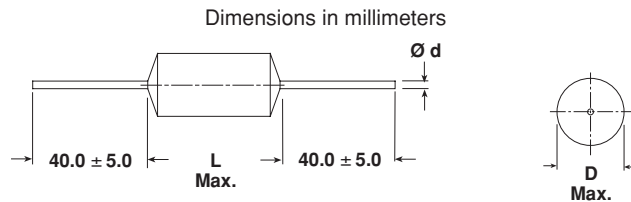
15,000 MΩ minimum value (50,000 MΩ typical value)

MAXIMUM PULSE RISE TIME

| CAPACITOR LENGTH (mm) | Maximum pulse rise time d _v /d _t [V/µs] | | | |
|-----------------------|---|---------|---------|---------|
| | 63 VDC | 100 VDC | 250 VDC | 400 VDC |
| 14 | 17 | 23 | 38 | 61 |
| 19 | 9 | 13 | 21 | 33 |
| 26.5 | 6 | 8 | 13 | 20 |
| 31.5 | 5 | 6 | 10 | 16 |

If the maximum pulse voltage is less than the rated voltage higher d_v/d_t values can be permitted.

Please note: these capacitors are not recommended for new designs



| D | Ø d |
|--------|-----|
| ≤ 7.0 | 0.7 |
| < 16.0 | 0.8 |
| ≥ 16.5 | 1.0 |

TIME CONSTANT:

Measured at 100 VDC (63 VDC series measured at 50 VDC) after one minute

For C > 0.33µF and U_R > 100 VDC:

10,000 s minimum value (40,000 s typical value)

For C > 0.33µF and U_R ≤ 100 VDC:

5,000 s minimum value (15,000 s typical value)

CAPACITANCE DRIFT:

Up to + 40°C, ± 2% for a period of two years

DERATING FOR DC AND AC. CATEGORY VOLTAGE U_C:

At + 85°C: U_C = 1.0 U_R

At + 100°C: U_C = 0.8 U_R

SELF INDUCTANCE:

~ 12 nH measured with 6mm long leads

PULL TEST ON LEADS:

≥ 20 N in direction of leads according to IEC 60068-2-21

BEND TEST ON LEADS:

2 bends through 90° with half of the force used in pull test

RELIABILITY:

Operational life > 300,000 h

Failure rate < 1 FIT (40°C and 0.5 x U_R)

For further details, please refer to the general information provided in this catalog.



DISSIPATION FACTOR TAN δ

| MEASURED AT | C ≤ 0.1µF | 0.1µF < C ≤ 1.0µF | C > 1.0µF |
|----------------|-----------------------|----------------------|----------------------|
| 1kHz | 3 x 10 ⁻³ | 3 x 10 ⁻³ | 3 x 10 ⁻³ |
| 10kHz | 4 x 10 ⁻³ | 4 x 10 ⁻³ | — |
| 100kHz | 10 x 10 ⁻³ | — | — |
| Maximum values | | | |

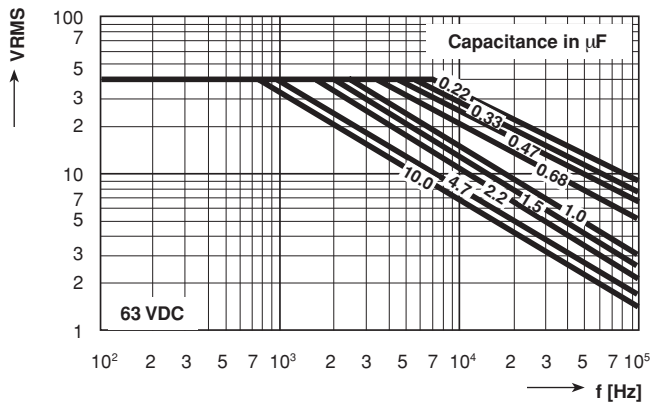
| CAPACITANCE | CAPACITANCE CODE | VOLTAGE CODE 06 63 VDC/ 40 VAC | | VOLTAGE CODE 01 100 VDC/ 63 VAC | | VOLTAGE CODE 25 250 VDC/ 160 VAC | | VOLTAGE CODE 40 400 VDC/ 200 VAC | |
|-------------|------------------|--------------------------------------|------|---------------------------------------|------|--|------|--|------|
| | | D | L | D | L | D | L | D | L |
| 0.01 µF | - 310 | — | — | — | — | — | — | 6.0 | 14.0 |
| 0.015 µF | - 315 | — | — | — | — | — | — | 6.0 | 14.0 |
| 0.022 µF | - 322 | — | — | — | — | — | — | 6.0 | 14.0 |
| 0.033 µF | - 333 | — | — | — | — | 6.0 | 14.0 | 6.0 | 14.0 |
| 0.047 µF | - 347 | — | — | — | — | 6.0 | 14.0 | 7.0 | 14.0 |
| 0.068 µF | - 368 | — | — | — | — | 6.0 | 14.0 | 8.0 | 14.0 |
| 0.10 µF | - 410 | — | — | 6.0 | 14.0 | 7.0 | 14.0 | 7.5 | 19.0 |
| 0.15 µF | - 415 | — | — | 6.0 | 14.0 | 7.5 | 14.0 | 8.5 | 19.0 |
| 0.22 µF | - 422 | 6.0 | 14.0 | 6.0 | 14.0 | 7.0 | 19.0 | 8.5 | 26.5 |
| 0.33 µF | - 433 | 6.0 | 14.0 | 6.0 | 19.0 | 8.0 | 19.0 | 10.0 | 26.5 |
| 0.47 µF | - 447 | 7.0 | 14.0 | 7.0 | 19.0 | 9.5 | 19.0 | 11.5 | 26.5 |
| 0.68 µF | - 468 | 6.5 | 19.0 | 8.0 | 19.0 | 9.0 | 26.5 | 12.0 | 31.5 |
| 1.0 µF | - 510 | 7.5 | 19.0 | 9.0 | 19.0 | 10.5 | 26.5 | 14.5 | 31.5 |
| 1.5 µF | - 515 | 8.5 | 19.0 | 9.0 | 26.5 | 11.5 | 31.5 | — | — |
| 2.2 µF | - 522 | 9.0 | 19.0 | 10.5 | 26.5 | 13.5 | 31.5 | — | — |
| 3.3 µF | - 533 | 9.5 | 26.5 | 12.5 | 26.5 | — | — | — | — |
| 4.7 µF | - 547 | 11.0 | 26.5 | 13.0 | 31.5 | — | — | — | — |
| 6.8 µF | - 568 | 12.0 | 31.5 | 15.5 | 31.5 | — | — | — | — |
| 10 µF | - 610 | 14.0 | 31.5 | 17.5 | 31.5 | — | — | — | — |

