



Film Capacitors

Metallized Polypropylene Film Capacitors (MKP)

Series/Type: B32651 ... B32656
Date: August 2004

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High pulse (wound)
Typical applications

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

Climatic

- Max. operating temperature: 105 °C
- Climatic category (IEC 60068-1): 55/100/56

Construction

- Dielectric: polypropylene (PP)
- Wound capacitor technology with internal series connection for $V_R \geq 1250$ VDC
- Plastic case (UL 94 V-0)
- Epoxy resin sealing

Features

- High pulse strength
- High contact reliability
- Small dimensions

Terminals

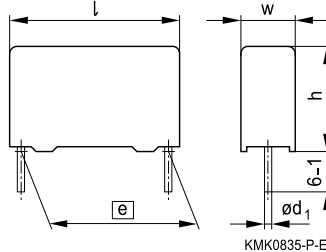
- Parallel wire leads, lead-free tinned
- Special lead lengths available on request

Marking

Manufacturer's logo,
 lot number (\boxed{e} ≤ 27.5 mm), series number
 (e.g. 651),
 rated capacitance (coded), cap. tolerance (code letter),
 rated DC voltage
 (AC voltage for 1600 VDC/700 VAC and
 2000 VDC/1000 VAC),
 date of manufacture (coded)

Delivery mode

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

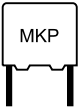
Dimensional drawing


Dimensions in mm

| Lead spacing \boxed{e} ± 0.4 | Lead diameter d_1 | Type |
|---------------------------------------|------------------------|--------|
| 10 | 0.6 | B32651 |
| 15 | 0.8 | B32652 |
| 22.5 | 0.8 | B32653 |
| 27.5 | 0.8 | B32654 |
| 37.5 | 1.0 | B32656 |

Overview of available types

| Lead spacing | 10 mm | 15 mm | | | | | | | |
|-----------------|--------|--------|-----|-----|------|------|------|------|------|
| Type | B32651 | B32652 | | | | | | | |
| Page | 6 | 7 | | | | | | | |
| V_R (VDC) | 1250 | 250 | 400 | 630 | 1000 | 1250 | 1600 | 1600 | 2000 |
| V_{rms} (VAC) | 450 | 160 | 200 | 250 | 250 | 500 | 500 | 700 | 700 |
| 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 | | | | | | | | | |

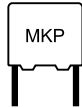


B32651 ... B32656

High pulse (wound)

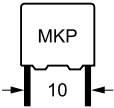
Overview of available types

| Lead spacing | 22.5 mm | | | | | | | | 27.5 mm | | | | | | |
|-----------------|---------|-----|-----|------|------|------|------|------|---------|-----|-----|------|------|------|------|
| Type | B32653 | | | | | | | | B32654 | | | | | | |
| Page | 9 | | | | | | | | 11 | | | | | | |
| V_R (VDC) | 250 | 400 | 630 | 1000 | 1250 | 1600 | 2000 | 2000 | 250 | 400 | 630 | 1000 | 1250 | 1600 | 2000 |
| V_{rms} (VAC) | 160 | 200 | 250 | 250 | 500 | 500 | 700 | 1000 | 160 | 200 | 250 | 250 | 500 | 500 | 700 |
| C_R (nF) | | | | | | | | | | | | | | | |
| 2.2 | | | | | | | | | | | | | | | |
| 3.3 | | | | | | | | | | | | | | | |
| 4.7 | | | | | | | | | | | | | | | |
| 6.8 | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | | |
| 47 | | | | | | | | | | | | | | | |
| 68 | | | | | | | | | | | | | | | |
| 100 | | | | | | | | | | | | | | | |
| 150 | | | | | | | | | | | | | | | |
| 220 | | | | | | | | | | | | | | | |
| 330 | | | | | | | | | | | | | | | |
| 470 | | | | | | | | | | | | | | | |
| 680 | | | | | | | | | | | | | | | |
| 1000 | | | | | | | | | | | | | | | |
| 1500 | | | | | | | | | | | | | | | |
| 2200 | | | | | | | | | | | | | | | |
| 3300 | | | | | | | | | | | | | | | |
| 4700 | | | | | | | | | | | | | | | |



Overview of available types

| | | | | | |
|-----------------|---------|------|------|------|------|
| Lead spacing | 37.5 mm | | | | |
| Type | B32656 | | | | |
| Page | 12 | | | | |
| V_R (VDC) | 850 | 1000 | 1250 | 1600 | 2000 |
| V_{rms} (VAC) | 450 | 500 | 500 | 600 | 700 |
| C_R (nF) | | | | | |
| 100 | | | | | |
| 150 | | | | | |
| 220 | | | | | |
| 330 | | | | | |
| 470 | | | | | |
| 680 | | | | | |
| 1000 | | | | | |


B32651
High pulse (wound)
Ordering codes and packing units (lead spacing 10 mm)

| V_R | V_{rms} $f \leq 1$ kHz | C_R | Max. dimensions $w \times h \times l$ mm | Ordering code (composition see below) | Ammo pack pcs./unit | Reel pcs./unit | Untaped pcs./unit |
|-------------------|-----------------------------|-------|--|---|---------------------------|-------------------|----------------------|
| VDC ¹⁾ | VAC | nF | | | | | |
| 1250 | 450 | 2.2 | 4.0 × 9.0 × 13.0 | B32651A7222+*** | 1000 | 1700 | 1000 |
| | | 3.3 | 5.0 × 11.0 × 13.0 | B32651A7332+*** | 830 | 1300 | 1000 |
| | | 4.7 | 5.0 × 11.0 × 13.0 | B32651A7472+*** | 830 | 1300 | 1000 |
| | | 6.8 | 6.0 × 12.0 × 13.0 | B32651A7682+*** | 680 | 1100 | 1000 |

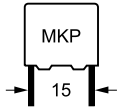
Further E series and intermediate capacitance values on request.

Composition of ordering code

+ = Capacitance tolerance code:
 K = ±10%
 J = ±5%
 on request = ±3.5%

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

1) For pulse loads (pulse width ≤ 1000 μs), a peak voltage of 1400 V_p can be permitted.


Ordering codes and packing units (lead spacing 15 mm)

