Film Capacitors

Metallized Polyester Film Capacitors (MKT)

Series/Type: **B32520 ... B32529**
Date: August 2004

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Typical applications

- Blocking
- Coupling, decoupling
- Bypassing
- RFI for automotive

Climatic

- Max. operating temperature: 125 °C
- Climatic category (IEC 60068-1): 55/125/56

Construction

- Dielectric: polyethylene terephthalate (polyester, PET)
- Stacked-film technology for lead spacing 5 to 15 mm
  = code D or C in digit 7 of ordering code
- Wound capacitor technology for lead spacing 10 to 27.5 mm
  = code N, Q or T in digit 7 of ordering code
- Plastic case (UL 94 V-0)
- Epoxy resin sealing (UL 94 V-0)

Features

- High pulse strength
- High contact reliability

Terminals

- Parallel wire leads, lead-free tinned
- Special lead lengths available on request

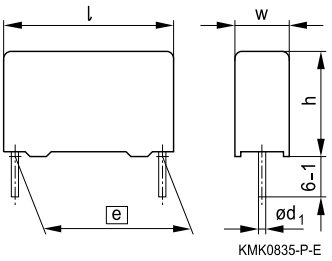
Marking

Manufacturer's logo,
rated capacitance (coded), cap. tolerance (code letter),
rated DC voltage, date of manufacture (coded),
coded type ("1") for lead spacing 5 mm,
series and lot number for lead spacing ≥10 mm

Delivery mode

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

Dimensional drawing



KMK0835-P-E

Dimensions in mm

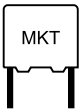
Lead spacing e ±0.4	Lead diameter d_1	Type
5.0	0.5	B32529
7.5	0.5	B32520
10.0	0.6[1)]	B32521
15.0	0.8	B32522
22.5	0.8	B32523
27.5	0.8	B32524

1) 0.5 mm for capacitor width w = 4 mm

Overview of available types

Lead spacing	5.0 mm						7.5 mm				10.0 mm				
Type	B32529						B32520				B32521				
Page	5						9				11				
Technology	s	s	s	s	s	s	s	s	s	s	s	s	s	s	w
V_R (VDC)	50	63	100	250	400	630	63	100	250	400	63	100	250	400	630
V_{rms} (VAC)	32	40	63	160	200	400	40	63	160	200	40	63	160	200	200
C_R (µF)															
0.0010		■	■	■	■	■				■					
0.0015		■	■	■	■	■				■					
0.0022		■	■	■	■	■				■					
0.0033		■	■	■	■	■				■					
0.0047		■	■	■	■	■				■					
0.0068		■	■	■	■	■				■					■
0.010		■	■	■	■	■				■				■	■
0.015		■	■	■	■				■	■				■	■
0.022		■	■	■	■				■	■				■	■
0.033		■	■	■	■				■	■			■	■	■
0.047		■	■	■	■			■	■	■			■	■	
0.068		■	■	■	■		■	■	■	■			■	■	
0.10		■	■	■	■		■	■	■			■	■	■	
0.15		■	■	■			■	■	■			■	■		
0.22		■	■	■			■	■	■			■	■		
0.33	■	■	■	■			■	■				■	■		
0.47	■	■	■	■			■	■			■	■	■		
0.68	■	■	■				■	■			■	■			
1.0	■	■	■				■	■			■	■			
1.5	■	■					■				■				
2.2	■	■					■				■				
3.3	■										■				

Technology: s = Stacked-film technology / w = Wound capacitor technology



B32520 ... B32529

General purpose (stacked/wound)

Overview of available types

Lead spacing	15.0 mm						22.5 mm					27.5 mm				
Type	B32522						B32523					B32524				
Page	13						15					16				
Technology	s	s/w	s/w	s	w	w	w	w	w	w	w	w	w	w	w	w
V_R (VDC)	63	100	250	400	450	630	63	100	250	400	630	63	100	250	400	630
V_{rms} (VAC)	40	63	160	200	200	200	40	63	160	200	200	40	63	160	200	220
C_R (µF)					NEW							NEW				
0.033																
0.047																
0.068																
0.10																
0.15																
0.22																
0.33																
0.47																
0.68																
1.0																
1.5																
2.2																
3.3																
4.7																
6.8																
10																
15																
22																
33																
47																
68																

Technology: s = Stacked-film technology / w = Wound capacitor technology

Ordering codes and packing units (lead spacing 5 mm)

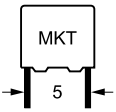
V_R	V_{rms} f ≤60 Hz	C_R	Max. dimensions w × h × l	Ordering code (composition see	Ammo pack	Reel	Untaped
VDC	VAC	µF	mm	below)	pcs./unit	pcs./unit	pcs./unit
50	32	0.33	3.0 × 6.5 × 7.2	B32529C5334+***	2700	2400	2000
		0.47	3.5 × 8.0 × 7.2	B32529C5474+***	2300	2000	2000
		0.68	4.5 × 9.5 × 7.3	B32529C5684+***	1800	1500	1500
		1.0	4.5 × 9.5 × 7.3	B32529C5105+***	1800	1500	1500
		1.5	6.0 × 10.5 × 7.5	B32529C5155+***	1300	1100	1000
		2.2	7.8 × 13.0 × 7.8	B32529D5225+***	1000	800	1000
		3.3	7.8 × 13.0 × 7.8	B32529D5335+***	1000	800	1000
63	40	0.0010	2.5 × 6.5 × 7.2	B32529C0102+***	3200	2800	2000
		0.0015	2.5 × 6.5 × 7.2	B32529C0152+***	3200	2800	2000
		0.0022	2.5 × 6.5 × 7.2	B32529C0222+***	3200	2800	2000
		0.0033	2.5 × 6.5 × 7.2	B32529C0332+***	3200	2800	2000
		0.0047	2.5 × 6.5 × 7.2	B32529C0472+***	3200	2800	2000
		0.0068	2.5 × 6.5 × 7.2	B32529C0682+***	3200	2800	2000
		0.010	2.5 × 6.5 × 7.2	B32529C0103+***	3200	2800	2000
		0.015	2.5 × 6.5 × 7.2	B32529C0153+***	3200	2800	2000
		0.022	2.5 × 6.5 × 7.2	B32529C0223+***	3200	2800	2000
		0.033	2.5 × 6.5 × 7.2	B32529C0333+***	3200	2800	2000
		0.047	2.5 × 6.5 × 7.2	B32529C0473+***	3200	2800	2000
		0.068	2.5 × 6.5 × 7.2	B32529C0683+***	3200	2800	2000
		0.10	2.5 × 6.5 × 7.2	B32529C0104+***	3200	2800	2000
		0.15	2.5 × 6.5 × 7.2	B32529C0154+***	3200	2800	2000
		0.22	2.5 × 6.5 × 7.2	B32529C0224+***	3200	2800	2000
		0.33	3.0 × 6.5 × 7.2	B32529C0334+***	2700	2400	2000
		0.47	3.5 × 8.0 × 7.2	B32529C0474+***	2300	2000	2000
		0.68	4.5 × 9.5 × 7.3	B32529C0684+***	1800	1500	1500
		1.0	4.5 × 9.5 × 7.3	B32529C0105+***	1800	1500	1500
		1.5	6.0 × 10.5 × 7.5	B32529C0155+***	1300	1100	1000
		2.2	7.8 × 13.0 × 7.8	B32529D0225+***	1000	800	1000

Further E series and intermediate capacitance values on request.

Composition of ordering code

+ = Capacitance tolerance code:
M = ±20%
K = ±10%
J = ±5%

*** = Packaging code:
289 = Ammo pack
189 = Reel
000 = Untaped (lead length 6 −1 mm)



B32529

General purpose (stacked)

Ordering codes and packing units (lead spacing 5 mm)

V_R	V_{rms} f ≤60 Hz	C_R	Max. dimensions w × h × l	Ordering code (composition see	Ammo pack	Reel	Untaped
VDC	VAC	µF	mm	below)	pcs./unit	pcs./unit	pcs./unit
100	63	0.0010	2.5 × 6.5 × 7.2	B32529C1102+***	3200	2800	2000
		0.0015	2.5 × 6.5 × 7.2	B32529C1152+***	3200	2800	2000
		0.0022	2.5 × 6.5 × 7.2	B32529C1222+***	3200	2800	2000
		0.0033	2.5 × 6.5 × 7.2	B32529C1332+***	3200	2800	2000
		0.0047	2.5 × 6.5 × 7.2	B32529C1472+***	3200	2800	2000
		0.0068	2.5 × 6.5 × 7.2	B32529C1682+***	3200	2800	2000
		0.010	2.5 × 6.5 × 7.2	B32529C1103+***	3200	2800	2000
		0.015	2.5 × 6.5 × 7.2	B32529C1153+***	3200	2800	2000
		0.022	2.5 × 6.5 × 7.2	B32529C1223+***	3200	2800	2000
		0.033	2.5 × 6.5 × 7.2	B32529C1333+***	3200	2800	2000
		0.047	2.5 × 6.5 × 7.2	B32529C1473+***	3200	2800	2000
		0.068	2.5 × 6.5 × 7.2	B32529C1683+***	3200	2800	2000
		0.10	2.5 × 6.5 × 7.2	B32529C1104+***	3200	2800	2000
		0.15	3.0 × 6.5 × 7.2	B32529C1154+***	2700	2400	2000
		0.22	3.5 × 8.0 × 7.2	B32529C1224+***	2300	2000	2000
		0.33	3.5 × 8.0 × 7.2	B32529C1334+***	2300	2000	2000
		0.47	4.5 × 9.5 × 7.3	B32529C1474+***	1800	1500	1500
		0.68	6.0 × 10.5 × 7.5	B32529C1684+***	1300	1100	1000
		1.0	7.8 × 13.0 × 7.8	B32529D1105+***	1000	800	1000

Further E series and intermediate capacitance values on request.

