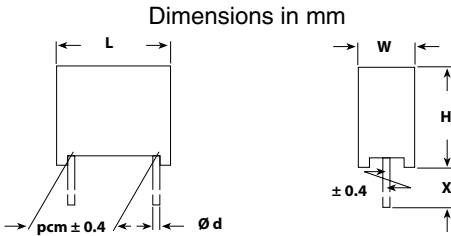
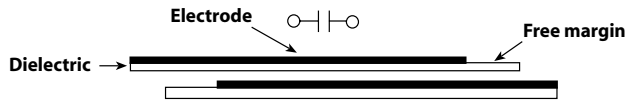


AC-Capacitors, Suppression Capacitors Class X2 AC 275 V (Code pos. 9 = 2) (MKP)



| PCM (mm) | PITCH CODE Pos. 10 | TERMINAL Ø d (mm) |
|----------|--------------------|-------------------|
| 10 | D | 0.6 |
| 15 | F | 0.8 |
| 22.5 | I | 0.8 |
| 27.5 | K | 0.8 |
| 37.5 | P | 0.8 |

| LEAD LENGTH | | ORDERING CODE** | | | | | |
|------------------|--------------|-----------------|-------|---|---|----|---------|
| X (mm) | CODE POS. 11 | 1 - 4 | 5 - 7 | 8 | 9 | 10 | 11 - 13 |
| 4 ⁻¹ | B | 1778 | ... | . | 2 | . | B . 0 |
| 5 ⁻¹ | M | 1778 | ... | . | 2 | . | M . 0 |
| 6 ⁻¹ | C | 1778 | ... | . | 2 | . | C . 0 |
| 10 ⁻¹ | E | 1778 | ... | . | 2 | . | E B 0 |
| 15 ⁻¹ | D | 1778 | ... | . | 2 | . | D B 0 |
| 20 ⁺⁵ | H | 1778 | ... | . | 2 | . | H B 0 |
| 30 ⁺⁵ | L | 1778 | ... | . | 2 | . | L B 0 |



MAXIMUM PULSE RISE TIME: (d_U/d_t) in V/μs

| RATED VOLTAGE | PITCH (mm) | | | |
|---------------|------------|------|------|-------------|
| | 10.0 | 15.0 | 22.5 | 27.5 / 37.5 |
| AC 275 V | 200 | 200 | 150 | 100 |

RATED VOLTAGE:

AC 275 V, 50/60 Hz

PERMISSIBLE DC VOLTAGE:

DC 630 V

TERMINALS:

Radial tinned copper wire

COATING:

Plastic case, epoxy resin sealed, flame retardant UL 94V-0

CLIMATIC TESTING CLASS ACC.TO EN 60068-1:

40/100/56

CAPACITANCE RANGE:

E12 series 0.01 μF X2 - 4.7 μF X2
preferred values acc. to E6

FEATURES:

Product is completely lead (Pb)-free
Product is RoHS compliant



CAPACITANCE TOLERANCE:

Standard: ± 20 %/± 10 %



DISSIPATION FACTOR TAN δ:

< 0.1 % measured at 1 kHz



INSULATION RESISTANCE: FOR C ≤ 0.33 μF:

30 GΩ average value
15 GΩ minimum value

TIME CONSTANT FOR C > 0.33 μF:

10 000 sec. average value
5000 sec. minimum value

TEST VOLTAGE:

(Electrode/electrode): DC 2150 V/2 sec

REFERENCE STANDARDS:

EN 60068-1, EN 132 400, 1994
IEC-Publ. 60384-14/2, 1993; UL 1283, UL 1414
CSA 22.2 No. 8-M 86, CSA 22.2 No. 1-M 90

DIELECTRIC:

