

**Standard applications**

**Construction**

- Dielectric: polyethylene terephthalate (polyester)
- Stacked-film technology for lead spacing 5 and 7,5 mm as well as for 10 and 15 mm (63 ... 400 Vdc)
- Wound capacitor technology for lead spacing 10 mm (630 Vdc), for lead spacing 15 mm (250 ... 630 Vdc), for lead spacing 22,5 and 27,5 mm
- Plastic case (UL 94 V-0)
- Epoxy resin sealing

**Features**

- High pulse strength
- High contact reliability

**Terminals**

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

**Marking**

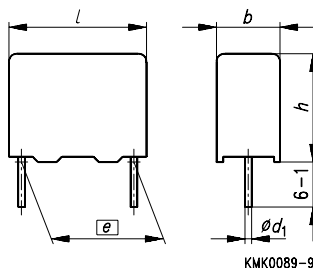
Manufacturer's logo,  
lot number for lead spacing  $\geq 15$  mm,  
style (MKT) for lead spacing  $\geq 7,5$  mm,  
type (coded) for lead spacing 5 mm (B32529  $\hat{=}$  1),  
rated capacitance (coded),  
capacitance tolerance (code letter),  
rated dc voltage,  
date of manufacture (coded)

**Delivery mode**

Bulk (untaped)  
Taped (Ammo pack or reel)  
For notes on taping, [refer to page 279](#).

**Detail specifications**

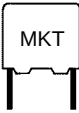
Homologated in accordance with  
CECC 30 401-043  
CECC 30 401-052/DIN 44 112



Dimensions in mm

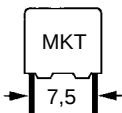
| Lead spacing<br>$e \pm 0,4$ | Diameter $d_1$ | Type     |
|-----------------------------|----------------|----------|
| 5,0                         | 0,5            | B 32 529 |
| 7,5                         | 0,5            | B 32 520 |
| 10,0                        | $0,5^{1)}/0,6$ | B 32 521 |
| 15,0                        | 0,8            | B 32 522 |
| 22,5                        | 0,8            | B 32 523 |
| 27,5                        | 0,8            | B 32 524 |

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



Overview of available types

| Lead spacing | 5 mm                    | 7,5 mm   | 10 mm    | 15 mm                                          | 22,5 mm                    | 27,5 mm  |
|--------------|-------------------------|----------|----------|------------------------------------------------|----------------------------|----------|
| Type         | B 32 529                | B 32 520 | B 32 521 | B 32 522                                       | B 32 523                   | B 32 524 |
| Page         | 19                      | 22       | 24       | 26                                             | 28                         | 29       |
| 1,0 nF       |                         |          |          |                                                |                            |          |
| 1,5 nF       |                         |          |          |                                                |                            |          |
| 2,2 nF       |                         |          |          |                                                |                            |          |
| 3,3 nF       |                         |          |          |                                                |                            |          |
| 4,7 nF       |                         |          |          |                                                |                            |          |
| 6,8 nF       |                         |          |          |                                                |                            |          |
| 10 nF        |                         |          |          |                                                |                            |          |
| 15 nF        |                         |          |          |                                                |                            |          |
| 22 nF        |                         |          |          |                                                |                            |          |
| 33 nF        |                         |          |          |                                                |                            |          |
| 47 nF        |                         |          |          |                                                |                            |          |
| 68 nF        |                         |          |          |                                                |                            |          |
| 0,10 µF      |                         |          |          |                                                |                            |          |
| 0,15 µF      |                         |          |          |                                                |                            |          |
| 0,22 µF      |                         |          |          |                                                |                            |          |
| 0,33 µF      |                         |          |          |                                                |                            |          |
| 0,47 µF      |                         |          |          |                                                |                            |          |
| 0,68 µF      |                         |          |          |                                                |                            |          |
| 1,0 µF       |                         |          |          |                                                |                            |          |
| 1,5 µF       |                         |          |          |                                                |                            |          |
| 2,2 µF       |                         |          |          |                                                |                            |          |
| 3,3 µF       |                         |          |          |                                                |                            |          |
| 4,7 µF       |                         |          |          |                                                |                            |          |
| 6,8 µF       |                         |          |          |                                                |                            |          |
| 10 µF        |                         |          |          |                                                |                            |          |
| 15 µF        |                         |          |          |                                                |                            |          |
| 22 µF        |                         |          |          |                                                |                            |          |
| 33 µF        |                         |          |          |                                                |                            |          |
| Note         | Stacked-film technology |          |          | Stacked-film/<br>Wound capacitor<br>technology | Wound capacitor technology |          |

