



## Film Capacitors

### Metallized Polypropylene Film Capacitors (MKP)

**Series/Type:** B32612 ... B32614

**Date:** August 2004

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**Typical applications**

- TV (S-correction, flyback)
- Electronic ballasts

**Climatic**

- Max. operating temperature: 110 °C
- Climatic category (IEC 60068-1): 55/100/56

**Construction**

- Dielectric: polypropylene (PP)
- Wound capacitor technology
- Epoxy resin coating (UL 94 V-0)

**Features**

- Very high pulse strength

**Terminals**

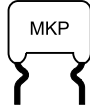
- Crimped wire leads, lead-free tinned,  
lead length (6 – 1 mm) or min. 20 mm
- Double crimped wire leads, lead-free tinned
- Straight wire leads, lead-free tinned,  
lead length (17 ±3) mm
- Different lead spacings (reduced and enlarged) available,  
lead length (6 – 1 mm)

**Marking**

Manufacturer's logo, style and type (P61x),  
rated capacitance (coded),  
capacitance tolerance (code letter),  
rated DC voltage, date of manufacture (code)

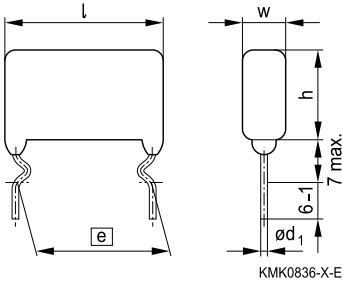
**Delivery mode**

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

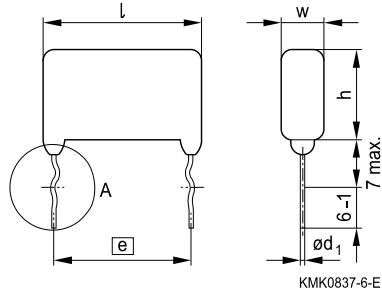


## Dimensional drawings

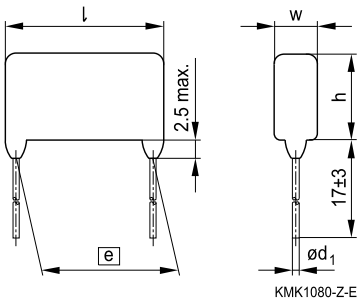
### Crimped leads



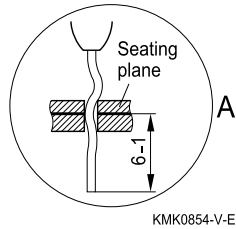
### Double crimped leads



### Straight leads

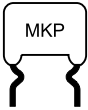


### Detail of double crimped version



### Dimensions in mm

| Lead spacing | Lead diameter | Type   |
|--------------|---------------|--------|
| $e \pm 0.8$  | $d_1$         |        |
| 15.0         | 0.8           | B32612 |
| 22.5         | 0.8           | B32613 |
| 27.5         | 0.8           | B32614 |



B32612 ... B32614

Pulse application (wound)

## Overview of available types

| Lead spacing    | 15.0 mm |     |     |      |      |      |      |      | 22.5 mm |     |     |      |      |      |      |  |
|-----------------|---------|-----|-----|------|------|------|------|------|---------|-----|-----|------|------|------|------|--|
| Type            | B32612  |     |     |      |      |      |      |      | B32613  |     |     |      |      |      |      |  |
| Page            | 6       |     |     |      |      |      |      |      | 8       |     |     |      |      |      |      |  |
| $V_R$ (VDC)     | 250     | 400 | 630 | 1000 | 1250 | 1600 | 1600 | 2000 | 250     | 400 | 630 | 1000 | 1600 | 2000 | 2000 |  |
| $V_{rms}$ (VAC) | 160     | 200 | 250 | 250  | 500  | 500  | 700  | 700  | 160     | 200 | 250 | 250  | 500  | 700  | 1000 |  |
| $C_R$ (nF)      |         |     |     |      |      |      |      |      |         |     |     |      |      |      |      |  |
| 1.0             |         |     |     |      |      |      |      |      |         |     |     |      |      |      |      |  |
| 1.5             |         |     |     |      |      |      |      |      |         |     |     |      |      |      |      |  |
| 2.2             |         |     |     |      |      |      |      |      |         |     |     |      |      |      |      |  |
| 3.3             |         |     |     |      |      |      |      |      |         |     |     |      |      |      |      |  |
| 4.7             |         |     |     |      |      |      |      |      |         |     |     |      |      |      |      |  |
| 6.8             |         |     |     |      |      |      |      |      |         |     |     |      |      |      |      |  |
| 10              |         |     |     |      |      |      |      |      |         |     |     |      |      |      |      |  |
| 15              |         |     |     |      |      |      |      |      |         |     |     |      |      |      |      |  |
| 22              |         |     |     |      |      |      |      |      |         |     |     |      |      |      |      |  |
| 33              |         |     |     |      |      |      |      |      |         |     |     |      |      |      |      |  |
| 47              |         |     |     |      |      |      |      |      |         |     |     |      |      |      |      |  |
| 68              |         |     |     |      |      |      |      |      |         |     |     |      |      |      |      |  |
| 100             |         |     |     |      |      |      |      |      |         |     |     |      |      |      |      |  |
| 150             |         |     |     |      |      |      |      |      |         |     |     |      |      |      |      |  |
| 220             |         |     |     |      |      |      |      |      |         |     |     |      |      |      |      |  |
| 330             |         |     |     |      |      |      |      |      |         |     |     |      |      |      |      |  |
| 470             |         |     |     |      |      |      |      |      |         |     |     |      |      |      |      |  |
| 680             |         |     |     |      |      |      |      |      |         |     |     |      |      |      |      |  |
| 1000            |         |     |     |      |      |      |      |      |         |     |     |      |      |      |      |  |

## Lead configurations

| Serie  | Standard                                                                            | Reduced                                                                             | Enlarged                                                                            | Straight                                                                            | Double crimped                                                                      |
|--------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|        |  |  |  |  |  |
| B32612 | 15 mm                                                                               | 7.5 / 10 / 12.5 mm                                                                  | 17.5 mm                                                                             | 15 mm                                                                               | 15 mm                                                                               |
| B32613 | 22.5 mm                                                                             | 15 / 17.5 / 20 mm                                                                   | 25 mm                                                                               | 22.5 mm                                                                             | 22.5 mm                                                                             |
| B32614 | 27.5 mm                                                                             | 25 mm                                                                               | —                                                                                   | 27.5 mm                                                                             | 27.5 mm                                                                             |

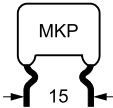


## Overview of available types

|                 |         |     |     |      |      |      |
|-----------------|---------|-----|-----|------|------|------|
| Lead spacing    | 27.5 mm |     |     |      |      |      |
| Type            | B32614  |     |     |      |      |      |
| Page            | 10      |     |     |      |      |      |
| $V_R$ (VDC)     | 250     | 400 | 630 | 1000 | 1600 | 2000 |
| $V_{rms}$ (VAC) | 160     | 200 | 250 | 250  | 500  | 700  |
| $C_R$ (nF)      |         |     |     |      |      |      |
| 10              |         |     |     |      |      |      |
| 15              |         |     |     |      |      |      |
| 22              |         |     |     |      |      |      |
| 33              |         |     |     |      |      |      |
| 47              |         |     |     |      |      |      |
| 68              |         |     |     |      |      |      |
| 100             |         |     |     |      |      |      |
| 150             |         |     |     |      |      |      |
| 220             |         |     |     |      |      |      |
| 470             |         |     |     |      |      |      |
| 680             |         |     |     |      |      |      |
| 1000            |         |     |     |      |      |      |
| 1500            |         |     |     |      |      |      |
| 2200            |         |     |     |      |      |      |