| V_R | V_{rms} $f \leq 1$ kHz | C_R | Max. dimensions $w \times h \times l$ mm | Ordering code (composition see below) | Ammo pack pcs./unit | Reel pcs./unit | Untaped pcs./unit |
|-------|-----------------------------|-------|--|---|---------------------------|-------------------|----------------------|
| VDC | VAC | nF | | | | | |
| 250 | 160 | 150 | $5.0 \times 10.5 \times 18.0$ | B32652A3154+*** | 1170 | 1300 | 1000 |
| | | 220 | $6.0 \times 11.0 \times 18.0$ | B32652A3224+*** | 960 | 1100 | 1000 |
| | | 330 | $7.0 \times 12.5 \times 18.0$ | B32652A3334+*** | 830 | 900 | 1000 |
| | | 470 | $8.5 \times 14.5 \times 18.0$ | B32652A3474+*** | 680 | 700 | 500 |
| | | 680 | $9.0 \times 17.5 \times 18.0$ | B32652A3684+*** | 640 | 700 | 500 |
| 400 | 200 | 68 | $5.0 \times 10.5 \times 18.0$ | B32652A4683+*** | 1170 | 1300 | 1000 |
| | | 100 | $5.0 \times 10.5 \times 18.0$ | B32652A4104+*** | 1170 | 1300 | 1000 |
| | | 150 | $6.0 \times 11.0 \times 18.0$ | B32652A4154+*** | 960 | 1100 | 1000 |
| | | 220 | $7.0 \times 12.5 \times 18.0$ | B32652A4224+*** | 830 | 900 | 1000 |
| | | 330 | $8.5 \times 14.5 \times 18.0$ | B32652A4334+*** | 680 | 700 | 500 |
| | | 470 | $9.0 \times 17.5 \times 18.0$ | B32652A4474+*** | 640 | 700 | 500 |
| 630 | 250 | 33 | $5.0 \times 10.5 \times 18.0$ | B32652A6333+*** | 1170 | 1300 | 1000 |
| | | 47 | $5.0 \times 10.5 \times 18.0$ | B32652A6473+*** | 1170 | 1300 | 1000 |
| | | 68 | $6.0 \times 11.0 \times 18.0$ | B32652A6683+*** | 960 | 1100 | 1000 |
| | | 100 | $7.0 \times 12.5 \times 18.0$ | B32652A6104+*** | 830 | 900 | 1000 |
| | | 150 | $8.5 \times 14.5 \times 18.0$ | B32652A6154+*** | 680 | 700 | 500 |
| | | 220 | $9.0 \times 17.5 \times 18.0$ | B32652A6224+*** | 640 | 700 | 500 |
| 1000 | 250 | 10 | $5.0 \times 10.5 \times 18.0$ | B32652A0103+*** | 1170 | 1300 | 1000 |
| | | 15 | $5.0 \times 10.5 \times 18.0$ | B32652A0153+*** | 1170 | 1300 | 1000 |
| | | 22 | $5.0 \times 10.5 \times 18.0$ | B32652A0223+*** | 1170 | 1300 | 1000 |
| | | 33 | $6.0 \times 11.0 \times 18.0$ | B32652A0333+*** | 960 | 1100 | 1000 |
| | | 47 | $7.0 \times 12.5 \times 18.0$ | B32652A0473+*** | 830 | 900 | 1000 |
| | | 68 | $8.5 \times 14.5 \times 18.0$ | B32652A0683+*** | 680 | 700 | 500 |
| | | 100 | $9.0 \times 17.5 \times 18.0$ | B32652A0104+*** | 640 | 700 | 500 |
| | | | | | | | |
| 1250 | 500 | 6.8 | $5.0 \times 10.5 \times 18.0$ | B32652A7682+*** | 1170 | 1300 | 1000 |
| | | 10 | $6.0 \times 11.0 \times 18.0$ | B32652A7103+*** | 960 | 1100 | 1000 |
| | | 15 | $7.0 \times 12.5 \times 18.0$ | B32652A7153+*** | 830 | 900 | 1000 |
| | | 22 | $8.5 \times 14.5 \times 18.0$ | B32652A7223+*** | 680 | 700 | 500 |
| | | 33 | $9.0 \times 17.5 \times 18.0$ | B32652A7333+*** | 640 | 700 | 500 |

Further E series and intermediate capacitance values on request.

Composition of ordering code

+ = Capacitance tolerance code:

K = $\pm 10\%$

J = $\pm 5\%$

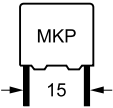
on request = $\pm 3.5\%$

*** = Packaging code:

289 = Ammo pack

189 = Reel

000 = Untaped (lead length 6 – 1 mm)


B32652
High pulse (wound)
Ordering codes and packing units (lead spacing 15 mm)

| V_R | V_{rms} $f \leq 1$ kHz | C_R | Max. dimensions $w \times h \times l$ mm | Ordering code (composition see below) | Ammo pack pcs./unit | Reel pcs./unit | Untaped pcs./unit |
|-------|-----------------------------|-------|--|---|---------------------------|-------------------|----------------------|
| VDC | VAC | nF | | | | | |
| 1600 | 500 | 3.3 | $5.0 \times 10.5 \times 18.0$ | B32652A1332+*** | 1170 | 1300 | 1000 |
| | | 4.7 | $6.0 \times 11.0 \times 18.0$ | B32652A1472+*** | 960 | 1100 | 1000 |
| | | 6.8 | $7.0 \times 12.5 \times 18.0$ | B32652A1682+*** | 830 | 900 | 1000 |
| | | 10 | $8.5 \times 14.5 \times 18.0$ | B32652A1103+*** | 680 | 700 | 500 |
| | | 15 | $9.0 \times 17.5 \times 18.0$ | B32652A1153+*** | 640 | 700 | 500 |
| 1600 | 700 | 2.2 | $5.0 \times 10.5 \times 18.0$ | B32652J1222+*** | 1170 | 1300 | 1000 |
| | | 3.3 | $6.0 \times 11.0 \times 18.0$ | B32652J1332+*** | 960 | 1100 | 1000 |
| | | 4.7 | $7.0 \times 12.5 \times 18.0$ | B32652J1472+*** | 830 | 900 | 1000 |
| | | 6.8 | $8.5 \times 14.5 \times 18.0$ | B32652J1682+*** | 680 | 700 | 500 |
| | | 10 | $9.0 \times 17.5 \times 18.0$ | B32652J1103+*** | 640 | 700 | 500 |
| 2000 | 700 | 1.0 | $5.0 \times 10.5 \times 18.0$ | B32652A2102+*** | 1170 | 1300 | 1000 |
| | | 1.5 | $6.0 \times 11.0 \times 18.0$ | B32652A2152+*** | 960 | 1100 | 1000 |
| | | 2.2 | $7.0 \times 12.5 \times 18.0$ | B32652A2222+*** | 830 | 900 | 1000 |
| | | 3.3 | $8.5 \times 14.5 \times 18.0$ | B32652A2332+*** | 680 | 700 | 500 |
| | | 4.7 | $9.0 \times 17.5 \times 18.0$ | B32652A2472+*** | 640 | 700 | 500 |

Further E series and intermediate capacitance values on request.

Composition of ordering code

+ = Capacitance tolerance code:

K = $\pm 10\%$

J = $\pm 5\%$

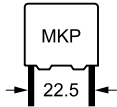
on request = $\pm 3.5\%$

*** = Packaging code:

289 = Ammo pack

189 = Reel

000 = Untaped (lead length 6 – 1 mm)


Ordering codes and packing units (lead spacing 22.5 mm)

| V_R | V_{rms} $f \leq 1 \text{ kHz}$ | C_R | Max. dimensions $w \times h \times l$ mm | Ordering code (composition see below) | Ammo pack pcs./unit | Reel pcs./unit | Untaped pcs./unit |
|-------|-------------------------------------|-------|--|---|---------------------------|-------------------|----------------------|
| VDC | VAC | nF | | | | | |
| 250 | 160 | 220 | $6.0 \times 15.0 \times 26.5$ | B32653A3224+*** | 680 | 700 | 720 |
| | | 330 | $6.0 \times 15.0 \times 26.5$ | B32653A3334+*** | 680 | 700 | 720 |
| | | 470 | $7.0 \times 16.0 \times 26.5$ | B32653A3474+*** | 580 | 600 | 630 |
| | | 680 | $8.5 \times 16.5 \times 26.5$ | B32653A3684+*** | 480 | 500 | 510 |
| | | 1000 | $10.5 \times 16.5 \times 26.5$ | B32653A3105+*** | 390 | 400 | 540 |
| 400 | 200 | 150 | $6.0 \times 15.0 \times 26.5$ | B32653A4154+*** | 680 | 700 | 720 |
| | | 220 | $6.0 \times 15.0 \times 26.5$ | B32653A4224+*** | 680 | 700 | 720 |
| | | 330 | $7.0 \times 16.0 \times 26.5$ | B32653A4334+*** | 580 | 600 | 630 |
| | | 470 | $8.5 \times 16.5 \times 26.5$ | B32653A4474+*** | 480 | 500 | 510 |
| | | 680 | $10.5 \times 16.5 \times 26.5$ | B32653A4684+*** | 390 | 400 | 540 |
| | | 1000 | $11.0 \times 20.5 \times 26.5$ | B32653A4105+*** | 370 | 350 | 510 |
| 630 | 250 | 100 | $6.0 \times 15.0 \times 26.5$ | B32653A6104+*** | 680 | 700 | 720 |
| | | 150 | $6.0 \times 15.0 \times 26.5$ | B32653A6154+*** | 680 | 700 | 720 |
| | | 220 | $8.5 \times 16.5 \times 26.5$ | B32653A6224+*** | 480 | 500 | 510 |
| | | 330 | $10.5 \times 16.5 \times 26.5$ | B32653A6334+*** | 390 | 400 | 540 |
| | | 470 | $11.0 \times 20.5 \times 26.5$ | B32653A6474+*** | 370 | 350 | 510 |
| 1000 | 250 | 33 | $6.0 \times 15.0 \times 26.5$ | B32653A0333+*** | 680 | 700 | 720 |
| | | 47 | $6.0 \times 15.0 \times 26.5$ | B32653A0473+*** | 680 | 700 | 720 |
| | | 68 | $6.0 \times 15.0 \times 26.5$ | B32653A0683+*** | 680 | 700 | 720 |
| | | 100 | $8.5 \times 16.5 \times 26.5$ | B32653A0104+*** | 480 | 500 | 510 |
| | | 150 | $10.5 \times 16.5 \times 26.5$ | B32653A0154+*** | 390 | 400 | 540 |
| | | 220 | $11.0 \times 20.5 \times 26.5$ | B32653A0224+*** | 370 | 350 | 510 |
| 1250 | 500 | 22 | $6.0 \times 15.0 \times 26.5$ | B32653A7223+*** | 680 | 700 | 720 |
| | | 33 | $6.0 \times 15.0 \times 26.5$ | B32653A7333+*** | 680 | 700 | 720 |
| | | 47 | $8.5 \times 16.5 \times 26.5$ | B32653A7473+*** | 480 | 500 | 510 |
| | | 68 | $10.5 \times 16.5 \times 26.5$ | B32653A7683+*** | 390 | 400 | 540 |
| | | 100 | $11.0 \times 20.5 \times 26.5$ | B32653A7104+*** | 370 | 350 | 510 |

