

**MKP stacked-film capacitors
Smallest possible dimensions**

Construction

- Dielectric: polypropylene
- Stacked-film technology
- Plastic case (UL 94 V-0)
- Epoxy resin sealing

Features

- Very high pulse strength
- Very good self-healing properties
- Smallest possible dimensions
- High contact reliability

Typical applications

- Energy-saving lamps
- TV S-correction
- High pulse load applications
- AC applications

Terminals

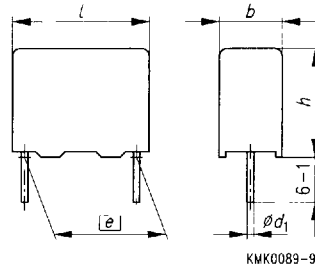
- Parallel wire leads, tinned
- Also available with $(3,2 \pm 0,3)$ mm lead length

Marking

Manufacturer's logo,
lot number for lead spacing 15 mm,
style (MKP),
rated capacitance (coded),
capacitance tolerance (code letter),
rated dc voltage,
date of manufacture (coded)

Delivery mode

Bulk (untaped)
Taped (Ammo pack or reel)
For notes on taping refer to page 278.



Dimensions in mm

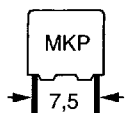
Lead spacing $e \pm 0,4$	Diameter d_1	Type
7,5	0,5	B 32 620
10	$0,5^1/0,6$	B 32 621
15	0,8	B 32 622

1) 0,5 mm for capacitor width $b = 4$ mm



Overview of available types

Lead spacing	7,5 mm				10 mm				15 mm			
Type	B 32 620				B 32 621				B 32 622			
Page	112				113				114			
1,5 nF												
2,2 nF												
3,3 nF												
4,7 nF												
6,8 nF												
10 nF												
15 nF												
22 nF												
33 nF												
47 nF												
68 nF												
0,10 µF												
0,15 µF												
0,22 µF												
0,33 µF												
0,47 µF												
0,68 µF												
1,0 µF												



B 32 620

Ordering codes and packing units, lead spacing 7,5 mm

V_R (V_{rms}) $f \leq 1$ kHz)	C_R	Maximum dimensions $b \times h \times l$ (mm)	Ordering code ¹⁾	Packing units (pcs)		
				Ammo pack	Reel	Untaped
160 V_{dc} (90 V_{ac})	22 nF	3,0 × 8,0 × 10,0	B32620-A5223-+***	2600	2400	2000
	33 nF	4,0 × 8,5 × 10,0	B32620-A5333-+***	2000	1800	1500
	47 nF	4,0 × 8,5 × 10,0	B32620-A5473-+***	2000	1800	1500
	68 nF	5,0 × 10,5 × 10,0	B32620-A5683-+***	1600	1400	1000
	0,10 μF	5,0 × 10,5 × 10,0	B32620-A5104-+***	1600	1400	1000
	0,15 μF	6,0 × 12,0 × 10,0	B32620-A5154-+***	1300	1100	750
250 V_{dc} (140 V_{ac})	22 nF	4,0 × 8,5 × 10,0	B32620-A3223-+***	2000	1800	1500
	33 nF	4,0 × 8,5 × 10,0	B32620-A3333-+***	2000	1800	1500
	47 nF	5,0 × 10,5 × 10,0	B32620-A3473-+***	1600	1400	1000
	68 nF	5,0 × 10,5 × 10,0	B32620-A3683-+***	1600	1400	1000
	0,10 μF	6,0 × 12,0 × 10,0	B32620-A3104-+***	1300	1100	750
	400 V_{dc} (200 V_{ac})	6,8 nF	4,0 × 8,5 × 10,0	B32620-A4682-+***	2000	1800
10 nF		4,0 × 8,5 × 10,0	B32620-A4103-+***	2000	1800	1500
15 nF		5,0 × 10,5 × 10,0	B32620-A4153-+***	1600	1400	1000
22 nF		5,0 × 10,5 × 10,0	B32620-A4223-+***	1600	1400	1000
33 nF		6,0 × 12,0 × 10,0	B32620-A4333-+***	1300	1100	750
630 V_{dc} (400 V_{ac})		1,5 nF	4,0 × 8,5 × 10,0	B32620-A6152-+***	2000	1800
	2,2 nF	4,0 × 8,5 × 10,0	B32620-A6222-+***	2000	1800	1500
	3,3 nF	4,0 × 8,5 × 10,0	B32620-A6332-+***	2000	1800	1500
	4,7 nF	4,0 × 8,5 × 10,0	B32620-A6472-+***	2000	1800	1500
	6,8 nF	5,0 × 10,5 × 10,0	B32620-A6682-+***	1600	1400	1000
	10 nF	5,0 × 10,5 × 10,0	B32620-A6103-+***	1600	1400	1000
	15 nF	6,0 × 12,0 × 10,0	B32620-A6153-+***	1300	1100	750
	1000 V_{dc} (500 V_{ac})	1,5 nF	4,0 × 8,5 × 10,0	B32620-A152-+***	2000	1800
2,2 nF		4,0 × 8,5 × 10,0	B32620-A222-+***	2000	1800	1500
3,3 nF		5,0 × 10,5 × 10,0	B32620-A332-+***	1600	1400	1000
4,7 nF		5,0 × 10,5 × 10,0	B32620-A472-+***	1600	1400	1000
6,8 nF		6,0 × 12,0 × 10,0	B32620-A682-+***	1300	1100	750

