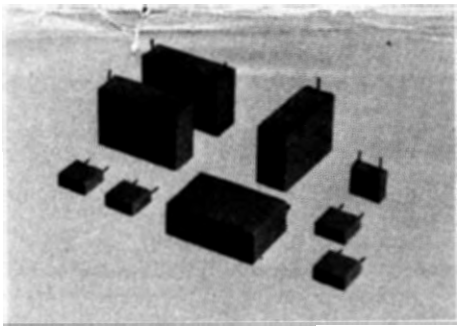
2222 344 (nugget)
miniature



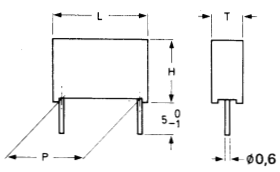
See previous page except for

version V(d.c.)	max pulse steepness V/μs
100	10
250	25
400	40
630	60

Composition of the catalogue no.

2222 344 ... ...

dielectric	V(d.c.)	%		
PETP	100	20	26	capacitance
		10	27	code
	250	20	46	in table
		10	47	
	400	20	56	
		10	57	
	630	20	66	
		10	67	



fixed volume for **ALL types**
T x L x H = 4,5 x 10,5 x 10 mm
P = 7,5 mm

U_R (V)

C_R nF	cap. code	d.c. a.c.	100 63	250 160	400 200	630 220
3,9	392					●
4,7	472					●
5,6	562					●
6,8	682					●
8,2	822				●	
10	103				●	
12	123				●	
15	153				●	
18	183			●		
22	223			●		
27	273			●		
33	333			●		
39	393		●			
47	473		●			
56	563		●			
68	683		●			
100	104		●			

film capacitors

metallized film

2222 344 (nugget)

Coupling and decoupling capacitors of well-defined shape with radial leads. For use in general industrial and professional applications where environmental conditions are of prime importance.

Rated capacitance range, C_R	3,9 nF to 5,8 μF
tolerance	10 and 20%
Capacitance series	E6 (E12 on request)
Rated voltage range, U_R (d.c.)	100 to 630 V
U_R (a.c.) 50–60 Hz	63 to 220 V
Category temperature range	–55 to +100 °C
Test voltage	1,6 x U_R
Insulation resistance	
$C \leqslant 0{,}33$ μF: $U_R \geqslant 250$ V(d.c.)	$R > 30000$ MΩ
$U_R = 100$ V(d.c.)	$R > 15000$ MΩ
$C > 0{,}33$ μF; $U_R \geqslant 250$ V(d.c.)	$RC > 10000$ s
$U_R = 100$ V(d.c.)	$RC > 5000$ s
Tan δ at 10 kHz	
dielectric: polycarbonate	$\leqslant 75 \times 10^{-4}$
PETP	$\leqslant 150 \times 10^{-4}$
Climatic category IEC 68	55/100/56

Composition of the catalogue no.

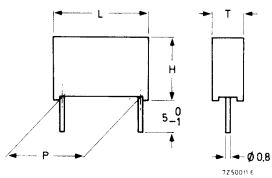
2222 344 . . . .

dielectric	V(d.c.)	%		
polycarbonate	100	20	20	capacitance
		10	21	code
	250	20	44	in table
		10	45	
	400	20	50	
		10	51	
	630	20	60	
		10	61	
PETP	100	20	24	
		10	25	
	250	20	40	
		10	41	
	400	20	54	
		10	55	

Max steepness in V/μs (pulse loads)
dimensions L (mm)

