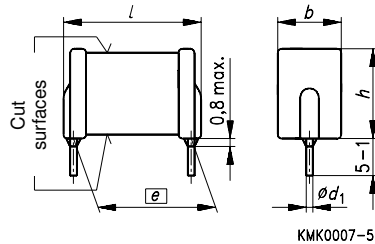


**Small dimensions
Insulated face ends
Versions with special dimensions
can be supplied at short notice**

Construction

- Dielectric: polyethylene terephthalate (polyester)
- Stacked-film technology
- Insulated face ends



Dimensions in mm

Features

- Special dimensions available upon request
- High pulse strength
- Coating material covers the leads for a length of $\leq 0,8$ mm from the capacitor body

Lead spacing $e \pm 0,4$	Diameter d_1	Type
7,5	0,5	B 32 510
10,0	0,5	B 32 511
15,0	0,6	B 32 512

Typical applications

- Standard applications
- Lamp ballast circuits
- Energy-saving lamps

Terminals

- Parallel wire leads, tinned
- Also available with $(3,0 \pm 0,5)$ mm lead length upon request
- Taped versions also available with crimped leads

Marking

Rated capacitance (coded),
rated dc voltage

Delivery mode

Bulk (untaped)

Taped, with straight leads or crimped leads (Ammo pack or reel)

Capacitors with 7,5 mm lead spacings (taped versions) can be supplied with leads bent to fit 5 mm grids.

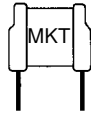
For notes on taping, refer to page 279.

Detail specification

Homologated in accordance with CECC 30 401-007

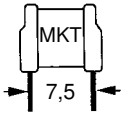
Notes on mounting

When mounting these capacitors, take into account creepage distances and clearances to adjacent live parts. The insulating strength of the cut surfaces to other live parts of the circuit is 1,5 times the capacitor's rated dc voltage, but is always at least 300 Vdc.



Overview of available types

Lead spacing	7,5 mm				10 mm				15 mm				
Type	B 32 510				B 32 511				B 32 512				
Page	44				46				47				
1,0 nF													
1,5 nF													
2,2 nF													
3,3 nF													
4,7 nF													
6,8 nF													
10 nF													
15 nF													
22 nF													
33 nF													
47 nF													
68 nF													
0,10 µF													
0,15 µF													
0,22 µF													
0,33 µF													
0,47 µF													
0,68 µF													
1,0 µF													
1,5 µF													
2,2 µF													
3,3 µF													
4,7 µF													
6,8 µF													
10 µF													

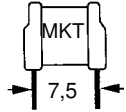


B 32 510

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

V_R (V_{rms} , $f \leq 60$ Hz)	C_R	Maximum dimensions $b \times h \times l$ (mm)	Ordering code ¹⁾	Packing units (pcs)		
				Ammo pack	Reel	Untaped
63 Vdc (40 Vac)	0,22 μ F	2,6 \times 6,4 \times 10,0	B32510-J224-+***	3550	2700	3000
	0,33 μ F	3,0 \times 6,8 \times 10,0	B32510-J334-+***	3150	2400	3000
	0,47 μ F	3,4 \times 7,0 \times 10,0	B32510-J474-+***	2820	2200	2500
	0,68 μ F	4,0 \times 7,4 \times 10,0	B32510-J684-+***	2550	2000	2000
	1,0 μ F	4,8 \times 8,0 \times 10,0	B32510-J105-+***	2050	1600	1500
	1,5 μ F	5,9 \times 8,8 \times 10,0	B32510-J155-+***	1570	1200	1000
	2,2 μ F	7,3 \times 9,4 \times 10,0	B32510-J225-+***	1220	1000	1000
100 Vdc (63 Vac)	0,10 μ F	3,0 \times 5,9 \times 10,0	B32510-J1104-+***	3550	2700	3000
	0,15 μ F	3,0 \times 5,9 \times 10,0	B32510-J1154-+***	3400	2600	3000
	0,22 μ F	3,0 \times 6,3 \times 10,0	B32510-J1224-+***	2900	2300	3000
	0,33 μ F	3,5 \times 6,9 \times 10,0	B32510-J1334-+***	2700	2100	2500
	0,47 μ F	4,2 \times 7,3 \times 10,0	B32510-J1474-+***	2270	1800	2000
	0,68 μ F	5,0 \times 7,7 \times 10,0	B32510-J1684-+***	1850	1500	1500
	1,0 μ F	6,3 \times 8,2 \times 10,0	B32510-J1105-+***	1450	1200	1000
1,5 μ F	7,5 \times 9,4 \times 10,0	B32510-J1155-+***	1170	900	800	
250 Vdc (160 Vac)	33 nF	3,0 \times 6,0 \times 10,0	B32510-J3333-+***	3550	2700	3000
	47 nF	3,0 \times 6,4 \times 10,0	B32510-J3473-+***	3020	2300	3000
	68 nF	3,4 \times 6,9 \times 10,0	B32510-J3683-+***	2900	2300	2500
	0,10 μ F	4,0 \times 7,3 \times 10,0	B32510-J3104-+***	2400	1900	2000
	0,15 μ F	4,7 \times 8,2 \times 10,0	B32510-J3154-+***	2000	1600	1500
	0,22 μ F	5,7 \times 8,7 \times 10,0	B32510-J3224-+***	1600	1300	1000
	0,33 μ F	7,2 \times 9,4 \times 10,0	B32510-J3334-+***	1220	1000	800