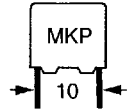
Capacitance tolerance: $\pm 20\% \hat{=} M, \pm 10\% \hat{=} K, \pm 5\% \hat{=} J$

1) Replace the + by the code letter for the required capacitance tolerance.

Replace the *** by the code number for the required packing: Ammo pack = 289, reel = 189 (taping cf p 278)

The ordering code for untaped components ends after the tolerance code letter

For capacitors with 3,2 mm lead length, append code number "3" to the tolerance code, e.g.. B32620-A5104-K3

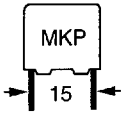


Ordering codes and packing units, lead spacing 10 mm

V_R (V_{rms}) $f \leq 1$ kHz)	C_R	Maximum dimensions $b \times h \times l$ (mm)	Ordering code ¹⁾	Packing units (pcs)		
				Ammo pack	Reel	Untaped
160 V_{dc} (90 V_{ac})	47 nF	4,0 × 9,0 × 13,0	B32621-A5473-+***	1000	1700	1000
	68 nF	4,0 × 9,0 × 13,0	B32621-A5683-+***	1000	1700	1000
	0,10 μ F	5,0 × 11,0 × 13,0	B32621-A5104-+***	800	1300	1000
	0,15 μ F	5,0 × 11,0 × 13,0	B32621-A5154-+***	800	1300	1000
	0,22 μ F	6,0 × 12,0 × 13,0	B32621-A5224-+***	600	1100	1000
250 V_{dc} (140 V_{ac})	33 nF	4,0 × 9,0 × 13,0	B32621-A3333-+***	1000	1700	1000
	47 nF	4,0 × 9,0 × 13,0	B32621-A3473-+***	1000	1700	1000
	68 nF	5,0 × 11,0 × 13,0	B32621-A3683-+***	800	1300	1000
	0,10 μ F	6,0 × 12,0 × 13,0	B32621-A3104-+***	600	1100	1000
400 V_{dc} (200 V_{ac})	10 nF	4,0 × 9,0 × 13,0	B32621-A4103-+***	1000	1700	1000
	15 nF	4,0 × 9,0 × 13,0	B32621-A4153-+***	1000	1700	1000
	22 nF	5,0 × 11,0 × 13,0	B32621-A4223-+***	800	1300	1000
	33 nF	5,0 × 11,0 × 13,0	B32621-A4333-+***	800	1300	1000
	47 nF	6,0 × 12,0 × 13,0	B32621-A4473-+***	600	1100	1000
630 V_{dc} (400 V_{ac})	4,7 nF	4,0 × 9,0 × 13,0	B32621-A6472-+***	1000	1700	1000
	6,8 nF	4,0 × 9,0 × 13,0	B32621-A6682-+***	1000	1700	1000
	10 nF	4,0 × 9,0 × 13,0	B32621-A6103-+***	1000	1700	1000
	15 nF	5,0 × 11,0 × 13,0	B32621-A6153-+***	800	1300	1000
	22 nF	6,0 × 12,0 × 13,0	B32621-A6223-+***	600	1100	1000
1000 V_{dc} (500 V_{ac})	2,2 nF	4,0 × 9,0 × 13,0	B32621-A222-+***	1000	1700	1000
	3,3 nF	4,0 × 9,0 × 13,0	B32621-A332-+***	1000	1700	1000
	4,7 nF	4,0 × 9,0 × 13,0	B32621-A472-+***	1000	1700	1000
	6,8 nF	5,0 × 11,0 × 13,0	B32621-A682-+***	800	1300	1000
	10 nF	6,0 × 12,0 × 13,0	B32621-A103-+***	600	1100	1000