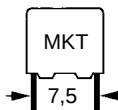


## B 32 520

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

| $V_R$<br>( $V_{rms}$ ,<br>$f \leq 60$ Hz) | $C_R$        | Maximum<br>dimensions<br>$b \times h \times l$ (mm) | Ordering code <sup>1)</sup> | Packing units (pcs) |      |         |
|-------------------------------------------|--------------|-----------------------------------------------------|-----------------------------|---------------------|------|---------|
|                                           |              |                                                     |                             | Ammo<br>pack        | Reel | Untaped |
| 63 Vdc<br>(40 Vac)                        | 68 nF        | $2,5 \times 7,0 \times 10,0$                        | B32520-C683-+***            | 3200                | 2800 | 2500    |
|                                           | 0,10 $\mu$ F | $2,5 \times 7,0 \times 10,0$                        | B32520-C104-+***            | 3200                | 2800 | 2500    |
|                                           | 0,15 $\mu$ F | $2,5 \times 7,0 \times 10,0$                        | B32520-C154-+***            | 3200                | 2800 | 2500    |
|                                           | 0,22 $\mu$ F | $2,5 \times 7,0 \times 10,0$                        | B32520-C224-+***            | 3200                | 2800 | 2500    |
|                                           | 0,33 $\mu$ F | $2,5 \times 7,0 \times 10,0$                        | B32520-C334-+***            | 3200                | 2800 | 2500    |
|                                           | 0,47 $\mu$ F | $3,0 \times 8,0 \times 10,0$                        | B32520-C474-+***            | 2600                | 2400 | 2000    |
|                                           | 0,68 $\mu$ F | $4,0 \times 8,5 \times 10,0$                        | B32520-C684-+***            | 2000                | 1800 | 1500    |
|                                           | 1,0 $\mu$ F  | $5,0 \times 10,5 \times 10,0$                       | B32520-C105-+***            | 1600                | 1400 | 1000    |
|                                           | 1,5 $\mu$ F  | $5,0 \times 10,5 \times 10,0$                       | B32520-C155-+***            | 1600                | 1400 | 1000    |
|                                           | 2,2 $\mu$ F  | $6,0 \times 12,0 \times 10,3$                       | B32520-C225-+***            | 1300                | 1100 | 750     |
| 100 Vdc<br>(63 Vac)                       | 47 nF        | $2,5 \times 7,0 \times 10,0$                        | B32520-C1473-+***           | 3200                | 2800 | 2500    |
|                                           | 68 nF        | $2,5 \times 7,0 \times 10,0$                        | B32520-C1683-+***           | 3200                | 2800 | 2500    |
|                                           | 0,10 $\mu$ F | $2,5 \times 7,0 \times 10,0$                        | B32520-C1104-+***           | 3200                | 2800 | 2500    |
|                                           | 0,15 $\mu$ F | $3,0 \times 8,0 \times 10,0$                        | B32520-C1154-+***           | 2600                | 2400 | 2000    |
|                                           | 0,22 $\mu$ F | $3,0 \times 8,0 \times 10,0$                        | B32520-C1224-+***           | 2600                | 2400 | 2000    |
|                                           | 0,33 $\mu$ F | $4,0 \times 8,5 \times 10,0$                        | B32520-C1334-+***           | 2000                | 1800 | 1500    |
|                                           | 0,47 $\mu$ F | $5,0 \times 10,5 \times 10,0$                       | B32520-C1474-+***           | 1600                | 1400 | 1000    |
|                                           | 0,68 $\mu$ F | $6,0 \times 12,0 \times 10,3$                       | B32520-C1684-+***           | 1300                | 1100 | 750     |
| 250 Vdc<br>(160 Vac)                      | 15 nF        | $2,5 \times 7,0 \times 10,0$                        | B32520-C3153-+***           | 3200                | 2800 | 2500    |
|                                           | 22 nF        | $2,5 \times 7,0 \times 10,0$                        | B32520-C3223-+***           | 3200                | 2800 | 2500    |
|                                           | 33 nF        | $2,5 \times 7,0 \times 10,0$                        | B32520-C3333-+***           | 3200                | 2800 | 2500    |
|                                           | 47 nF        | $2,5 \times 7,0 \times 10,0$                        | B32520-C3473-+***           | 3200                | 2800 | 2500    |
|                                           | 68 nF        | $3,0 \times 8,0 \times 10,0$                        | B32520-C3683-+***           | 2600                | 2400 | 2000    |
|                                           | 0,10 $\mu$ F | $4,0 \times 8,5 \times 10,0$                        | B32520-C3104-+***           | 2000                | 1800 | 1500    |
|                                           | 0,15 $\mu$ F | $5,0 \times 10,5 \times 10,0$                       | B32520-C3154-+***           | 1600                | 1400 | 1000    |

1) For instructions on how to determine the ordering code, see next page.