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

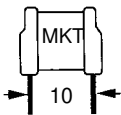

Ordering codes and packing units, lead spacing 7,5 mm

V_R (V_{rms} , $f \leq 60$ Hz)	C_R	Maximum dimensions $b \times h \times l$ (mm)	Ordering code ¹⁾	Packing units (pcs)		
				Ammo pack	Reel	Untaped
400 Vdc (200 Vac)	1,0 nF	$3,0 \times 6,7 \times 10,0$	B32510-J6102-****	–	–	3000
	1,5 nF	$3,0 \times 6,7 \times 10,0$	B32510-J6152-****	3000	2300	3000
	2,2 nF	$3,0 \times 6,7 \times 10,0$	B32510-J6222-****	3150	2400	3000
	3,3 nF	$3,0 \times 6,7 \times 10,0$	B32510-J6332-****	2970	2300	3000
	4,7 nF	$3,0 \times 6,7 \times 10,0$	B32510-J6472-****	3150	2400	3000
	6,8 nF	$3,0 \times 6,7 \times 10,0$	B32510-J6682-****	3150	2400	3000
	10 nF	$3,0 \times 6,7 \times 10,0$	B32510-J6103-****	3000	2300	3000
	15 nF	$3,0 \times 6,7 \times 10,0$	B32510-J6153-****	3000	2300	3000
	22 nF	$3,0 \times 6,7 \times 10,0$	B32510-J6223-****	2900	2300	3000
	33 nF	$3,4 \times 7,2 \times 10,0$	B32510-J6333-****	2900	2300	2500
	47 nF	$4,0 \times 7,7 \times 10,0$	B32510-J6473-****	2400	1900	2000
	68 nF	$4,6 \times 8,5 \times 10,0$	B32510-J6683-****	2100	1600	1500
	0,10 μ F	$5,7 \times 8,9 \times 10,0$	B32510-J6104-****	1600	1300	1000
	0,15 μ F	$7,3 \times 9,4 \times 10,0$	B32510-J6154-****	1220	1000	800

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

Special dimensions available upon request. For corresponding design rules, [refer to page 238](#).

1) Replace the + by the code letter for the required capacitance tolerance.
 Replace the *** by the code number for the required packing:
 - For straight leads: Ammo pack = 289, reel = 189
 - For crimped leads: Ammo pack = 249, reel = 149
 - Lead spacing changed from 7,5 to 5 mm by bending leads: Ammo pack = 259, reel = 159
 The ordering code for untaped components ends after the tolerance code letter.