V(d.c.)	13	17,5	26	30
100	10	7	3,5	3
250	20	10	6	5
400	30	20	9	8
630	45	30	13	10

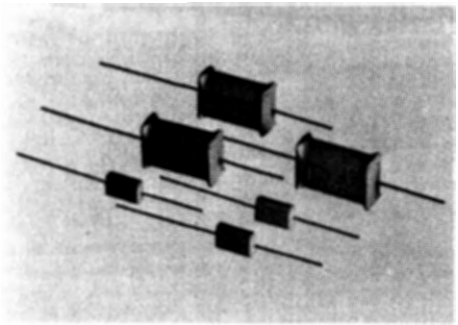
L	P
13	10
17,5	15
26	22,5
30	27,5



Selection chart for C_R–U_R and relevant sizes

C_R	cap. code	U_R(V) d.c. 100 a.c. 63 T x L x H	250 160 T x L x H	400 200 T x L x H	630 220 T x L x H
0,01	103			4,5 x 13 x 10	4,5 x 13 x 10
0,015	153			4,5 x 13 x 10	5 x 13 x 11
0,022	223			4,5 x 13 x 10	6 x 13 x 12
0,033	333			4,5 x 13 x 10	6 x 17,5 x 11,5
0,047	473		4,5 x 13 x 10	5 x 17,5 x 11	7 x 17,5 x 13
0,068	683		4,5 x 13 x 10	6 x 17,5 x 11,5	8,5 x 17,5 x 14,5
0,1	104	4,5 x 13 x 10	5 x 17,5 x 11	7 x 17,5 x 13	6,5 x 26 x 15,5
0,15	154	4,5 x 13 x 10	6 x 17,5 x 11,5	8,5 x 17,5 x 14,5	7,5 x 26 x 16,5
0,22	224	5 x 13 x 11	7 x 17,5 x 13	6,5 x 26 x 15,5	9 x 26 x 19
0,33	334	5 x 17,5 x 11	8,5 x 17,5 x 14,5	7,5 x 26 x 16,5	11 x 30 x 20,5
0,47	474	6 x 17,5 x 11,5	6,5 x 26 x 15,5	9,5 x 26 x 19	13,5 x 30 x 23
0,68	684	7 x 17,5 x 13	7,5 x 26 x 16,5	11 x 30 x 20,5	
1	105	8,5 x 17,5 x 14,5	9,5 x 26 x 19	13,5 x 30 x 23	
1,5	155	6,5 x 26 x 15,5	11 x 30 x 20,5		
2,2	225	8,5 x 26 x 18	13,5 x 30 x 23		
3,3	335	9,5 x 26 x 19			
4,7	475	11 x 30 x 20,5			
6,8	685	13,5 x 30 x 23			

2222 341 (mepolesco)



Coupling and decoupling capacitors in an axial version for use in general industrial and other professional applications where severe environmental conditions are encountered.

Rated capacitance range (E6 series), C_R	0,001 to 4,7 µF
tolerance	10 and 20%
Capacitance series	E6 (E12 on request)
Rated voltage range, U_R (d.c.)	100 to 1600 V
U_R (a.c.) 50–60 Hz	63 to 250 V
Category temperature range	–55 to +100 °C
Test voltage (d.c.)	1,6 x U_R
Insulation resistance	
$C \leqslant 0{,}33$ µF; $U_R \geqslant 250$ V(d.c.)	$R > 30000$ MΩ
$U_R = 100$ V(d.c.)	$R > 15000$ MΩ
$C > 0{,}33$ µF; $U_R \geqslant 250$ V(d.c.)	$RC > 10000$ s
$U_R = 100$ V(d.c.)	$RC > 5000$ s
Tan δ at 10 kHz	
dielectric: polycarbonate	$\leqslant 75 \times 10^{-4}$
PETP	$\leqslant 150 \times 10^{-4}$
Climatic category IEC 68	55/100/56

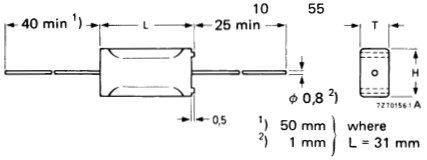
Max steepness (pulse loads)

U_R (d.c.)	L = 14,5	18	23,5	31	mm
100 V	10	7	4	3	V/µs
250 V	20	10	7	5	V/µs
400 V	30	20	10	8	V/µs
630 V	45	30	15	10	V/µs
1000 V	–	45	30	20	V/µs
1600 V	200	90	50	30	V/µs

Composition of the catalogue no.

2222 341 . . . .

dielectric	V(d.c.)	%		
polycarbonate	100	20	28	capacitance
		10	29	code
	250	20	48	in table
		10	49	
	400	20	58	
		10	59	
	630	20	60	
		10	61	
	1000	20	70	
		10	71	
	1600	20	80	
		10	81	
PETP	100	20	26	
		10	27	
	250	20	88	
		10	89	
	400	20	54	
		10	55	