Capacitance tolerance: $\pm 20\% \hat{=} M, \pm 10\% \hat{=} K, \pm 5\% \hat{=} J$

1) Replace the + by the code letter for the required capacitance tolerance.
 Replace the *** by the code number for the required packing Ammo pack = 289, reel = 189 (taping cf. p. 278)
 The ordering code for untaped components ends after the tolerance code letter
 For capacitors with 3,2 mm lead length, append code number "3" to the tolerance code, e.g., B32621-A5104-K3



B 32 622

Ordering codes and packing units, lead spacing 15 mm

V_R (V_{rms} $f \leq 1$ kHz)	C_R	Maximum dimensions $b \times h \times l$ (mm)	Ordering code ¹⁾	Packing units (pcs)		
				Ammo pack	Reel	Untaped
160 V_{dc} (90 V_{ac})	0,10 μF	5,0 \times 10,5 \times 18,0	B32622-A5104-+***	1180	1300	1000
	0,15 μF	5,0 \times 10,5 \times 18,0	B32622-A5154-+***	1180	1300	1000
	0,22 μF	5,0 \times 10,5 \times 18,0	B32622-A5224-+***	1180	1300	1000
	0,33 μF	6,0 \times 11,0 \times 18,0	B32622-A5334-+***	1000	1100	1000
	0,47 μF	7,0 \times 12,5 \times 18,0	B32622-A5474-+***	840	900	1000
	0,68 μF	8,5 \times 14,5 \times 18,0	B32622-A5684-+***	690	700	500
	1,0 μF	9,0 \times 17,5 \times 18,0	B32622-A5105-+***	660	700	500
250 V_{dc} (140 V_{ac})	0,10 μF	5,0 \times 10,5 \times 18,0	B32622-A3104-+***	1180	1300	1000
	0,15 μF	5,0 \times 10,5 \times 18,0	B32622-A3154-+***	1180	1300	1000
	0,22 μF	6,0 \times 11,0 \times 18,0	B32622-A3224-+***	1000	1100	1000
	0,33 μF	7,0 \times 12,5 \times 18,0	B32622-A3334-+***	840	900	1000
	0,47 μF	8,5 \times 14,5 \times 18,0	B32622-A3474-+***	690	700	500
	0,68 μF	9,0 \times 17,5 \times 18,0	B32622-A3684-+***	660	700	500
400 V_{dc} (200 V_{ac})	47 nF	5,0 \times 10,5 \times 18,0	B32622-A4473-+***	1180	1300	1000
	68 nF	6,0 \times 11,0 \times 18,0	B32622-A4683-+***	1000	1100	1000
	0,10 μF	7,0 \times 12,5 \times 18,0	B32622-A4104-+***	840	900	1000
	0,15 μF	8,5 \times 14,5 \times 18,0	B32622-A4154-+***	690	700	500
	0,22 μF	9,0 \times 17,5 \times 18,0	B32622-A4224-+***	660	700	500
630 V_{dc} (400 V_{ac})	33 nF	5,0 \times 10,5 \times 18,0	B32622-A6333-+***	1180	1300	1000
	47 nF	6,0 \times 11,0 \times 18,0	B32622-A6473-+***	1000	1100	1000
	68 nF	7,0 \times 12,5 \times 18,0	B32622-A6683-+***	840	900	1000
	0,10 μF	8,5 \times 14,5 \times 18,0	B32622-A6104-+***	690	700	500
	0,15 μF	9,0 \times 17,5 \times 18,0	B32622-A6154-+***	660	700	500
1000 V_{dc} (500 V_{ac})	10 nF	5,0 \times 10,5 \times 18,0	B32622-A103-+***	1180	1300	1000
	15 nF	6,0 \times 11,0 \times 18,0	B32622-A153-+***	1000	1100	1000
	22 nF	7,0 \times 12,5 \times 18,0	B32622-A223-+***	840	900	1000
	33 nF	8,5 \times 14,5 \times 18,0	B32622-A333-+***	690	700	500
	47 nF	8,5 \times 14,5 \times 18,0	B32622-A473-+***	690	700	500

Capacitance tolerance: $\pm 20\% \hat{=} M, \pm 10\% \hat{=} K, \pm 5\% \hat{=} J$

1) Replace the + by the code letter for the required capacitance tolerance.