## Lead configurations

| Serie  | Standard                                                                            | Reduced                                                                             | Enlarged                                                                            | Straight                                                                            | Double crimped                                                                      |
|--------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|        |  |  |  |  |  |
| B32612 | 15 mm                                                                               | 7.5 / 10 / 12.5 mm                                                                  | 17.5 mm                                                                             | 15 mm                                                                               | 15 mm                                                                               |
| B32613 | 22.5 mm                                                                             | 15 / 17.5 / 20 mm                                                                   | 25 mm                                                                               | 22.5 mm                                                                             | 22.5 mm                                                                             |
| B32614 | 27.5 mm                                                                             | 25 mm                                                                               | —                                                                                   | 27.5 mm                                                                             | 27.5 mm                                                                             |



## B32612

### Pulse application (wound)

#### Ordering codes and packing units (lead spacing 15 mm)

| $V_R$ | $V_{rms}$<br>$f \leq 1 \text{ kHz}$<br>VDC | $C_R$<br>nF | Max. dimensions<br>$w \times h \times l$<br>mm | Ordering code<br>(composition see<br>below) | Ammo<br>pack<br>pcs./unit | Reel<br>pcs./unit | Untaped<br>pcs./unit |
|-------|--------------------------------------------|-------------|------------------------------------------------|---------------------------------------------|---------------------------|-------------------|----------------------|
| 250   | 160                                        | 150         | $6.5 \times 12.5 \times 18.0$                  | B32612A3154+***                             | 850                       | 1100              | 1000                 |
|       |                                            | 220         | $7.0 \times 13.5 \times 18.0$                  | B32612A3224+***                             | 800                       | 1000              | 1000                 |
|       |                                            | 330         | $8.0 \times 14.5 \times 18.0$                  | B32612A3334+***                             | 700                       | 900               | 500                  |
|       |                                            | 470         | $9.5 \times 16.0 \times 18.0$                  | B32612A3474+***                             | 600                       | 800               | 500                  |
|       |                                            | 680         | $11.5 \times 17.5 \times 18.0$                 | B32612A3684+***                             | 500                       | 650               | 500                  |
| 400   | 200                                        | 68          | $6.5 \times 12.0 \times 18.0$                  | B32612A4683+***                             | 850                       | 1100              | 1000                 |
|       |                                            | 100         | $7.0 \times 12.5 \times 18.0$                  | B32612A4104+***                             | 800                       | 1000              | 1000                 |
|       |                                            | 150         | $7.5 \times 12.5 \times 18.0$                  | B32612A4154+***                             | 750                       | 1000              | 1000                 |
|       |                                            | 220         | $8.0 \times 14.5 \times 18.0$                  | B32612A4224+***                             | 700                       | 900               | 500                  |
|       |                                            | 330         | $9.5 \times 16.0 \times 18.0$                  | B32612A4334+***                             | 600                       | 800               | 500                  |
| 630   | 250                                        | 470         | $11.0 \times 17.5 \times 18.0$                 | B32612A4474+***                             | 500                       | 650               | 500                  |
|       |                                            | 68          | $6.5 \times 12.0 \times 18.0$                  | B32612A6683+***                             | 850                       | 1100              | 1000                 |
|       |                                            | 100         | $7.5 \times 13.0 \times 18.0$                  | B32612A6104+***                             | 750                       | 1000              | 1000                 |
|       |                                            | 150         | $9.0 \times 14.5 \times 18.0$                  | B32612A6154+***                             | 600                       | 800               | 500                  |
| 1000  | 250                                        | 220         | $10.0 \times 16.5 \times 18.0$                 | B32612A6224+***                             | 550                       | 750               | 500                  |
|       |                                            | 10          | $7.0 \times 12.5 \times 18.0$                  | B32612A0103+***                             | 800                       | 1000              | 1000                 |
|       |                                            | 15          | $8.0 \times 13.5 \times 18.0$                  | B32612A0153+***                             | 700                       | 900               | 1000                 |
|       |                                            | 22          | $9.0 \times 15.5 \times 18.0$                  | B32612A0223+***                             | 600                       | 800               | 1000                 |
|       |                                            | 33          | $6.5 \times 13.0 \times 18.0$                  | B32612A0333+***                             | 850                       | 1100              | 1000                 |
|       |                                            | 47          | $7.0 \times 15.5 \times 18.0$                  | B32612A0473+***                             | 800                       | 1000              | 1000                 |
|       |                                            | 68          | $8.5 \times 16.5 \times 18.0$                  | B32612A0683+***                             | 650                       | 850               | 500                  |
|       |                                            | 100         | $11.0 \times 17.5 \times 18.0$                 | B32612A0104+***                             | 500                       | 650               | 500                  |

Further E series and intermediate capacitance values on request.

#### Composition of ordering code

+ = Capacitance tolerance code:

K =  $\pm 10\%$

J =  $\pm 5\%$

\*\*\* = Packaging code:

289 = Ammo pack

189 = Reel

010 = Untaped crimped (lead length 6 – 1 mm)

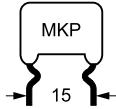
011 = Untaped crimped (lead length min. 20 mm)

008 = Untaped (straight, lead length  $17 \pm 3$  mm)

020 = Double crimped (lead length 6 – 1 mm)

Packaging codes for further lead configurations (untaped):

| Lead configuration (lead length 6 – 1 mm) | Reduced | Reduced | Reduced | Enlarged |
|-------------------------------------------|---------|---------|---------|----------|
| Lead spacing (mm)                         | 7.5 mm  | 10 mm   | 12.5 mm | 17.5 mm  |
| Packaging code                            | 030     | 040     | 050     | 060      |



### Ordering codes and packing units (lead spacing 15 mm)

| $V_R$ | $V_{rms}$<br>$f \leq 1 \text{ kHz}$ | $C_R$ | Max. dimensions<br>$w \times h \times l$<br>mm | Ordering code<br>(composition see<br>below) | Ammo<br>pack<br>pcs./unit | Reel<br>pcs./unit | Untaped<br>pcs./unit |
|-------|-------------------------------------|-------|------------------------------------------------|---------------------------------------------|---------------------------|-------------------|----------------------|
| VDC   | VAC                                 | nF    |                                                |                                             |                           |                   |                      |
| 1250  | 500                                 | 6.8   | $7.0 \times 11.0 \times 18.0$                  | B32612A7682+***                             | 800                       | 1000              | 1000                 |
|       |                                     | 10    | $7.5 \times 13.0 \times 18.0$                  | B32612A7103+***                             | 750                       | 1000              | 1000                 |
|       |                                     | 15    | $8.0 \times 14.0 \times 18.0$                  | B32612A7153+***                             | 700                       | 900               | 500                  |
|       |                                     | 22    | $9.5 \times 15.5 \times 18.0$                  | B32612A7223+***                             | 600                       | 800               | 500                  |
|       |                                     | 33    | $11.0 \times 17.5 \times 18.0$                 | B32612A7333+***                             | 500                       | 650               | 500                  |
| 1600  | 500                                 | 4.7   | $6.5 \times 12.0 \times 18.0$                  | B32612A1472+***                             | 850                       | 1100              | 1000                 |
|       |                                     | 6.8   | $8.0 \times 13.0 \times 18.0$                  | B32612A1682+***                             | 700                       | 900               | 500                  |
|       |                                     | 10    | $9.0 \times 14.5 \times 18.0$                  | B32612A1103+***                             | 600                       | 800               | 500                  |
|       |                                     | 15    | $10.0 \times 17.5 \times 18.0$                 | B32612A1153+***                             | 550                       | 750               | 500                  |
| 1600  | 700                                 | 3.3   | $6.5 \times 11.5 \times 18.0$                  | B32612J1332+***                             | 850                       | 1100              | 1000                 |
|       |                                     | 4.7   | $7.5 \times 12.5 \times 18.0$                  | B32612J1472+***                             | 750                       | 1000              | 1000                 |
|       |                                     | 6.8   | $8.5 \times 14.5 \times 18.0$                  | B32612J1682+***                             | 650                       | 850               | 500                  |
|       |                                     | 10    | $9.5 \times 17.0 \times 18.0$                  | B32612J1103+***                             | 600                       | 800               | 250                  |
| 2000  | 700                                 | 1.0   | $7.0 \times 10.5 \times 18.0$                  | B32612A2102+***                             | 800                       | 1000              | 1000                 |
|       |                                     | 1.5   | $7.5 \times 11.5 \times 18.0$                  | B32612A2152+***                             | 750                       | 1000              | 1000                 |
|       |                                     | 2.2   | $8.0 \times 14.5 \times 18.0$                  | B32612A2222+***                             | 700                       | 900               | 1000                 |
|       |                                     | 3.3   | $8.5 \times 15.0 \times 18.0$                  | B32612A2332+***                             | 650                       | 850               | 500                  |
|       |                                     | 4.7   | $9.5 \times 18.0 \times 18.0$                  | B32612A2472+***                             | 600                       | 800               | 500                  |

Further E series and intermediate capacitance values on request.

