# 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

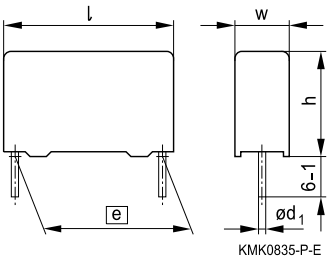
### Marking

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

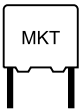
| Lead spacing $e$ ±0.4 | Lead diameter $d_1$ | Type |
|---|---|---|
| 5.0 | 0.5 | B32529 |
| 7.5 | 0.5 | B32520 |
| 10.0 | 0.6[1)] | B32521 |
| 15.0 | 0.8 | B32522 |
| 22.5 | 0.8 | B32523 |
| 27.5 | 0.8 | B32524 |

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)**

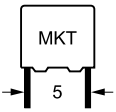
| $V_R$ | $V_{rms}$ f ≤60 Hz | $C_R$ | Max. dimensions w × h × l | Ordering code (composition see | Ammo pack | Reel | Untaped |
|---|---|---|---|---|---|---|---|
| VDC | VAC | µF | mm | below) | pcs./unit | pcs./unit | pcs./unit |
| 50 | 32 | 0.33 | 3.0 × 6.5 × 7.2 | B32529C5334+*** | 2700 | 2400 | 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)**

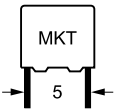
| $V_R$ | $V_{rms}$ f ≤60 Hz | $C_R$ | Max. dimensions w × h × l | Ordering code (composition see | Ammo pack | Reel | Untaped |
|---|---|---|---|---|---|---|---|
| VDC | VAC | µF | mm | below) | pcs./unit | pcs./unit | pcs./unit |
| 250 | 160 | 0.0010 | 2.5 × 6.5 × 7.2 | B32529C3102+*** | 3200 | 2800 | 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)

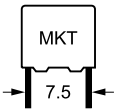
| $V_R$ | $V_{rms}$ f ≤60 Hz | $C_R$ | Max. dimensions w × h × l | Ordering code (composition see | Ammo pack | Reel | Untaped |
|---|---|---|---|---|---|---|---|
| VDC | VAC | µF | mm | below) | pcs./unit | pcs./unit | pcs./unit |
| 630 | 400 | 0.0010 | 2.5 × 6.5 × 7.2 | B32529C8102+*** | 3200 | 2800 | 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)**

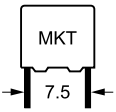
| $V_R$ VDC | $V_{rms}$ f ≤60 Hz VAC | $C_R$ µF | Max. dimensions w × h × l mm | Ordering code (composition see below) | Ammo pack pcs./unit | Reel pcs./unit | Untaped pcs./unit |
|---|---|---|---|---|---|---|---|
| 63 | 40 | 0.068 | 2.5 × 7.0 × 10.0 | B32520C0683+*** | 3200 | 2800 | 2500 |
| | | 0.10 | 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 |

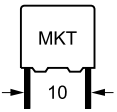
∇ Wound capacitor technology

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 |

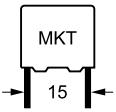
∇ Wound capacitor technology

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 |

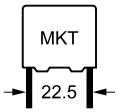
∇ Wound capacitor technology

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)**

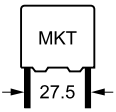
| $V_R$ VDC | $V_{rms}$ f ≤60 Hz VAC | $C_R$ µF | Max. dimensions w × h × l mm | Ordering code (composition see below) | Ammo pack pcs./unit | Reel pcs./unit | Untaped pcs./unit |
|---|---|---|---|---|---|---|---|
| 63 | 40 | 3.3 | 6.0 × 15.0 × 26.5 | B32523Q0335+*** | 680 | 700 | 720 |
| | | 4.7 | 7.0 × 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)

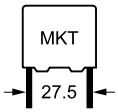
| $V_R$ | $V_{rms}$ f ≤60 Hz | $C_R$ | Max. dimensions w × h × l | Ordering code (composition see | Ammo pack | Reel | Untaped |
|---|---|---|---|---|---|---|---|
| VDC | VAC | µF | mm | below) | pcs./unit | pcs./unit | pcs./unit |
| 63 | 40 | 4.7 | 11.0 × 21.0 × 31.5 | B32524Q0475+*** | – | 350 | 320 |
| | | 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.*