Polypropylene film

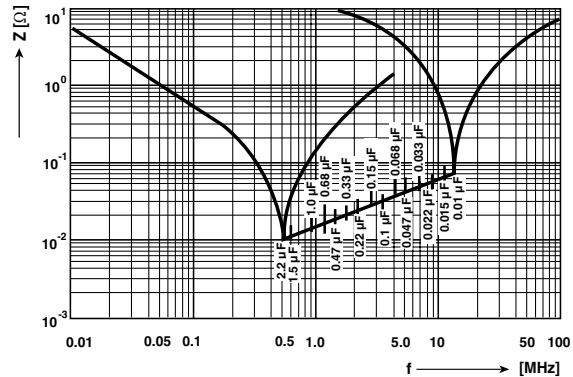
ELECTRODES:

Metal evaporated

CONSTRUCTION:

Metallized film capacitor, single design

Between interconnected terminations and case (foil method):
AC 2500 V for 2 sec. at 25 °C



Impedance (Z) as a function of frequency (f) at T_a = 20 °C (average). Measurement with lead length 6 mm.

FURTHER TECHNICAL DATA:

See page 21 (Document No 26504)



AC-Capacitors, Suppression Capacitors
Class X2 AC 275 V (Code pos. 9=2) (MKP)

Vishay Roederstein

APPROVALS

| COUNTRY | SPECIFICATION | ELECTRICAL VALUES | APPROVAL | APPROVAL MARK |
|---|---|------------------------------------|-----------------------|---------------|
| U.S.A. | UL 1283 (for AC 275 V) UL 1414 (for AC 250 V) | 0.01 - 4.7 µF X 0.01 - 1.0 µF X | E 76 297 E 100 682 | |
| Canada (for AC 250 V) | C 22.2 No. 8-M 1986 C 22.2 No. 1-M 1994 | 0.01 - 4.7 µF X 0.01 - 1.0 µF X | 1114383 EN 100 682 | |
| CB TEST-CERTIFICATE (for AC 275 V) | | 0.01 - 4.7 µF X2 | DE 1-19508 | |
| Germany | EN 132 400; 1999 IEC 60384-14, 2nd edition; 1995 | 0.01- 4.7 µF X2 | 40000787 | |