1) 50 mm
2) 1 mm
where L = 31 mm

Selection chart for C_R–U_R and relevant sizes

C_R µF	cap. code	d.c. 100 / a.c. 63 T x L x H	250 / 160 T x L x H	U_R (V) 400 / 220 T x L x H	630 / 220 T x L x H	1000 / 250 T x L x H	1600 / 250 T x L x H
0,001	102						5,5 x 14,5 x 9,4
0,0015	152						6,5 x 14,5 x 10,4
0,0022	222						6,5 x 18 x 10,4
0,0033	332						6,5 x 18 x 10,4
0,0047	472						7,6 x 18 x 11,5
0,0068	682						7,4 x 23,5 x 11,5
0,01	103			4,7 x 14,5 x 8,7	4,7 x 14,5 x 8,7	6,5 x 18 x 10,4	7,4 x 23,5 x 11,5
0,0015	153			4,7 x 14,5 x 8,7	5,5 x 14,5 x 9,4	7,6 x 18 x 11,5	8,7 x 23,5 x 12,8
0,0022	223			4,7 x 14,5 x 8,7	6,5 x 14,5 x 10,4	7,4 x 23,5 x 11,5	10,4 x 23,5 x 14,4
0,0033	333			4,7 x 14,5 x 8,7	6,5 x 18 x 10,4	8,7 x 23,5 x 12,8	10,4 x 31 x 14,6
0,047	473		4,7 x 14,5 x 8,7	6,5 x 14,5 x 10,4	7,6 x 18 x 11,5	10,4 x 23,5 x 14,4	12,4 x 31 x 19,5
0,068	683		4,7 x 14,5 x 8,7	6,5 x 18 x 10,4	7,4 x 23,5 x 11,5	10,4 x 31 x 14,6	15 x 31 x 22
0,1	104	4,7 x 14,5 x 8,7	5,5 x 14,5 x 9,4	7,6 x 18 x 11,5	8,7 x 23,5 x 12,8	12,4 x 31 x 19,5	
0,15	154	4,7 x 14,5 x 8,7	6,5 x 18 x 10,4	7,4 x 23,5 x 11,5	10,4 x 23,5 x 14,4	15 x 31 x 22	
0,22	224	6,5 x 14,5 x 10,4	7,6 x 18 x 11,5	8,7 x 23,5 x 12,8	10,4 x 31 x 14,6		
0,33	334	6,5 x 18 x 10,4	7,4 x 23,5 x 11,5	10,4 x 23,5 x 14,4	12,4 x 31 x 19,5		
0,47	474	7,6 x 18 x 11,5	8,7 x 23,5 x 12,8	10,4 x 31 x 14,6	15 x 31 x 22		
0,68	684	7,4 x 23,5 x 11,5	10,4 x 23,5 x 14,4	12,4 x 31 x 19,5			
1	105	8,7 x 23,5 x 12,8	10,4 x 31 x 14,6	15 x 31 x 22			
1,5	155	10,4 x 23,5 x 14,4	12,4 x 31 x 19,5				
2,2	225	10,4 x 31 x 14,6	15 x 31 x 22				
3,3	335	12,4 x 31 x 19,5					
4,7	475	15 x 31 x 22					

film capacitors

metallized film

2222 352 (f.f.c.)

Coupling and decoupling capacitors, colour coded and in a radial lead version: for use in general purpose applications.

Rated capacitance range, C_R	0,001 to 6,8 μF
tolerance	10 and 20%
Capacitance series	E12
Rated voltage range, U_R (d.c.)	100 to 630 V
U_R (a.c.) 50–60 Hz	63 to 220 V
Test voltage between terminals	1,6 x U_R
Category temperature range	−40 to +100 °C
Tan δ at 10 kHz	⩽ 150 x 10^{-4}
Insulation resistance C ⩽ 0,33 μF	R > 30000 MΩ *
at 20 °C C > 0,33 μF	RC > 10000 s *
	(MΩ x μF)

* Except 100 V version: R > 15000 MΩ
RC > 5000 s.

Composition of the catalogue no.

2222 352 . . . .

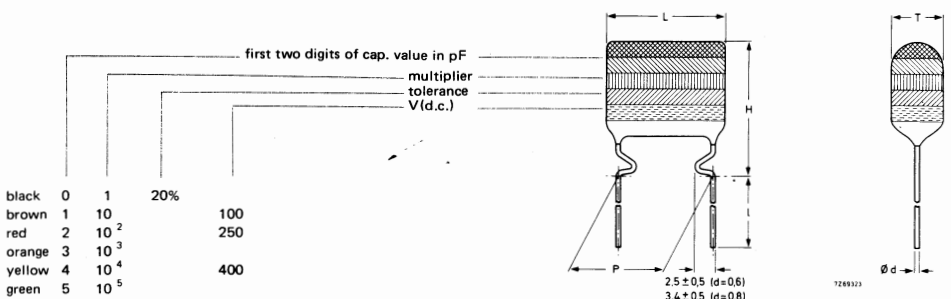
dielectric	U_R	%	long leads	short leads	capacitance code in table
PETP	100	20	24	27	
		10	25	28	
	250	20	44	47	
		10	45	48	
	400	20	54	57	
		10	55	58	
	630	20	64	67	
		10	65	68	