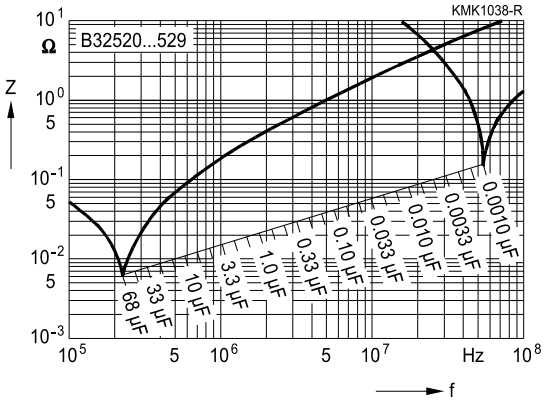
**dV/dt values**

| 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 |

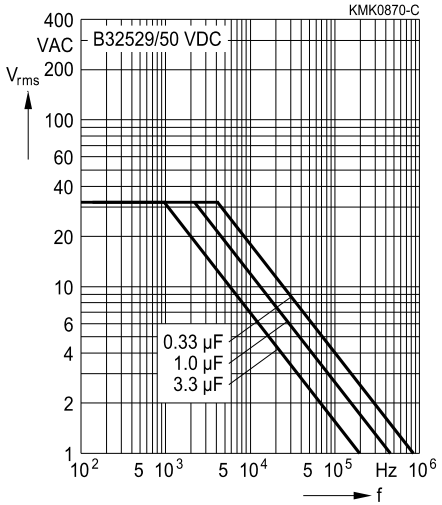
**Impedance Z versus frequency f**
(typical values)



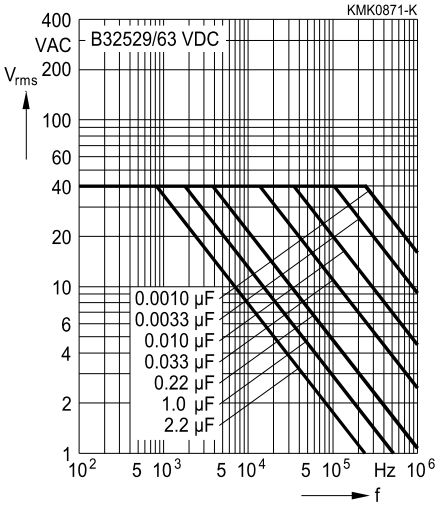
**Permissible AC voltage $V_{rms}$ versus frequency f (for sinusoidal waveforms, $T_A \leq 55$ °C)**
For $T_A$ >55 °C, please refer to "General technical information", section 3.2.3.