### Composition of ordering code

+ = Capacitance tolerance code:

K =  $\pm 10\%$

J =  $\pm 5\%$

\*\*\* = Packaging code:

289 = Ammo pack

189 = Reel

010 = Untaped crimped (lead length 6 – 1 mm)

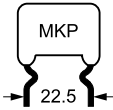
011 = Untaped crimped (lead length min. 20 mm)

008 = Untaped (straight, lead length  $17 \pm 3$  mm)

020 = Double crimped (lead length 6 – 1 mm)

Packaging codes for further lead configurations (untaped):

| Lead configuration (lead length 6 – 1 mm) | Reduced | Reduced | Reduced | Enlarged |
|-------------------------------------------|---------|---------|---------|----------|
| Lead spacing (mm)                         | 7.5 mm  | 10 mm   | 12.5 mm | 17.5 mm  |
| Packaging code                            | 030     | 040     | 050     | 060      |



## B32613

### Pulse application (wound)

#### Ordering codes and packing units (lead spacing 22.5 mm)

| $V_R$<br>VDC | $V_{rms}$<br>$f \leq 1$ kHz<br>VAC | $C_R$<br>nF | Max. dimensions<br>$w \times h \times l$<br>mm | Ordering code<br>(composition see<br>below) | Ammo<br>pack<br>pcs./unit | Reel<br>pcs./unit | Untaped<br>pcs./unit |
|--------------|------------------------------------|-------------|------------------------------------------------|---------------------------------------------|---------------------------|-------------------|----------------------|
| 250          | 160                                | 220         | $7.0 \times 14.5 \times 26.5$                  | B32613A3224+***                             | 500                       | 700               | 500                  |
|              |                                    | 330         | $7.0 \times 14.5 \times 26.5$                  | B32613A3334+***                             | 500                       | 700               | 500                  |
|              |                                    | 470         | $8.0 \times 15.5 \times 26.5$                  | B32613A3474+***                             | 450                       | 600               | 500                  |
|              |                                    | 680         | $9.5 \times 16.0 \times 26.5$                  | B32613A3684+***                             | 350                       | 500               | 500                  |
|              |                                    | 1000        | $11.0 \times 19.0 \times 26.5$                 | B32613A3105+***                             | 300                       | 450               | 250                  |
| 400          | 200                                | 150         | $7.0 \times 13.5 \times 26.5$                  | B32613A4154+***                             | 500                       | 700               | 500                  |
|              |                                    | 220         | $7.0 \times 14.0 \times 26.5$                  | B32613A4224+***                             | 500                       | 700               | 500                  |
|              |                                    | 330         | $8.0 \times 16.0 \times 26.5$                  | B32613A4334+***                             | 450                       | 600               | 500                  |
|              |                                    | 470         | $9.5 \times 16.0 \times 26.5$                  | B32613A4474+***                             | 350                       | 500               | 250                  |
|              |                                    | 680         | $11.5 \times 17.5 \times 26.5$                 | B32613A4684+***                             | 300                       | 400               | 250                  |
| 630          | 250                                | 100         | $7.0 \times 12.5 \times 26.5$                  | B32613A6104+***                             | 500                       | 700               | 250                  |
|              |                                    | 150         | $7.5 \times 14.0 \times 26.5$                  | B32613A6154+***                             | 450                       | 650               | 250                  |
|              |                                    | 220         | $9.0 \times 15.5 \times 26.5$                  | B32613A6224+***                             | 400                       | 550               | 250                  |
|              |                                    | 330         | $10.0 \times 18.0 \times 26.5$                 | B32613A6334+***                             | 350                       | 500               | 250                  |
|              |                                    | 470         | $11.0 \times 20.0 \times 26.5$                 | B32613A6474+***                             | 300                       | 450               | 250                  |
| 1000         | 250                                | 33          | $8.5 \times 14.5 \times 26.5$                  | B32613A0333+***                             | 400                       | 550               | 500                  |
|              |                                    | 47          | $10.0 \times 15.5 \times 26.5$                 | B32613A0473+***                             | 350                       | 500               | 250                  |
|              |                                    | 68          | $11.0 \times 17.5 \times 26.5$                 | B32613A0683+***                             | 300                       | 450               | 250                  |
|              |                                    | 100         | $10.0 \times 16.5 \times 26.5$                 | B32613A0104+***                             | 350                       | 500               | 250                  |
|              |                                    | 150         | $12.0 \times 18.0 \times 26.5$                 | B32613A0154+***                             | 300                       | 400               | 250                  |
| 1600         | 500                                | 10          | $7.0 \times 13.5 \times 26.5$                  | B32613A1103+***                             | 500                       | 700               | 500                  |
|              |                                    | 15          | $8.0 \times 14.5 \times 26.5$                  | B32613A1153+***                             | 450                       | 600               | 500                  |
|              |                                    | 22          | $9.0 \times 17.0 \times 26.5$                  | B32613A1223+***                             | 400                       | 550               | 250                  |
|              |                                    | 33          | $10.5 \times 18.5 \times 26.5$                 | B32613A1333+***                             | 350                       | 450               | 250                  |

Further E series and intermediate capacitance values on request.

#### Composition of ordering code

+ = Capacitance tolerance code:

K =  $\pm 10\%$

J =  $\pm 5\%$

\*\*\* = Packaging code:

289 = Ammo pack

189 = Reel

010 = Untaped crimped (lead length 6 – 1 mm)

011 = Untaped crimped (lead length min. 20 mm)

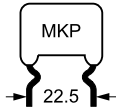
008 = Untaped (straight, lead length  $17 \pm 3$  mm)

020 = Double crimped (lead length 6 – 1 mm)

Packaging codes for further lead configurations (untaped):

| Lead configuration (lead length 6 – 1 mm) | Reduced | Reduced | Reduced | Enlarged |
|-------------------------------------------|---------|---------|---------|----------|
| Lead spacing (mm)                         | 15 mm   | 17.5 mm | 20 mm   | 25 mm    |
| Packaging code                            | 055     | 060     | 030     | 080      |





### Ordering codes and packing units (lead spacing 22.5 mm)

| $V_R$ | $V_{rms}$<br>$f \leq 1 \text{ kHz}$ | $C_R$ | Max. dimensions<br>$w \times h \times l$<br>mm | Ordering code<br>(composition see<br>below) | Ammo<br>pack<br>pcs./unit | Reel<br>pcs./unit | Untaped<br>pcs./unit |
|-------|-------------------------------------|-------|------------------------------------------------|---------------------------------------------|---------------------------|-------------------|----------------------|
| VDC   | VAC                                 | nF    |                                                |                                             |                           |                   |                      |
| 2000  | 700                                 | 3.3   | $7.0 \times 13.0 \times 26.5$                  | B32613A2332+***                             | 500                       | 700               | 500                  |
|       |                                     | 4.7   | $7.5 \times 14.0 \times 26.5$                  | B32613A2472+***                             | 450                       | 650               | 500                  |
|       |                                     | 6.8   | $8.5 \times 16.0 \times 26.5$                  | B32613A2682+***                             | 400                       | 550               | 500                  |
|       |                                     | 10    | $10.5 \times 17.0 \times 26.5$                 | B32613A2103+***                             | 350                       | 450               | 250                  |
|       |                                     | 15    | $12.0 \times 20.5 \times 26.5$                 | B32613A2153+***                             | 300                       | 400               | 250                  |
| 2000  | 1000                                | 3.3   | $8.0 \times 14.5 \times 26.5$                  | B32613A8332+***                             | 450                       | 600               | 500                  |
|       |                                     | 4.7   | $8.5 \times 16.5 \times 26.5$                  | B32613A8472+***                             | 400                       | 550               | 250                  |
|       |                                     | 6.8   | $10.0 \times 18.5 \times 26.5$                 | B32613A8682+***                             | 350                       | 500               | 250                  |
|       |                                     | 10    | $11.5 \times 21.5 \times 26.5$                 | B32613A8103+***                             | 300                       | 400               | 250                  |

Further E series and intermediate capacitance values on request.