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

| $V_R$<br>( $V_{rms}$ ,<br>$f \leq 60$ Hz) | $C_R$  | Maximum<br>dimensions<br>$b \times h \times l$ (mm) | Ordering code <sup>1)</sup> | Packing units (pcs) |      |         |
|-------------------------------------------|--------|-----------------------------------------------------|-----------------------------|---------------------|------|---------|
|                                           |        |                                                     |                             | Ammo<br>pack        | Reel | Untaped |
| 400 Vdc<br>(200 Vac)                      | 1,0 nF | $2,5 \times 7,0 \times 10,0$                        | B32520-C6102-+***           | 3200                | 2800 | 2500    |
|                                           | 1,5 nF | $2,5 \times 7,0 \times 10,0$                        | B32520-C6152-+***           | 3200                | 2800 | 2500    |
|                                           | 2,2 nF | $2,5 \times 7,0 \times 10,0$                        | B32520-C6222-+***           | 3200                | 2800 | 2500    |
|                                           | 3,3 nF | $2,5 \times 7,0 \times 10,0$                        | B32520-C6332-+***           | 3200                | 2800 | 2500    |
|                                           | 4,7 nF | $2,5 \times 7,0 \times 10,0$                        | B32520-C6472-+***           | 3200                | 2800 | 2500    |
|                                           | 6,8 nF | $2,5 \times 7,0 \times 10,0$                        | B32520-C6682-+***           | 3200                | 2800 | 2500    |
|                                           | 10 nF  | $2,5 \times 7,0 \times 10,0$                        | B32520-C6103-+***           | 3200                | 2800 | 2500    |
|                                           | 15 nF  | $3,0 \times 8,0 \times 10,0$                        | B32520-C6153-+***           | 2600                | 2400 | 2000    |
|                                           | 22 nF  | $4,0 \times 8,5 \times 10,0$                        | B32520-C6223-+***           | 2000                | 1800 | 1500    |
|                                           | 33 nF  | $5,0 \times 10,5 \times 10,0$                       | B32520-C6333-+***           | 1600                | 1400 | 1000    |
|                                           | 47 nF  | $5,0 \times 10,5 \times 10,0$                       | B32520-C6473-+***           | 1600                | 1400 | 1000    |
|                                           | 68 nF  | $6,0 \times 12,0 \times 10,3$                       | B32520-C6683-+***           | 1300                | 1100 | 750     |

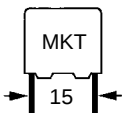
Capacitance tolerance:  $\pm 20\% \hat{=}$  M,  $\pm 10\% \hat{=}$  K,  $\pm 5\% \hat{=}$  J

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

Replace the \*\*\* by the code number for the required packaging: Ammo pack = 289, reel = 189

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

For capacitors with 3,2 mm lead length, append code number "3" to the tolerance code, e.g.: B32520-C6102-K3