B 32 511

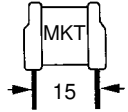
Ordering codes and packing units, lead spacing 10 mm

V_R (V_{rms} , $f \leq 60$ Hz)	C_R	Maximum dimensions $b \times h \times l$ (mm)	Ordering code ¹⁾	Packing units (pcs)		
				Ammo pack	Reel	Untaped
100 Vdc (63 Vac)	0,33 μ F	3,3 × 6,4 × 12,5	B32511-J1334-+***	1460	2100	2200
	0,47 μ F	3,7 × 7,0 × 12,5	B32511-J1474-+***	1320	2000	2000
	0,68 μ F	4,4 × 7,5 × 12,5	B32511-J1684-+***	1100	1700	1500
	1,0 μ F	5,3 × 8,1 × 12,5	B32511-J1105-+***	920	1400	1000
	1,5 μ F	6,4 × 9,0 × 12,5	B32511-J1155-+***	750	1100	800
	2,2 μ F	7,7 × 10,2 × 12,5	B32511-J1225-+***	610	900	500
250 Vdc (160 Vac)	47 nF	3,2 × 5,6 × 12,5	B32511-J3473-+***	1760	2400	2900
	68 nF	3,2 × 6,0 × 12,5	B32511-J3683-+***	1490	2200	2500
	0,10 μ F	3,6 × 6,5 × 12,5	B32511-J3104-+***	1360	2000	2000
	0,15 μ F	4,1 × 7,2 × 12,5	B32511-J3154-+***	1140	1700	1500
	0,22 μ F	5,0 × 7,8 × 12,5	B32511-J3224-+***	930	1400	1000
	0,33 μ F	6,0 × 8,7 × 12,5	B32511-J3334-+***	760	1200	800
	0,47 μ F	7,1 × 9,7 × 12,5	B32511-J3474-+***	630	900	500
400 Vdc (200 Vac)	10 nF	3,2 × 6,3 × 12,5	B32511-J6103-+***	1460	2100	2500
	15 nF	3,2 × 6,3 × 12,5	B32511-J6153-+***	1630	2300	2500
	22 nF	3,2 × 6,3 × 12,5	B32511-J6223-+***	1520	2200	2500
	33 nF	3,2 × 6,3 × 12,5	B32511-J6333-+***	1460	2100	2500
	47 nF	3,4 × 7,2 × 12,5	B32511-J6473-+***	1460	2100	2000
	68 nF	4,0 × 7,8 × 12,5	B32511-J6683-+***	1200	1800	1500
	0,10 μ F	4,8 × 8,1 × 12,5	B32511-J6104-+***	980	1400	1000
	0,15 μ F	6,0 × 8,9 × 12,5	B32511-J6154-+***	760	1200	800
	0,22 μ F	7,4 × 9,7 × 12,5	B32511-J6224-+***	610	900	500

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

Special dimensions available upon request. For corresponding design rules, [refer to page 238](#).

1) Replace the + by the code letter for the required capacitance tolerance.
 Replace the *** by the code number for the required packing form:
 - For straight leads: Ammo pack = 289, reel = 189
 - For crimped leads: Ammo pack = 249, reel = 149
 The ordering code for untaped components ends after the tolerance code letter.