### Composition of ordering code

+ = Capacitance tolerance code:

K =  $\pm 10\%$

J =  $\pm 5\%$

\*\*\* = Packaging code:

289 = Ammo pack

189 = Reel

010 = Untaped crimped (lead length 6 – 1 mm)

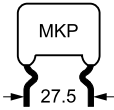
011 = Untaped crimped (lead length min. 20 mm)

008 = Untaped (straight, lead length  $17 \pm 3$  mm)

020 = Double crimped (lead length 6 – 1 mm)

Packaging codes for further lead configurations (untaped):

| Lead configuration (lead length 6 – 1 mm) | Reduced | Reduced | Reduced | Enlarged |
|-------------------------------------------|---------|---------|---------|----------|
| Lead spacing (mm)                         | 15 mm   | 17.5 mm | 20 mm   | 25 mm    |
| Packaging code                            | 055     | 060     | 030     | 080      |


**B32614**
**Pulse application (wound)**
**Ordering codes and packing units (lead spacing 27.5 mm)**

| $V_R$<br>VDC | $V_{rms}$<br>$f \leq 1$ kHz<br>VAC | $C_R$<br>nF | Max. dimensions<br>$w \times h \times l$<br>mm | Ordering code<br>(composition see<br>below) | Untaped<br>pcs./unit |
|--------------|------------------------------------|-------------|------------------------------------------------|---------------------------------------------|----------------------|
| 250          | 160                                | 470         | $7.0 \times 15.0 \times 31.5$                  | B32614A3474+***                             | 500                  |
|              |                                    | 680         | $8.0 \times 16.5 \times 31.5$                  | B32614A3684+***                             | 500                  |
|              |                                    | 1000        | $9.5 \times 17.5 \times 31.5$                  | B32614A3105+***                             | 200                  |
|              |                                    | 1500        | $11.5 \times 19.5 \times 31.5$                 | B32614A3155+***                             | 200                  |
|              |                                    | 2200        | $14.0 \times 22.0 \times 31.5$                 | B32614A3225+***                             | 200                  |
| 400          | 200                                | 470         | $9.5 \times 15.0 \times 31.5$                  | B32614A4474+***                             | 200                  |
|              |                                    | 680         | $10.0 \times 17.5 \times 31.5$                 | B32614A4684+***                             | 200                  |
|              |                                    | 1000        | $11.5 \times 19.5 \times 31.5$                 | B32614A4105+***                             | 200                  |
|              |                                    | 1500        | $14.0 \times 22.0 \times 31.5$                 | B32614A4155+***                             | 200                  |
|              |                                    | 2200        | $16.5 \times 24.5 \times 31.5$                 | B32614A4225+***                             | 150                  |
| 630          | 250                                | 470         | $10.5 \times 18.5 \times 31.5$                 | B32614A6474+***                             | 200                  |
|              |                                    | 680         | $12.0 \times 21.5 \times 31.5$                 | B32614A6684+***                             | 200                  |
|              |                                    | 1000        | $14.0 \times 24.0 \times 31.5$                 | B32614A6105+***                             | 200                  |
| 1000         | 250                                | 100         | $11.5 \times 17.5 \times 31.5$                 | B32614A0104+***                             | 500                  |
|              |                                    | 150         | $13.0 \times 21.0 \times 31.5$                 | B32614A0154+***                             | 200                  |
|              |                                    | 220         | $14.5 \times 24.5 \times 31.5$                 | B32614A0224+***                             | 200                  |
| 1600         | 500                                | 22          | $9.0 \times 14.5 \times 31.5$                  | B32614A1223+***                             | 500                  |
|              |                                    | 33          | $10.5 \times 16.0 \times 31.5$                 | B32614A1333+***                             | 500                  |
|              |                                    | 47          | $11.0 \times 19.5 \times 31.5$                 | B32614A1473+***                             | 200                  |
|              |                                    | 68          | $13.0 \times 21.5 \times 31.5$                 | B32614A1683+***                             | 200                  |
| 2000         | 700                                | 10          | $9.0 \times 15.5 \times 31.5$                  | B32614A2103+***                             | 500                  |
|              |                                    | 15          | $11.0 \times 17.5 \times 31.5$                 | B32614A2153+***                             | 200                  |
|              |                                    | 22          | $13.0 \times 19.5 \times 31.5$                 | B32614A2223+***                             | 200                  |
|              |                                    | 33          | $14.5 \times 23.0 \times 31.5$                 | B32614A2333+***                             | 200                  |
|              |                                    | 47          | $16.5 \times 25.5 \times 31.5$                 | B32614A2473+***                             | 150                  |

Further E series and intermediate capacitance values on request.

**Composition of ordering code**

+ = Capacitance tolerance code:

K =  $\pm 10\%$

J =  $\pm 5\%$

\*\*\* = Packaging code:

010 = Untaped crimped (lead length 6 – 1 mm)

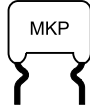
011 = Untaped crimped (lead length min. 20 mm)

008 = Untaped (straight, lead length  $17 \pm 3$  mm)

020 = Double crimped (lead length 6 – 1 mm)

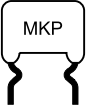
Packaging codes for further lead configurations (untaped):

|                                           |         |
|-------------------------------------------|---------|
| Lead configuration (lead length 6 – 1 mm) | Reduced |
| Lead spacing (mm)                         | 25 mm   |
| Packaging code                            | 090     |