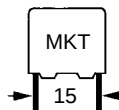
## B 32 522

### Ordering codes and packing units, lead spacing 15 mm

| $V_R$<br>( $V_{rms}$ ,<br>$f \leq 60$ Hz) | $C_R$             | Maximum<br>dimensions<br>$b \times h \times l$ (mm) | Ordering code <sup>1)</sup> | Packing units (pcs) |      |         |
|-------------------------------------------|-------------------|-----------------------------------------------------|-----------------------------|---------------------|------|---------|
|                                           |                   |                                                     |                             | Ammo<br>pack        | Reel | Untaped |
| 63 Vdc<br>(40 Vac)                        | 0,68 $\mu F$      | $5,0 \times 10,5 \times 18,0$                       | B32522-C684-+***            | 1170                | 1300 | 1000    |
|                                           | 1,0 $\mu F$       | $5,0 \times 10,5 \times 18,0$                       | B32522-C105-+***            | 1170                | 1300 | 1000    |
|                                           | 1,5 $\mu F$       | $5,0 \times 10,5 \times 18,0$                       | B32522-C155-+***            | 1170                | 1300 | 1000    |
|                                           | 2,2 $\mu F$       | $5,0 \times 10,5 \times 18,0$                       | B32522-C225-+***            | 1170                | 1300 | 1000    |
|                                           | 3,3 $\mu F$       | $6,0 \times 11,0 \times 18,0$                       | B32522-C335-+***            | 960                 | 1100 | 1000    |
|                                           | 4,7 $\mu F$       | $7,0 \times 12,5 \times 18,0$                       | B32522-C475-+***            | 830                 | 900  | 1000    |
| 100 Vdc<br>(63 Vac)                       | 0,33 $\mu F$      | $5,0 \times 10,5 \times 18,0$                       | B32522-C1334-+***           | 1170                | 1300 | 1000    |
|                                           | 0,47 $\mu F$      | $5,0 \times 10,5 \times 18,0$                       | B32522-C1474-+***           | 1170                | 1300 | 1000    |
|                                           | 0,68 $\mu F$      | $5,0 \times 10,5 \times 18,0$                       | B32522-C1684-+***           | 1170                | 1300 | 1000    |
|                                           | 1,0 $\mu F$       | $5,0 \times 10,5 \times 18,0$                       | B32522-C1105-+***           | 1170                | 1300 | 1000    |
|                                           | 1,5 $\mu F$       | $6,0 \times 11,0 \times 18,0$                       | B32522-C1155-+***           | 960                 | 1100 | 1000    |
|                                           | 2,2 $\mu F$       | $7,0 \times 12,5 \times 18,0$                       | B32522-C1225-+***           | 830                 | 900  | 1000    |
|                                           | 3,3 $\mu F$       | $8,5 \times 14,5 \times 18,0$                       | B32522-C1335-+***           | 680                 | 700  | 500     |
| 250 Vdc<br>(160 Vac)                      | 0,10 $\mu F$      | $5,0 \times 10,5 \times 18,0$                       | B32522-C3104-+***           | 1170                | 1300 | 1000    |
|                                           | 0,15 $\mu F$      | $5,0 \times 10,5 \times 18,0$                       | B32522-C3154-+***           | 1170                | 1300 | 1000    |
|                                           | 0,22 $\mu F$      | $5,0 \times 10,5 \times 18,0$                       | B32522-C3224-+***           | 1170                | 1300 | 1000    |
|                                           | 0,33 $\mu F$      | $5,0 \times 10,5 \times 18,0$                       | B32522-C3334-+***           | 1170                | 1300 | 1000    |
|                                           | 0,47 $\mu F$      | $6,0 \times 11,0 \times 18,0$                       | B32522-C3474-+***           | 960                 | 1100 | 1000    |
|                                           | 0,68 $\mu F$      | $7,0 \times 12,5 \times 18,0$                       | B32522-C3684-+***           | 830                 | 900  | 1000    |
|                                           | 1,0 $\mu F$       | $8,5 \times 14,5 \times 18,0$                       | B32522-C3105-+***           | 680                 | 700  | 500     |
|                                           | 1,0 $\mu F^{2)}$  | $8,5 \times 14,5 \times 18,0$                       | B32522-N3105-+***           | 680                 | 700  | 500     |
| 400 Vdc<br>(200 Vac)                      | 47 nF             | $5,0 \times 10,5 \times 18,0$                       | B32522-C6473-+***           | 1170                | 1300 | 1000    |
|                                           | 68 nF             | $5,0 \times 10,5 \times 18,0$                       | B32522-C6683-+***           | 1170                | 1300 | 1000    |
|                                           | 0,10 $\mu F$      | $5,0 \times 10,5 \times 18,0$                       | B32522-C6104-+***           | 1170                | 1300 | 1000    |
|                                           | 0,10 $\mu F^{2)}$ | $5,0 \times 10,5 \times 18,0$                       | B32522-N6104-+***           | 1170                | 1300 | 1000    |
|                                           | 0,15 $\mu F$      | $6,0 \times 11,0 \times 18,0$                       | B32522-C6154-+***           | 960                 | 1100 | 1000    |
|                                           | 0,15 $\mu F^{2)}$ | $5,0 \times 10,5 \times 18,0$                       | B32522-N6154-+***           | 1170                | 1300 | 1000    |
|                                           | 0,22 $\mu F$      | $7,0 \times 12,5 \times 18,0$                       | B32522-C6224-+***           | 830                 | 900  | 1000    |
|                                           | 0,22 $\mu F^{2)}$ | $6,0 \times 11,0 \times 18,0$                       | B32522-N6224-+***           | 960                 | 1100 | 1000    |
|                                           | 0,33 $\mu F$      | $8,5 \times 14,5 \times 18,0$                       | B32522-C6334-+***           | 680                 | 700  | 500     |
|                                           | 0,33 $\mu F^{2)}$ | $8,5 \times 14,5 \times 18,0$                       | B32522-N6334-+***           | 680                 | 700  | 500     |
|                                           | 0,47 $\mu F^{2)}$ | $8,5 \times 14,5 \times 18,0$                       | B32522-N6474-+***           | 680                 | 700  | 500     |
|                                           | 0,68 $\mu F^{2)}$ | $9,0 \times 17,5 \times 18,0$                       | B32522-N6684-+***           | 640                 | 700  | 500     |

1) For instructions on how to determine the ordering code, see next page.