**Lead spacing 5 mm**

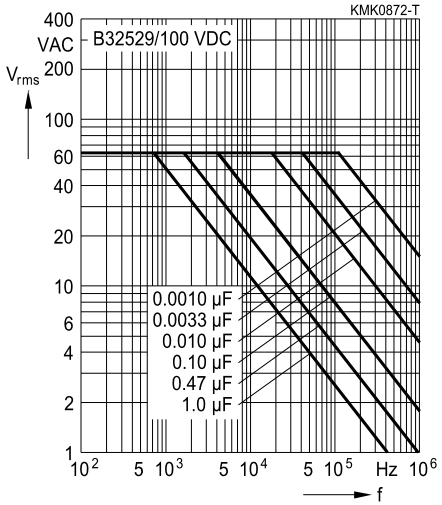
50 VDC/32 VAC



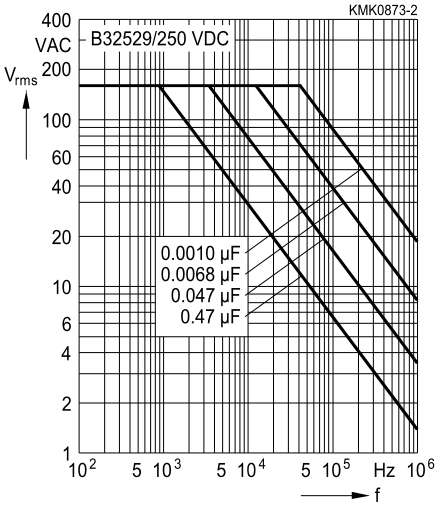

63 VDC/40 VAC

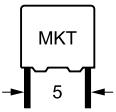



100 VDC/63 VAC




250 VDC/160 VAC



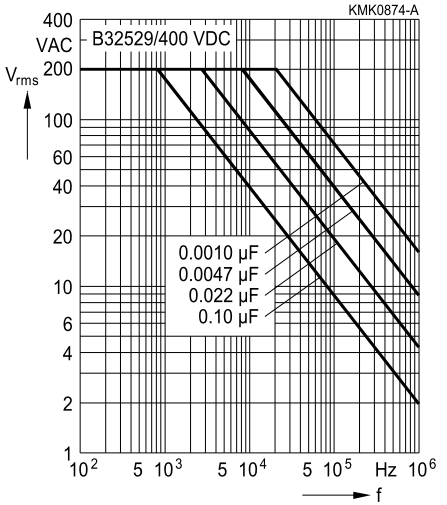




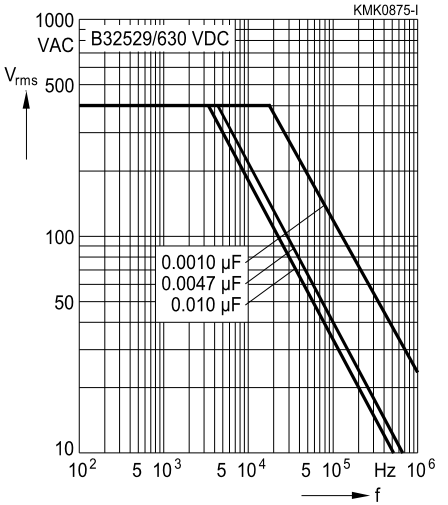

**Permissible AC voltage $V_{rms}$ versus frequency f (for sinusoidal waveforms, $T_A \leq 55$ °C)**
For $T_A$ >55 °C, please refer to "General technical information", section 3.2.3.

**Lead spacing 5 mm**

400 VDC/200 VAC



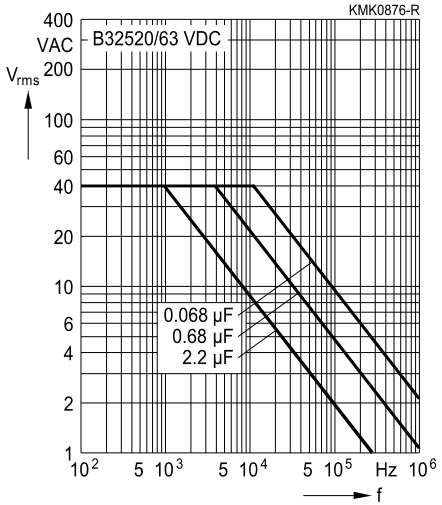

630 VDC/400 VAC



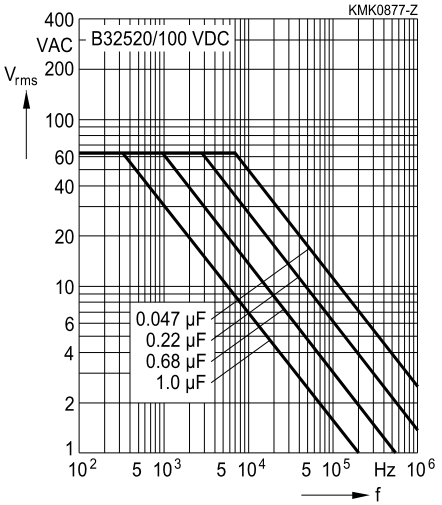
**Permissible AC voltage $V_{rms}$ versus frequency f (for sinusoidal waveforms, $T_A \leq 55$ °C)**
For $T_A$ >55 °C, please refer to "General technical information", section 3.2.3.