Max steepness in V/μs (pulse load)

U_R V(d.c.)	dimension 12,5	L (mm) 17,5	22,5	30
100	10	7	4	3
250	20	10	7	5
400	30	20	10	8
630	45	30	15	10

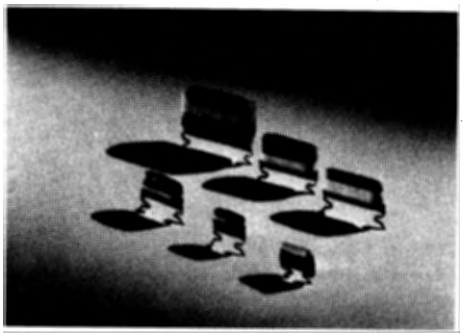
Dimensions (mm)

L	d	P	long leads l	short leads l
12,5	0,6	10,16 ± 0,3	17 ± 4	5–1
17,5	0,8	15,24 ± 0,3	17 ± 4	5–1
22,5	0,8	20,32 ± 0,3	25 ± 4	5–1
30	0,8	27,94 ± 0,3	23 ± 4	5–1



black	0	1	20%	
brown	1	10		100
red	2	10^2		250
orange	3	10^3		
yellow	4	10^4		400
green	5	10^5		
blue	6			630
violet	7			
grey	8			
white	9		10%	

Note: Version with long straight leads available on request (2222 342 series).



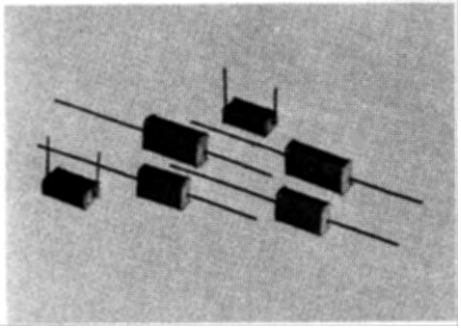
Selection chart for C_R–U_R and relevant sizes

C_R	cap.	d.c. 100 a.c. 63	250 160	U_R (V)	400 220	630 220
µF	code	T x L x H	T x L x H		T x L x H	T x L x H
0,001	102		4,5 x 12,5 x 12,5			
0,0012	122					
0,0015	152					
0,0018	182					
0,0022	222					
0,0027	272					
0,0033	332					
0,0039	392					
0,0047	472					
0,0056	562					
0,0068	682					
0,0082	822					
0,01	103		4 x 12,5 x 12		4,5 x 12,5 x 12,5	4,5 x 12,5 x 12,5
0,012	123					5 x 12,5 x 13
0,015	153					5,5 x 12,5 x 13,5
0,018	183					6 x 12,5 x 14
0,022	223					6,5 x 12,5 x 14,5
0,027	273				5 x 12,5 x 13	5,5 x 17,5 x 14,5
0,033	333				5,5 x 12,5 x 13,5	6 x 17,5 x 15
0,039	393				6 x 12,5 x 14	6,5 x 17,5 x 15,5
0,047	473	4,5 x 12,5 x 12,5			6,5 x 12,5 x 14,5	7 x 17,5 x 16
0,056	563		4,5 x 12,5 x 12,5		5,5 x 17,5 x 14,5	6 x 22,5 x 15
0,068	683				6 x 17,5 x 15	6,5 x 22,5 x 15,5
0,082	823				6,5 x 17,5 x 15,5	7 x 22,5 x 16
0,1	104		5 x 12,5 x 13		7 x 17,5 x 16	7,5 x 22,5 x 16,5
0,12	124		5,5 x 17,5 x 14,5		6 x 22,5 x 15	8,5 x 22,5 x 17,5
0,15	154	5 x 12,5 x 13	6 x 17,5 x 15		6,5 x 22,5 x 15,5	9,5 x 22,5 x 18,5
0,18	184	5,5 x 12,5 x 13,5	6,5 x 17,5 x 15,5		7 x 22,5 x 16	8,5 x 30 x 17,5
0,22	224	6 x 12,5 x 14	7 x 17,5 x 16		7,5 x 22,5 x 16,5	9,5 x 30 x 18,5
0,27	274	6,5 x 12,5 x 14,5	6 x 22,5 x 15		8,5 x 22,5 x 17,5	9 x 30 x 21
0,33	334	5,5 x 17,5 x 14,5	6,5 x 22,5 x 15,5		9,5 x 22,5 x 18,5	10 x 30 x 22
0,39	394	6 x 17,5 x 15	7 x 22,5 x 16		8,5 x 30 x 17,5	11 x 30 x 23
0,47	474	6,5 x 17,5 x 15,5	7,5 x 22,5 x 16,5		9,5 x 30 x 18,5	12 x 30 x 24
0,56	564	7 x 17,5 x 16	8 x 22,5 x 17		9 x 30 x 21	
0,68	684	6 x 22,5 x 15	9 x 22,5 x 18		10 x 30 x 22	
0,82	824	6,5 x 22,5 x 15,5	8 x 30 x 17		11 x 30 x 23	
1	105	7 x 22,5 x 16	9 x 30 x 18		12 x 30 x 24	
1,2	125	7,5 x 22,5 x 16,5	8,5 x 30 x 20,5			
1,5	155	8,5 x 22,5 x 17,5	9,5 x 30 x 21,5			
1,8	185	9,5 x 22,5 x 18,5	10,5 x 30 x 22,5			
2,2	225	8,5 x 30 x 17,5	11,5 x 30 x 23,5			
2,7	275	9,5 x 30 x 18,5				
3,3	335	9 x 30 x 21				
3,9	395	10 x 30 x 22				
4,7	475	11,5 x 30 x 23,5				
5,6	565	12,5 x 30 x 24,5				
6,8	685	14 x 30 x 26				