Further E series and intermediate capacitance values on request.

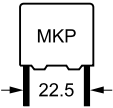
Composition of ordering code

+ = Capacitance tolerance code:

K = $\pm 10\%$
 J = $\pm 5\%$
 on request = $\pm 3.5\%$

*** = Packaging code:

289 = Ammo pack
 189 = Reel
 000 = Untaped (lead length 6 – 1 mm)


B32653
High pulse (wound)
Ordering codes and packing units (lead spacing 22.5 mm)

| V_R VDC | V_{rms} $f \leq 1$ kHz VAC | C_R nF | Max. dimensions $w \times h \times l$ mm | Ordering code (composition see below) | Ammo pack pcs./unit | Reel pcs./unit | Untaped pcs./unit |
|--------------|------------------------------------|-------------|--|---|---------------------------|-------------------|----------------------|
| 1600 | 500 | 6.8 | $6.0 \times 15.0 \times 26.5$ | B32653A1682+*** | 680 | 700 | 720 |
| | | 10 | $6.0 \times 15.0 \times 26.5$ | B32653A1103+*** | 680 | 700 | 720 |
| | | 15 | $7.0 \times 16.0 \times 26.5$ | B32653A1153+*** | 580 | 600 | 630 |
| | | 22 | $8.5 \times 16.5 \times 26.5$ | B32653A1223+*** | 480 | 500 | 510 |
| | | 33 | $10.5 \times 16.5 \times 26.5$ | B32653A1333+*** | 390 | 400 | 540 |
| | | 47 | $11.0 \times 20.5 \times 26.5$ | B32653A1473+*** | 370 | 350 | 510 |
| 2000 | 700 | 3.3 | $6.0 \times 15.0 \times 26.5$ | B32653A2332+*** | 680 | 700 | 720 |
| | | 4.7 | $6.0 \times 15.0 \times 26.5$ | B32653A2472+*** | 680 | 700 | 720 |
| | | 6.8 | $8.5 \times 16.5 \times 26.5$ | B32653A2682+*** | 480 | 500 | 510 |
| | | 10 | $10.5 \times 16.5 \times 26.5$ | B32653A2103+*** | 390 | 400 | 540 |
| | | 15 | $11.0 \times 20.5 \times 26.5$ | B32653A2153+*** | 370 | 350 | 510 |
| 2000 | 1000 | 2.2 | $6.0 \times 15.0 \times 26.5$ | B32653A8222+*** | 680 | 700 | 720 |
| | | 3.3 | $6.0 \times 15.0 \times 26.5$ | B32653A8332+*** | 680 | 700 | 720 |
| | | 4.7 | $8.5 \times 16.5 \times 26.5$ | B32653A8472+*** | 480 | 500 | 510 |
| | | 6.8 | $10.5 \times 16.5 \times 26.5$ | B32653A8682+*** | 390 | 400 | 540 |
| | | 10 | $10.5 \times 20.5 \times 26.5$ | B32653A8103+*** | 390 | 400 | 540 |

Further E series and intermediate capacitance values on request.

Composition of ordering code

+ = Capacitance tolerance code:

 K = $\pm 10\%$

 J = $\pm 5\%$

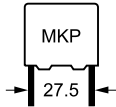
 on request = $\pm 3.5\%$

*** = Packaging code:

289 = Ammo pack

189 = Reel

000 = Untaped (lead length 6 – 1 mm)


Ordering codes and packing units (lead spacing 27.5 mm)

| V_R | V_{rms} $f \leq 1$ kHz | C_R | Max. dimensions $w \times h \times l$ mm | Ordering code (composition see below) | Ammo pack pcs./unit | Reel pcs./unit | Untaped pcs./unit |
|-------|-----------------------------|-------|--|---|---------------------------|-------------------|----------------------|
| VDC | VAC | nF | | | | | |
| 250 | 160 | 1500 | 11.0 × 21.0 × 31.5 | B32654A3155+*** | – | 350 | 320 |
| | | 2200 | 12.5 × 21.5 × 31.5 | B32654A3225+*** | – | 300 | 280 |
| | | 3300 | 15.0 × 24.5 × 31.5 | B32654A3335+000 | – | – | 240 |
| | | 4700 | 18.0 × 27.5 × 31.5 | B32654A3475+000 | – | – | 200 |
| 400 | 200 | 1000 | 11.0 × 21.0 × 31.5 | B32654A4105+*** | – | 350 | 320 |
| | | 1500 | 12.5 × 21.5 × 31.5 | B32654A4155+*** | – | 300 | 280 |
| | | 2200 | 14.0 × 24.5 × 31.5 | B32654A4225+000 | – | – | 260 |
| | | 3300 | 19.0 × 30.0 × 31.5 | B32654A4335+000 | – | – | 180 |
| 630 | 250 | 680 | 11.0 × 21.0 × 31.5 | B32654A6684+*** | – | 350 | 320 |
| | | 1000 | 13.5 × 23.0 × 31.5 | B32654A6105+*** | – | 250 | 260 |
| | | 1500 | 18.0 × 27.5 × 31.5 | B32654A6155+000 | – | – | 200 |
| 1000 | 250 | 220 | 11.0 × 21.0 × 31.5 | B32654A0224+*** | – | 350 | 320 |
| | | 330 | 11.0 × 21.0 × 31.5 | B32654A0334+*** | – | 350 | 320 |
| | | 470 | 14.0 × 24.5 × 31.5 | B32654A0474+000 | – | – | 260 |
| | | 680 | 18.0 × 27.5 × 31.5 | B32654A0684+000 | – | – | 200 |
| 1250 | 500 | 100 | 11.0 × 21.0 × 31.5 | B32654A7104+*** | – | 350 | 320 |
| | | 150 | 11.0 × 21.0 × 31.5 | B32654A7154+*** | – | 350 | 320 |
| | | 220 | 14.0 × 24.5 × 31.5 | B32654A7224+000 | – | – | 260 |
| | | 330 | 18.0 × 27.5 × 31.5 | B32654A7334+000 | – | – | 200 |
| 1600 | 500 | 47 | 11.0 × 21.0 × 31.5 | B32654A1473+*** | – | 350 | 320 |
| | | 68 | 11.0 × 21.0 × 31.5 | B32654A1683+*** | – | 350 | 320 |
| | | 100 | 14.0 × 24.5 × 31.5 | B32654A1104+000 | – | – | 260 |
| | | 150 | 18.0 × 27.5 × 31.5 | B32654A1154+000 | – | – | 200 |
| 2000 | 700 | 22 | 11.0 × 21.0 × 31.5 | B32654A2223+*** | – | 350 | 320 |
| | | 33 | 13.5 × 23.0 × 31.5 | B32654A2333+*** | – | 250 | 260 |
| | | 47 | 18.0 × 27.5 × 31.5 | B32654A2473+000 | – | – | 200 |
| | | 68 | 19.0 × 30.0 × 31.5 | B32654A2683+000 | – | – | 180 |

Further E series and intermediate capacitance values on request.