**Lead spacing 7.5 mm**

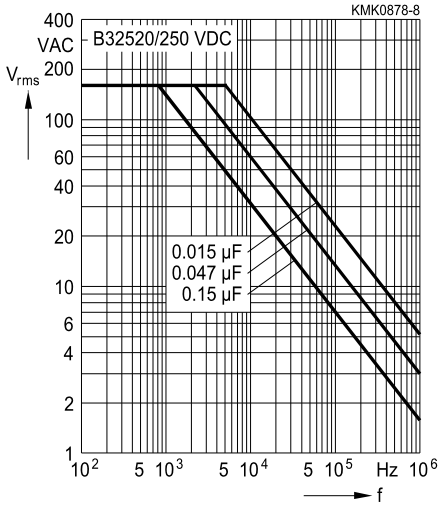
63 VDC/40 VAC



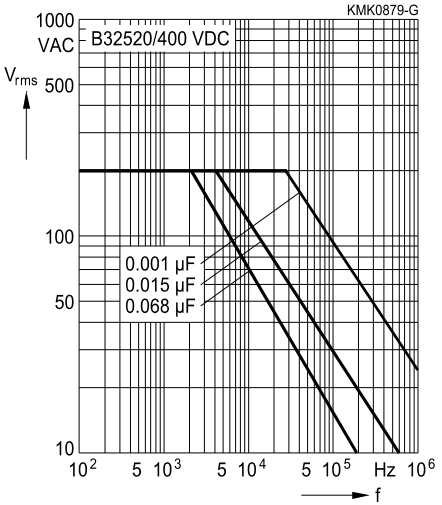

100 VDC/63 VAC




250 VDC/160 VAC



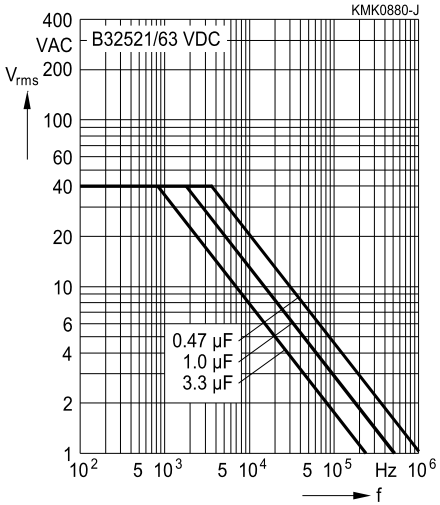

400 VDC/200 VAC



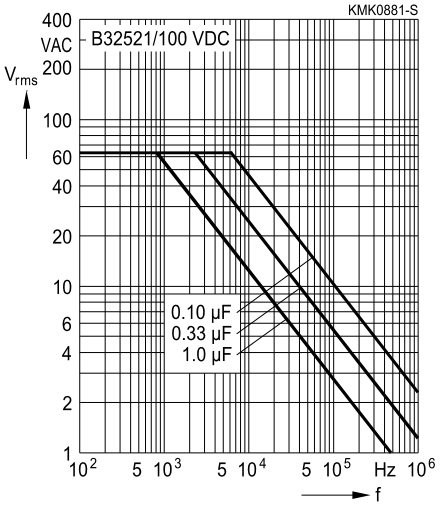
**Permissible AC voltage $V_{rms}$ versus frequency f (for sinusoidal waveforms, $T_A \leq 55$ °C)**
For $T_A$ >55 °C, please refer to "General technical information", section 3.2.3.