| CAPACITANCE CODE POS. 5 - 7 | TOL. CODE POS. 8 J = ± 5 % K = ± 10 % M = ± 20 % | PITCH | | BOX NO. | DIMENSIONS W x H x L (mm) (+ 0.2/- 0.4 mm) | WEIGHT (Lead Length ≤ 6 ⁻¹ mm) (g) | QUANTITY PACKAGE (Lead Length ≤ 6 ⁻¹ mm) (pcs)* | ORDERING CODE** | | | | | |
|-----------------------------------|--|-------|-----------------|------------|---|--|--|-----------------|---------|-----|---------|-------|--------------------------|
| | | (mm) | CODE POS. 10 | | | | | TYPE | C-VALUE | TOL | VOLTAGE | PITCH | LEAD Length Design |
| | | | | | | | | | | | | | |
| Pitch 10 mm | | | | | | | | | | | | | |
| 0.01 µF X2 | K/M | 10.0 | D | 32 | 3.8 x 8.8 x 12.8 | 0.6 | 1500 | 1778 | 310 | . | 2 | D | . B0 |
| 0.012 µF X2 | K | 10.0 | D | 32 | 3.8 x 8.8 x 12.8 | 0.6 | 1500 | 1778 | 312 | K | 2 | D | . B0 |
| 0.015 µF X2 | K/M | 10.0 | D | 32 | 3.8 x 8.8 x 12.8 | 0.6 | 1500 | 1778 | 315 | . | 2 | D | . B0 |
| 0.018 µF X2 | K | 10.0 | D | 02 | 4.2 x 9.4 x 12.8 | 0.8 | 1250 | 1778 | 318 | K | 2 | D | . B0 |
| 0.022 µF X2 | K/M | 10.0 | D | 02 | 4.2 x 9.4 x 12.8 | 0.8 | 1250 | 1778 | 322 | . | 2 | D | . B0 |
| 0.027 µF X2 | K | 10.0 | D | 03 | 5.3 x 10.3 x 12.8 | 1.0 | 1250 | 1778 | 327 | K | 2 | D | . B0 |
| 0.033 µF X2 | K/M | 10.0 | D | 03 | 5.3 x 10.3 x 12.8 | 1.0 | 1000 | 1778 | 333 | . | 2 | D | . B0 |
| 0.039 µF X2 | K | 10.0 | D | 03 | 5.3 x 11.3 x 12.8 | 1.0 | 1000 | 1778 | 339 | K | 2 | D | . B0 |
| 0.047 µF X2 | M | 10.0 | D | 03 | 5.3 x 11.3 x 12.8 | 1.0 | 1000 | 1778 | 347 | M | 2 | D | . B0 |
| 0.047 µF X2 | K | 10.0 | D | 04 | 6.3 x 11.3 x 12.8 | 1.3 | 750 | 1778 | 347 | K | 2 | D | . B0 |
| 0.068 µF X2 | K/M | 10.0 | D | 91 | 6.4 x 12.5 x 12.8 | 1.5 | 750 | 1778 | 368 | . | 2 | D | . B0 |
| 0.1 µF X2 | M | 10.0 | D | 91 | 6.4 x 12.5 x 12.8 | 1.4 | 750 | 1778 | 410 | M | 2 | D | . B0 |
| Pitch 15 mm | | | | | | | | | | | | | |
| 0.022 µF X2 | K/M | 15.0 | F | 05 | 5.3 x 10.3 x 17.8 | 0.8 | 750 | 1778 | 322 | . | 2 | F | . B0 |
| 0.033 µF X2 | K/M | 15.0 | F | 05 | 5.3 x 10.3 x 17.8 | 0.8 | 750 | 1778 | 333 | . | 2 | F | . B0 |
| 0.047 µF X2 | K/M | 15.0 | F | 05 | 5.3 x 10.3 x 17.8 | 1.0 | 750 | 1778 | 347 | . | 2 | F | . B0 |
| 0.056 µF X2 | K | 15.0 | F | 05 | 5.3 x 10.3 x 17.8 | 1.4 | 750 | 1778 | 356 | K | 2 | F | . B0 |
| 0.068 µF X2 | K/M | 15.0 | F | 05 | 5.3 x 10.3 x 17.8 | 1.5 | 750 | 1778 | 368 | . | 2 | F | . B0 |
| 0.082 µF X2 | K | 15.0 | F | 05 | 5.3 x 10.3 x 17.8 | 1.5 | 750 | 1778 | 382 | K | 2 | F | . B0 |
| 0.1 µF X2 | K | 15.0 | F | 49 | 6.0 x 12.0 x 17.9 | 2.0 | 600 | 1778 | 410 | K | 2 | F | . B0 |
| 0.1 µF X2 | M | 15.0 | F | 05 | 5.3 x 10.3 x 17.8 | 1.8 | 750 | 1778 | 410 | M | 2 | F | . B0 |
| 0.12 µF X2 | K | 15.0 | F | 49 | 6.0 x 12.0 x 17.9 | 2.2 | 600 | 1778 | 412 | K | 2 | F | . B0 |
| 0.15 µF X2 | K | 15.0 | F | 07 | 7.3 x 13.3 x 17.8 | 2.4 | 450 | 1778 | 415 | K | 2 | F | . B0 |
| 0.15 µF X2 | M | 15.0 | F | 49 | 6.0 x 12.0 x 17.9 | 2.2 | 600 | 1778 | 415 | M | 2 | F | . B0 |
| 0.18 µF X2 | K | 15.0 | F | 07 | 8.3 x 17.3 x 17.8 | 2.5 | 450 | 1778 | 418 | K | 2 | F | . . 0 |
| 0.22 µF X2 | K/M | 15.0 | F | 08 | 8.3 x 14.3 x 17.8 | 3.3 | 300 | 1778 | 422 | . | 2 | F | . . 0 |
| 0.33 µF X2 | K/M | 15.0 | F | 46 | 10.0 x 16.0 x 17.9 | 6.3 | 240 | 1778 | 433 | . | 2 | F | . . 0 |
| 0.39 µF X2 | K | 15.0 | F | 70 | 10.8 x 18.3 x 17.8 | 7.0 | 225 | 1778 | 439 | K | 2 | F | . . 0 |
| 0.47 µF X2 | K | 15.0 | F | 70 | 10.8 x 18.3 x 17.8 | 7.0 | 225 | 1778 | 447 | K | 2 | F | . . 0 |
| 0.47 µF X2 | M | 15.0 | F | 35 | 10.3 x 17.3 x 17.8 | 6.5 | 225 | 1778 | 447 | M | 2 | F | . . 0 |

Inbuilt discharging resistor on request (with larger case dimensions).