Composition of ordering code

+ = Capacitance tolerance code:
- M = ±20%
- K = ±10%
- J = ±5%

*** = Packaging code:
- 289 = Ammo pack
- 189 = Reel
- 000 = Untaped (lead length 6 −1 mm)

Ordering codes and packing units (lead spacing 5 mm)

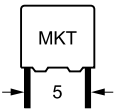
V_R	V_{rms} f ≤60 Hz	C_R	Max. dimensions w × h × l	Ordering code (composition see	Ammo pack	Reel	Untaped
VDC	VAC	µF	mm	below)	pcs./unit	pcs./unit	pcs./unit
250	160	0.0010	2.5 × 6.5 × 7.2	B32529C3102+***	3200	2800	2000
		0.0015	2.5 × 6.5 × 7.2	B32529C3152+***	3200	2800	2000
		0.0022	2.5 × 6.5 × 7.2	B32529C3222+***	3200	2800	2000
		0.0033	2.5 × 6.5 × 7.2	B32529C3332+***	3200	2800	2000
		0.0047	2.5 × 6.5 × 7.2	B32529C3472+***	3200	2800	2000
		0.0068	2.5 × 6.5 × 7.2	B32529C3682+***	3200	2800	2000
		0.010	2.5 × 6.5 × 7.2	B32529C3103+***	3200	2800	2000
		0.015	2.5 × 6.5 × 7.2	B32529C3153+***	3200	2800	2000
		0.022	2.5 × 6.5 × 7.2	B32529C3223+***	3200	2800	2000
		0.033	3.0 × 6.5 × 7.2	B32529C3333+***	2700	2400	2000
		0.047	3.5 × 8.0 × 7.2	B32529C3473+***	2300	2000	2000
		0.068	4.5 × 9.5 × 7.3	B32529C3683+***	1800	1500	1500
		0.10	4.5 × 9.5 × 7.3	B32529C3104+***	1800	1500	1500
		0.15	5.0 × 10.0 × 7.5	B32529C3154+***	1600	1400	1500
		0.22	7.8 × 13.0 × 7.8	B32529D3224+***	1000	800	1000
		0.33	7.8 × 13.0 × 7.8	B32529C3334+***	1000	800	1000
		0.47	7.8 × 13.0 × 7.8	B32529C3474+***	1000	800	1000
400	200	0.0010	2.5 × 6.5 × 7.2	B32529C6102+***	3200	2800	2000
		0.0015	2.5 × 6.5 × 7.2	B32529C6152+***	3200	2800	2000
		0.0022	2.5 × 6.5 × 7.2	B32529C6222+***	3200	2800	2000
		0.0033	2.5 × 6.5 × 7.2	B32529C6332+***	3200	2800	2000
		0.0047	2.5 × 6.5 × 7.2	B32529C6472+***	3200	2800	2000
		0.0068	2.5 × 6.5 × 7.2	B32529C6682+***	3200	2800	2000
		0.010	3.0 × 6.5 × 7.2	B32529C6103+***	2700	2400	2000
		0.015	3.5 × 8.0 × 7.2	B32529C6153+***	2300	2000	2000
		0.022	4.5 × 9.5 × 7.3	B32529C6223+***	1800	1500	1500
		0.033	5.0 × 10.0 × 7.5	B32529C6333+***	1600	1400	1500
		0.047	6.0 × 10.5 × 7.5	B32529C6473+***	1300	1100	1000
		0.068	7.8 × 13.0 × 7.8	B32529D6683+***	1000	800	1000
		0.10	7.8 × 13.0 × 7.8	B32529D6104+***	1000	800	1000

Further E series and intermediate capacitance values on request.

Composition of ordering code

+ = Capacitance tolerance code:
M = ±20%
K = ±10%
J = ±5%

*** = Packaging code:
289 = Ammo pack
189 = Reel
000 = Untaped (lead length 6 −1 mm)



B32529

General purpose (stacked)

Ordering codes and packing units (lead spacing 5 mm)

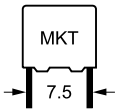
V_R	V_{rms} f ≤60 Hz	C_R	Max. dimensions w × h × l	Ordering code (composition see	Ammo pack	Reel	Untaped
VDC	VAC	µF	mm	below)	pcs./unit	pcs./unit	pcs./unit
630	400	0.0010	2.5 × 6.5 × 7.2	B32529C8102+***	3200	2800	2000
		0.0015	2.5 × 6.5 × 7.2	B32529C8152+***	3200	2800	2000
		0.0022	2.5 × 6.5 × 7.2	B32529C8222+***	3200	2800	2000
		0.0033	3.5 × 8.0 × 7.2	B32529C8332+***	2300	2000	2000
		0.0047	3.5 × 8.0 × 7.2	B32529C8472+***	2300	2000	2000
		0.0068	3.5 × 8.0 × 7.2	B32529C8682+***	2300	2000	2000
		0.010	5.0 × 10.0 × 7.5	B32529C8103+***	1600	1400	1500

Further E series and intermediate capacitance values on request.

Composition of ordering code

+ = Capacitance tolerance code:
- M = ±20%
- K = ±10%
- J = ±5%

*** = Packaging code:
- 289 = Ammo pack
- 189 = Reel
- 000 = Untaped (lead length 6 −1 mm)



Ordering codes and packing units (lead spacing 7.5 mm)

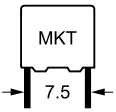
V_R VDC	V_{rms} f ≤60 Hz VAC	C_R µF	Max. dimensions w × h × l mm	Ordering code (composition see below)	Ammo pack pcs./unit	Reel pcs./unit	Untaped pcs./unit
63	40	0.068	2.5 × 7.0 × 10.0	B32520C0683+***	3200	2800	2500
		0.10	2.5 × 7.0 × 10.0	B32520C0104+***	3200	2800	2500
		0.15	2.5 × 7.0 × 10.0	B32520C0154+***	3200	2800	2500
		0.22	2.5 × 7.0 × 10.0	B32520C0224+***	3200	2800	2500
		0.33	2.5 × 7.0 × 10.0	B32520C0334+***	3200	2800	2500
		0.47	3.0 × 8.0 × 10.0	B32520C0474+***	2600	2400	2000
		0.68	4.0 × 8.5 × 10.0	B32520C0684+***	2000	1800	1500
		1.0	5.0 × 10.5 × 10.0	B32520C0105+***	1600	1400	1000
		1.5	5.0 × 10.5 × 10.0	B32520C0155+***	1600	1400	1000
		2.2	6.0 × 12.0 × 10.3	B32520C0225+***	1300	1100	750
100	63	0.047	2.5 × 7.0 × 10.0	B32520C1473+***	3200	2800	2500
		0.068	2.5 × 7.0 × 10.0	B32520C1683+***	3200	2800	2500
		0.10	2.5 × 7.0 × 10.0	B32520C1104+***	3200	2800	2500
		0.15	3.0 × 8.0 × 10.0	B32520C1154+***	2600	2400	2000
		0.22	3.0 × 8.0 × 10.0	B32520C1224+***	2600	2400	2000
		0.33	4.0 × 8.5 × 10.0	B32520C1334+***	2000	1800	1500
		0.47	5.0 × 10.5 × 10.0	B32520C1474+***	1600	1400	1000
		0.68	6.0 × 12.0 × 10.3	B32520C1684+***	1300	1100	750
		1.0	6.0 × 12.0 × 10.3	B32520C1105+***	1300	1100	750
250	160	0.015	2.5 × 7.0 × 10.0	B32520C3153+***	3200	2800	2500
		0.022	2.5 × 7.0 × 10.0	B32520C3223+***	3200	2800	2500
		0.033	2.5 × 7.0 × 10.0	B32520C3333+***	3200	2800	2500
		0.047	2.5 × 7.0 × 10.0	B32520C3473+***	3200	2800	2500
		0.068	3.0 × 8.0 × 10.0	B32520C3683+***	2600	2400	2000
		0.10	4.0 × 8.5 × 10.0	B32520C3104+***	2000	1800	1500
		0.15	5.0 × 10.5 × 10.0	B32520C3154+***	1600	1400	1000
		0.22	6.0 × 12.0 × 10.3	B32520C3224+***	1300	1100	750

Further E series and intermediate capacitance values on request.