2) Wound capacitor technology



### Ordering codes and packing units, lead spacing 15 mm

| $V_R$<br>( $V_{rms}$ ,<br>$f \leq 60$ Hz) | $C_R$                 | Maximum<br>dimensions<br>$b \times h \times l$ (mm) | Ordering code <sup>1)</sup> | Packing units (pcs) |      |         |
|-------------------------------------------|-----------------------|-----------------------------------------------------|-----------------------------|---------------------|------|---------|
|                                           |                       |                                                     |                             | Ammo<br>pack        | Reel | Untaped |
| 630 Vdc<br>(200 Vac)                      | 33 nF <sup>2)</sup>   | 5,0 × 10,5 × 18,0                                   | B32522-Q8333-+***           | 1170                | 1300 | 1000    |
|                                           | 47 nF <sup>2)</sup>   | 5,0 × 10,5 × 18,0                                   | B32522-Q8473-+***           | 1170                | 1300 | 1000    |
|                                           | 68 nF <sup>2)</sup>   | 6,0 × 11,0 × 18,0                                   | B32522-Q8683-+***           | 960                 | 1100 | 1000    |
|                                           | 0,10 µF <sup>2)</sup> | 7,0 × 12,5 × 18,0                                   | B32522-Q8104-+***           | 830                 | 900  | 1000    |

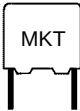
Capacitance tolerance:  $\pm 20\% \hat{=}$  M,  $\pm 10\% \hat{=}$  K,  $\pm 5\% \hat{=}$  J

1) Replace the + by the code letter for the required packing: Ammo pack = 289, reel = 189

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

For capacitors with 3,2 mm lead length, append code number "3" to the tolerance code, e.g.: B32522-Q8104-K3