Further C-values upon request
pcm = L + 3.5

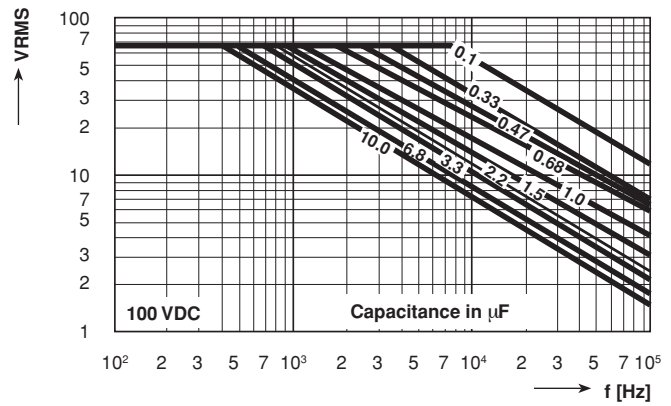
RECOMMENDED PACKAGING

| LETTER CODE | TYPE OF PACKAGING | REEL DIAMETER (mm) | ORDERING CODE EXAMPLE | |
|-------------|-------------------|--------------------|-----------------------|---|
| G | AMMO | — | MKC 1860-422/404-G | X |
| R | REEL | 350 | MKC 1860-422/404-R | X |
| — | BULK | — | MKC 1860-422/404 | X |

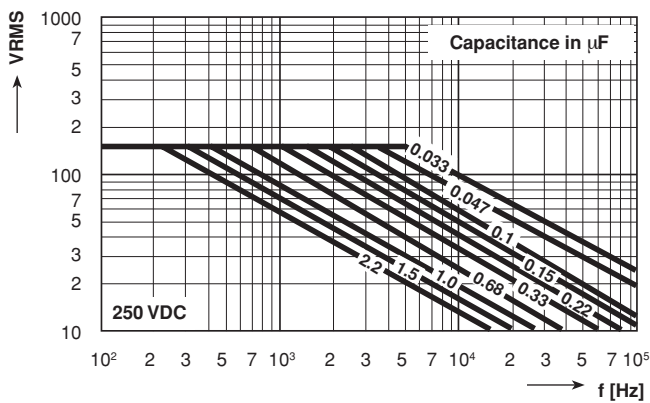
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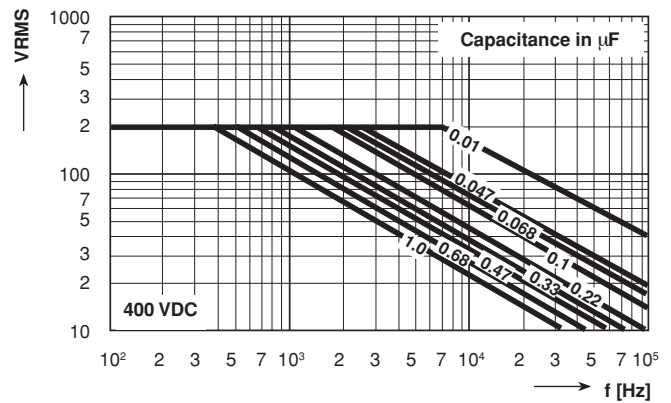
Permissible AC Voltage versus Frequency



Permissible AC Voltage versus Frequency



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