film capacitors

metallized film

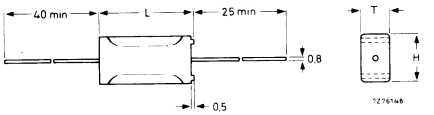
2222 330 (r.i.s.)



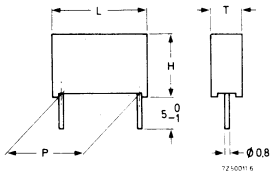
Metallized PETP/paper dielectric

Interference suppression capacitors, dual dielectric, single section type. Designed for radio interference suppression in consumer and general industrial applications (class X).

Rated capacitance range (E6 series), C_R	0,01 to 0,33 μF
tolerance	± 20%
Rated voltage, U_R (a.c.) 50 to 60 Hz	250 V
Test voltage (d.c.)	750 V
Insulation resistance	> 15000 MΩ
Tan δ at 10 kHz	⩽ 130 x 10^{-4}
Rated temperature	85 °C
Climatic category, IEC 68	40/085/21
DIN 40040	GPF
Approval	VDE 0560-7, class X
	SEMKO applied for



style 1



style 2

Dimensions (mm)

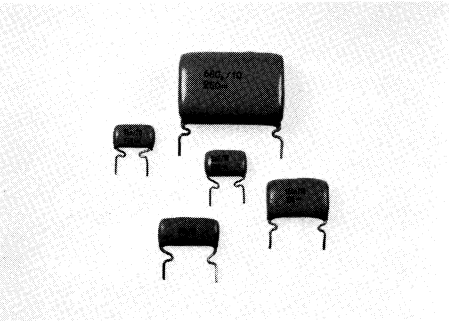
C_R μF	style 1 T x L x H	catalogue no.
0,01	6,5 x 18 x 10,4	2222 330 00103
0,015	6,5 x 18 x 10,4	153
0,022	6,5 x 18 x 10,4	223
0,033	6,5 x 18 x 10,4	333
0,047	6,5 x 18 x 10,4	473
0,068	7,6 x 18 x 11,5	683
0,1	7,4 x 23,5 x 11,5	104
0,15	8,7 x 23,5 x 12,8	154
0,22	10,4 x 23,5 x 14,4	224
0,33		

style 2 T x L x H	P ± 0,4	catalogue no.
5 x 17,5 x 11	15	2222 330 40103
5 x 17,5 x 11	15	153
5 x 17,5 x 11	15	223
5 x 17,5 x 11	15	333
6 x 17,5 x 11,5	15	473
7 x 17,5 x 13	15	683
8,5 x 17,5 x 14,5	15	104
6,5 x 26 x 15,5	22,5	154
7,5 x 26 x 16,5	22,5	224
9,5 x 26 x 19	22,5	334

film capacitors

film/foil

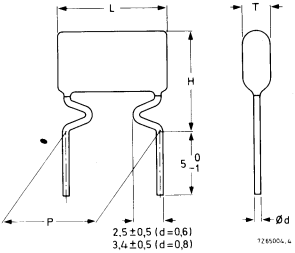
2222 347 (p.p.c.)