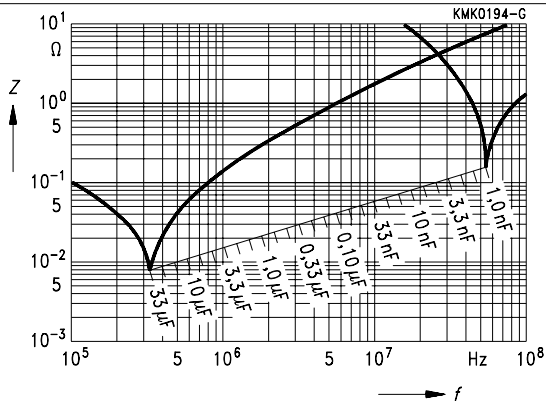
2) Wound capacitor technology



**Technical data**

|                                                                                                                                                       |                                                                                                                                                                                                                         |                                                                 |                                                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|------------------------------------------------------------|
| Climatic category<br>in accordance with IEC 68-1                                                                                                      | 55/100/56                                                                                                                                                                                                               |                                                                 |                                                            |
| Lower category temperature $T_{\min}$                                                                                                                 | – 55 °C                                                                                                                                                                                                                 |                                                                 |                                                            |
| Upper category temperature $T_{\max}$                                                                                                                 | + 100 °C (+ 125 °C for 1000 h and $V_C = 0,5 \cdot V_R$ )                                                                                                                                                               |                                                                 |                                                            |
| Damp heat test                                                                                                                                        | 56 days/40 °C/93 % relative humidity                                                                                                                                                                                    |                                                                 |                                                            |
| Limit values after damp<br>heat test                                                                                                                  | Capacitance change $ \Delta C/C $                                                                                                                                                                                       | $\leq 5 \%$                                                     |                                                            |
|                                                                                                                                                       | Dissipation factor change $\Delta \tan \delta$                                                                                                                                                                          | $\leq 5 \cdot 10^{-3}$ (at 1 kHz)                               |                                                            |
|                                                                                                                                                       | Insulation resistance $R_{is}$                                                                                                                                                                                          | $\geq 50 \%$ of minimum                                         |                                                            |
|                                                                                                                                                       | or time constant $\tau = C_R \cdot R_{is}$                                                                                                                                                                              | as-delivered values                                             |                                                            |
| Reliability:                                                                                                                                          |                                                                                                                                                                                                                         |                                                                 |                                                            |
| Reference conditions                                                                                                                                  | 0,5 · $V_R$ ; 40 °C                                                                                                                                                                                                     |                                                                 |                                                            |
| Failure rate                                                                                                                                          | 1 · 10 <sup>–9</sup> /h = 1 fit                                                                                                                                                                                         |                                                                 |                                                            |
|                                                                                                                                                       | For a conversion table for other operating conditions and temperatures, <a href="#">refer to page 276</a> .                                                                                                             |                                                                 |                                                            |
| Service life                                                                                                                                          | 200 000 h                                                                                                                                                                                                               |                                                                 |                                                            |
| Failure criteria:                                                                                                                                     |                                                                                                                                                                                                                         |                                                                 |                                                            |
| Total failure                                                                                                                                         | Short circuit or open circuit                                                                                                                                                                                           |                                                                 |                                                            |
| Failure due to variation<br>of parameters                                                                                                             | Capacitance change $ \Delta C/C $                                                                                                                                                                                       | $> 10 \%$                                                       |                                                            |
|                                                                                                                                                       | Dissipation factor $\tan \delta$                                                                                                                                                                                        | $> 2 \cdot$ upper limit value                                   |                                                            |
|                                                                                                                                                       | Insulation resistance $R_{is}$                                                                                                                                                                                          | $< 150 \text{ M}\Omega$ ( $C_R \leq 0,33 \text{ }\mu\text{F}$ ) |                                                            |
|                                                                                                                                                       | or time constant $\tau = C_R \cdot R_{is}$                                                                                                                                                                              | $< 50 \text{ s}$ ( $C_R > 0,33 \text{ }\mu\text{F}$ )           |                                                            |
| DC test voltage                                                                                                                                       | 1,4 · $V_R$ , 2 s                                                                                                                                                                                                       |                                                                 |                                                            |
| Category voltage $V_C$                                                                                                                                | $T \leq 85 \text{ }^\circ\text{C}$ : $V_C = 1,0 \cdot V_R$ or $1,0 \cdot V_{\text{rms}}$                                                                                                                                |                                                                 |                                                            |
| Operation with dc voltage or<br>ac voltage $V_{\text{rms}}$ up to 60 Hz                                                                               | $T \leq 100 \text{ }^\circ\text{C}$ : $V_C = 0,8 \cdot V_R$ or $0,8 \cdot V_{\text{rms}}$                                                                                                                               |                                                                 |                                                            |
| Category voltage for<br>short operating periods                                                                                                       | $T \leq 100 \text{ }^\circ\text{C}$ : $V_C = 1,25 \cdot V_R$ or $1,0 \cdot V_{\text{rms}}$ for max. 2000 h<br>$T \leq 125 \text{ }^\circ\text{C}$ : $V_C = 0,5 \cdot V_R$ or $0,5 \cdot V_{\text{rms}}$ for max. 1000 h |                                                                 |                                                            |
| Dissipation factor $\tan \delta$ (in 10 <sup>–3</sup> )<br>at 20 °C<br>(upper limit values)                                                           |                                                                                                                                                                                                                         | $C_R \leq 0,1 \text{ }\mu\text{F}$                              | $0,1 \text{ }\mu\text{F} < C_R \leq 1 \text{ }\mu\text{F}$ |
|                                                                                                                                                       | at 1 kHz                                                                                                                                                                                                                | 8                                                               | 10                                                         |
|                                                                                                                                                       | 10 kHz                                                                                                                                                                                                                  | 15                                                              | 20                                                         |
|                                                                                                                                                       | 100 kHz                                                                                                                                                                                                                 | 30                                                              | –                                                          |
| Insulation resistance $R_{is}$<br>or time constant $\tau = C_R \cdot R_{is}$<br>at 20 °C, rel. humidity $\leq 65 \%$<br>(minimum as-delivered values) | $V_R$                                                                                                                                                                                                                   | $C_R \leq 0,33 \text{ }\mu\text{F}$                             | $C_R > 0,33 \text{ }\mu\text{F}$                           |
|                                                                                                                                                       | $\leq 100 \text{ Vdc}$                                                                                                                                                                                                  | 3750 M $\Omega$                                                 | 1250 s                                                     |
|                                                                                                                                                       | $\geq 250 \text{ Vdc}$                                                                                                                                                                                                  | 7500 M $\Omega$                                                 | 2500 s                                                     |