## Technical data

|                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                |                                    |                                |                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|--------------------------------|--------------------------------------------|
| Operating temperature range                                                                                                                            | Max. operating temperature $T_{op,max}$ +110 °C<br>Upper category temperature $T_{max}$ +100 °C<br>Lower category temperature $T_{min}$ -55 °C<br>Rated temperature $T_R$ +85 °C                                                                                                                                                               |                                    |                                |                                            |
| Dissipation factor $\tan \delta$ (in $10^{-3}$ )<br>at 20 °C<br>(upper limit values)                                                                   | at                                                                                                                                                                                                                                                                                                                                             | $C_R \leq 0.1 \mu F$               | $0.1 \mu F < C_R \leq 1 \mu F$ | $C_R > 1 \mu F$                            |
|                                                                                                                                                        | 1 kHz                                                                                                                                                                                                                                                                                                                                          | —                                  | 0.5                            | 0.5                                        |
|                                                                                                                                                        | 10 kHz                                                                                                                                                                                                                                                                                                                                         | —                                  | 0.8                            | 1.5                                        |
|                                                                                                                                                        | 100 kHz                                                                                                                                                                                                                                                                                                                                        | 5.0                                | —                              | —                                          |
| Insulation resistance $R_{ins}$<br>or time constant $\tau = C_R \cdot R_{ins}$<br>at 20 °C, rel. humidity $\leq 65\%$<br>(minimum as-delivered values) | $C_R \leq 0.33 \mu F$                                                                                                                                                                                                                                                                                                                          |                                    | $C_R > 0.33 \mu F$             |                                            |
|                                                                                                                                                        | 100 G $\Omega$                                                                                                                                                                                                                                                                                                                                 |                                    | 30000 s                        |                                            |
| DC test voltage                                                                                                                                        | 1.6 · $V_R$ , 2 s                                                                                                                                                                                                                                                                                                                              |                                    |                                |                                            |
| Category voltage $V_C$<br>(continuous operation with $V_{DC}$<br>or $V_{AC}$ at $f \leq 1$ kHz)                                                        | $T_A$ (°C)                                                                                                                                                                                                                                                                                                                                     | DC voltage derating                |                                | AC voltage derating                        |
|                                                                                                                                                        | $T_A \leq 85$                                                                                                                                                                                                                                                                                                                                  | $V_C = V_R$                        |                                | $V_{C,rms} = V_{rms}$                      |
|                                                                                                                                                        | $85 < T_A \leq 100$                                                                                                                                                                                                                                                                                                                            | $V_C = V_R \cdot (165 - T_A)/80$   |                                | $V_{C,rms} = V_{rms} \cdot (165 - T_A)/80$ |
| Operating voltage $V_{op}$ for<br>short operating periods<br>( $V_{DC}$ or $V_{AC}$ at $f \leq 1$ kHz)                                                 | $T_A$ (°C)                                                                                                                                                                                                                                                                                                                                     | DC voltage (max. hours)            |                                | AC voltage (max. hours)                    |
|                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                | $V_{op} = 1.25 \cdot V_C$ (2000 h) |                                | $V_{op} = 1.0 \cdot V_{C,rms}$ (2000 h)    |
|                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                | $V_{op} = 1.25 \cdot V_C$ (1000 h) |                                | $V_{op} = 1.0 \cdot V_{C,rms}$ (1000 h)    |
| Damp heat test<br>Limit values after damp<br>heat test                                                                                                 | 56 days/40 °C/93% relative humidity<br>Capacitance change $ \Delta C/C $ $\leq 3\%$<br>Dissipation factor change $\Delta \tan \delta$ $\leq 0.5 \cdot 10^{-3}$ (at 1 kHz)<br>$\leq 1.0 \cdot 10^{-3}$ (at 10 kHz)<br>Insulation resistance $R_{ins}$ $\geq 50\%$ of minimum<br>or time constant $\tau = C_R \cdot R_{ins}$ as-delivered values |                                    |                                |                                            |
| Reliability:<br>Failure rate $\lambda$<br>Service life $t_{SL}$                                                                                        | 1 fit ( $\leq 1 \cdot 10^{-9}$ /h) at $0.5 \cdot V_R$ , 40 °C<br>200 000 h at $1.0 \cdot V_R$ , 40 °C<br>For conversion to other operating conditions and temperatures,<br>refer to chapter "Quality assurance", page .                                                                                                                        |                                    |                                |                                            |
| Failure criteria:<br>Total failure<br>Failure due to variation<br>of parameters                                                                        | Short circuit or open circuit<br>Capacitance change $ \Delta C/C $ $> 10\%$<br>Dissipation factor $\tan \delta$ $> 4 \cdot$ upper limit value<br>Insulation resistance $R_{ins}$ $< 1500$ M $\Omega$ ( $C_R \leq 0.33 \mu F$ )<br>or time constant $\tau = C_R \cdot R_{ins}$ $< 500$ s ( $C_R > 0.33 \mu F$ )                                 |                                    |                                |                                            |



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**Pulse application (wound)**

**Characteristic voltages  $V_{DC}$ ,  $V_{AC}$ ,  $V_{pp}$**

| $V_{DC}$<br>V | $V_{AC}$<br>V | $V_{pp}$<br>V |
|---------------|---------------|---------------|
| 1000          | 250           | 700           |
| 1250          | 500           | 1250          |
| 1600          | 500           | 1400          |
| 1600          | 700           | 1600          |
| 2000          | 700           | 1600          |
| 2000          | 1000          | 2000          |

### Pulse handling capability

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

"k<sub>0</sub>" represents the maximum permissible pulse characteristic of the waveform applied to the capacitor, expressed in V<sup>2</sup>/ $\mu$ s.

Note:

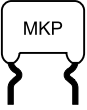
The values of dV/dt and k<sub>0</sub> provided below must not be exceeded in order to avoid damaging the capacitor.

### dV/dt values

| Lead spacing          |                         | 15 mm               | 22.5 mm | 27.5 mm |
|-----------------------|-------------------------|---------------------|---------|---------|
| V <sub>R</sub><br>VDC | V <sub>rms</sub><br>VAC | dV/dt in V/ $\mu$ s |         |         |
| 250                   | 160                     | 140                 | 80      | 50      |
| 400                   | 200                     | 200                 | 100     | 70      |
| 630                   | 250                     | 270                 | 140     | 100     |
| 1000                  | 250                     | 400                 | 350     | 225     |
| 1250                  | 500                     | 800                 | —       | —       |
| 1600                  | 500                     | 1500                | 1000    | 700     |
| 1600                  | 700                     | 1900                | —       | —       |
| 2000                  | 700                     | 2200                | 1400    | 900     |
| 2000                  | 1000                    | —                   | 2000    | —       |

### k<sub>0</sub> values

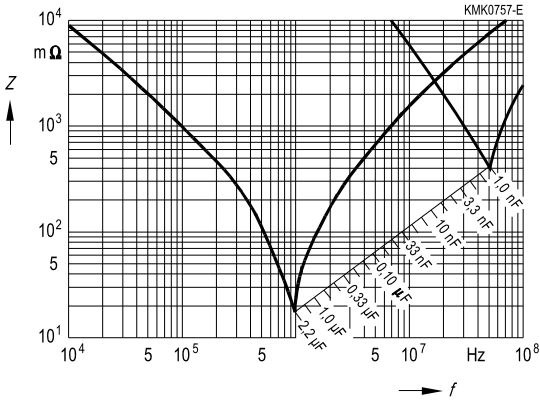
| Lead spacing          |                         | 15 mm                                      | 22.5 mm    | 27.5 mm   |
|-----------------------|-------------------------|--------------------------------------------|------------|-----------|
| V <sub>R</sub><br>VDC | V <sub>rms</sub><br>VAC | k <sub>0</sub> in V <sup>2</sup> / $\mu$ s |            |           |
| 250                   | 160                     | 70 000                                     | 40 000     | 25 000    |
| 400                   | 200                     | 160 000                                    | 80 000     | 55 000    |
| 630                   | 250                     | 340 000                                    | 170 000    | 120 000   |
| 1000                  | 250                     | 800 000                                    | 675 000    | 450 000   |
| 1250                  | 500                     | 2 000 000                                  | —          | —         |
| 1600                  | 500                     | 4 800 000                                  | 3 200 000  | 2 200 000 |
| 1600                  | 700                     | 6 100 000                                  | —          | —         |
| 2000                  | 700                     | 8 800 000                                  | 5 600 000  | 3 600 000 |
| 2000                  | 1000                    | —                                          | 10 000 000 | —         |

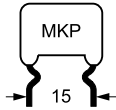


B32612 ... B32614

Pulse application (wound)

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



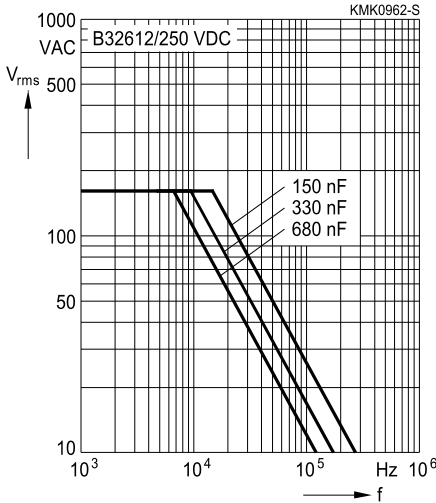


Permissible AC voltage  $V_{rms}$  versus frequency  $f$  (for sinusoidal waveforms,  $T_A \leq 90^\circ\text{C}$ )

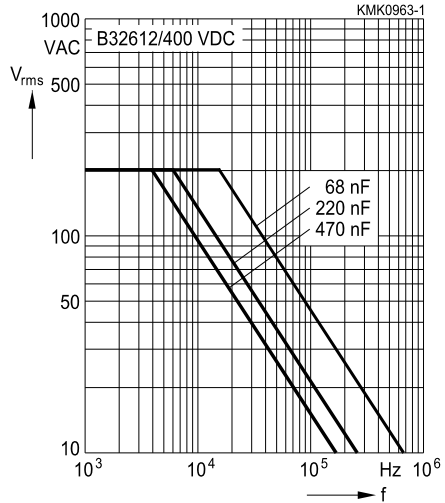
For  $T_A > 90^\circ\text{C}$ , please refer to "General technical information", section 3.2.3.