Composition of ordering code

+ = Capacitance tolerance code:

K = ±10%

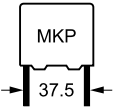
J = ±5%

on request = ±3.5%

*** = Packaging code:

189 = Reel

000 = Untaped (lead length 6 – 1 mm)


B32656
High pulse (wound)
Ordering codes and packing units (lead spacing 37.5 mm)

| V_R | V_{rms} $f \leq 1$ kHz | C_R | Max. dimensions $w \times h \times l$ mm | Ordering code (composition see below) | Untaped pcs./unit |
|-------|-----------------------------|-------|--|---|----------------------|
| VDC | VAC | nF | | | |
| 850 | 450 | 220 | 12.0 × 22.0 × 42.0 | B32656A8224+000 | 72 |
| | | 330 | 12.0 × 22.0 × 42.0 | B32656A8334+000 | 72 |
| | | 470 | 12.0 × 22.0 × 42.0 | B32656A8474+000 | 72 |
| | | 680 | 16.0 × 28.5 × 42.0 | B32656A8684+000 | 48 |
| | | 1000 | 18.0 × 32.5 × 42.0 | B32656A8105+000 | 32 |
| 1000 | 500 | 470 | 14.0 × 25.0 × 42.0 | B32656A0474+000 | 56 |
| | | 680 | 16.0 × 28.5 × 42.0 | B32656A0684+000 | 48 |
| | | 1000 | 20.0 × 39.5 × 42.0 | B32656A0105+000 | 32 |
| 1250 | 500 | 220 | 14.0 × 25.0 × 42.0 | B32656A7224+000 | 56 |
| | | 330 | 16.0 × 28.5 × 42.0 | B32656A7334+000 | 48 |
| | | 470 | 18.0 × 32.5 × 42.0 | B32656A7474+000 | 48 |
| | | 680 | 20.0 × 39.5 × 42.0 | B32656A7684+000 | 32 |
| 1600 | 600 | 100 | 12.0 × 22.0 × 42.0 | B32656J1104+000 | 72 |
| | | 150 | 14.0 × 25.0 × 42.0 | B32656J1154+000 | 56 |
| | | 220 | 16.0 × 28.5 × 42.0 | B32656J1224+000 | 48 |
| 2000 | 700 | 100 | 14.0 × 25.0 × 42.0 | B32656J2104+000 | 56 |
| | | 150 | 18.0 × 32.5 × 42.0 | B32656J2154+000 | 48 |
| | | 220 | 20.0 × 39.5 × 42.0 | B32656J2224+000 | 32 |

Further E series and intermediate capacitance values on request.

Composition of ordering code

+ = Capacitance tolerance code:

K = ±10%

J = ±5%

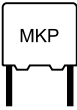
on request = ±3.5%

Packaging code:

000 = Untaped (lead length 6 – 1 mm)

Technical data

| | | | | | |
|--|---|--|---|--|---------------|
| Operating temperature range | Max. operating temperature $T_{op,max}$ | | +105 °C | | |
| | Upper category temperature T_{max} | | +100 °C | | |
| | Lower category temperature T_{min} | | -55 °C | | |
| | Rated temperature T_R | | +85 °C | | |
| Dissipation factor $\tan \delta$ (in 10^{-3}) at 20 °C (upper limit values) | at | ≤ 27 nF | 27 nF $< C_R \leq 0.1$ μ F | 0.1 μ F $< C_R \leq 1$ μ F | > 1 μ F |
| | 1 kHz | 0.8 | 0.8 | 0.8 | 0.8 |
| | 10 kHz | 1.0 | 1.0 | 1.0 | — |
| | 100 kHz | 2.0 | 3.0 | — | — |
| Insulation resistance R_{ins} or time constant $\tau = C_R \cdot R_{ins}$ at 20 °C, rel. humidity $\leq 65\%$ (minimum as-delivered values) | $C_R \leq 0.33$ μ F | | $C_R > 0.33$ μ F | | |
| | 100 G Ω | | 30000 s | | |
| DC test voltage | $1.6 \cdot V_R, 2$ s | | | | |
| Category voltage V_C (continuous operation with V_{DC} or V_{AC} at $f \leq 1$ kHz) | T_A (°C) | DC voltage derating | | AC voltage derating | |
| | $T_A \leq 85$ $85 < T_A \leq 100$ | $V_C = V_R$ $V_C = V_R \cdot (165 - T_A)/80$ | | $V_{C,rms} = V_{rms}$ $V_{C,rms} = V_{rms} \cdot (165 - T_A)/80$ | |
| Operating voltage V_{op} for short operating periods (V_{DC} or V_{AC} at $f \leq 1$ kHz) | T_A (°C) | DC voltage (max. hours) | | AC voltage (max. hours) | |
| | $T_A \leq 85$ $85 < T_A \leq 100$ | $V_{op} = 1.25 \cdot V_C$ (2000 h) $V_{op} = 1.25 \cdot V_C$ (2000 h) | | $V_{op} = 1.0 \cdot V_{C,rms}$ (2000 h) $V_{op} = 1.0 \cdot V_{C,rms}$ (2000 h) | |
| Damp heat test Limit values after damp heat test | 56 days/40 °C/93% relative humidity | | | | |
| | Capacitance change $ \Delta C/C $ | | $\leq 3\%$ | | |
| | Dissipation factor change $\Delta \tan \delta$ | | $\leq 0.5 \cdot 10^{-3}$ (at 1 kHz) $\leq 1.0 \cdot 10^{-3}$ (at 10 kHz) | | |
| | Insulation resistance R_{ins} or time constant $\tau = C_R \cdot R_{ins}$ | | $\geq 50\%$ of minimum as-delivered values | | |
| Reliability: Failure rate λ Service life t_{SL} | 1 fit ($\leq 1 \cdot 10^{-9}$ /h) at $0.5 \cdot V_R, 40$ °C 200 000 h at $1.0 \cdot V_R, 40$ °C For conversion to other operating conditions and temperatures, refer to chapter "Quality assurance", page . | | | | |
| Failure criteria: Total failure Failure due to variation of parameters | Short circuit or open circuit | | | | |
| | Capacitance change $ \Delta C/C $ | | $> 10\%$ | | |
| | Dissipation factor $\tan \delta$ | | $> 4 \cdot$ upper limit value | | |
| | Insulation resistance R_{ins} or time constant $\tau = C_R \cdot R_{ins}$ | | < 1500 M Ω ($C_R \leq 0.33$ μ F) < 500 s ($C_R > 0.33$ μ F) | | |



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High pulse (wound)

Pulse handling capability

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

"k₀" represents the maximum permissible pulse characteristic of the waveform applied to the capacitor, expressed in V²/ μ s.

Note:

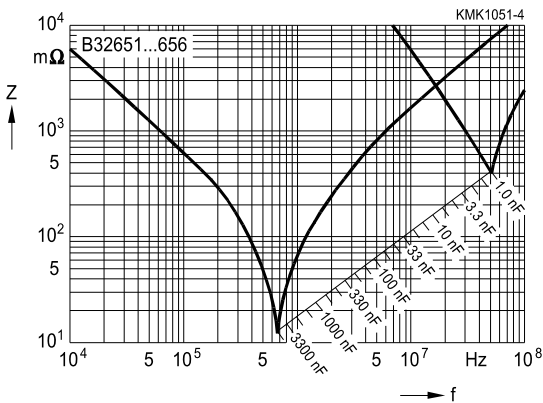
The values of dV/dt and k₀ provided below must not be exceeded in order to avoid damaging the capacitor.

