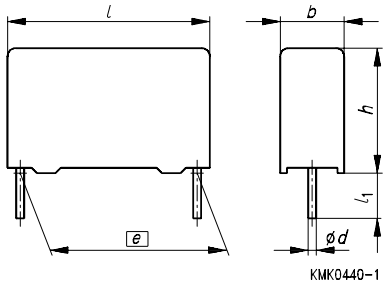
X2 capacitors with very small dimensions
Rated ac voltage 275 V, 50/60 Hz



KMK0440-1

Construction

- Dielectric: polypropylene (MKP)
- Plastic case (UL 94 V-0)
- Epoxy resin sealing, flame-retardant
- Impregnated

Features

- Very small dimensions
- Self-healing properties

Terminals

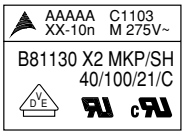
- Parallel wire leads, tinned
- Two standard lead lengths available: 6 mm und 26 mm
  Other lead lengths available upon request.

Lead spacing e ±0,4	Lead diameter ∅d (mm)	Lead length l_1 (mm)	
10 mm	0,6	6 – 1	—
≥ 15 mm	0,8	6 – 1	26 ±2

Marking

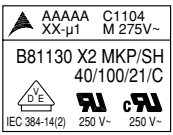
Manufacturer's logo and lot number
date code,
rated capacitance (coded),
capacitance tolerance (code letter),
rated ac voltage, type number,
interference suppression sub-class (X2),
style (MKP), climatic category,
awarded marks of conformity.

Lead spacing = 10 mm



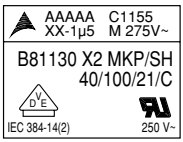
KMK0570-T

Lead spacing ≥ 15 mm (22 nF ... 1,0 µF)



KMK0571-2

Lead spacing = 27,5 mm (1,5 and 2,2 µF)



KMK0699-I

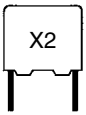
Delivery mode

Bulk (untaped)
Taped (Ammo pack or reel)
For notes on taping,
refer to chapter "Taping and packing", page 274.

Marks of conformity

Marks of conformity	Standards	Certificate
VDE UL cUL 1)	EN 132400 / IEC 384-14, 2nd edition UL 1414 (V_R = 250 Vac) Approved by UL according to CSA C22.2 No. 0; 1 (V_R = 250 Vac)	18643-4670-1010/A1G E97863/97NK11940A E97863/97NK11940A

1) Not for 1,5 and 2,2 µF



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275 Vac

Ordering codes and packing units

Lead spacing $\boxed{e}$ ±0,4 mm	C_R	Maximum dimensions $b \times h \times l$ (mm)	Ordering code[1]	Packing units (pcs) Ammo pack	Reel	Untaped Lead length 6 mm	26 mm
10	10 nF	4,0 × 9,0 × 13,0	B81130-C1103-+***	1000	1700	1000	—
	15 nF	4,0 × 9,0 × 13,0	B81130-C1153-+***	1000	1700	1000	—
	22 nF	5,0 × 11,0 × 13,0	B81130-C1223-+***	830	1300	1000	—
	33 nF	5,0 × 11,0 × 13,0	B81130-C1333-M***	830	1300	1000	—
	33 nF	6,0 × 12,0 × 13,0	B81130-A1333-+***	680	1100	1000	—
	47 nF	6,0 × 12,0 × 13,0	B81130-C1473-+***	680	1100	1000	—
15	22 nF	5,0 × 10,5 × 18,0	B81130-B1223-+***	1170	1300	1000	1000
	33 nF	5,0 × 10,5 × 18,0	B81130-B1333-+***	1170	1300	1000	1000
	47 nF	5,0 × 10,5 × 18,0	B81130-B1473-+***	1170	1300	1000	1000
	68 nF	6,0 × 11,0 × 18,0	B81130-C1683-+***	960	1100	1000	1000
	0,10 µF	6,0 × 12,0 × 18,0	B81130-C1104-M***	960	1100	1000	1000
	0,10 µF	7,0 × 12,5 × 18,0	B81130-A1104-+***	830	900	1000	800
	0,15 µF	8,5 × 14,5 × 18,0	B81130-C1154-+***	680	700	500	500
	0,22 µF	9,0 × 17,5 × 18,0	B81130-C1224-+***	640	700	500	500
22,5	0,15 µF	6,0 × 15,0 × 26,5	B81130-B1154-+***	680	700	720	500
	0,22 µF	7,0 × 16,0 × 26,5	B81130-B1224-+***	580	600	630	500
	0,33 µF	8,5 × 16,5 × 26,5	B81130-C1334-+***	480	500	510	450
	0,47 µF	10,5 × 16,5 × 26,5	B81130-C1474-M***	390	400	540	350
	0,47 µF	10,5 × 18,5 × 26,5	B81130-A1474-+***	390	400	540	300
	0,68 µF	11,0 × 20,5 × 26,5	B81130-C1684-M***	370	350	510	300
27,5	0,47 µF	11,0 × 21,0 × 31,5	B81130-B1474-+***	—	350	320	200
	0,68 µF	11,0 × 21,0 × 31,5	B81130-B1684-+***	—	350	320	200
	1,0 µF	12,5 × 21,5 × 31,5	B81130-C1105-M***	—	300	280	200
	1,0 µF	13,5 × 23,0 × 31,5	B81130-A1105-+***	—	250	260	150
	1,5 µF	15,0 × 24,5 × 31,5	B81130-C1155-M***	—	—	240	150
	1,5 µF	18,0 × 27,5 × 31,5	B81130-A1155-+***	—	—	200	100
	2,2 µF	18,0 × 27,5 × 31,5	B81130-C1225-M***	—	—	200	100
	2,2 µF	19,0 × 30,0 × 31,5	B81130-A1225-+***	—	—	180	100