**Lead spacing 10 mm**

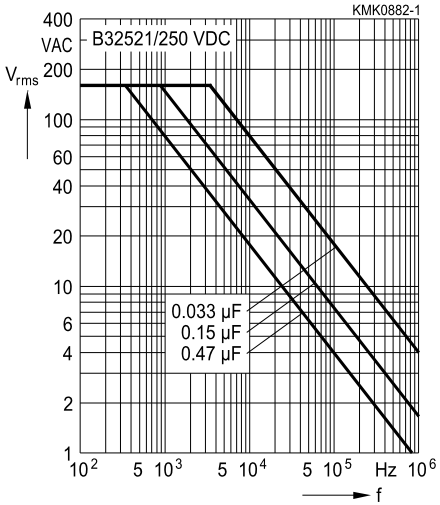
63 VDC/40 VAC



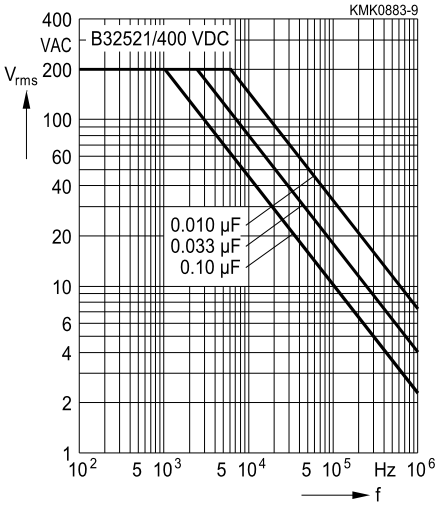

100 VDC/63 VAC




250 VDC/160 VAC



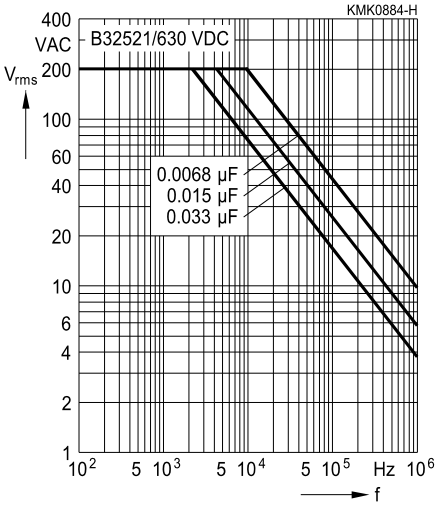

400 VDC/200 VAC



**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**

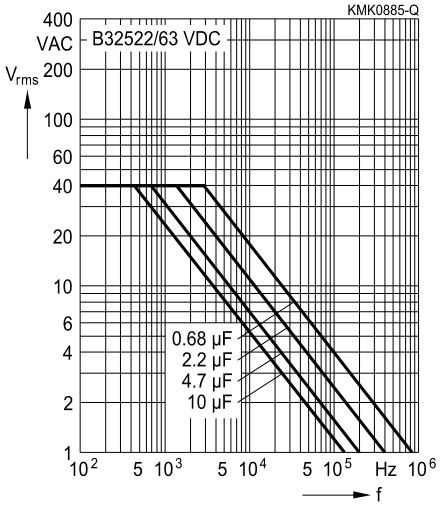
630 VDC/200 VAC



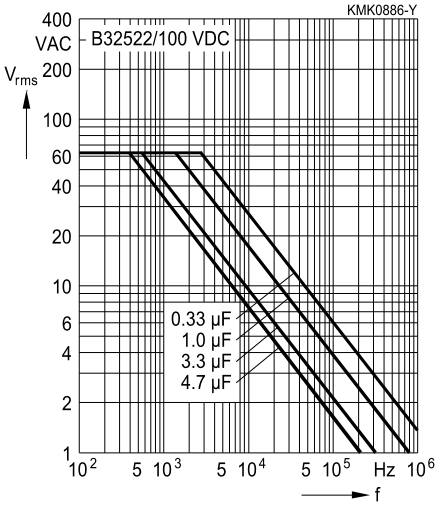
**Permissible AC voltage $V_{rms}$ versus frequency f (for sinusoidal waveforms, $T_A \leq 55$ °C)**
For $T_A$ >55 °C, please refer to "General technical information", section 3.2.3.