* For further information about packaging quantities with different lead length and/or taped versions visit www.vishay.com/doc?27622
(Packing Quantities) - use Box No. as reference

** These capacitors can be delivered on continuous tape and reel, visit www.vishay.com/doc?27622

Bo = Bulk Pack
T0 = Tray/Pallet

| CAPACITANCE CODE POS. 5 - 7 | TOL. CODE POS. 8 J = ± 5 % K = ± 10 % M = ± 20 % | PITCH | | BOX NO. | DIMENSIONS W x H x L (mm) (+ 0.2/- 0.4 mm) | WEIGHT (Lead Length ≤ 6 ⁻¹ mm) (g) | QUANTITY PACKAGE (Lead Length ≤ 6 ⁻¹ mm) (pcs)** | ORDERING CODE** | | | | | |
|--------------------------------|--|-------|--------------|---------|---|--|---|-----------------|---------|-----|---------|-------|--------------------|
| | | (mm) | CODE POS. 10 | | | | | TYPE | C-VALUE | TOL | VOLTAGE | PITCH | LEAD Length Design |
| | | | | | | | | | | | | | |
| Pitch 22.5 mm | | | | | | | | | | | | | |
| 0.15 µF X2 | K/M | 22.5 | I | 09 | 6.3 x 14.3 x 26.3 | 3.3 | 260 | 1778 | 415 | . | 2 | I | .. 0 |
| 0.22 µF X2 | K | 22.5 | I | 09 | 6.3 x 14.3 x 26.3 | 3.4 | 260 | 1778 | 422 | K | 2 | I | .. 0 |
| 0.22 µF X2 | M | 22.5 | I | 09 | 6.3 x 14.3 x 26.3 | 3.4 | 260 | 1778 | 422 | M | 2 | I | .. 0 |
| 0.27 µF X2 | K | 22.5 | I | 12 | 8.3 x 16.3 x 26.3 | 4.1 | 200 | 1778 | 427 | K | 2 | I | .. 0 |
| 0.33 µF X2 | K | 22.5 | I | 12 | 8.3 x 16.3 x 26.3 | 5.0 | 190 | 1778 | 433 | K | 2 | I | .. 0 |
| 0.33 µF X2 | M | 22.5 | I | 11 | 7.3 x 15.3 x 26.2 | 4.1 | 235 | 1778 | 433 | M | 2 | I | .. 0 |
| 0.39 µF X2 | K | 22.5 | I | 12 | 8.3 x 16.3 x 26.3 | 5.0 | 200 | 1778 | 439 | K | 2 | I | .. 0 |
| 0.47 µF X2 | K | 22.5 | I | 01 | 8.8 x 16.8 x 26.3 | 5.7 | 190 | 1778 | 447 | K | 2 | I | .. 0 |
| 0.47 µF X2 | M | 22.5 | I | 12 | 8.3 x 16.3 x 26.2 | 5.0 | 200 | 1778 | 447 | M | 2 | I | .. 0 |
| 0.56 µF X2 | K | 22.5 | I | 45 | 10.8 x 20.8 x 26.3 | 8.0 | 150 | 1778 | 456 | K | 2 | I | .. 0 |
| 0.68 µF X2 | K | 22.5 | I | 45 | 10.8 x 20.8 x 26.3 | 8.0 | 150 | 1778 | 468 | K | 2 | I | .. 0 |
| 0.68 µF X2 | M | 22.5 | I | 13 | 10.3 x 18.3 x 26.2 | 6.7 | 170 | 1778 | 468 | M | 2 | I | .. 0 |
| 1.0 µF X2 | M | 22.5 | I | 27 | 12.3 x 20.0 x 26.3 | 8.7 | 135 | 1778 | 510 | M | 2 | I | .. 0 |
| Pitch 27.5 mm | | | | | | | | | | | | | |
| 0.47 µF X2 | K/M | 27.5 | K | 23 | 8.8 x 16.8 x 31.3 | 6.8 | 160 | 1778 | 447 | . | 2 | K | .. 0 |
| 0.56 µF X2 | K | 27.5 | K | 23 | 8.8 x 16.8 x 31.3 | 7.0 | 160 | 1778 | 456 | K | 2 | K | .. 0 |