PETP dielectric

A radial lead, lacqer-encapsulated capacitor for coupling and decoupling where steep pulses are encountered.

Rated capacitance range, C_R	2,2 to 1000 nF
tolerance	10 and 20%
Capacitance series	E6
on request	E12
Rated voltage range, U_R (d.c.)	100 to 630 V
U_R (a.c.) 50–60 Hz	50 to 200 V
Test voltage	2 x U_R
Category temperature range	−40 to +100 °C
Tan δ at 10 kHz	< 110 x 10^{-4}
Insulation resistance C ⩽ 330 nF	R > 50000 MΩ
at 20 °C C > 330 nF	RC > 16500 s
Max pulse steepness	unlimited



Composition of the catalogue no.

2222 347 . . . .

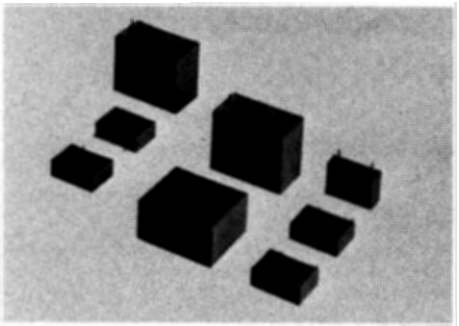
U_R	%		
100	20	20	capacitance code in table
	10	21	
250	20	40	
	10	41	
400	20	50	
	10	51	
630	20	60	
	10	61	

L	P	d
13,5	10,16 (4e)	0,6
19	15,24 (6e)	0,8
27	22,86 (9e)	0,8
32	27,94 (11e)	0,8

Selection chart for C_R–U_R and relevant sizes

C_R nF	cap. code	U_R (V) d.c. 100 a.c. 50 T x L x H	250 80 T x L x H	400 125 T x L x H	630 200 T x L x H
2,2	222				4,5 x 13,5 x 12
3,3	332				5,5 x 13,5 x 13
4,7	472			4,5 x 13,5 x 12	6 x 13,5 x 13
6,8	682			5,5 x 13,5 x 13	7 x 13,5 x 14,5
10	103		5 x 13,5 x 12,5	6 x 13,5 x 13,5	6 x 19 x 14,5
15	153	4,5 x 13,5 x 12	5,5 x 13,5 x 13	7 x 13,5 x 14,5	7 x 19 x 15,5
22	223	5,5 x 13,5 x 13	6,5 x 13,5 x 14	6 x 19 x 14,5	8 x 19 x 16,5
33	333	6 x 13,5 x 13,5	5,5 x 19 x 14	7 x 19 x 15,5	7 x 27 x 18,5
47	473	7 x 13,5 x 14,5	6,5 x 19 x 15	8 x 19 x 16,5	8,5 x 27 x 20
68	683	6 x 19 x 14,5	7,5 x 19 x 16	7 x 27 x 18,5	10,5 x 27 x 22
100	104	7 x 19 x 15,5	6,5 x 27 x 18	8,5 x 27 x 20	11 x 32 x 22,5
150	154	8 x 19 x 16,5	8 x 27 x 19,5	10,5 x 27 x 22	13,5 x 32 x 25
220	224	7 x 27 x 18,5	9,5 x 27 x 21	11 x 32 x 22,5	
330	334	8,5 x 27 x 20	10 x 32 x 21,5	13,5 x 32 x 25	
470	474	10,5 x 27 x 22	12 x 32 x 23,5		
680	684	11 x 32 x 22,5	15 x 32 x 26,5		
1000	105	13,5 x 32 x 25			

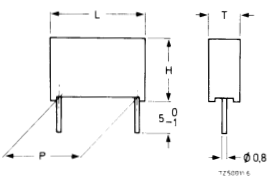
2222 357



Polypropylene dielectric

The construction of this capacitor enables it to withstand high currents, high voltages and steep pulses. It is commonly used in television sets in deflection circuits and a.c. motor control.

Rated capacitance range (E12 series), U_R	0,018 to 0,82 μF
tolerance	± 5 and ± 10%
Rated voltage range, U_R (d.c.)	250, 630 and 1000 V
(a.c.) 50 to 60 Hz	160, 300 and 400 V
Test voltage (d.c.)	1,6 x U_R
Rated temperature	85 °C
Insulation resistance, C ≤ 0,1 μF	R > 50000 MΩ
C > 0,1 μF	RC > 5000 s
Tan δ at 10 kHz	≤ 5 x 10^{-4}
Climatic category, IEC 68	40/085/56
Pulse steepness	unlimited



L	P ± 0,4
21,5	15,0
29	22,5
34	27,5

Composition of the catalogue no.