**Lead spacing 15 mm**

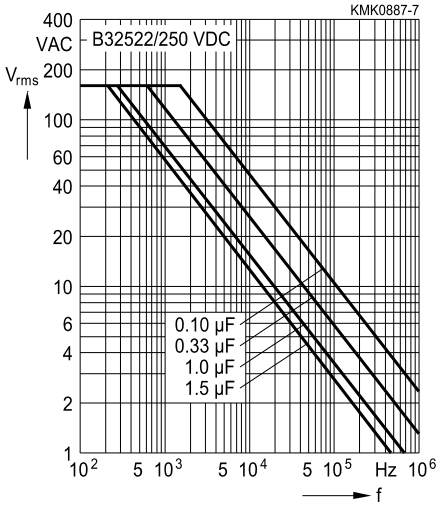
63 VDC/40 VAC



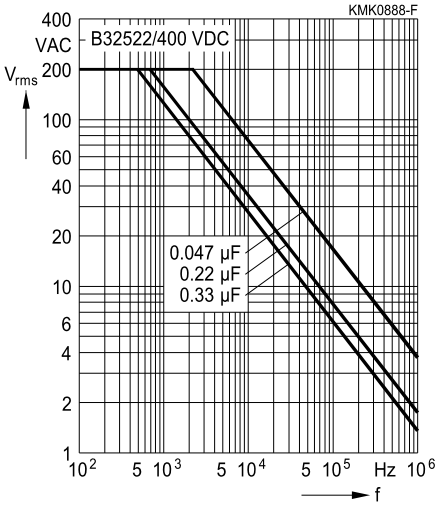

100 VDC/63 VAC




250 VDC/160 VAC



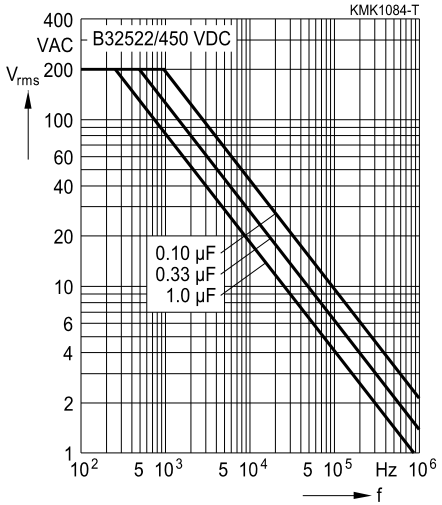

400 VDC/200 VAC



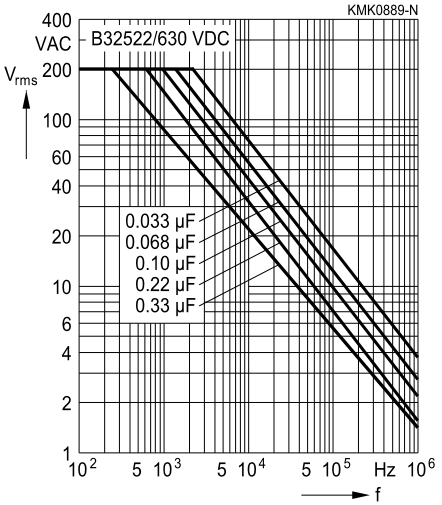
**Permissible AC voltage $V_{rms}$ versus frequency f (for sinusoidal waveforms, $T_A \leq 55$ °C)**
For $T_A$ >55 °C, please refer to "General technical information", section 3.2.3.