Composition of ordering code

+ = Capacitance tolerance code:
- M = ±20%
- K = ±10%
- J = ±5%

*** = Packaging code:
- 289 = Ammo pack
- 189 = Reel
- 000 = Untaped (lead length 6 −1 mm)



B32520

General purpose (stacked)

Ordering codes and packing units (lead spacing 7.5 mm)

V_R	V_{rms} f ≤60 Hz	C_R	Max. dimensions w × h × l	Ordering code (composition see	Ammo pack	Reel	Untaped
VDC	VAC	µF	mm	below)	pcs./unit	pcs./unit	pcs./unit
400	200	0.0010	2.5 × 7.0 × 10.0	B32520C6102+***	3200	2800	2500
		0.0015	2.5 × 7.0 × 10.0	B32520C6152+***	3200	2800	2500
		0.0022	2.5 × 7.0 × 10.0	B32520C6222+***	3200	2800	2500
		0.0033	2.5 × 7.0 × 10.0	B32520C6332+***	3200	2800	2500
		0.0047	2.5 × 7.0 × 10.0	B32520C6472+***	3200	2800	2500
		0.0068	2.5 × 7.0 × 10.0	B32520C6682+***	3200	2800	2500
		0.010	2.5 × 7.0 × 10.0	B32520C6103+***	3200	2800	2500
		0.015	3.0 × 8.0 × 10.0	B32520C6153+***	2600	2400	2000
		0.022	4.0 × 8.5 × 10.0	B32520C6223+***	2000	1800	1500
		0.033	5.0 × 10.5 × 10.0	B32520C6333+***	1600	1400	1000
		0.047	5.0 × 10.5 × 10.0	B32520C6473+***	1600	1400	1000
		0.068	6.0 × 12.0 × 10.3	B32520C6683+***	1300	1100	750

Further E series and intermediate capacitance values on request.

Composition of ordering code

+ = Capacitance tolerance code:
M = ±20%
K = ±10%
J = ±5%

*** = Packaging code:
289 = Ammo pack
189 = Reel
000 = Untaped (lead length 6 −1 mm)

Ordering codes and packing units (lead spacing 10 mm)

V_R	V_{rms} f ≤60 Hz	C_R	Max. dimensions w × h × l	Ordering code (composition see	Ammo pack	Reel	Untaped
VDC	VAC	µF	mm	below)	pcs./unit	pcs./unit	pcs./unit
63	40	0.47	4.0 × 7.0 × 13.0	B32521C0474+***	1000	1700	1000
		0.68	4.0 × 7.0 × 13.0	B32521C0684+***	1000	1700	1000
		1.0	4.0 × 9.0 × 13.0	B32521C0105+***	1000	1700	1000
		1.5	5.0 × 11.0 × 13.0	B32521C0155+***	830	1300	1000
		2.2	5.0 × 11.0 × 13.0	B32521C0225+***	830	1300	1000
		3.3	6.0 × 12.0 × 13.0	B32521C0335+***	680	1100	1000
100	63	0.10	4.0 × 7.0 × 13.0	B32521C1104+***	1000	1700	1000
		0.15	4.0 × 7.0 × 13.0	B32521C1154+***	1000	1700	1000
		0.22	4.0 × 7.0 × 13.0	B32521C1224+***	1000	1700	1000
		0.33	4.0 × 7.0 × 13.0	B32521C1334+***	1000	1700	1000
		0.47	4.0 × 9.0 × 13.0	B32521C1474+***	1000	1700	1000
		0.68	5.0 × 11.0 × 13.0	B32521C1684+***	830	1300	1000
		1.0	6.0 × 12.0 × 13.0	B32521C1105+***	680	1100	1000
250	160	0.033	4.0 × 7.0 × 13.0	B32521C3333+***	1000	1700	1000
		0.047	4.0 × 7.0 × 13.0	B32521C3473+***	1000	1700	1000
		0.068	4.0 × 7.0 × 13.0	B32521C3683+***	1000	1700	1000
		0.10	4.0 × 7.0 × 13.0	B32521C3104+***	1000	1700	1000
		0.15	4.0 × 9.0 × 13.0	B32521C3154+***	1000	1700	1000
		0.22	5.0 × 11.0 × 13.0	B32521C3224+***	830	1300	1000
		0.33	5.0 × 11.0 × 13.0	B32521C3334+***	830	1300	1000
		0.47	6.0 × 12.0 × 13.0	B32521C3474+***	680	1100	1000
400	200	0.010	4.0 × 7.0 × 13.0	B32521C6103+***	1000	1700	1000
		0.015	4.0 × 7.0 × 13.0	B32521C6153+***	1000	1700	1000
		0.022	4.0 × 7.0 × 13.0	B32521C6223+***	1000	1700	1000
		0.033	4.0 × 9.0 × 13.0	B32521C6333+***	1000	1700	1000
		0.047	5.0 × 11.0 × 13.0	B32521C6473+***	830	1300	1000
		0.068	5.0 × 11.0 × 13.0	B32521C6683+***	830	1300	1000
		0.10	6.0 × 12.0 × 13.0	B32521C6104+***	680	1100	1000

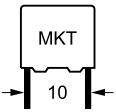
∇ Wound capacitor technology

Further E series and intermediate capacitance values on request.

Composition of ordering code

+ = Capacitance tolerance code:
- M = ±20%
- K = ±10%
- J = ±5%

*** = Packaging code:
- 289 = Ammo pack
- 189 = Reel
- 000 = Untaped (lead length 6 −1 mm)



B32521

General purpose (stacked/wound)

Ordering codes and packing units (lead spacing 10 mm)

V_R	V_{rms} f ≤60 Hz	C_R		Max. dimensions w × h × l	Ordering code (composition see	Ammo pack	Reel	Untaped
VDC	VAC	µF		mm	below)	pcs./unit	pcs./unit	pcs./unit
630	200	0.0068	∇	4.0 × 9.0 × 13.0	B32521N8682+***	1000	1700	1000
		0.010	∇	4.0 × 9.0 × 13.0	B32521N8103+***	1000	1700	1000
		0.015	∇	5.0 × 11.0 × 13.0	B32521N8153+***	830	1300	1000
		0.022	∇	5.0 × 11.0 × 13.0	B32521N8223+***	830	1300	1000
		0.033	∇	6.0 × 12.0 × 13.0	B32521N8333+***	680	1100	1000

∇ Wound capacitor technology

Further E series and intermediate capacitance values on request.

Composition of ordering code

+ = Capacitance tolerance code:
M = ±20%
K = ±10%
J = ±5%

*** = Packaging code:
289 = Ammo pack
189 = Reel
000 = Untaped (lead length 6 −1 mm)

Ordering codes and packing units (lead spacing 15 mm)

V_R VDC	V_{rms} f ≤60 Hz VAC	C_R µF		Max. dimensions w × h × l mm	Ordering code (composition see below)	Ammo pack pcs./unit	Reel pcs./unit	Untaped pcs./unit
63	40	0.68		5.0 × 10.5 × 18.0	B32522C0684+***	1170	1300	1000
		1.0		5.0 × 10.5 × 18.0	B32522C0105+***	1170	1300	1000
		1.5		5.0 × 10.5 × 18.0	B32522C0155+***	1170	1300	1000
		2.2		5.0 × 10.5 × 18.0	B32522C0225+***	1170	1300	1000
		3.3		6.0 × 11.0 × 18.0	B32522C0335+***	960	1100	1000
		4.7		7.0 × 12.5 × 18.0	B32522C0475+***	830	900	1000
		6.8		8.5 × 14.5 × 18.0	B32522C0685+***	680	700	500
		10		9.0 × 17.5 × 18.0	B32522C0106+***	640	700	500
100	63	0.33		5.0 × 10.5 × 18.0	B32522C1334+***	1170	1300	1000
		0.47		5.0 × 10.5 × 18.0	B32522C1474+***	1170	1300	1000
		0.68		5.0 × 10.5 × 18.0	B32522C1684+***	1170	1300	1000
		1.0		5.0 × 10.5 × 18.0	B32522C1105+***	1170	1300	1000
		1.0	∇	6.0 × 11.0 × 18.0	B32522Q1105+***	960	1100	1000
		1.5		6.0 × 11.0 × 18.0	B32522C1155+***	960	1100	1000
		1.5	∇	7.0 × 12.5 × 18.0	B32522Q1155+***	830	900	1000
		2.2		7.0 × 12.5 × 18.0	B32522C1225+***	830	900	1000
		2.2	∇	8.5 × 14.5 × 18.0	B32522Q1225+***	680	700	500
		3.3		8.5 × 14.5 × 18.0	B32522C1335+***	680	700	500
		3.3	∇	9.0 × 17.5 × 18.0	B32522Q1335+***	640	700	500
		4.7		9.0 × 17.5 × 18.0	B32522C1475+***	640	700	500
		4.7	∇	11.0 × 18.5 × 18.0	B32522Q1475+***	–	550	300
250	160	0.10		5.0 × 10.5 × 18.0	B32522C3104+***	1170	1300	1000
		0.15		5.0 × 10.5 × 18.0	B32522C3154+***	1170	1300	1000
		0.22		5.0 × 10.5 × 18.0	B32522C3224+***	1170	1300	1000
		0.33		5.0 × 10.5 × 18.0	B32522C3334+***	1170	1300	1000
		0.47		6.0 × 11.0 × 18.0	B32522C3474+***	960	1100	1000
		0.68		7.0 × 12.5 × 18.0	B32522C3684+***	830	900	1000
		1.0		8.5 × 14.5 × 18.0	B32522C3105+***	680	700	500
		1.0	∇	8.5 × 14.5 × 18.0	B32522N3105+***	680	700	500
		1.5		9.0 × 17.5 × 18.0	B32522C3155+***	640	700	500
		1.5	∇	9.0 × 17.5 × 18.0	B32522N3155+***	640	700	500

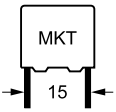
∇ Wound capacitor technology

Further E series and intermediate capacitance values on request.