Replace the *** by the code number for the required packing: Ammo pack = 289, reel = 189 (taping cf. p. 278)

The ordering code for untaped components ends after the tolerance code letter.

For capacitors with 3,2 mm lead length, append code number "3" to the tolerance code, e.g. B32622-A5104-K3

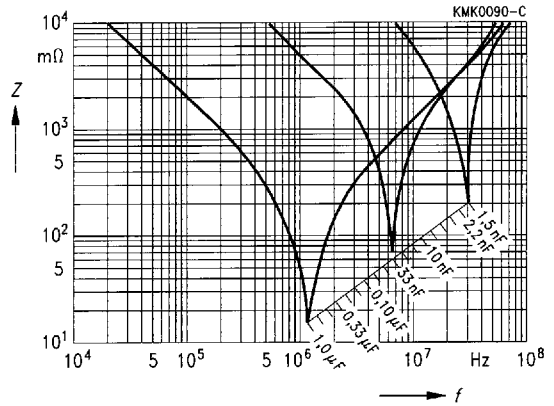


Technical data

Climatic category in accordance with IEC 68-1	55/100/56		
Lower category temperature T_{min}	- 55 °C		
Upper category temperature T_{max}	+ 100 °C		
Damp heat test	56 days/40 °C/93% relative humidity		
Limit values after damp heat test	Capacitance change $ \Delta C/C $	$\leq 3 \%$	
	Dissipation factor change $\Delta \tan \delta$	$\leq 0,5 \cdot 10^{-3}$ (at 1 kHz) $\leq 1,0 \cdot 10^{-3}$ (at 10 kHz)	
	Insulation resistance R_{is} or time constant $\tau = C_R \cdot R_{is}$	$\geq 50 \%$ of minimum as-delivered values	
Reliability:			
Reference conditions	0,5 · V_R ; 40 °C		
Failure rate	$1 \cdot 10^{-9}/h = 1 \text{ fit}$		
	For a conversion table for other operating conditions and temperatures refer to page 273.		
Service life	200 000 h		
Failure criteria:			
Total failure	Short circuit or open circuit		
Failure due to variation of parameters	Capacitance change $ \Delta C/C $	$> 10 \%$	
	Dissipation factor $\tan \delta$	4 · upper limit values	
	Insulation resistance R_{is} or time constant $\tau = C_R \cdot R_{is}$	$< 1500 \text{ M}\Omega$ ($C_R \leq 0,33 \mu\text{F}$) $< 500 \text{ s}$ ($C_R > 0,33 \mu\text{F}$)	
DC test voltage	$1,6 \cdot V_R, 2 \text{ s}$		
Category voltage V_C	$T \leq 85 \text{ °C}: V_C = 1,0 \cdot V_R \text{ or } 1,0 \cdot V_{rms}$		
Operation with dc voltage or ac voltage V_{rms} up to 1 kHz	$T = 100 \text{ °C}: V_C = 0,7 \cdot V_R \text{ or } 0,7 \cdot V_{rms}$		
Dissipation factor $\tan \delta$ (in 10^{-3}) at 20 °C (upper limit values)		$C_R \leq 0,1 \mu\text{F}$	$0,1 \mu\text{F} < C_R \leq 1 \mu\text{F}$
	at 1 kHz	–	0,5
	10 kHz	–	1,5
	100 kHz	4,0	–
Insulation resistance R_{is} or time constant $\tau = C_R \cdot R_{is}$ at 20 °C, rel. humidity $\leq 65 \%$ (minimum as-delivered values)	$C_R \leq 0,33 \mu\text{F}$	$C_R > 0,33 \mu\text{F}$	
	100 G Ω	30 000 s	



Impedance Z
versus
frequency f
(typical values)



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 $V/\mu s$ (for $V_{pp} = V_R$)		
	Lead spacing		
	7,5 mm	10 mm	15 mm
160 V_{dc}	750	600	450
250 V_{dc}	1200	900	600
400 V_{dc}	1500	1050	750
630 V_{dc}	2700	1800	1200
1000 V_{dc}	3200	2400	1650

For $V_{pp} < V_R$, the permissible voltage rise rate value V_{pp}/τ may be multiplied by the factor V_R/V_{pp} . Also refer to the calculation example on page 246.