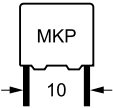
dV/dt values

| Lead spacing | | 10 mm | 15 mm | 22.5 mm | 27.5 mm | 37.5 mm |
|-----------------------|-------------------------|---------------------|-------|---------|---------|---------|
| V _R VDC | V _{rms} VAC | dV/dt in V/ μ s | | | | |
| 250 | 160 | – | 200 | 120 | 50 | – |
| 400 | 200 | – | 300 | 180 | 100 | – |
| 630 | 250 | – | 400 | 300 | 150 | – |
| 850 | 450 | – | – | – | – | 90 |
| 1000 | 250 | – | 975 | 600 | 300 | – |
| | 500 | – | – | – | – | 100 |
| 1250 | 450 | 4000 | – | – | – | – |
| | 500 | – | 1850 | 1150 | 600 | 140 |
| 1600 | 500 | – | 4500 | 2400 | 1000 | – |
| | 600 | – | – | – | – | 210 |
| | 700 | – | 5200 | – | – | – |
| 2000 | 700 | – | 8000 | 7000 | 2300 | 200 |
| | 1000 | – | – | 7500 | – | – |

k_0 values

| Lead spacing | | 10 mm | 15 mm | 22.5 mm | 27.5 mm | 37.5 mm |
|--------------|------------------|----------------------|------------|------------|------------|---------|
| V_R VDC | V_{rms} VAC | k_0 in $V^2/\mu s$ | | | | |
| 250 | 160 | – | 10 000 | 60 000 | 25 000 | – |
| 400 | 200 | – | 250 000 | 200 000 | 110 000 | – |
| 630 | 250 | – | 500 000 | 350 000 | 250 000 | – |
| 850 | 450 | – | – | – | – | 153 000 |
| 1000 | 250 | – | 3 000 000 | 1 500 000 | 1 000 000 | – |
| | 500 | – | – | – | – | 180 000 |
| 1250 | 450 | 25 000 000 | – | – | – | – |
| | 500 | – | 9 000 000 | 3 750 000 | 2 000 000 | 350 000 |
| 1600 | 500 | – | 20 000 000 | 10 000 000 | 4 000 000 | – |
| | 600 | – | – | – | – | 672 000 |
| | 700 | – | 28 000 000 | – | – | – |
| 2000 | 700 | – | 60 000 000 | 40 000 000 | 15 000 000 | 800 000 |
| | 1000 | – | – | 50 000 000 | – | – |

Impedance Z versus frequency f
 (typical values)




B32651

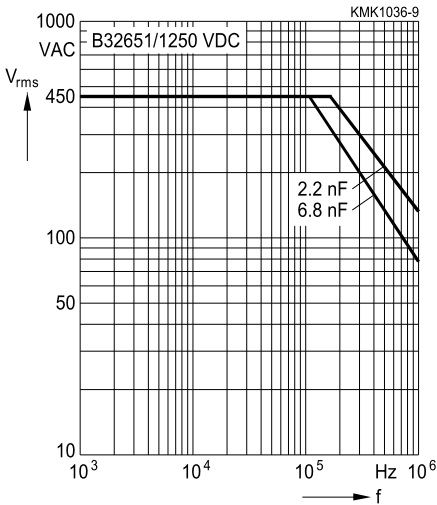
High pulse (wound)

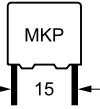
Permissible AC voltage V_{rms} versus frequency f (for sinusoidal waveforms, $T_A \leq 90^\circ\text{C}$)

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

Lead spacing 10 mm

1250 VDC/450 VAC



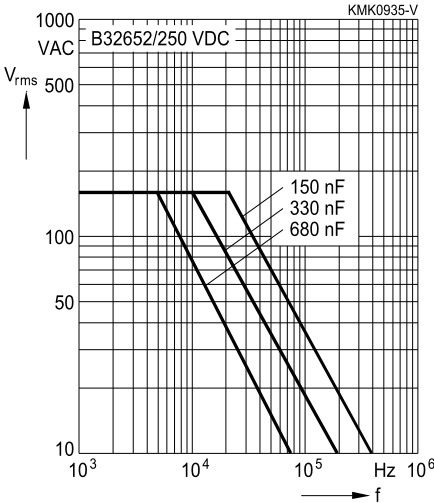


Permissible AC voltage V_{rms} versus frequency f (for sinusoidal waveforms, $T_A \leq 90^\circ C$)

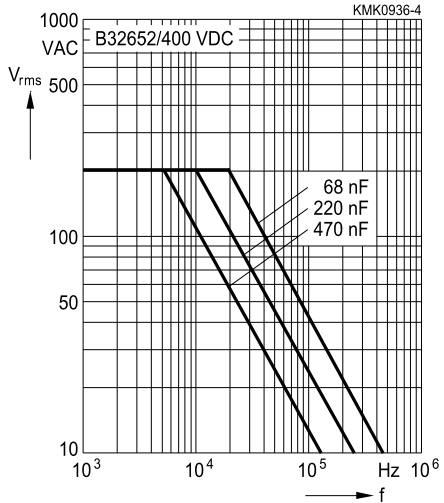
For $T_A > 90^\circ C$, please refer to "General technical information", section 3.2.3.

Lead spacing 15 mm

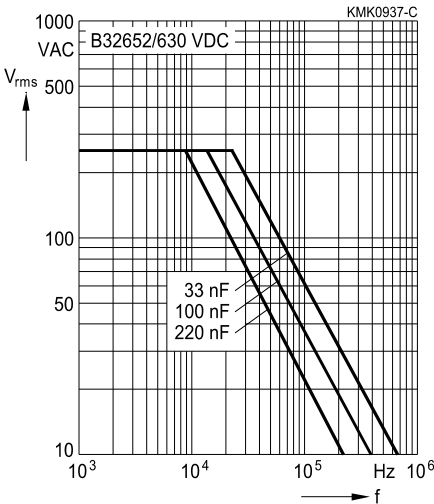
250 VDC/160 VAC



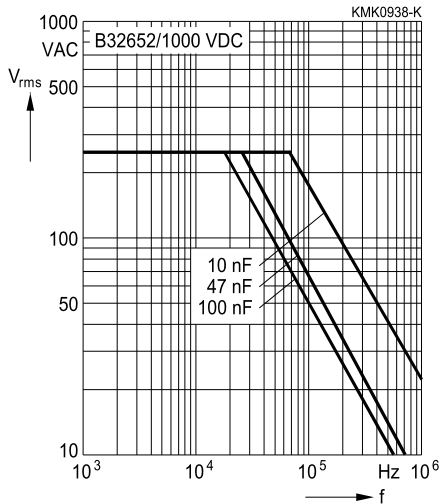
400 VDC/200 VAC

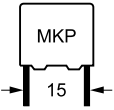


630 VDC/250 VAC



1000 VDC/250 VAC





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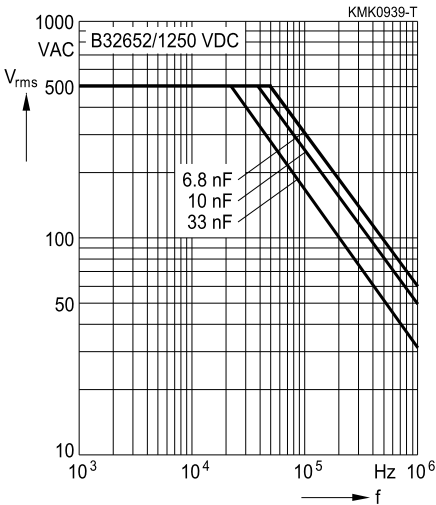
High pulse (wound)

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

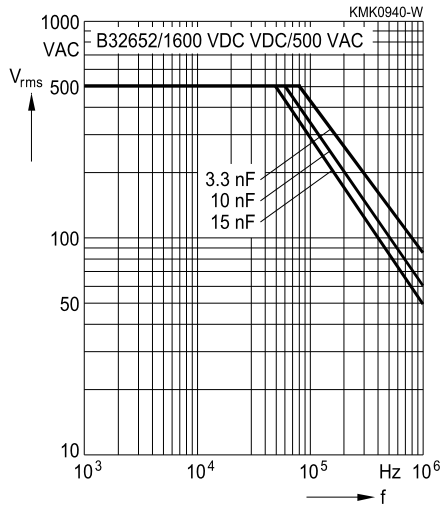
For $T_A > 90^\circ C$, please refer to "General technical information", section 3.2.3.