Composition of ordering code

+ = Capacitance tolerance code:
M = ±20%
K = ±10%
J = ±5%

*** = Packaging code:
289 = Ammo pack
189 = Reel
000 = Untaped (lead length 6 −1 mm)



B32522

General purpose (stacked/wound)

Ordering codes and packing units (lead spacing 15 mm)

V_R	V_{rms} f ≤60 Hz	C_R	Max. dimensions w × h × l	Ordering code (composition see	Ammo pack	Reel	Untaped
VDC	VAC	µF	mm	below)	pcs./unit	pcs./unit	pcs./unit
400	200	0.047	5.0 × 10.5 × 18.0	B32522C6473+***	1170	1300	1000
		0.068	5.0 × 10.5 × 18.0	B32522C6683+***	1170	1300	1000
		0.10	5.0 × 10.5 × 18.0	B32522C6104+***	1170	1300	1000
		0.15	6.0 × 11.0 × 18.0	B32522C6154+***	960	1100	1000
		0.22	7.0 × 12.5 × 18.0	B32522C6224+***	830	900	1000
		0.33	8.5 × 14.5 × 18.0	B32522C6334+***	680	700	500
450	200	0.10 ∇	5.0 × 10.5 × 18.0	B32522N6104+***	1170	1300	1000
		0.15 ∇	5.0 × 10.5 × 18.0	B32522N6154+***	1170	1300	1000
		0.22 ∇	6.0 × 11.0 × 18.0	B32522N6224+***	960	1100	1000
		0.33 ∇	7.0 × 12.5 × 18.0	B32522N6334+***	830	900	1000
		0.47 ∇	8.5 × 14.5 × 18.0	B32522N6474+***	680	700	500
		0.47 ∇	8.0 × 14.0 × 18.0	B32522T6474+***	–	750	500
		0.68 ∇	9.0 × 17.5 × 18.0	B32522N6684+***	640	700	500
		0.68 ∇	13.0 × 14.0 × 18.0	B32522T6684+***	–	500	300
		1.0 ∇	11.0 × 18.5 × 18.0	B32522N6105+***	–	550	300
630	200	0.033 ∇	5.0 × 10.5 × 18.0	B32522Q8333+***	1170	1300	1000
		0.047 ∇	5.0 × 10.5 × 18.0	B32522Q8473+***	1170	1300	1000
		0.068 ∇	6.0 × 11.0 × 18.0	B32522Q8683+***	960	1100	1000
		0.10 ∇	7.0 × 12.5 × 18.0	B32522Q8104+***	830	900	1000
		0.15 ∇	8.5 × 14.5 × 18.0	B32522Q8154+***	680	700	500
		0.15 ∇	8.0 × 14.0 × 18.0	B32522T8154+***	–	750	500
		0.22 ∇	9.0 × 17.5 × 18.0	B32522Q8224+***	640	700	500
		0.33 ∇	11.0 × 18.5 × 18.0	B32522Q8334+***	–	550	300

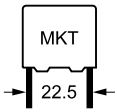
∇ Wound capacitor technology

Further E series and intermediate capacitance values on request.

Composition of ordering code

+ = Capacitance tolerance code:
M = ±20%
K = ±10%
J = ±5%

*** = Packaging code:
289 = Ammo pack
189 = Reel
000 = Untaped (lead length 6 −1 mm)



Ordering codes and packing units (lead spacing 22.5 mm)

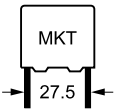
V_R VDC	V_{rms} f ≤60 Hz VAC	C_R µF	Max. dimensions w × h × l mm	Ordering code (composition see below)	Ammo pack pcs./unit	Reel pcs./unit	Untaped pcs./unit
63	40	3.3	6.0 × 15.0 × 26.5	B32523Q0335+***	680	700	720
		4.7	7.0 × 16.0 × 26.5	B32523Q0475+***	580	600	630
		6.8	8.5 × 16.5 × 26.5	B32523Q0685+***	480	500	510
		10	10.5 × 18.5 × 26.5	B32523Q0106+***	390	400	540
		15	12.0 × 22.0 × 26.5	B32523Q0156+***	–	–	450
100	63	1.5	6.0 × 15.0 × 26.5	B32523Q1155+***	680	700	720
		2.2	6.0 × 15.0 × 26.5	B32523Q1225+***	680	700	720
		3.3	6.0 × 15.0 × 26.5	B32523Q1335+***	680	700	720
		4.7	7.0 × 16.0 × 26.5	B32523Q1475+***	580	600	630
		6.8	8.5 × 16.5 × 26.5	B32523Q1685+***	480	500	510
		10	10.5 × 18.5 × 26.5	B32523Q1106+***	390	400	540
		15	12.0 × 22.0 × 26.5	B32523Q1156+***	–	–	450
250	160	0.47	6.0 × 15.0 × 26.5	B32523Q3474+***	680	700	720
		0.68	6.0 × 15.0 × 26.5	B32523Q3684+***	680	700	720
		1.0	6.0 × 15.0 × 26.5	B32523Q3105+***	680	700	720
		1.5	7.0 × 16.0 × 26.5	B32523Q3155+***	580	600	630
		2.2	10.5 × 16.5 × 26.5	B32523Q3225+***	390	400	540
		3.3	11.0 × 20.5 × 26.5	B32523Q3335+***	370	350	510
400	200	0.22	6.0 × 15.0 × 26.5	B32523Q6224+***	680	700	720
		0.33	6.0 × 15.0 × 26.5	B32523Q6334+***	680	700	720
		0.47	7.0 × 16.0 × 26.5	B32523Q6474+***	580	600	630
		0.68	8.5 × 16.5 × 26.5	B32523Q6684+***	480	500	510
		1.0	10.5 × 16.5 × 26.5	B32523Q6105+***	390	400	540
		1.5	11.0 × 20.5 × 26.5	B32523Q6155+***	370	350	510
630	200	0.10	6.0 × 15.0 × 26.5	B32523Q8104+***	680	700	720
		0.15	6.0 × 15.0 × 26.5	B32523Q8154+***	680	700	720
		0.22	7.0 × 16.0 × 26.5	B32523Q8224+***	580	600	630
		0.33	10.5 × 16.5 × 26.5	B32523Q8334+***	390	400	540
		0.47	10.5 × 20.5 × 26.5	B32523Q8474+***	390	400	540
		0.68	12.0 × 22.0 × 26.5	B32523Q8684+***	–	–	450

Further E series and intermediate capacitance values on request.