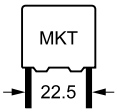
**Lead spacing 15 mm**

450 VDC/200 VAC




630 VDC/200 VAC





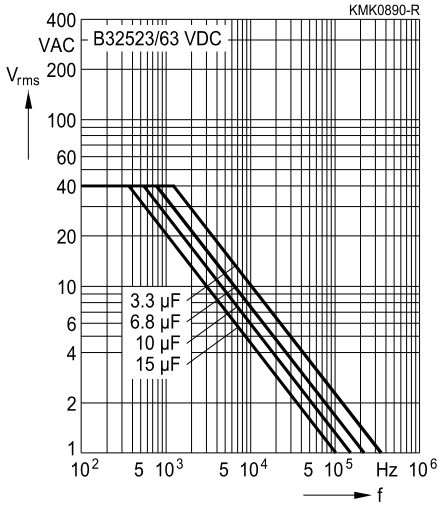

**B32523**

**General purpose (wound)**

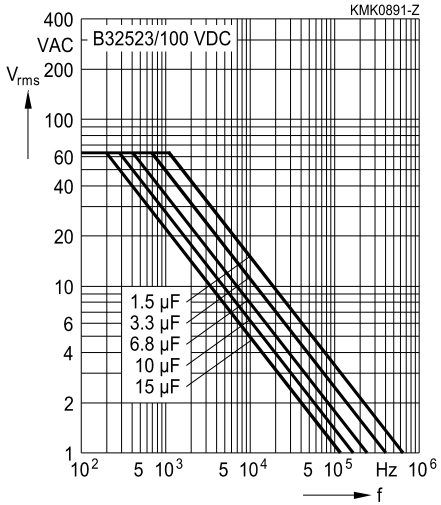
**Permissible AC voltage $V_{rms}$ versus frequency f (for sinusoidal waveforms, $T_A \leq 55$ °C)**
For $T_A$ >55 °C, please refer to "General technical information", section 3.2.3.

**Lead spacing 22.5 mm**

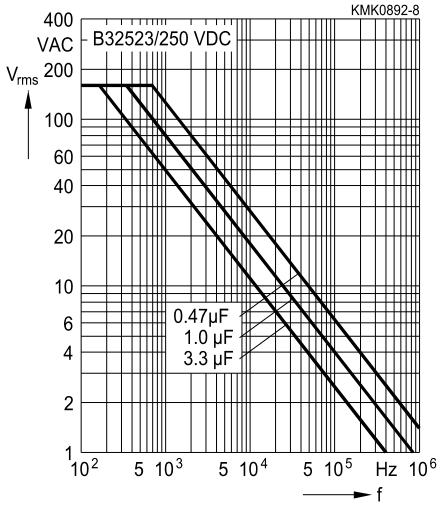
63 VDC/40 VAC



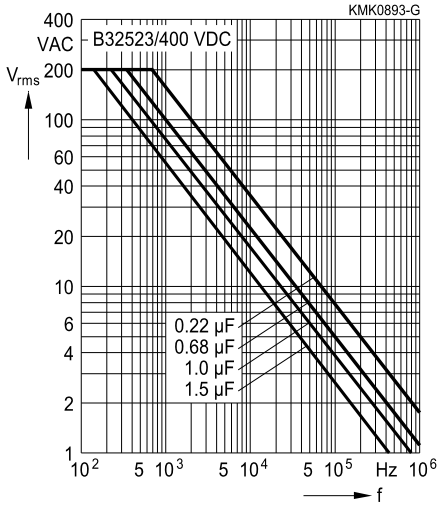

100 VDC/63 VAC




250 VDC/160 VAC



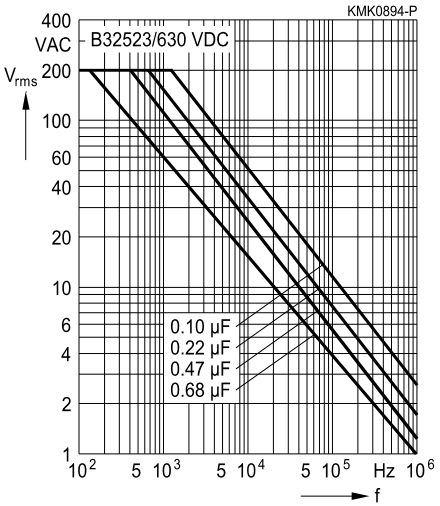

400 VDC/200 VAC

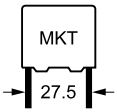


**Permissible AC voltage $V_{rms}$ versus frequency f (for sinusoidal waveforms, $T_A \leq 55$ °C)**
For $T_A$ >55 °C, please refer to "General technical information", section 3.2.3.