Lead spacing 15 mm

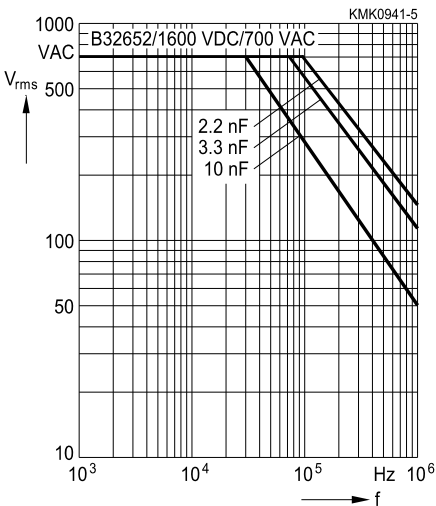
1250 VDC/500 VAC



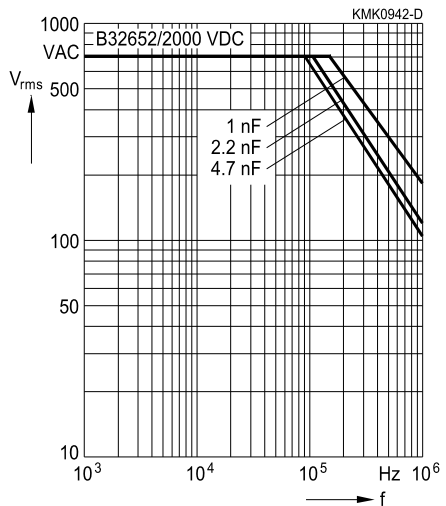
1600 VDC/500 VAC

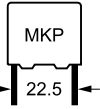


1600 VDC/700 VAC



2000 VDC/700 VAC



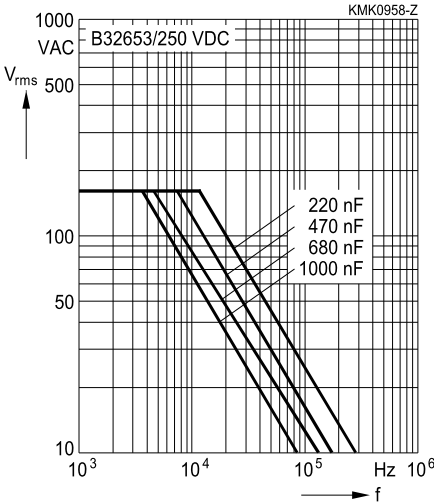


Permissible AC voltage V_{rms} versus frequency f (for sinusoidal waveforms, $T_A \leq 90^\circ C$)

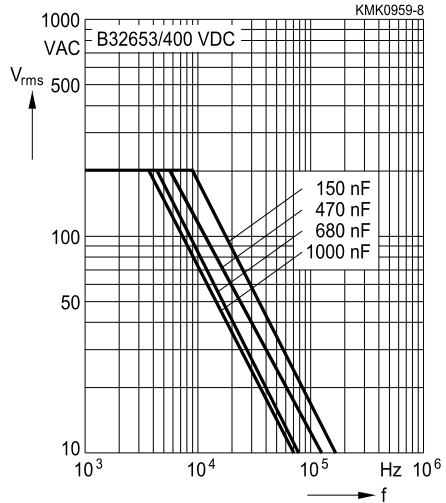
For $T_A > 90^\circ C$, please refer to "General technical information", section 3.2.3.

Lead spacing 22.5 mm

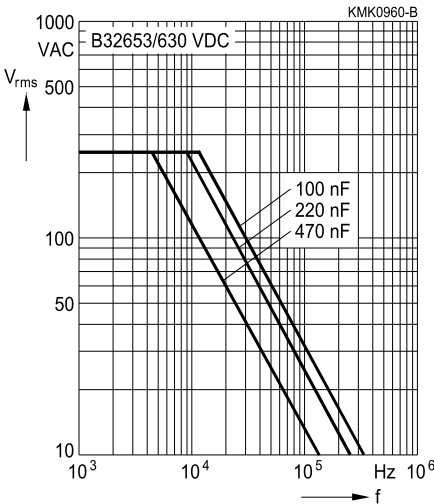
250 VDC/160 VAC



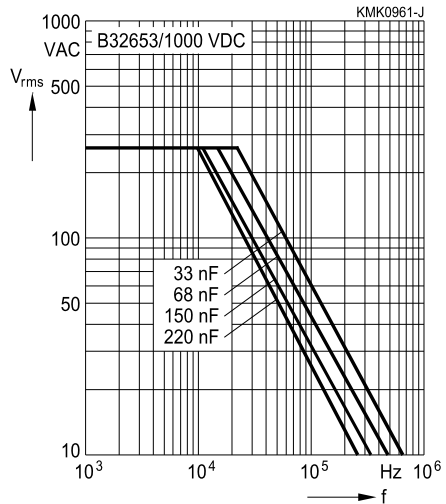
400 VDC/200 VAC

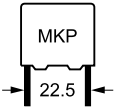


630 VDC/250 VAC



1000 VDC/250 VAC





B32653

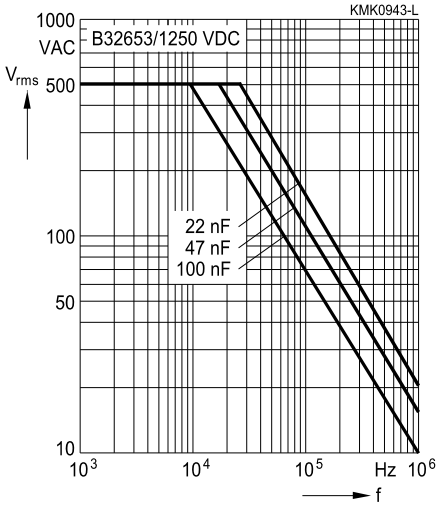
High pulse (wound)

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

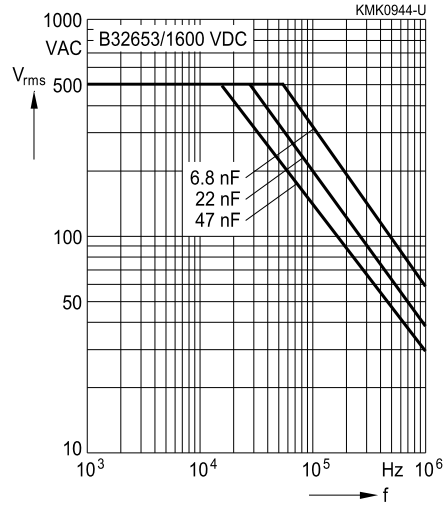
For $T_A > 90^\circ C$, please refer to "General technical information", section 3.2.3.