Composition of ordering code

+ = Capacitance tolerance code:
M = ±20%
K = ±10%
J = ±5%

*** = Packaging code:
289 = Ammo pack
189 = Reel
000 = Untaped (lead length 6 −1 mm)



B32524

General purpose (wound)

Ordering codes and packing units (lead spacing 27.5 mm)

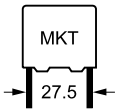
V_R	V_{rms} f ≤60 Hz	C_R	Max. dimensions w × h × l	Ordering code (composition see	Ammo pack	Reel	Untaped
VDC	VAC	µF	mm	below)	pcs./unit	pcs./unit	pcs./unit
63	40	4.7	11.0 × 21.0 × 31.5	B32524Q0475+***	–	350	320
		6.8	11.0 × 21.0 × 31.5	B32524Q0685+***	–	350	320
		10	11.0 × 21.0 × 31.5	B32524Q0106+***	–	350	320
		15	11.0 × 21.0 × 31.5	B32524Q0156+***	–	300	280
		22	14.0 × 24.5 × 31.5	B32524Q0226+***	–	350	320
		33	18.0 × 27.5 × 31.5	B32524Q0336+***	–	–	200
		47	21.0 × 31.0 × 31.5	B32524Q0476+***	–	–	180
		68	22.0 × 36.5 × 31.5	B32524Q0686+***	–	–	160
100	63	4.7	11.0 × 21.0 × 31.5	B32524Q1475+***	–	350	320
		6.8	11.0 × 21.0 × 31.5	B32524Q1685+***	–	350	320
		10	11.0 × 21.0 × 31.5	B32524Q1106+***	–	350	320
		15	11.0 × 21.0 × 31.5	B32524Q1156+***	–	300	280
		22	14.0 × 24.5 × 31.5	B32524Q1226+***	–	350	320
		33	18.0 × 27.5 × 31.5	B32524Q1336+***	–	–	200
		47	21.0 × 31.0 × 31.5	B32524Q1476+***	–	–	180
		68	22.0 × 36.5 × 31.5	B32524Q1686+***	–	–	160
250	160	1.5	11.0 × 21.0 × 31.5	B32524Q3155+***	–	350	320
		2.2	11.0 × 21.0 × 31.5	B32524Q3225+***	–	350	320
		3.3	11.0 × 21.0 × 31.5	B32524Q3335+***	–	350	320
		4.7	11.0 × 21.0 × 31.5	B32524Q3475+***	–	350	320
		6.8	14.0 × 24.5 × 31.5	B32524Q3685+***	–	250	260
		10	18.0 × 27.5 × 31.5	B32524Q3106+***	–	–	200
		15	19.0 × 30.0 × 31.5	B32524Q3156+***	–	–	180
400	200	0.68	11.0 × 19.0 × 31.5	B32524Q6684+***	–	350	320
		1.0	11.0 × 19.0 × 31.5	B32524Q6105+***	–	350	320
		1.5	11.0 × 19.0 × 31.5	B32524Q6155+***	–	350	320
		2.2	12.5 × 21.5 × 31.5	B32524Q6225+***	–	300	280
		3.3	15.0 × 24.5 × 31.5	B32524Q6335+***	–	–	240
		4.7	18.0 × 27.5 × 31.5	B32524Q6475+***	–	–	200
		6.8	21.0 × 31.0 × 31.5	B32524Q6685+***	–	–	180

Further E series and intermediate capacitance values on request.

Composition of ordering code

+ = Capacitance tolerance code:
M = ±20%
K = ±10%
J = ±5%

*** = Packaging code:
289 = Ammo pack
189 = Reel
000 = Untaped (lead length 6 −1 mm)



Ordering codes and packing units (lead spacing 27.5 mm)

V_R	V_{rms} f ≤60 Hz	C_R	Max. dimensions w × h × l	Ordering code (composition see	Ammo pack	Reel	Untaped
VDC	VAC	µF	mm	below)	pcs./unit	pcs./unit	pcs./unit
630	220	0.33	11.0 × 21.0 × 31.5	B32524Q8334+***	–	350	320
		0.47	11.0 × 21.0 × 31.5	B32524Q8474+***	–	350	320
		0.68	11.0 × 21.0 × 31.5	B32524Q8684+***	–	350	320
		1.0	14.0 × 24.5 × 31.5	B32524Q8105+***	–	250	260
		1.5	18.0 × 27.5 × 31.5	B32524Q8155+***	–	–	200
		2.2	21.0 × 31.0 × 31.5	B32524Q8225+***	–	–	180

Further E series and intermediate capacitance values on request.

Composition of ordering code

+ = Capacitance tolerance code:
M = ±20%
K = ±10%
J = ±5%

*** = Packaging code:
289 = Ammo pack
189 = Reel
000 = Untaped (lead length 6 −1 mm)

Technical data

Operating temperature range	Max. operating temperature $T_{op,max}$			+125 °C
	Upper category temperature T_{max}			+125 °C
	Lower category temperature T_{min}			−55 °C
	Rated temperature T_R			+85 °C
Dissipation factor tan δ (in 10^{-3})	at	$C_R \leq 0.1$ µF	0.1 µF < $C_R \leq 1$ µF	$C_R > 1$ µF
at 20 °C	1 kHz	8	8	10
(upper limit values)	10 kHz	15	15	–
	100 kHz	30	–	–
Insulation resistance R_{ins}	V_R	$C_R \leq 0.33$ µF		$C_R > 0.33$ µF
or time constant $\tau = C_R \cdot R_{ins}$	≤ 100 VDC	3750 MΩ		1250 s
at 20 °C, rel. humidity ≤ 65%	≥ 250 VDC	7500 MΩ		2500 s
(minimum as-delivered values)				
DC test voltage	1.4 · V_R, 2 s			
Category voltage V_C	T_A (°C)	DC voltage derating		AC voltage derating
(continuous operation with V_{DC}	$T_A \leq 85$	$V_C = V_R$		$V_{C,rms} = V_{rms}$
or V_{AC} at f ≤ 60 Hz)	$85 < T_A \leq 125$	$V_C = V_R \cdot (165 - T_A)/80$		$V_{C,rms} = V_{rms} \cdot (165 - T_A)/80$
Operating voltage V_{op} for	T_A (°C)	DC voltage (max. hours)		AC voltage (max. hours)
short operating periods	$T_A \leq 100$	$V_{op} = 1.25 \cdot V_C$ (2000 h)		$V_{op} = 1.0 \cdot V_{C,rms}$ (2000 h)
(V_{DC} or V_{AC} at f ≤ 60 Hz)	$100 < T_A \leq 125$	$V_{op} = 1.25 \cdot V_C$ (1000 h)		$V_{op} = 1.0 \cdot V_{C,rms}$ (1000 h)
Damp heat test	56 days/40 °C/93% relative humidity			
Limit values after damp	Capacitance change $\lvert\Delta C/C\rvert$			≤ 5%
heat test	Dissipation factor change Δ tan δ			≤ 5 · 10^{-3} (at 1 kHz)
	Insulation resistance R_{ins}			≥ 50% of minimum
	or time constant $\tau = C_R \cdot R_{ins}$			as-delivered values
Reliability:				
Failure rate λ	1 fit (≤ 1 · 10^{-9}/h) at 0.5 · V_R, 40 °C			
Service life t_{SL}	200 000 h at 1.0 · V_R, 40 °C			
	For conversion to other operating conditions and temperatures, refer to chapter "Quality assurance", page .			
Failure criteria:				
Total failure	Short circuit or open circuit			
Failure due to variation	Capacitance change $\lvert\Delta C/C\rvert$			> 10%
of parameters	Dissipation factor tan δ			> 2 · upper limit value
	Insulation resistance R_{ins}			< 150 MΩ ($C_R \leq 0.33$ µF)
	or time constant $\tau = C_R \cdot R_{ins}$			< 50 s ($C_R > 0.33$ µF)

Pulse handling capability

"dV/dt" represents the maximum permissible voltage change per unit of time for non-sinusoidal voltages, expressed in V/µs.

"k_0" represents the maximum permissible pulse characteristic of the waveform applied to the capacitor, expressed in $V^2/\mu s$.

Note:
The values of dV/dt and k_0 provided below must not be exceeded in order to avoid damaging the capacitor.

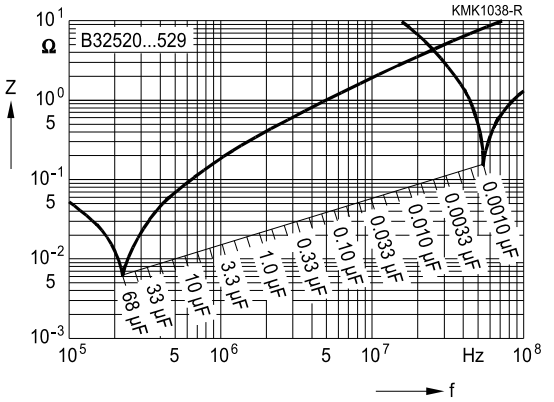
dV/dt values

Lead spacing		5 mm	7.5 mm	10 mm		15 mm		22.5 mm	27.5 mm
Technology		Stacked	Stacked	Stacked	Wound	Stacked	Wound	Wound	Wound
V_R VDC	V_{rms} VAC	dV/dt in V/µs							
50	32	200	–	–	–	–	–	–	–
63	40	250	120	50	–	30	–	3	1
100	63	300	150	75	–	50	5	4	3
250	160	400	200	150	–	100	10	6	4.5
400	200	600	275	175	–	125	–	10	7.5
450	200	–	–	–	–	–	20	–	–
630	400	800	–	–	20	–	25	15	12

k_0 values

Lead spacing		5 mm	7.5 mm	10 mm		15 mm		22.5 mm	27.5 mm
Technology		Stacked	Stacked	Stacked	Wound	Stacked	Wound	Wound	Wound
V_R VDC	V_{rms} VAC	k_0 in $V^2/\mu s$							
50	32	20 000	–	–	–	–	–	–	–
63	40	30 000	15 000	6 300	–	3 800	–	375	130
100	63	60 000	30 000	15 000	–	10 000	850	750	600
250	160	200 000	100 000	75 000	–	50 000	5 000	3 000	2 250
400	200	500 000	220 000	140 000	–	100 000	–	8 000	6 000
450	200	–	–	–	–	–	15 000	–	–
630	400	1 000 000	–	–	25 000	–	30 000	18 000	15 000