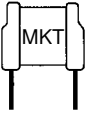

Ordering codes and packing units, lead spacing 15 mm

V_R (V_{rms} , $f \leq 60$ Hz)	C_R	Maximum dimensions $b \times h \times l$ (mm)	Ordering code ¹⁾	Packing units (pcs)		
				Ammo pack	Reel	Untaped
100 Vdc (63 Vac)	1,0 μ F	4,2 \times 7,5 \times 17,5	B32512-J1105-****	1450	1600	900
	1,5 μ F	5,0 \times 8,5 \times 17,5	B32512-J1155-****	1200	1300	650
	2,2 μ F	5,9 \times 9,2 \times 17,5	B32512-J1225-****	1000	1100	500
	3,3 μ F	7,0 \times 10,5 \times 17,5	B32512-J1335-****	850	900	400
	4,7 μ F	8,3 \times 11,8 \times 17,5	B32512-J1475-****	700	850	300
	6,8 μ F	10,0 \times 13,0 \times 17,5	B32512-J1685-****	590	600	200
	10 μ F	12,8 \times 14,2 \times 17,5	B32512-J1106-****	450	500	150
250 Vdc (160 Vac)	0,22 μ F	4,2 \times 6,8 \times 17,5	B32512-J3224-****	1450	1600	1000
	0,33 μ F	5,0 \times 7,4 \times 17,5	B32512-J3334-****	1200	1300	800
	0,47 μ F	6,0 \times 7,9 \times 17,5	B32512-J3474-****	1000	1100	600
	0,68 μ F	7,0 \times 9,0 \times 17,5	B32512-J3684-****	850	900	450
	1,0 μ F	8,0 \times 10,5 \times 17,5	B32512-J3105-****	740	800	350
	1,5 μ F	9,7 \times 12,2 \times 17,5	B32512-J3155-****	600	600	250
	2,2 μ F	11,7 \times 14,0 \times 17,5	B32512-J3225-****	500	500	150
3,3 μ F	14,9 \times 15,7 \times 17,5	B32512-J3335-****	390	400	100	
400 Vdc (200 Vac)	22 nF	4,3 \times 6,8 \times 17,5	B32512-J6223-****	1450	1500	1000
	33 nF	4,3 \times 6,8 \times 17,5	B32512-J6333-****	1450	1500	1000
	47 nF	4,3 \times 6,8 \times 17,5	B32512-J6473-****	1500	1600	1000
	68 nF	4,3 \times 6,8 \times 17,5	B32512-J6683-****	1500	1600	1000
	0,10 μ F	4,3 \times 6,8 \times 17,5	B32512-J6104-****	1400	1500	1000
	0,15 μ F	4,9 \times 7,7 \times 17,5	B32512-J6154-****	1250	1300	700
	0,22 μ F	5,7 \times 8,7 \times 17,5	B32512-J6224-****	1050	1100	500
	0,33 μ F	7,0 \times 9,5 \times 17,5	B32512-J6334-****	850	900	400
	0,47 μ F	8,3 \times 10,5 \times 17,5	B32512-J6474-****	700	800	300
	0,68 μ F	9,9 \times 12,0 \times 17,5	B32512-J6684-****	590	600	150
	1,0 μ F	11,9 \times 13,7 \times 17,5	B32512-J6105-****	490	500	150

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

Special dimensions available upon request. For corresponding design rules, [refer to page 238](#).

1) Replace the + by the code letter for the required capacitance tolerance.
 Replace the *** by the code number for the required packing:
 - For straight leads: Ammo pack = 289, reel = 189
 - For crimped leads: Ammo pack = 249, reel = 149
 The ordering code for untaped components ends after the tolerance code letter.

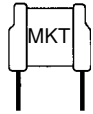


B 32 510 ... B 32 512

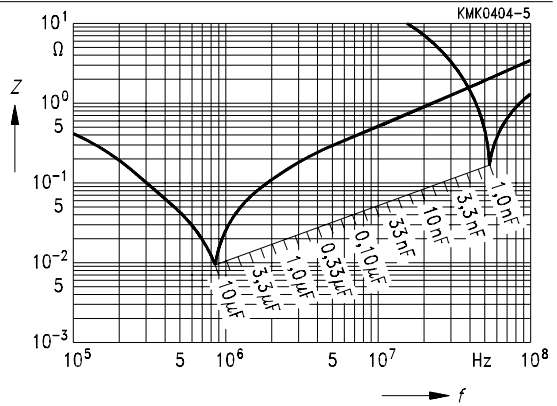
Technical data

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

1) According to CECC 30401-007, test criteria must be met after exposure to damp heat for 21 days.