2222 357 . . . .

U_R, 51 = 250 V (d.c.)
90 = 630 or 1000 V (d.c.)

capacitance code in table

Selection chart for C_R–U_R and relevant sizes

C_R μF	d.c. / a.c.	U_R (V) 250 / 160 T x L x H	cap. code C ± 10%	630 / 300 T x L x H	cap. code C ± 10%	cap. code C ± 5%	1000 / 400 T x L x H	cap. code C ± 10%	cap. code C ± 5%
0,018							8,5 x 29 x 18,5	032	045
0,022							8,5 x 29 x 18,5	033	046
0,027				8,5 x 29 x 18,5	005	018	8,5 x 29 x 18,5	034	047
0,033				8,5 x 29 x 18,5	006	019	10 x 29 x 20	035	048
0,039		8 x 21,5 x 15	393	8,5 x 29 x 18,5	007	021	10 x 34 x 20	036	049
0,047		8 x 21,5 x 15	473	10 x 29 x 20	008	022	10 x 34 x 20	037	051
0,056		8 x 21,5 x 15	563	10 x 29 x 20	009	023	10 x 34 x 20	038	052
0,068		10 x 21,5 x 17	683	10 x 34 x 20	011	024	12 x 34 x 22	039	053
0,082		10 x 21,5 x 17	823	10 x 34 x 20	012	025	12 x 34 x 22	041	054
0,1		8,5 x 29 x 18,5	104	12 x 34 x 22	013	026	15 x 34 x 25	042	055
0,12		8,5 x 29 x 18,5	124	12 x 34 x 22	014	027	18 x 34 x 28	043	056
0,15		8,5 x 29 x 18,5	154	15 x 34 x 25	015	028	18 x 34 x 28	044	057
0,18		10 x 29 x 20	184	18 x 34 x 28	016	029			
0,22		10 x 34 x 20	224	18 x 34 x 28	017	031			
0,27		10 x 34 x 20	274						
0,33		12 x 34 x 22	334						
0,39		12 x 34 x 22	394						
0,47		15 x 34 x 25	474						
0,56		15 x 34 x 25	564						
0,68		18 x 34 x 28	684						
0,82		18 x 34 x 28	824						

film capacitors

survey

For detailed information
Handbook CM2b

Metallized film capacitors

main application	description	dielectric	rated voltage	rated capacitance	series no.	status	page
light and motor	sealed aluminium case; solder tags	metallized polycarbonate film	160, 220, 250 V (r.m.s.)	1,5 to 25 μF	325, 326 327	M	340
coupling and decoupling	moulded; axial leads	metallized PETP film or metallized polycarbonate film	100, 250 400, 630 1000, 1600 V (d.c.)	0,001 to 4,7 μF	341	D	341
coupling and decoupling	potted; radial leads	metallized PETP film or metallized polycarbonate film	100, 250, 400, 630 V (d.c.)	0,0039 to 6,8 μF	344	D	342 – 343
coupling and decoupling	lacquered; radial leads	metallized PETP film	100, 250, 400, 630 V (d.c.)	0,001 to 6,8 μF	352	D	344 – 345
interference suppression	moulded; axial leads potted; radial leads	paper/metallized PETP film	250 V (r.m.s.)	0,01 to 0,33 μF	330	N	346

Film/foil capacitors

interference suppression	sealed case; axial leads	paper/ PETP film	250 V (r.m.s.)	4,7 to 330 nF	276	D	347
flyback	sealed case; axial leads	paper/poly-propylene	750, 1500, 2000 V (peak)	1,5 to 27 nF	278	D	348
general purposes	lacquered; axial leads	PETP film	160, 400 V (d.c.)	0,001 to 1 μF	311	M	349
high currents and/or steep pulses	lacquered; radial leads	PETP film	100, 250 400, 630 V (d.c.)	0,0022 to 1 μF	347	D	350
deflection	potted; radial leads	polypropylene film	250, 630 1000 V (d.c.)	0,018 to 0,82 μF	357	N	351
tuned circuits; filter networks	sleeved; axial leads	polystyrene film	63, 125, 250, 500 V (d.c.)	51 to 162000 pF	424 to 431	D	352 – 353
LC filters	potted; radial leads	polystyrene film	63 V (d.c.)	100 to 12100 pF	443	D	354
tuned circuits; LC filters	wrap and fill; axial leads	polystyrene film	63, 125, 250, 500 V (d.c.)	6,2 to 162 nF	444 to 447	N	355

