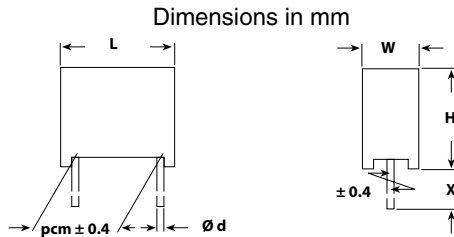


## AC-Capacitors, Suppression Capacitors Class X2 AC 275 V (Code pos. 9 = 2) (MKP)



**FEATURES:**

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



**CAPACITANCE TOLERANCE:**

Standard:  $\pm 20\% / \pm 10\%$



**DISSIPATION FACTOR TAN  $\delta$ :**

$< 0.1\%$  measured at 1 kHz



**INSULATION RESISTANCE: FOR  $C \leq 0.33 \mu\text{F}$ :**

30 G $\Omega$  average value  
15 G $\Omega$  minimum value

**TIME CONSTANT FOR  $C > 0.33 \mu\text{F}$ :**

10 000 sec. average value  
5000 sec. minimum value

PCM (mm)	PITCH CODE Pos. 10	TERMINAL $\varnothing d$ (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 <sup>-1</sup>	B	1778	...	.	2	.	B.0
5 <sup>-1</sup>	M	1778	...	.	2	.	M.0
6 <sup>-1</sup>	C	1778	...	.	2	.	C.0
10 <sup>-1</sup>	E	1778	...	.	2	.	E B 0
15 <sup>-1</sup>	D	1778	...	.	2	.	D B 0
20 <sup>+5</sup>	H	1778	...	.	2	.	H B 0
30 <sup>+5</sup>	L	1778	...	.	2	.	L B 0

**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:**

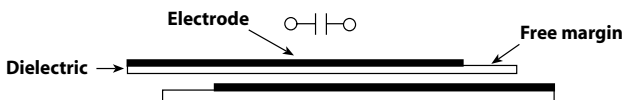
Polypropylene film

**ELECTRODES:**

Metal evaporated

**CONSTRUCTION:**

Metallized film capacitor, single design



**MAXIMUM PULSE RISE TIME: ( $d_u/d_t$ ) in V/ $\mu\text{s}$**

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

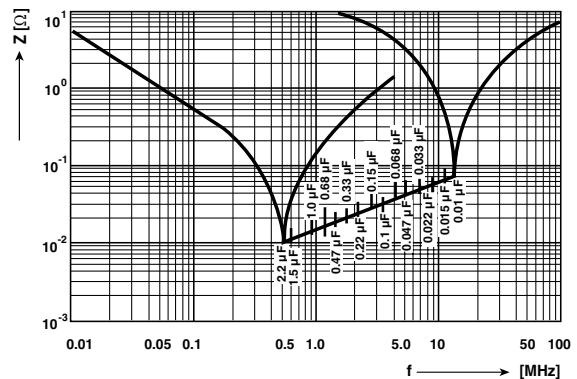
**CLIMATIC TESTING CLASS ACC.TO EN 60068-1:**

40/100/56

**CAPACITANCE RANGE:**

E12 series 0.01  $\mu\text{F}$  X2 - 4.7  $\mu\text{F}$  X2  
preferred values acc. to E6

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  $T_a = 20\text{ }^\circ\text{C}$  (average). Measurement with lead length 6 mm.

**FURTHER TECHNICAL DATA:**

See page 21 (Document No 26504)



**F1778-275V**

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 $\mu$ F X 0.01 - 1.0 $\mu$ F 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 $\mu$ F X 0.01 - 1.0 $\mu$ F X	1114383 EN 100 682	
<b>CB TEST-CERTIFICATE (for AC 275 V)</b>		0.01 - 4.7 $\mu$ F X2	DE 1-19508	
Germany	EN 132 400; 1999 IEC 60384-14, 2nd edition; 1995	0.01- 4.7 $\mu$ F X2	40000787	

CAPACITANCE CODE POS. 5 - 7	TOL. CODE POS. 8 J = $\pm$ 5 % K = $\pm$ 10 % M = $\pm$ 20 %	PITCH		BOX NO.	DIMENSIONS W x H x L  (mm) (+ 0.2/- 0.4 mm)	WEIGHT (Lead Length $\leq$ 6 <sup>-1</sup> mm) (g)	QUANTITY PACKAGE (Lead Length $\leq$ 6 <sup>-1</sup> mm) (pcs)*	ORDERING CODE**					
		(mm)	CODE POS. 10					TYPE	C-VALUE	TOL	VOLTAGE	PITCH	LEAD Length Design
Pitch 10 mm													
0.01 $\mu$ F 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 $\mu$ F 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 $\mu$ F 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 $\mu$ F 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 $\mu$ F 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 $\mu$ F 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 $\mu$ F 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 $\mu$ F 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 $\mu$ F 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 $\mu$ F 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 $\mu$ F 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 $\mu$ F 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 $\mu$ F 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 $\mu$ F 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 $\mu$ F 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 $\mu$ F 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 $\mu$ F 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 $\mu$ F 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 $\mu$ F 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 $\mu$ F 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 $\mu$ F 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 $\mu$ F 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 $\mu$ F 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 $\mu$ F 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 $\mu$ F 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 $\mu$ F 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 $\mu$ F 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 $\mu$ F 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 $\mu$ F 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](http://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](http://www.vishay.com/doc?27622)

Bo = Bulk Pack  
T0 = Tray/Pallet

# F1778-275V



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

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 <sup>-1</sup> mm) (g)	QUANTITY PACKAGE (Lead Length ≤ 6 <sup>-1</sup> mm) (pcs)**	ORDERING CODE**					
		(mm)	CODE POS. 10					TYPE	C-VALUE	TOL	VOLTAGE	PITCH	LEAD Length Design
<b>Pitch 22.5 mm</b>													
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
<b>Pitch 27.5 mm</b>													
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
<b>Pitch 37.5 mm</b>													
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](http://www.vishay.com/doc?27622)  
(Packing Quantities) - use Box No. as reference

Bo = Bulk Pack  
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\*\* These capacitors can be delivered on continuous tape and reel, visit [www.vishay.com/doc?27622](http://www.vishay.com/doc?27622)

## 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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