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



### Pulse handling capability

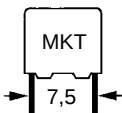
Maximum permissible voltage change per unit of time for non-sinusoidal voltages  
(pulse, sawtooth)

| $V_R$   | Max. rate of voltage rise $V_{pp}/\tau$ in $V/\mu s$ (for $V_{pp} = V_R$ ) |        |                     |                     |                       |                       |
|---------|----------------------------------------------------------------------------|--------|---------------------|---------------------|-----------------------|-----------------------|
|         | Lead spacing                                                               |        |                     |                     |                       |                       |
|         | 5 mm                                                                       | 7,5 mm | 10 mm <sup>1)</sup> | 15 mm <sup>1)</sup> | 22,5 mm <sup>1)</sup> | 27,5 mm <sup>1)</sup> |
| 50 Vdc  | 200                                                                        | —      | —                   | —                   | —                     | —                     |
| 63 Vdc  | 250                                                                        | 120    | 50                  | 30                  | (2)                   | —                     |
| 100 Vdc | 300                                                                        | 150    | 75                  | 50                  | (2,5)                 | (2)                   |
| 250 Vdc | 400                                                                        | 200    | 150                 | 100 (10)            | (4)                   | (3)                   |
| 400 Vdc | 600                                                                        | 275    | 175                 | 125 (12,5)          | (7)                   | (5)                   |
| 630 Vdc | 800                                                                        | —      | (20)                | (15)                | (10)                  | (8)                   |

For  $V_{pp} < V_R$ , the permissible voltage rise rate value  $V_{pp}/\tau$  may be multiplied by the factor  $V_R/V_{pp}$ .  
Also refer to the calculation example on [page 250](#).

| $V_R$   | Pulse characteristic $k_0$ in $V^2/\mu s$ (for $V_{pp} \leq V_R$ ) |         |                     |                     |                       |                       |
|---------|--------------------------------------------------------------------|---------|---------------------|---------------------|-----------------------|-----------------------|
|         | Lead spacing                                                       |         |                     |                     |                       |                       |
|         | 5 mm                                                               | 7,5 mm  | 10 mm <sup>1)</sup> | 15 mm <sup>1)</sup> | 22,5 mm <sup>1)</sup> | 27,5 mm <sup>1)</sup> |
| 50 Vdc  | 20 000                                                             | —       | —                   | —                   | —                     | —                     |
| 63 Vdc  | 30 000                                                             | 15 000  | 6 300               | 3 800               | (250)                 | —                     |
| 100 Vdc | 60 000                                                             | 30 000  | 15 000              | 10 000              | (500)                 | (400)                 |
| 250 Vdc | 200 000                                                            | 100 000 | 75 000              | 50 000 (5 000)      | (2 000)               | (1 500)               |
| 400 Vdc | 500 000                                                            | 220 000 | 140 000             | 100 000 (10 000)    | (5 600)               | (4 000)               |
| 630 Vdc | 1 000 000                                                          | —       | (25 000)            | (19 000)            | (12 600)              | (10 000)              |

1) Values in brackets apply to wound capacitors

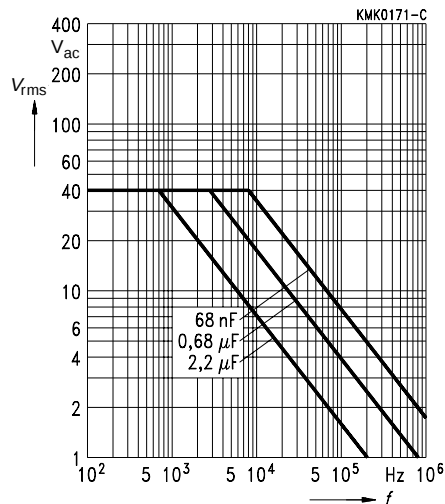


**B 32 520**

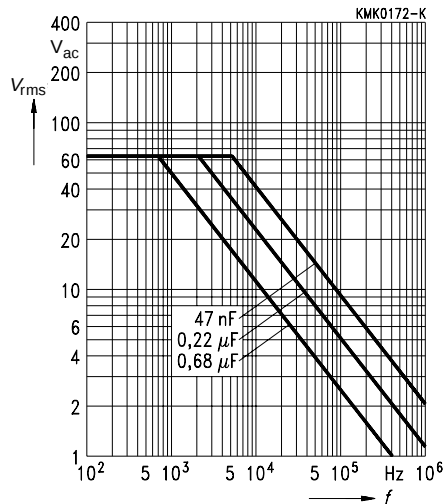
**Permissible ac voltage  $V_{rms}$  versus frequency  $f$**