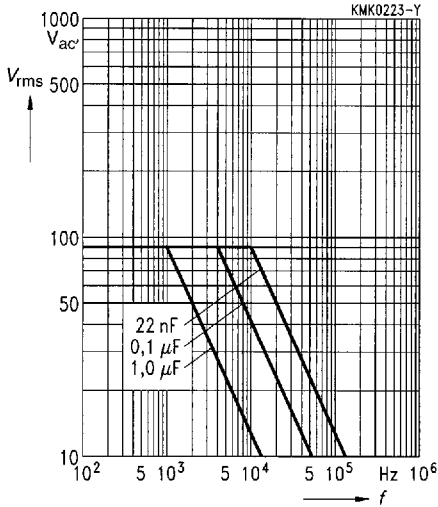
V_R	Pulse characteristic k_0 in $V^2/\mu s$ (for $V_{pp} \leq V_R$)		
	Lead spacing		
	7,5 mm	10 mm	15 mm
160 V_{dc}	240 000	190 000	145 000
250 V_{dc}	600 000	450 000	300 000
400 V_{dc}	1 200 000	840 000	600 000
630 V_{dc}	3 400 000	2 250 000	1 500 000
1000 V_{dc}	6 400 000	4 800 000	3 300 000



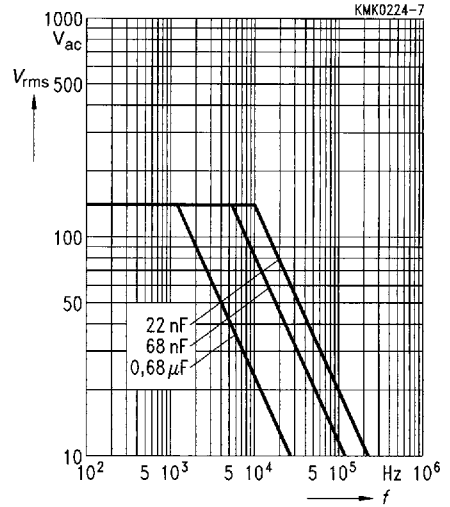
Permissible ac voltage V_{rms} versus frequency f

Lead spacing 7,5 ... 15 mm

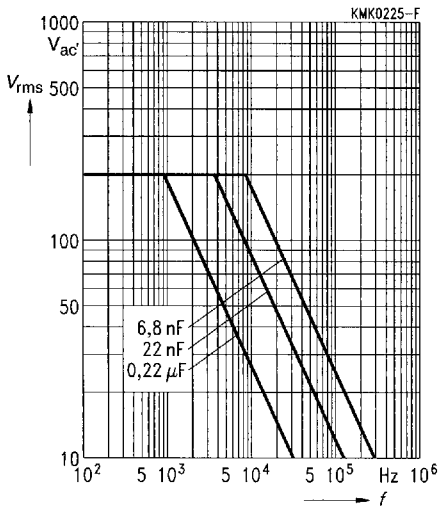
160 V_{dc} / 90 V_{ac}



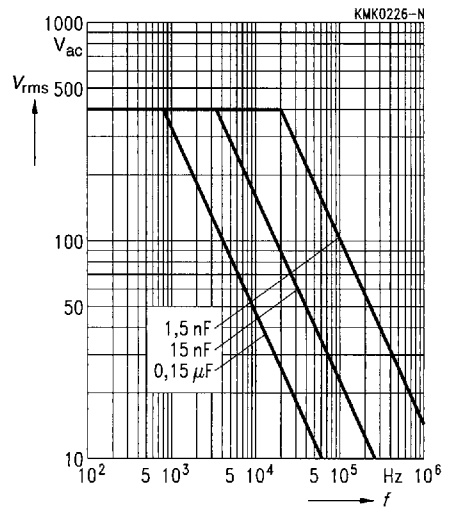
250 V_{dc} / 140 V_{ac}



400 V_{dc} / 200 V_{ac}



630 V_{dc} / 400 V_{ac}





B 32 620 ... B 32 622

Permissible ac voltage V_{rms} versus frequency f

Lead spacing 7,5 ... 15 mm

1000 V_{dc} / 500 V_{ac}