| 0.68 µF X2 | K/M | 27.5 | K | 29 | 8.8 x 18.3 x 31.3 | 7.4 | 160 | 1778 | 468 | . | 2 | K | .. 0 |
| 0.82 µF X2 | K | 27.5 | K | 14 | 11.0 x 20.3 x 31.3 | 9.1 | 125 | 1778 | 482 | K | 2 | K | .. 0 |
| 1.0 µF X2 | K/M | 27.5 | K | 14 | 11.0 x 20.3 x 31.3 | 9.1 | 125 | 1778 | 510 | . | 2 | K | .. 0 |
| 1.2 µF X2 | K | 27.5 | K | 15 | 13.0 x 23.3 x 31.3 | 12.9 | 110 | 1778 | 512 | K | 2 | K | .. 0 |
| 1.5 µF X2 | K/M | 27.5 | K | 15 | 13.0 x 23.3 x 31.3 | 13.2 | 110 | 1778 | 515 | . | 2 | K | .. 0 |
| 1.8 µF X2 | K | 27.5 | K | 17 | 16.3 x 29.3 x 31.3 | 19.0 | 85 | 1778 | 518 | K | 2 | K | .. 0 |
| 2.2 µF X2 | K/M | 27.5 | K | 17 | 16.3 x 29.3 x 31.3 | 21.0 | 85 | 1778 | 522 | . | 2 | K | .. 0 |
| 3.3 µF X2 | K | 27.5 | K | 41 | 19.5 x 34.8 x 31.3 | 29.8 | 70 | 1778 | 533 | K | 2 | K | .. 0 |
| 3.3 µF X2 | M | 27.5 | K | 40 | 17.8 x 32.3 x 31.3 | 27.8 | 80 | 1778 | 533 | M | 2 | K | .. 0 |
| Pitch 37.5 mm | | | | | | | | | | | | | |
| 2.2 µF X2 | K/M | 37.5 | P | 16 | 14.0 x 24.3 x 41.3 | 19 | 80 | 1778 | 522 | . | 2 | P | .. 0 |
| 3.3 µF X2 | M | 37.5 | P | 19 | 15.5 x 28.3 x 41.3 | 25.0 | 70 | 1778 | 533 | M | 2 | P | .. 0 |
| 4.7 µF X2 | M | 37.5 | P | 20 | 17.8 x 32.3 x 41.3 | 31.6 | 60 | 1778 | 547 | M | 2 | P | .. 0 |

Inbuilt discharging resistor on request (with larger case dimensions).

* For further information about packaging quantities with different lead length and/or taped versions visit www.vishay.com/doc?27622

(Packing Quantities) - use Box No. as reference

Bo = Bulk Pack

** These capacitors can be delivered on continuous tape and reel, visit www.vishay.com/doc?27622

T0 = Tray/Pallet

APPLICATION NOTES

- For X2 electromagnetic interference suppression in **across the line applications** (50/60 Hz) with a maximum mains voltage of 275 V (AC).
- These capacitors are not intended for continuous pulse applications. For these situations, capacitors of the AC and pulse programs must be used.
- These capacitors are not intended for series impedance application. For these situations in case safety approvals are requested, please refer to our special capacitors of 1772 series with internal series connection.
- The maximum ambient temperature must not exceed 100 °C.
- Rated voltage pulse slope:
If the pulse voltage is lower than the rated voltage, the values of the specific reference data can be multiplied by 385 V (DC) and divided by the applied voltage.



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