**Lead spacing 7,5 mm**

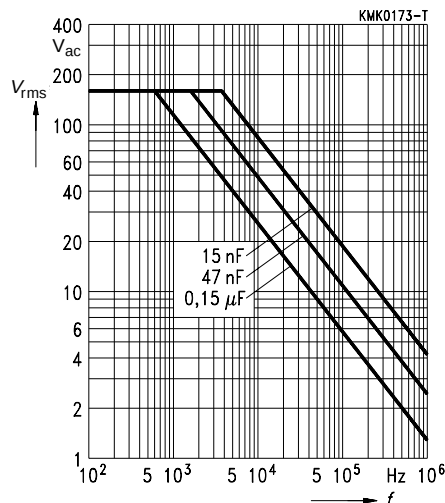
63 Vdc/ 40 Vac



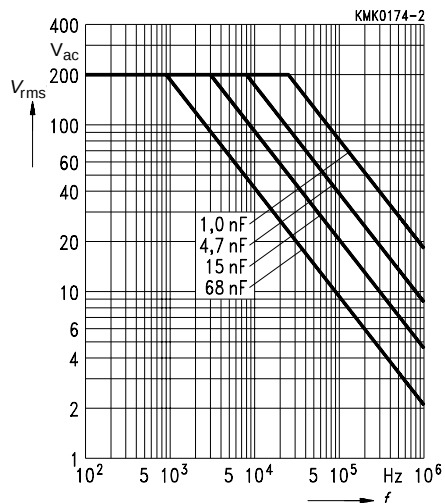
100 Vdc/ 63 Vac

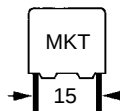


250 Vdc/ 160 Vac



400 Vdc/ 200 Vac

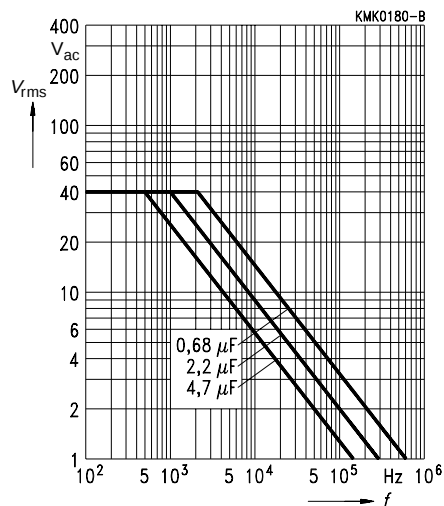




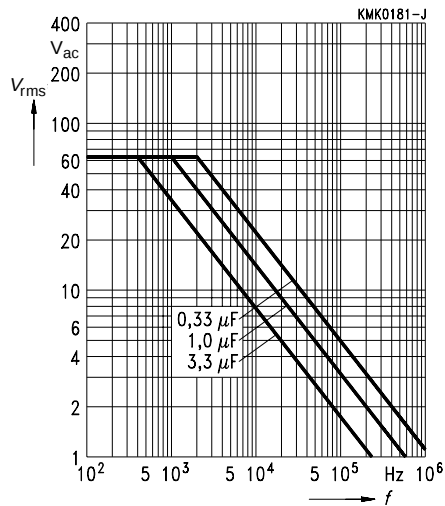
Permissible ac voltage  $V_{rms}$  versus frequency  $f$

Lead spacing 15 mm

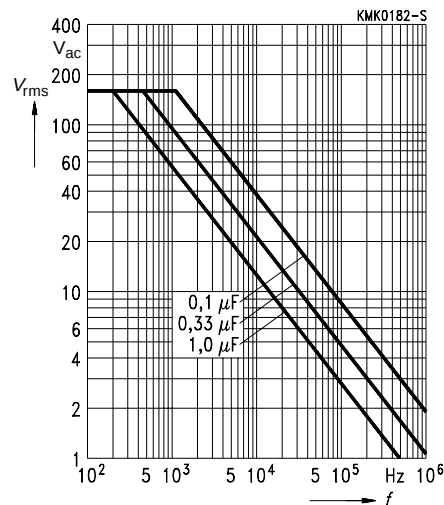
63 Vdc/ 40 Vac



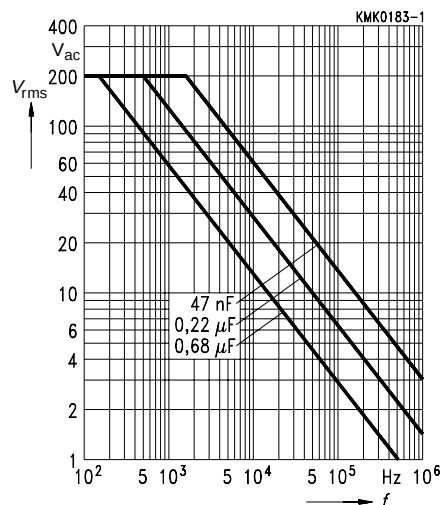
100 Vdc/ 63 Vac

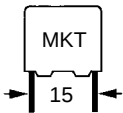


250 Vdc/ 160 Vac



400 Vdc/ 200 Vac





**B 32 522**

**Permissible ac voltage  $V_{rms}$  versus frequency  $f$**

**Lead spacing 15 mm**

630 Vdc/ 200 Vac