Lead spacing 15 mm

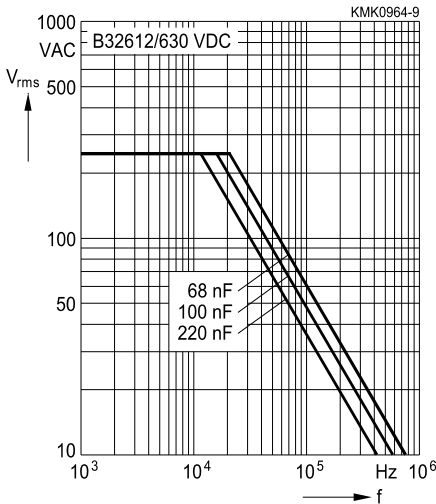
250 VDC/160 VAC



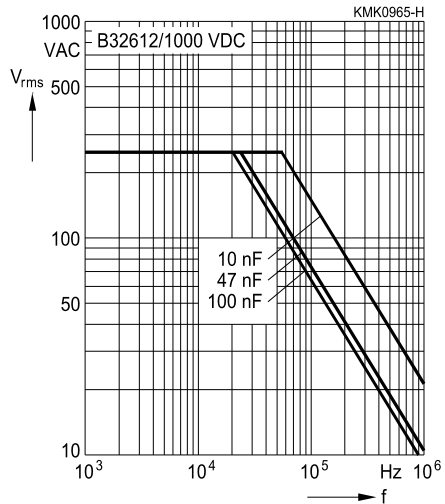
400 VDC/200 VAC

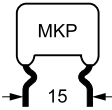


630 VDC/250 VAC



1000 VDC/250 VAC





**B32612**

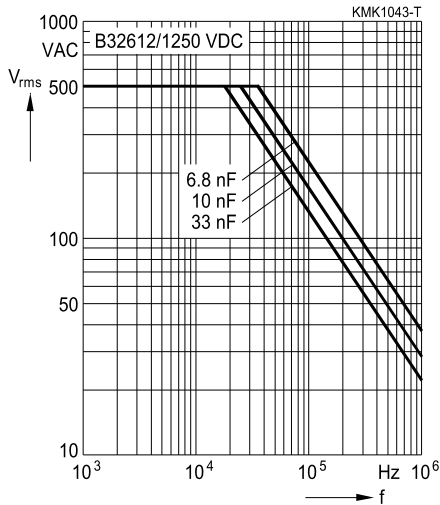
**Pulse application (wound)**

**Permissible AC voltage  $V_{rms}$  versus frequency  $f$  (for sinusoidal waveforms,  $T_A \leq 90^\circ\text{C}$ )**

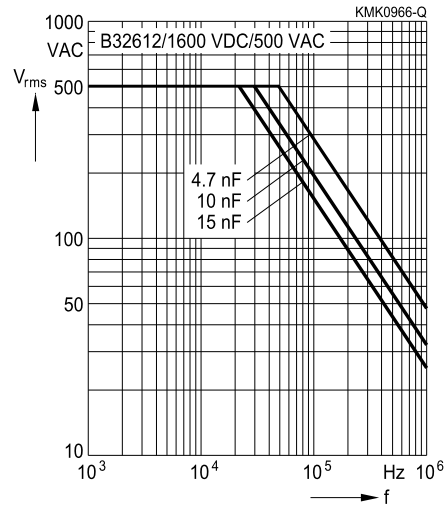
For  $T_A > 90^\circ\text{C}$ , please refer to "General technical information", section 3.2.3.

**Lead spacing 15 mm**

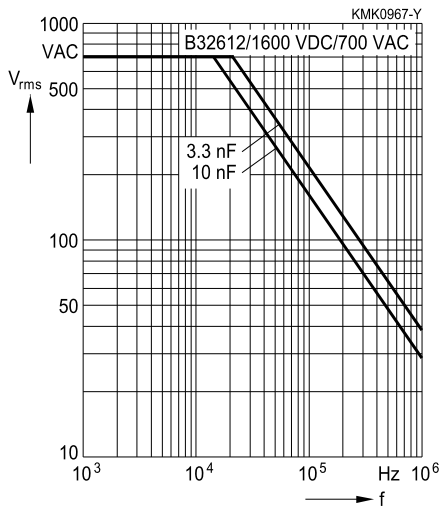
**1250 VDC/500 VAC**



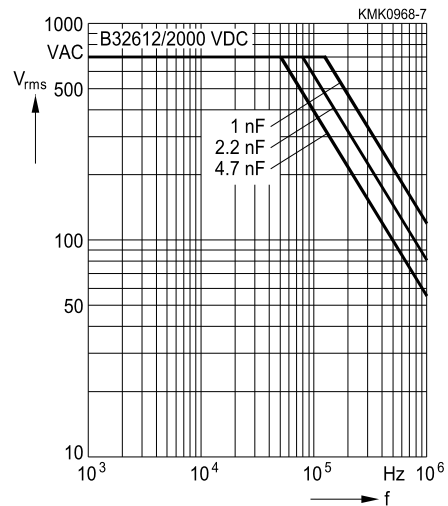
**1600 VDC/500 VAC**



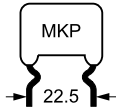
**1600 VDC/700 VAC**



**2000 VDC/700 VAC**





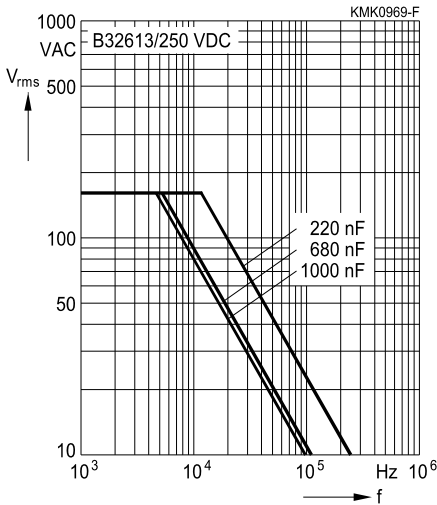


**Permissible AC voltage  $V_{rms}$  versus frequency  $f$  (for sinusoidal waveforms,  $T_A \leq 90^\circ\text{C}$ )**

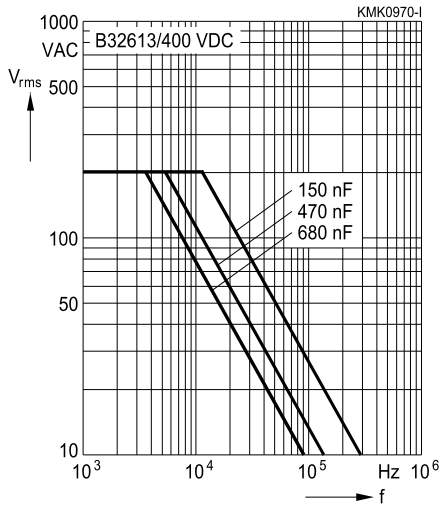
For  $T_A > 90^\circ\text{C}$ , please refer to "General technical information", section 3.2.3.