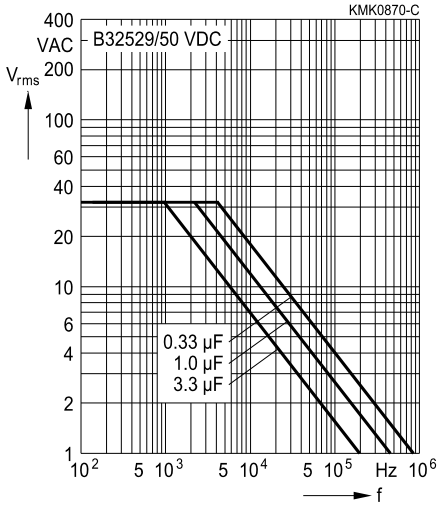
Impedance Z versus frequency f
(typical values)



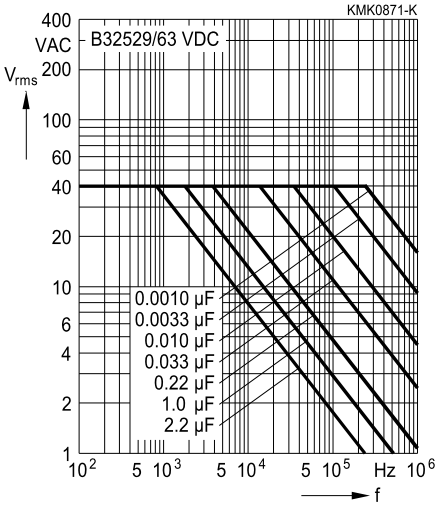
Permissible AC voltage V_{rms} versus frequency f (for sinusoidal waveforms, $T_A \leq 55$ °C)
For T_A >55 °C, please refer to "General technical information", section 3.2.3.

Lead spacing 5 mm

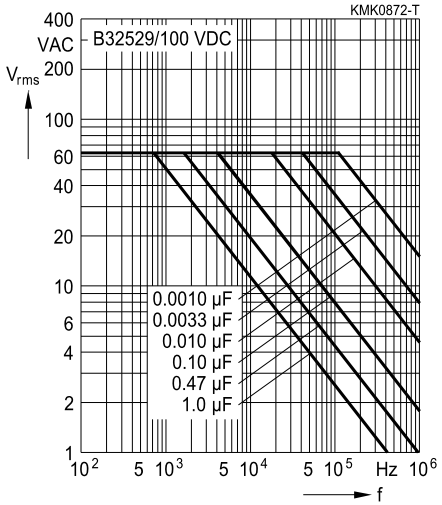
50 VDC/32 VAC



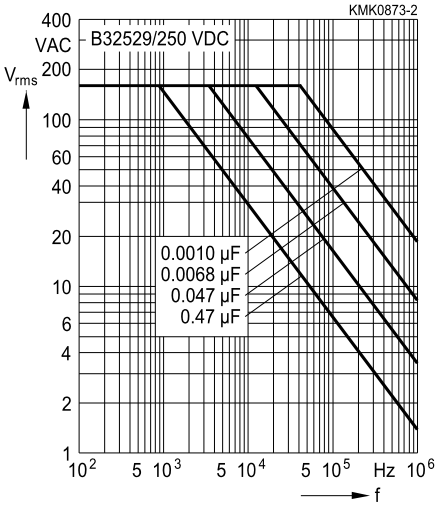
63 VDC/40 VAC

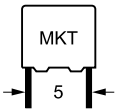


100 VDC/63 VAC



250 VDC/160 VAC

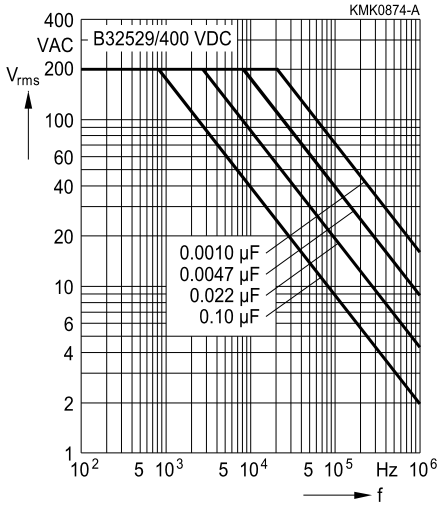




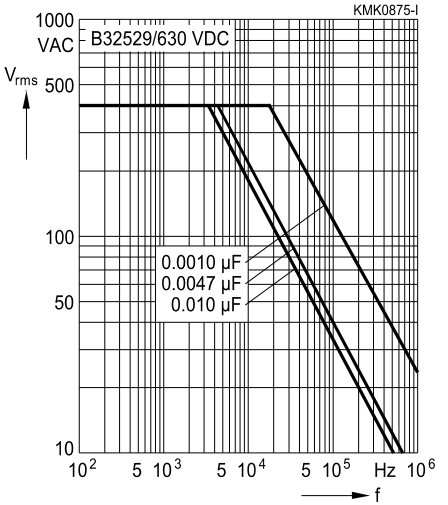
Permissible AC voltage V_{rms} versus frequency f (for sinusoidal waveforms, $T_A \leq 55$ °C)
For T_A >55 °C, please refer to "General technical information", section 3.2.3.

Lead spacing 5 mm

400 VDC/200 VAC



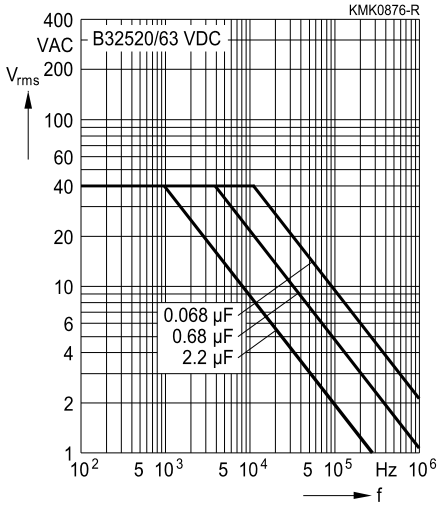
630 VDC/400 VAC



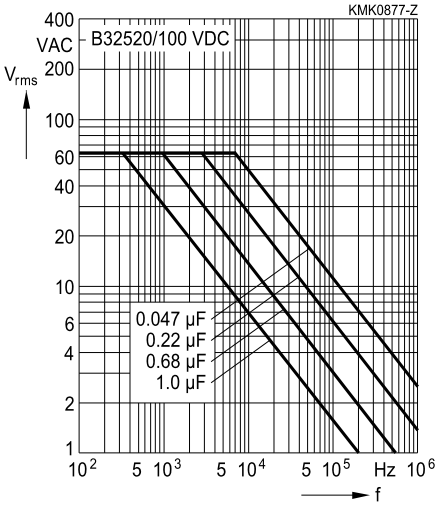
Permissible AC voltage V_{rms} versus frequency f (for sinusoidal waveforms, $T_A \leq 55$ °C)
For T_A >55 °C, please refer to "General technical information", section 3.2.3.