Lead spacing 22.5 mm

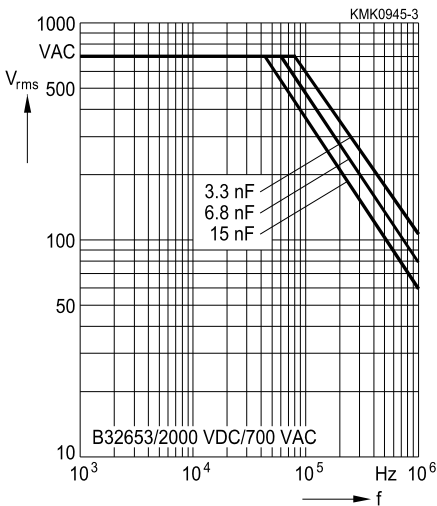
1250 VDC/500 VAC



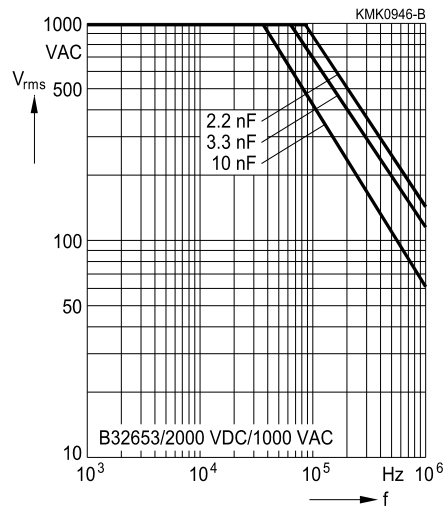
1600 VDC/500 VAC

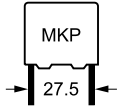


2000 VDC/700 VAC



2000 VDC/1000 VAC

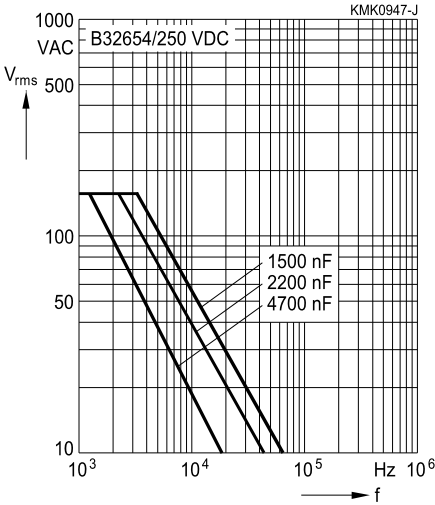




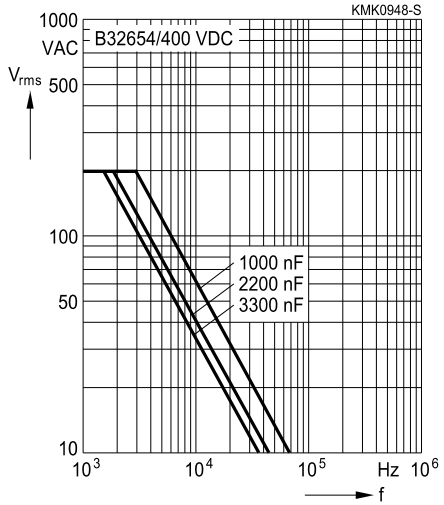
Permissible AC voltage V_{rms} versus frequency f (for sinusoidal waveforms, $T_A \leq 90^\circ\text{C}$)
 For $T_A > 90^\circ\text{C}$, please refer to "General technical information", section 3.2.3.

Lead spacing 27.5 mm

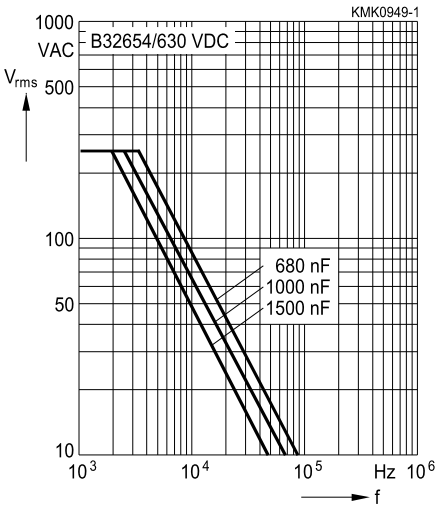
250 VDC/160 VAC



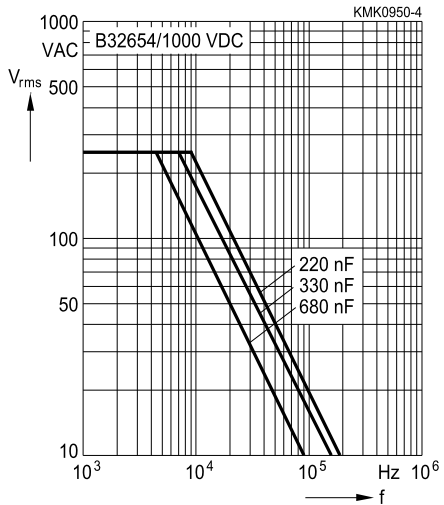
400 VDC/200 VAC

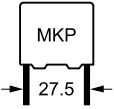


630 VDC/250 VAC



1000 VDC/250 VAC





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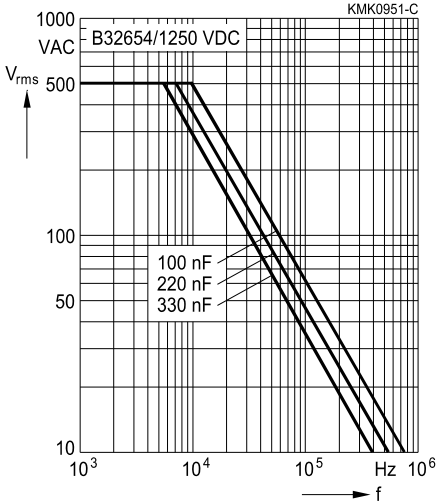
High pulse (wound)

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

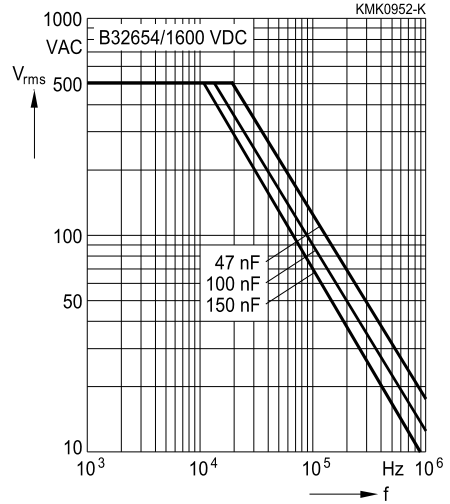
For $T_A > 90^\circ\text{C}$, please refer to "General technical information", section 3.2.3.

Lead spacing 27.5 mm

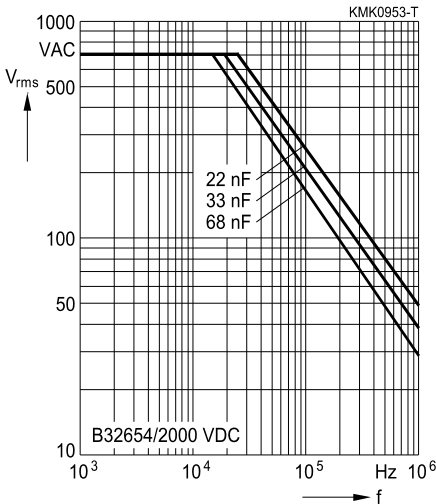
1250 VDC/500 VAC

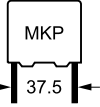


1600 VDC/500 VAC



2000 VDC/700 VAC

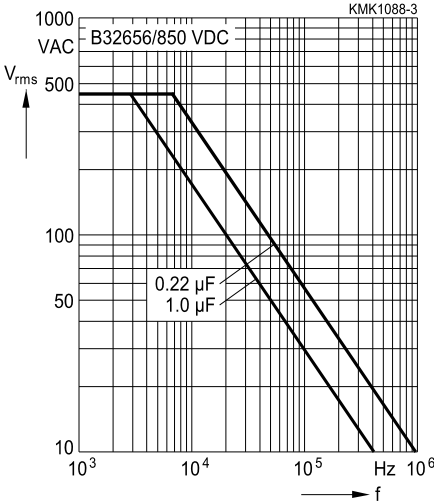




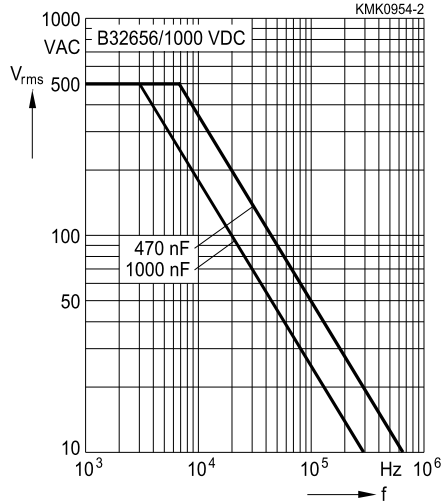
Permissible AC voltage V_{rms} versus frequency f (for sinusoidal waveforms, $T_A \leq 90^\circ\text{C}$)
 For $T_A > 90^\circ\text{C}$, please refer to "General technical information", section 3.2.3.