**Lead spacing 22.5 mm**

630 VDC/200 VAC



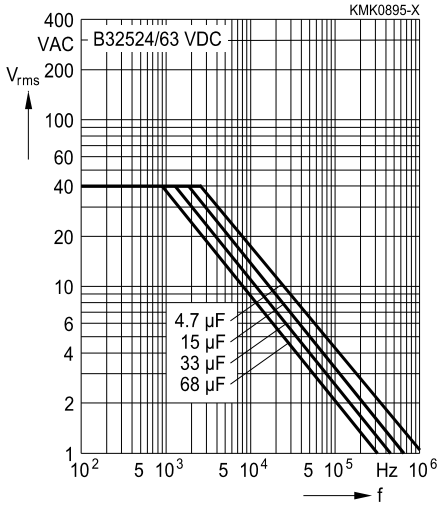




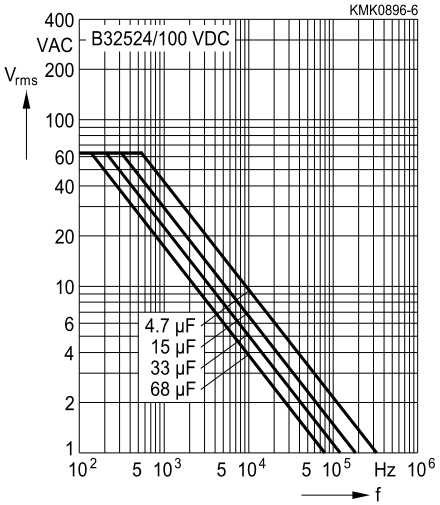

**Permissible AC voltage $V_{rms}$ versus frequency f (for sinusoidal waveforms, $T_A \leq 55$ °C)**
For $T_A$ >55 °C, please refer to "General technical information", section 3.2.3.

**Lead spacing 27.5 mm**

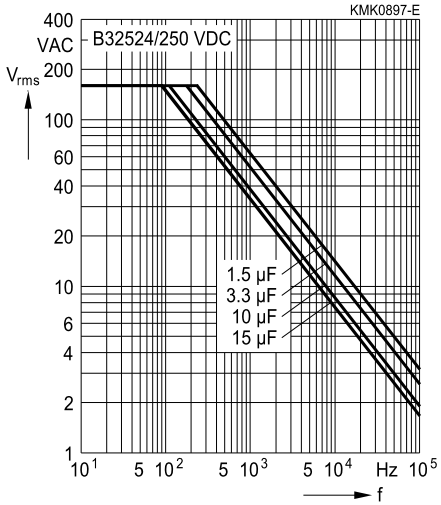
63 VDC/40 VAC



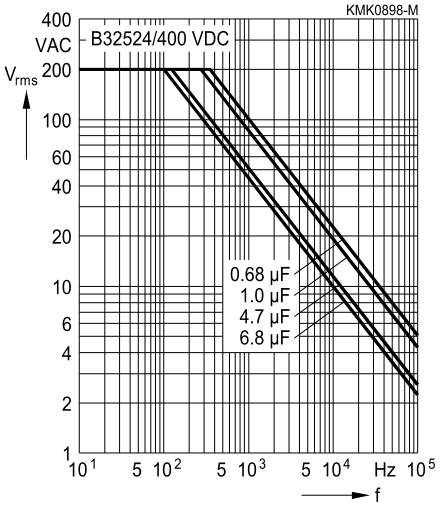

100 VDC/63 VAC

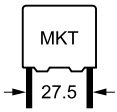



250 VDC/160 VAC

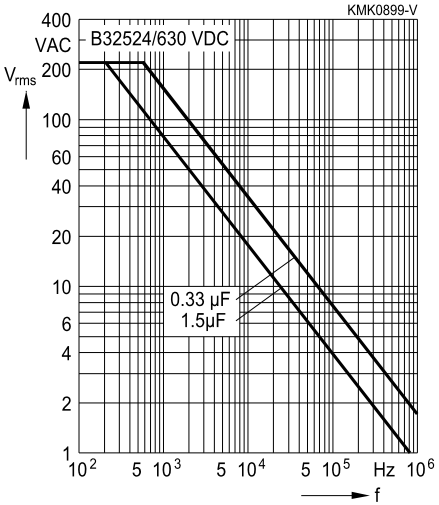



400 VDC/200 VAC






**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