Impedance Z
versus
frequency f
(typical values)



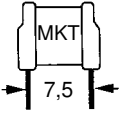
Pulse handling capability

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

V_R	Max. rate of voltage rise V_{pp}/τ in $V/\mu s$ (for $V_{pp} = V_R$)		
	Lead spacing		
	7,5 mm	10 mm	15 mm
63 Vdc	120	–	–
100 Vdc	150	75	50
250 Vdc	200	150	100
400 Vdc	275	175	125

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

V_R	Pulse characteristic k_0 in $V^2/\mu s$ (for $V_{pp} \leq V_R$)		
	Lead spacing		
	7,5 mm	10 mm	15 mm
63 Vdc	15 000	–	–
100 Vdc	30 000	15 000	10 000
250 Vdc	100 000	75 000	50 000
400 Vdc	220 000	140 000	100 000

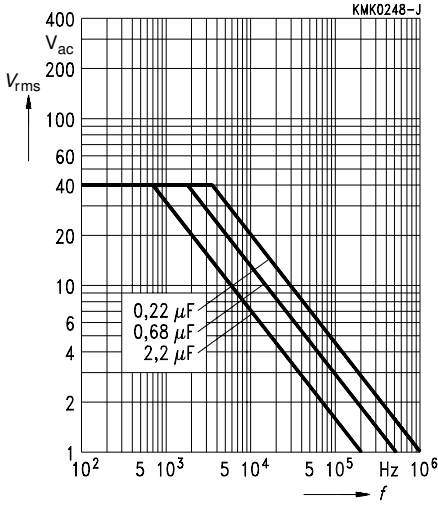


B 32 510

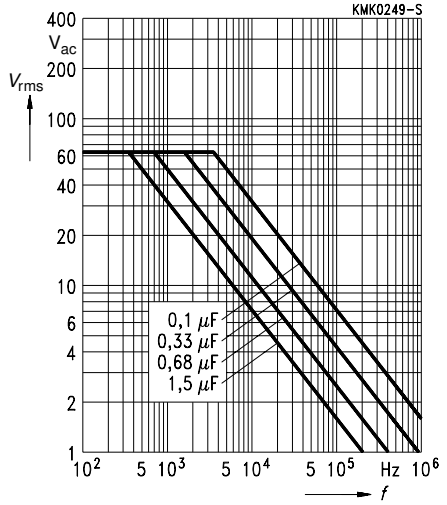
Permissible ac voltage V_{rms} versus frequency f