Capacitance tolerance: ± 20 % ≙ M, ±10 % ≙ K (closer tolerances upon request)

1) Replace the + by the code letter for the required capacitance tolerance.
Replace the *** by the code number for the required lead length or packing.
000 = lead length 6 mm (untaped)
026 = lead length 26 mm (untaped)
289 = taped, Ammo pack
189 = taped, reel

Technical data

Climatic category in accordance with IEC 60068-1	40/100/21
Lower category temperature T_{min} Upper category temperature T_{max}	– 40 °C + 100 °C
Passive flammability category in accordance with IEC 40 (CO) 752	C
Damp heat test	21 days/40 °C/93 % relative humidity
Limit values after damp heat test	Capacitance change $\lvert\Delta C/C\rvert$ ≤ 3 % Dissipation factor change $\Delta \tan \delta$ ≤ $0{,}5 \cdot 10^{-3}$ (at 1 kHz) ≤ $1{,}0 \cdot 10^{-3}$ (at 10 kHz) Insulation resistance R_{is} ≥ 50 % of minimum or time constant $\tau = C_R \cdot R_{is}$ as-delivered values
Permissible continuous ac voltage	275 V (50/60 Hz)
Permissible continuous dc voltage	560 V
DC test voltage	2121 V, 2 s

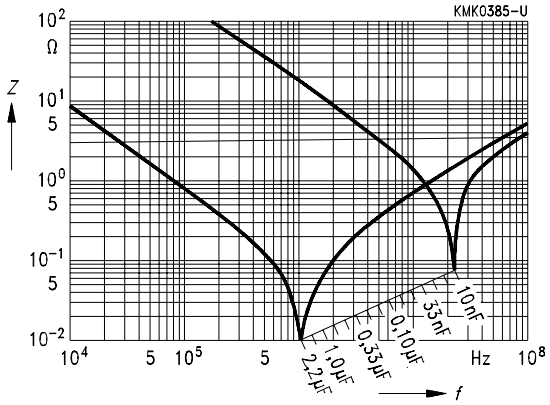
Dissipation factor tan δ (in 10^{-3}) at 20 °C (upper limit values)

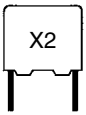
	$C_R \le 0{,}1$ µF	0,1 µF < $C_R \le 1$ µF	$C_R > 1$ µF
at 1 kHz	1,0	1,0	1,0
100 kHz	5	10	13

Insulation resistance R_{is} or time constant $\tau = C_R \cdot R_{is}$ at 20 °C, rel. humidity ≤ 65 % (minimum as-delivered values)

$C_R \le 0{,}33$ µF	$C_R > 0{,}33$ µF
100 GΩ	30 000 s

Impedance Z versus frequency f (typical values)





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275 Vac

Pulse handling capability

Maximum permissible voltage change per unit of time for non-sinusoidal voltages (pulse, sawtooth).

V_R	Max. rate of voltage rise V_{pp}/τ in V/µs (for $V_{pp} = \hat{V}_R$) Lead spacing			
	10 mm	15 mm	22,5 mm	27,5 mm
275 Vac	290	110	50	30

For $V_{pp} < \hat{V}_R$, the permissible voltage rise rate V_{pp}/τ may be multiplied by the factor $\hat{V}_R/V_{pp}$.
Also refer to the calculation example in chapter “General technical information”, page 302.

V_R	Pulse characteristic k_0 in $V^2/\mu s$ (for $V_{pp} \leq \hat{V}_R$) Lead spacing			
	10 mm	15 mm	22,5 mm	27,5 mm
275 Vac	220 000	80 000	35 000	21 000

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