Lead spacing 7.5 mm

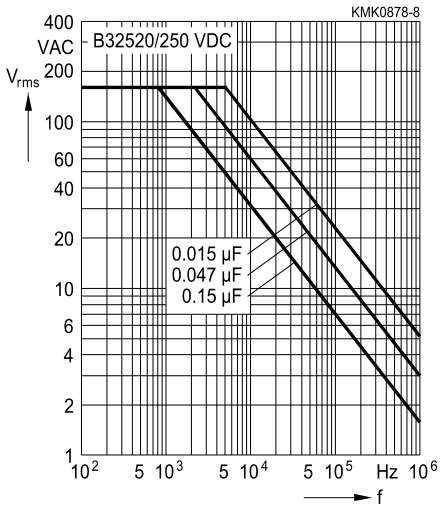
63 VDC/40 VAC



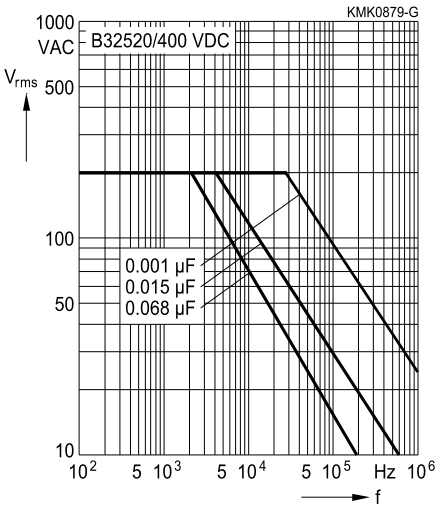
100 VDC/63 VAC



250 VDC/160 VAC



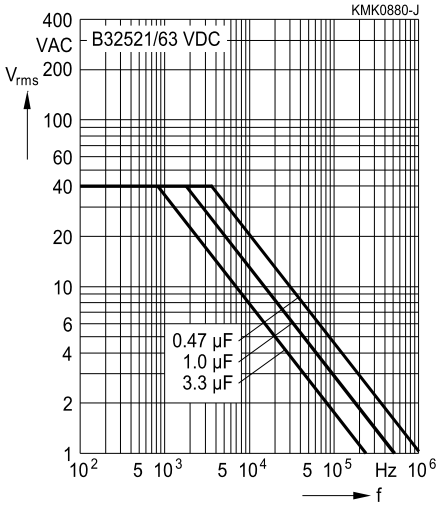
400 VDC/200 VAC



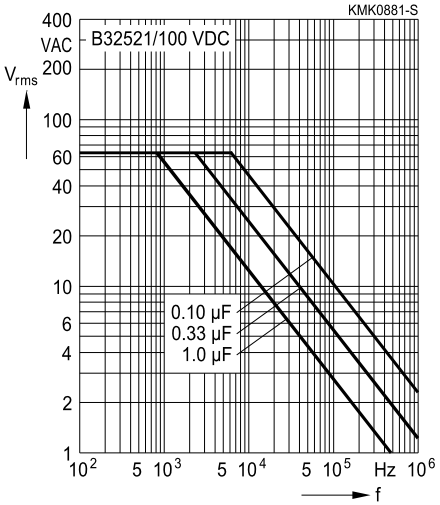
Permissible AC voltage V_{rms} versus frequency f (for sinusoidal waveforms, $T_A \leq 55$ °C)
For T_A >55 °C, please refer to "General technical information", section 3.2.3.

Lead spacing 10 mm

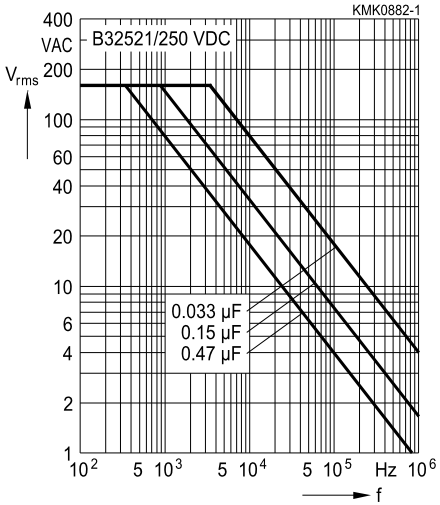
63 VDC/40 VAC



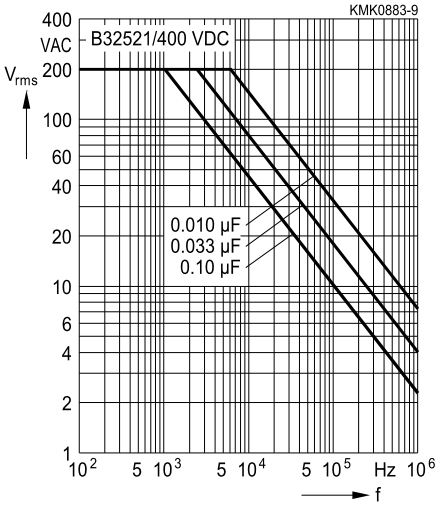
100 VDC/63 VAC



250 VDC/160 VAC



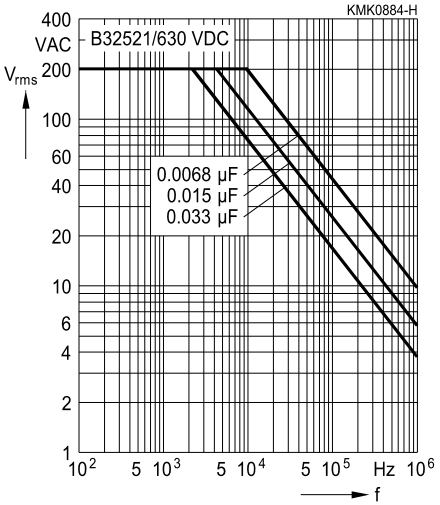
400 VDC/200 VAC



Permissible AC voltage V_{rms} versus frequency f (for sinusoidal waveforms, $T_A \leq 55$ °C)
For T_A >55 °C, please refer to "General technical information", section 3.2.3.

Lead spacing 10 mm

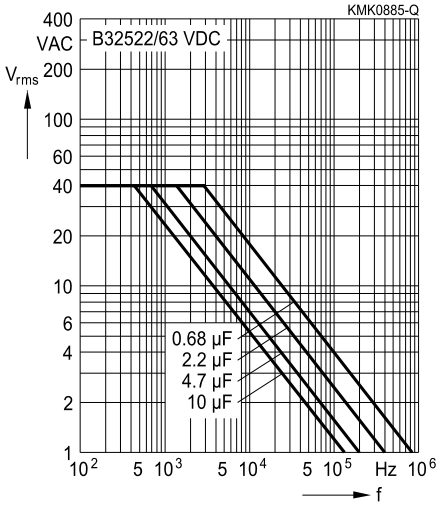
630 VDC/200 VAC



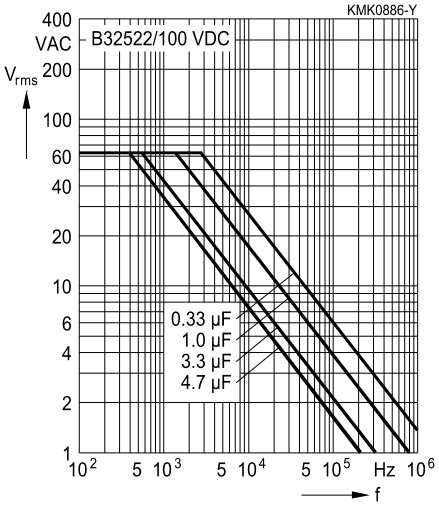
Permissible AC voltage V_{rms} versus frequency f (for sinusoidal waveforms, $T_A \leq 55$ °C)
For T_A >55 °C, please refer to "General technical information", section 3.2.3.

Lead spacing 15 mm

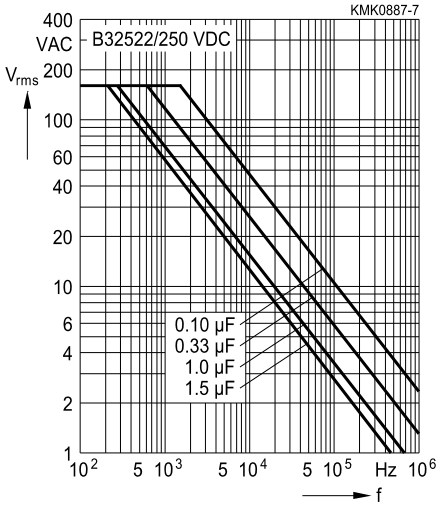
63 VDC/40 VAC



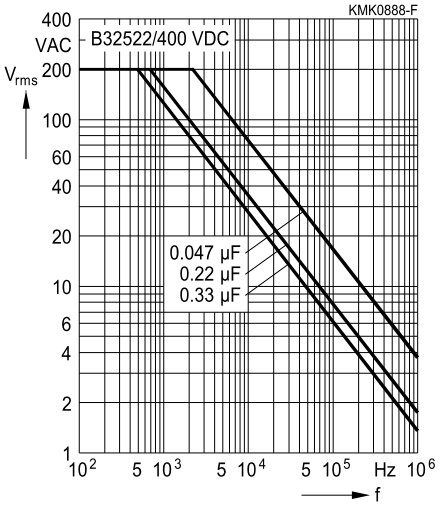
100 VDC/63 VAC



250 VDC/160 VAC



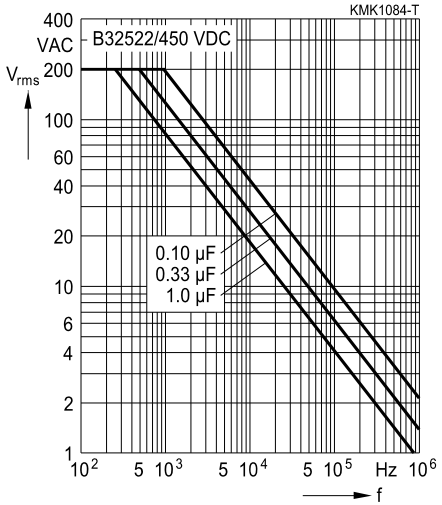
400 VDC/200 VAC



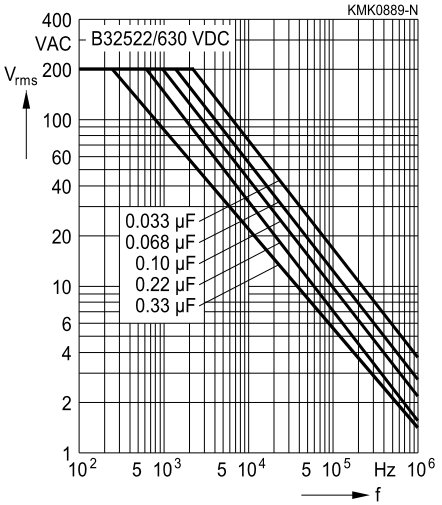
Permissible AC voltage V_{rms} versus frequency f (for sinusoidal waveforms, $T_A \leq 55$ °C)
For T_A >55 °C, please refer to "General technical information", section 3.2.3.