Lead spacing 7,5 mm

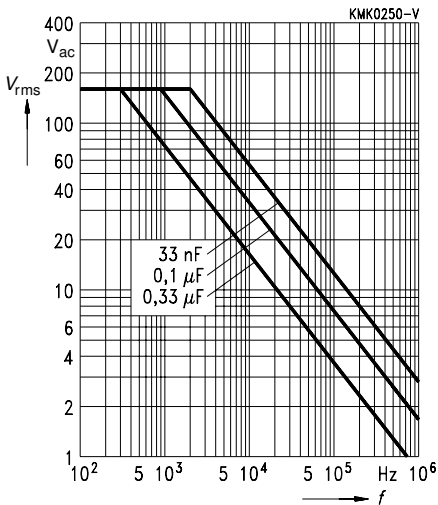
63 Vdc/ 40 Vac



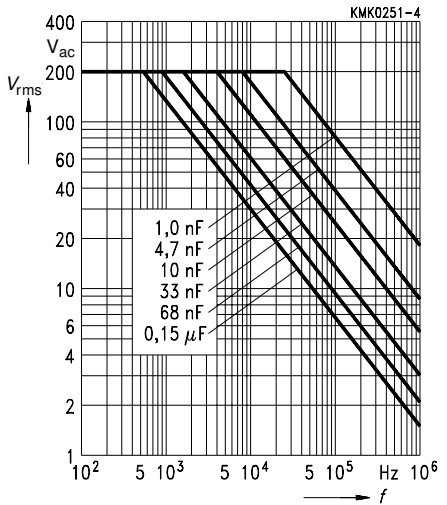
100 Vdc/ 63 Vac

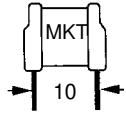


250 Vdc/ 160 Vac



400 Vdc/ 200 Vac

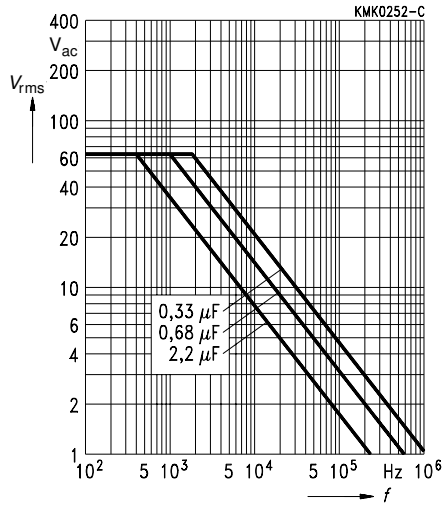




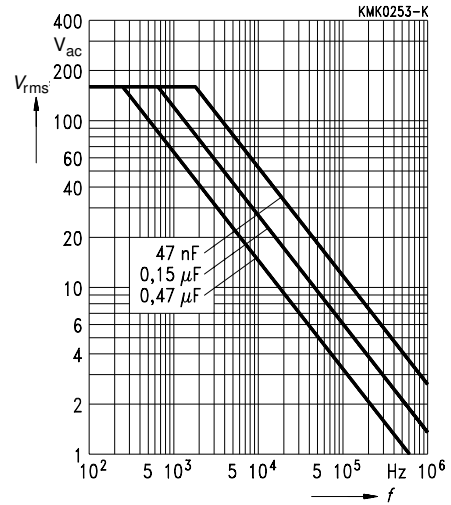
Permissible ac voltage V_{rms} versus frequency f

Lead spacing 10 mm

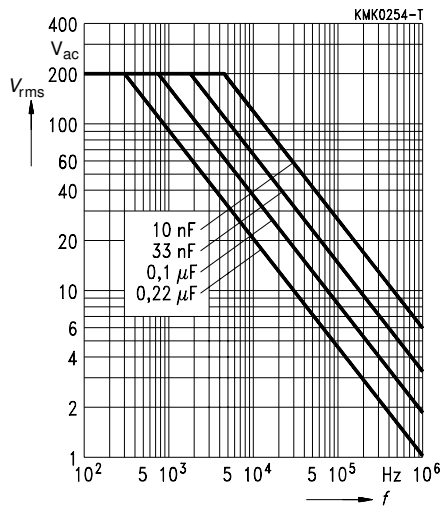
100 Vdc/ 63 Vac

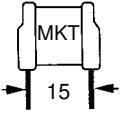


250 Vdc/ 160 Vac



400 Vdc/ 200 Vac



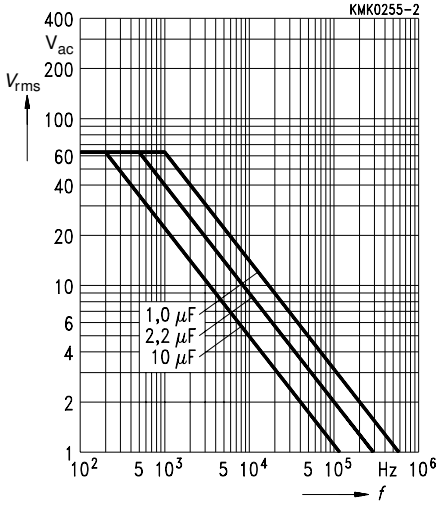


B 32 512

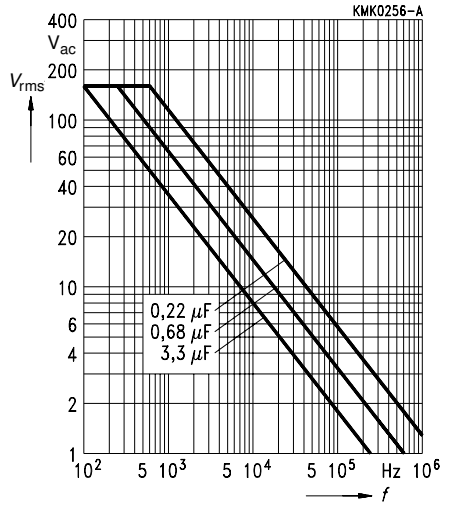
Permissible ac voltage V_{rms} versus frequency f

Lead spacing 15 mm

100 Vdc/ 63 Vac



250 Vdc/ 160 Vac



400 Vdc/ 200 Vac