**Lead spacing 22.5 mm**

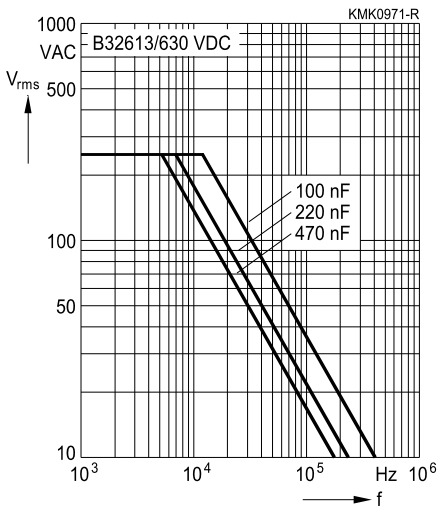
**250 VDC/160 VAC**



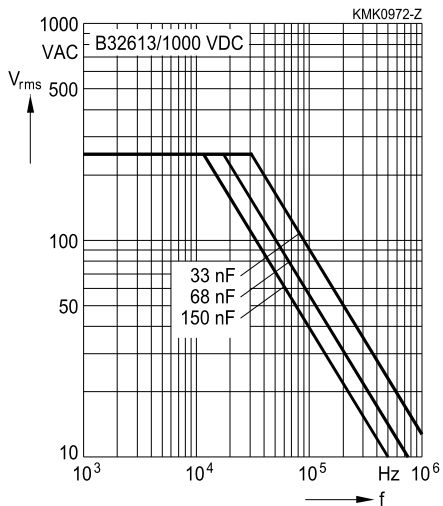
**400 VDC/200 VAC**

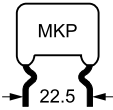


**630 VDC/250 VAC**



**1000 VDC/250 VAC**





**B32613**

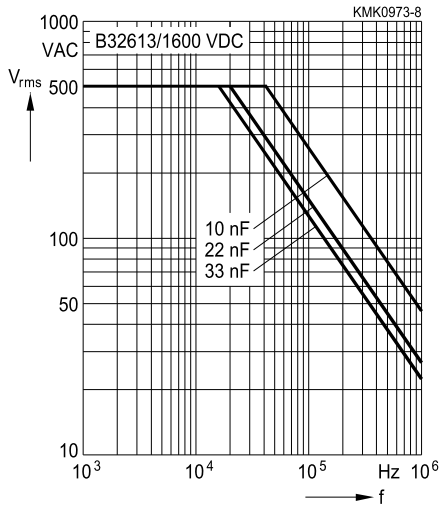
**Pulse application (wound)**

**Permissible AC voltage  $V_{rms}$  versus frequency  $f$  (for sinusoidal waveforms,  $T_A \leq 90^\circ\text{C}$ )**

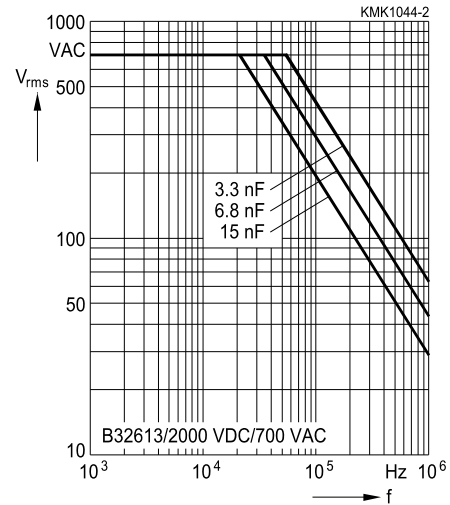
For  $T_A > 90^\circ\text{C}$ , please refer to "General technical information", section 3.2.3.

**Lead spacing 22.5 mm**

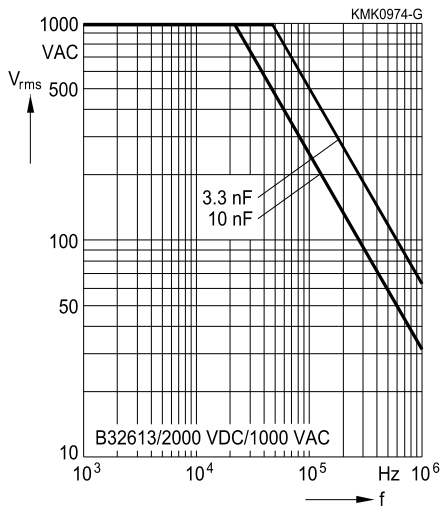
**1600 VDC/500 VAC**



**2000 VDC/700 VAC**



**2000 VDC/1000 VAC**

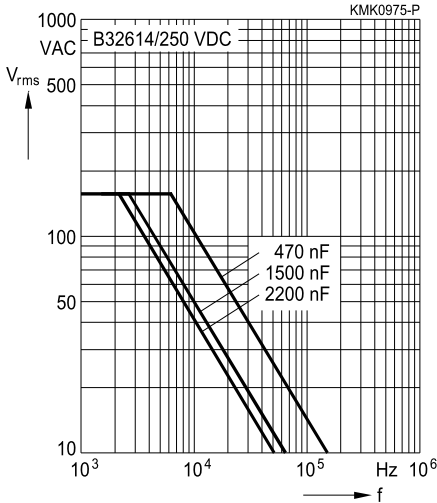


# Permissible AC voltage $V_{rms}$ versus frequency $f$ (for sinusoidal waveforms, $T_A \leq 90^\circ\text{C}$ )

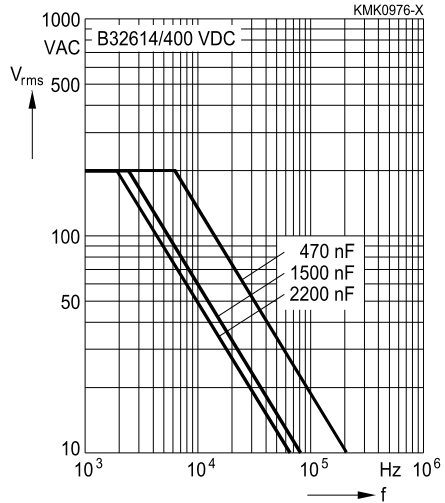
For  $T_A > 90^\circ\text{C}$ , please refer to "General technical information", section 3.2.3.