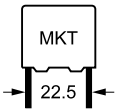
Lead spacing 15 mm

450 VDC/200 VAC



630 VDC/200 VAC

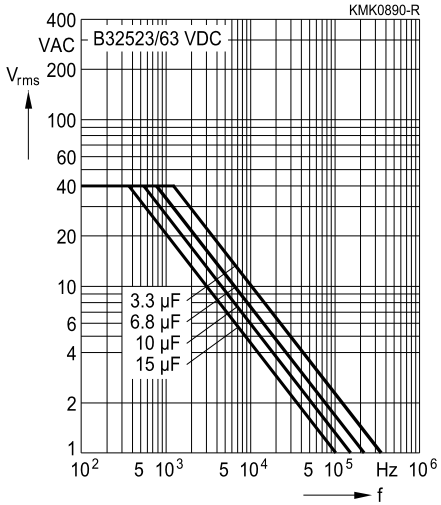




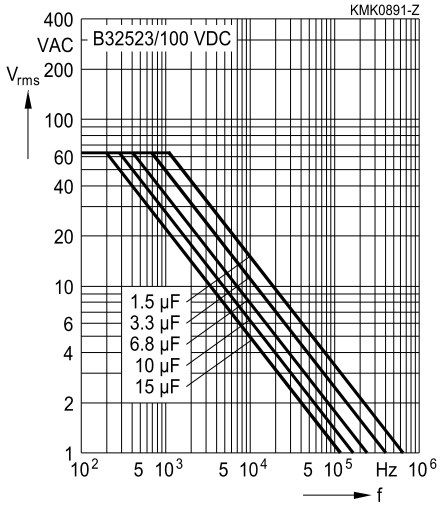
Permissible AC voltage V_{rms} versus frequency f (for sinusoidal waveforms, $T_A \leq 55$ °C)
For T_A >55 °C, please refer to "General technical information", section 3.2.3.

Lead spacing 22.5 mm

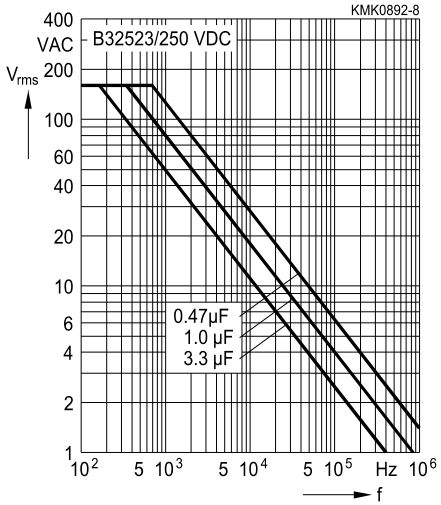
63 VDC/40 VAC



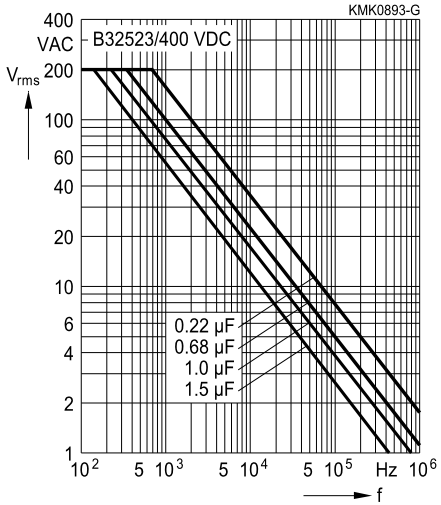
100 VDC/63 VAC



250 VDC/160 VAC



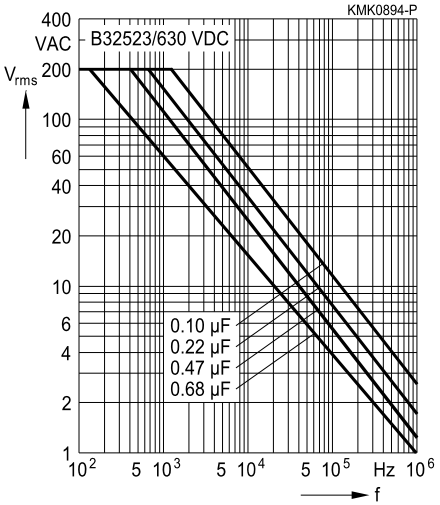
400 VDC/200 VAC

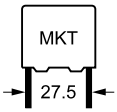


Permissible AC voltage V_{rms} versus frequency f (for sinusoidal waveforms, $T_A \leq 55$ °C)
For T_A >55 °C, please refer to "General technical information", section 3.2.3.

Lead spacing 22.5 mm

630 VDC/200 VAC

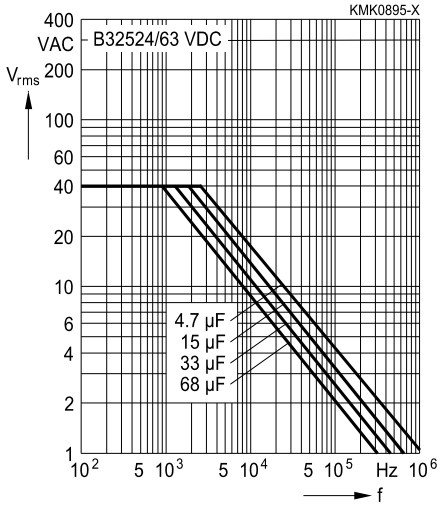




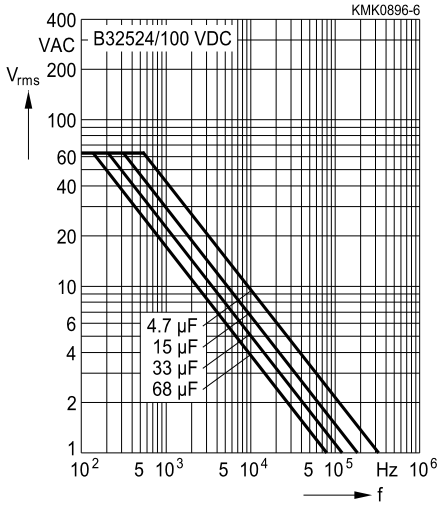
Permissible AC voltage V_{rms} versus frequency f (for sinusoidal waveforms, $T_A \leq 55$ °C)
For T_A >55 °C, please refer to "General technical information", section 3.2.3.

Lead spacing 27.5 mm

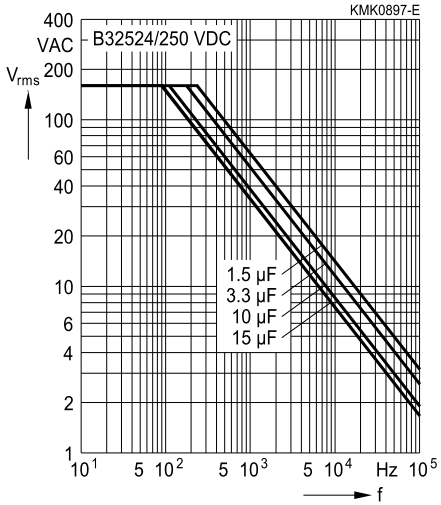
63 VDC/40 VAC



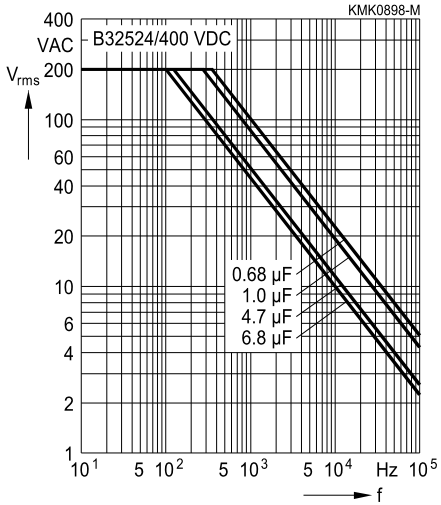
100 VDC/63 VAC

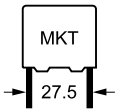


250 VDC/160 VAC



400 VDC/200 VAC





Permissible AC voltage V_{rms} versus frequency f (for sinusoidal waveforms, $T_A \leq 55$ °C)
For T_A >55 °C, please refer to "General technical information", section 3.2.3.

Lead spacing 27.5 mm

630 VDC/220 VAC