Lead spacing 37.5 mm

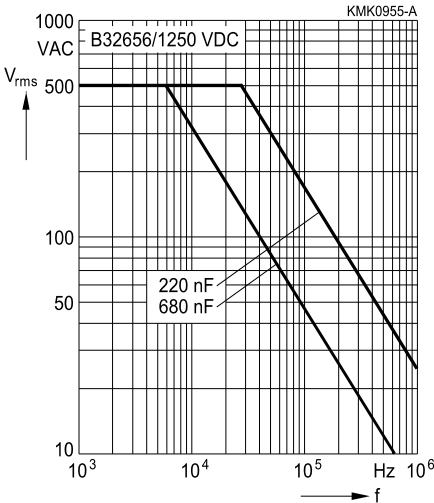
850 VDC/450 VAC



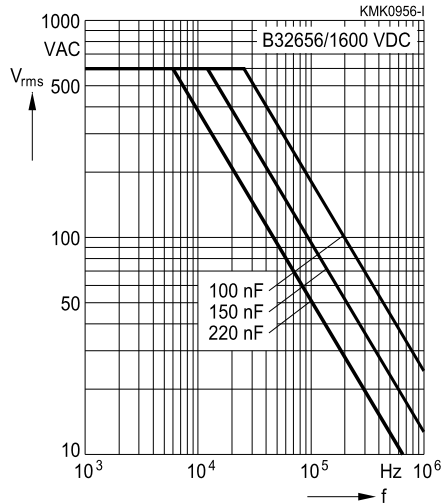
1000 VDC/500 VAC

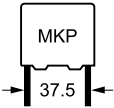


1250 VDC/500 VAC



1600 VDC/600 VAC





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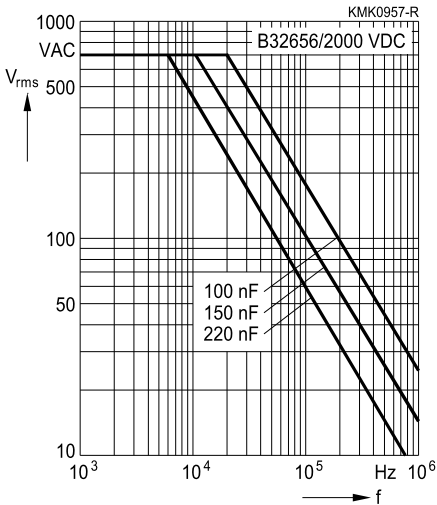
High pulse (wound)

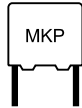
Permissible AC voltage V_{rms} versus frequency f (for sinusoidal waveforms, $T_A \leq 90^\circ\text{C}$)

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

Lead spacing 37.5 mm

2000 VDC/700 VAC

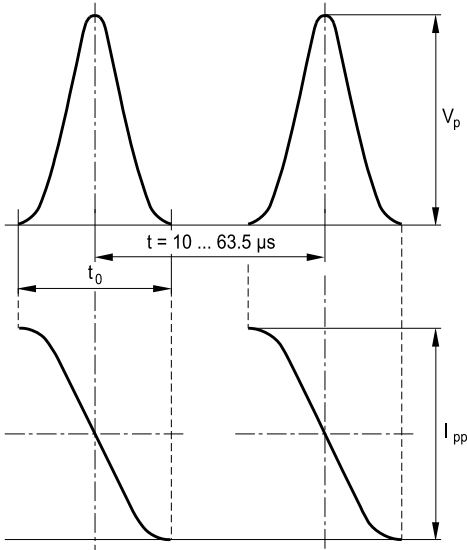




Flyback application

Permissible voltage and current / waveform

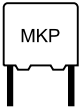
Permissible current I_{pp} versus frequency f for a duty cycle of 20% ($t_0/t = 0.2$):



KMK0720-5

Approximation formular for duty cycle higher than 20%:

$$I'_{pp} = I_{pp} \cdot \sqrt{\frac{t_0^3}{t_0'^3}}$$



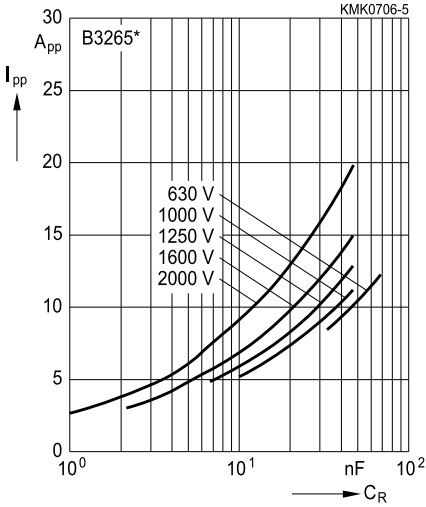
B32651 ... B32656

High pulse (wound)

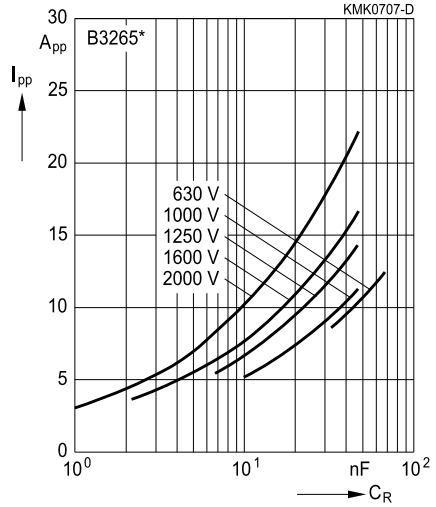
Flyback application

Permissible current I_{pp} versus rated capacitance C_R

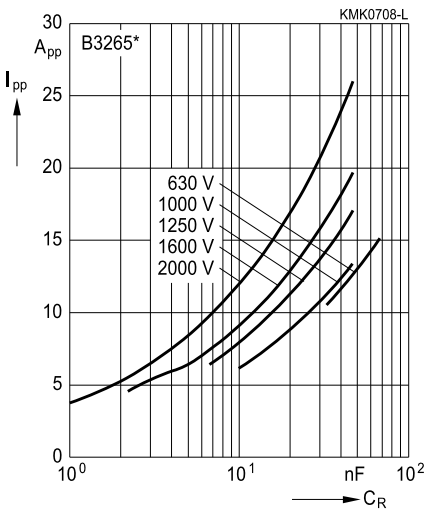
Frequency = 15.75 kHz

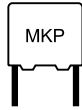


Frequency = 31.5 kHz



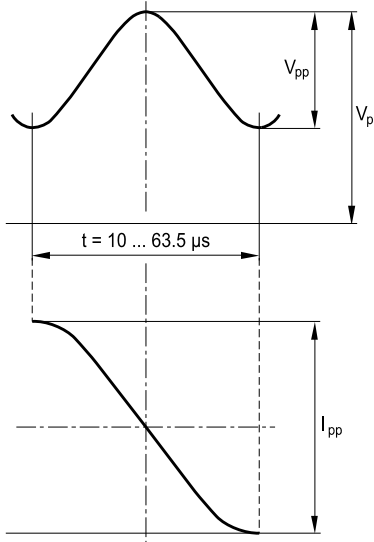
Frequency = 95 kHz



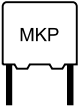


S-correction application

Permissible voltage and current / waveform



KMK0721-D



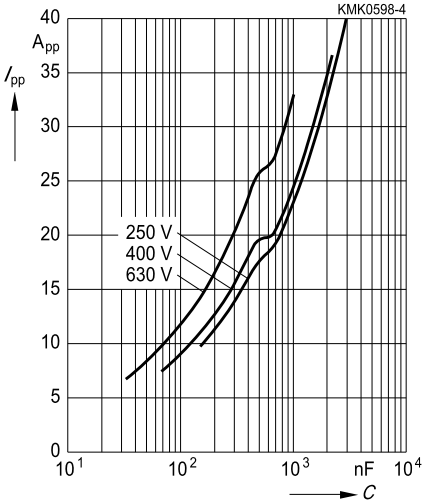
B32651 ... B32656

High pulse (wound)

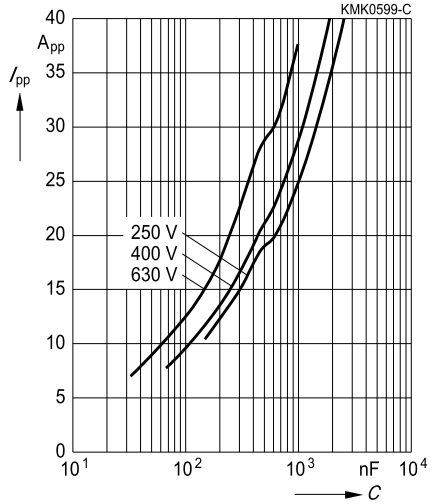
S-correction application

Permissible current I_{pp} versus rated capacitance C_R

Frequency = 15.75 kHz



Frequency = 31.75 kHz



Frequency = 95 kHz