## Lead spacing 27.5 mm

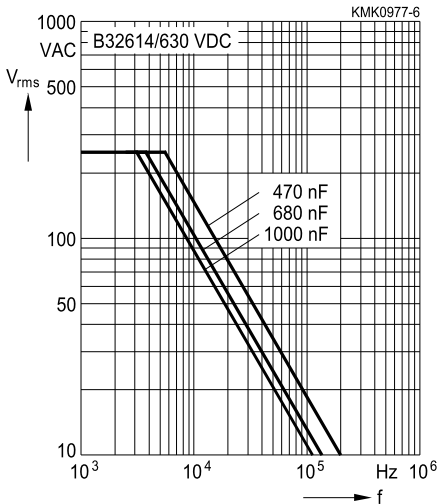
### 250 VDC/160 VAC



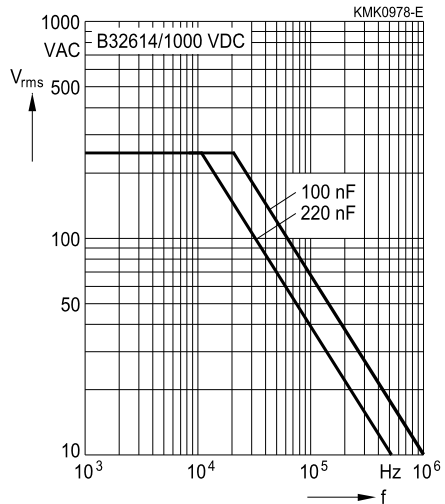
### 400 VDC/200 VAC

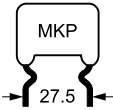


### 630 VDC/250 VAC



### 1000 VDC/250 VAC





**B32614**

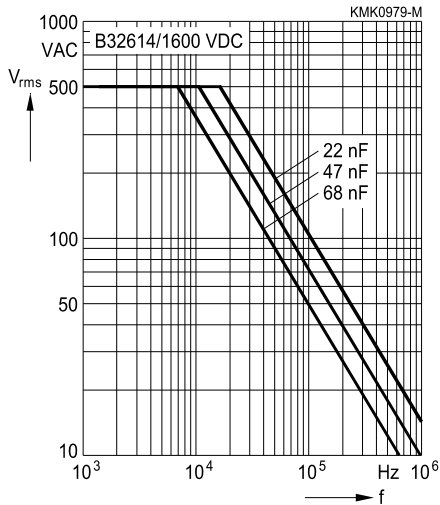
**Pulse application (wound)**

**Permissible AC voltage  $V_{rms}$  versus frequency  $f$  (for sinusoidal waveforms,  $T_A \leq 90^\circ\text{C}$ )**

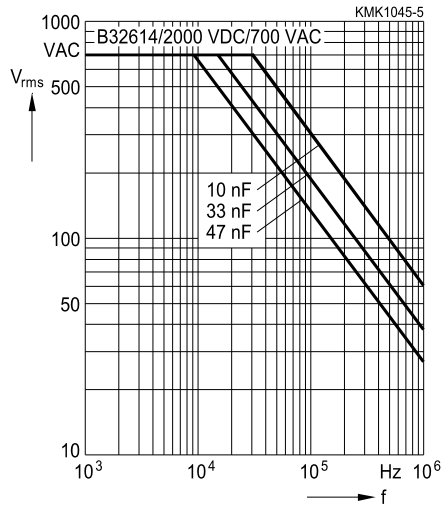
For  $T_A > 90^\circ\text{C}$ , please refer to "General technical information", section 3.2.3.

**Lead spacing 27.5 mm**

**1600 VDC/500 VAC**



**2000 VDC/700 VAC**

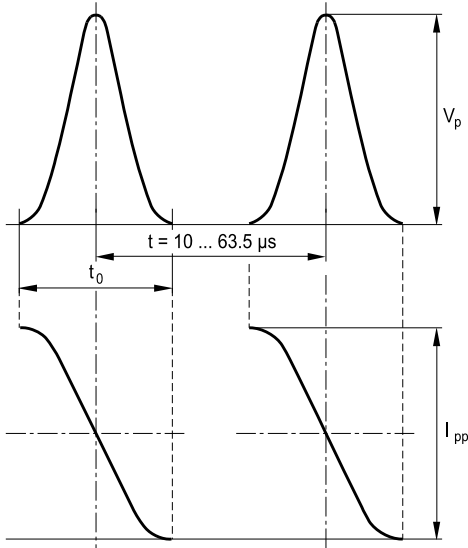




## Flyback application

### Permissible voltage and current / waveform

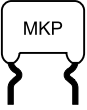
Permissible current  $I_{pp}$  versus frequency  $f$  for a duty cycle of 20% ( $t_0/t = 0.2$ ):



KMK0720-5

Approximation formular for duty cycle higher than 20%:

$$I'_{pp} = I_{pp} \cdot \sqrt{\frac{t_0^3}{t'^3_0}}$$



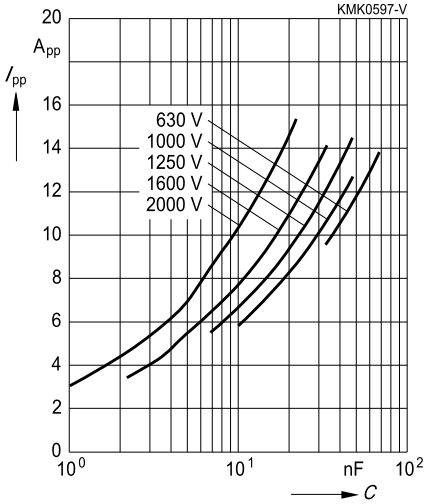
B32612 ... B32614

Pulse application (wound)

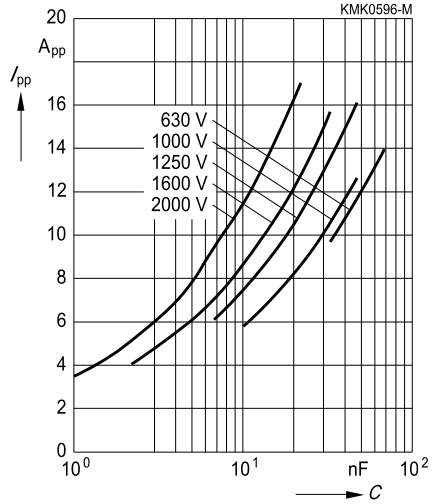
### Flyback application

Permissible current  $I_{pp}$  versus rated capacitance  $C_R$

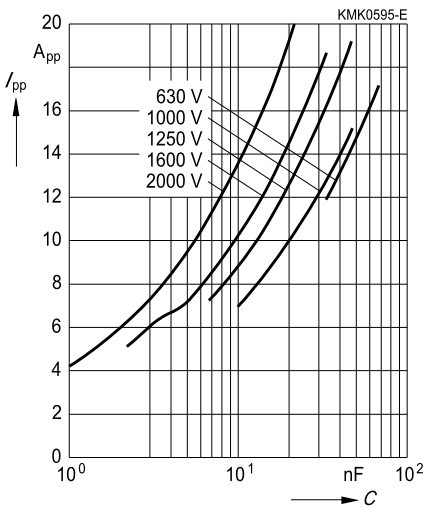
Frequency = 15.75 kHz



Frequency = 31.5 kHz



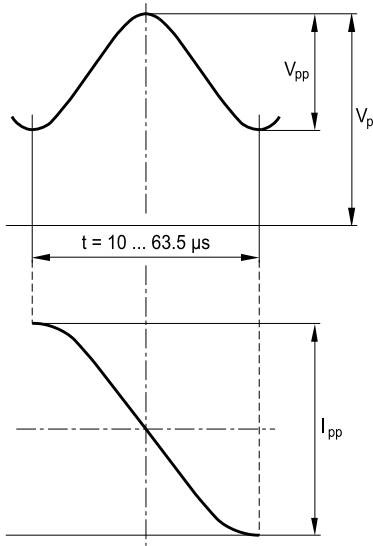
Frequency = 95 kHz



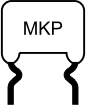


# S-correction application

## Permissible voltage and current / waveform



KMK0721-D



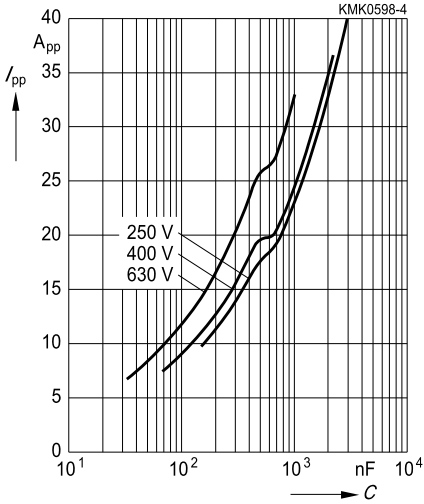
B32612 ... B32614

Pulse application (wound)

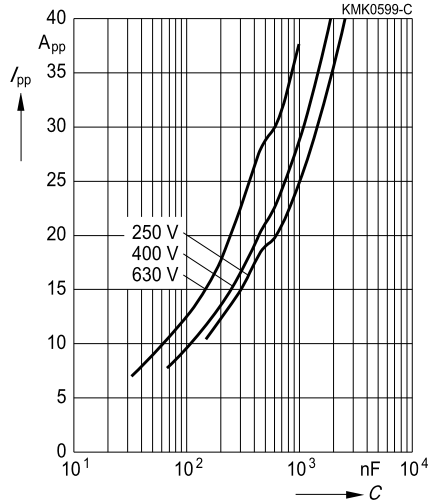
### S-correction application

Permissible current  $I_{pp}$  versus rated capacitance  $C_R$

Frequency = 15.75 kHz



Frequency = 31.75 kHz



Frequency = 95 kHz