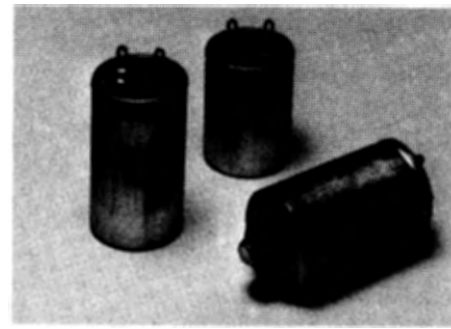
film capacitors

metallized film

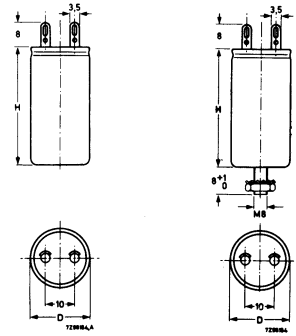
2222 325 2222 326 2222 327

Light and motor applications.

Shunt capacitor in power-factor correction of fluorescent and other discharge lamps;
phase-shift capacitor in single-phase alternating current motors;
commutation capacitor in thyristor circuits; due to their low losses they can also be used at higher frequencies. Approvals for 327-series: DEMKO, NEMKO, SEMKO and conform to BS4017.



Rated capacitance range, C_R	1,5 to 25 μF
tolerance	± 10%
Rated voltage range, U_R (r.m.s.)	160 to 250 V
Operating frequency	50 to 60 Hz
Category temperature range	−40 to +85 °C
Test voltage between:	
terminals 325 series	265 V(r.m.s.)
326 series	365 V(r.m.s.)
327 series	540 V(r.m.s.)
interconnected terminals and case	2500 V(r.m.s.) or 3500 V(d.c.)
Insulation resistance between: terminals	$> \frac{10000}{C\ (\mu F)}$ MΩ
interconnected terminals and case	> 12500 MΩ
Tan δ at 50 Hz	$< 25 \times 10^{-4}$
Climatic category IEC 68	40/085/56



Composition of the catalogue no.

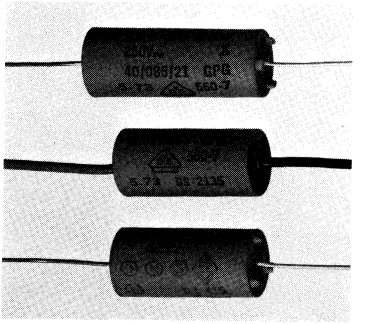
2222 32 . 0 .

U_R					
5 = 160 V 6 = 220 V 7 = 250 V	0 = style 1 5 = style 2	first two digits of capacitance value in μF (see chart)	factor 5 = 0,1 6 = 1	style 1, with solder tags	style 2, as style 1 but bolt mounting

Selection chart for C_R–U_R and relevant sizes

C_R μF	U_R (V)		
	160	220	250
	D x H	D x H	D x H
1,5		30 x 40	30 x 40
2	30 x 40	30 x 40	30 x 40
2,5	30 x 40	30 x 40	30 x 40
3	30 x 40	30 x 40	30 x 40
4	30 x 40	30 x 40	30 x 52
4,5	30 x 40	30 x 40	30 x 52
5	30 x 40	30 x 40	30 x 52
6	30 x 40	30 x 52	35 x 52
7	30 x 40	30 x 52	35 x 52
8	30 x 40	30 x 52	35 x 52
9	30 x 52	30 x 52	40 x 52
10	30 x 52	35 x 52	40 x 52
12	30 x 52	35 x 52	
14	35 x 52	40 x 52	
16	35 x 52	40 x 52	
18	35 x 52	40 x 52	
20	40 x 52		
25	40 x 52		

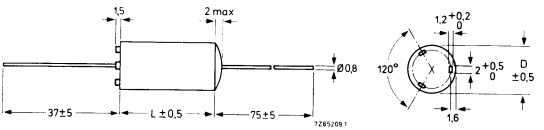
2222 276 (r.i.s.)



Paper/PETP dielectric

Interference suppression capacitors for use in consumer and industrial applications (class X and Y).

Rated capacitance range (E6 series), C_R	4,7 to 330 nF
tolerance	± 20%
Rated voltage, U_R (r.m.s.)	250 V
Insulation resistance:	
between leads	> 6000 MΩ
between leads and metal foil wrapped around the case	> 6000 MΩ
Tan δ at 1 kHz	≤ 60 x 10^{-4}
Climatic category IEC 68	40/085/21
DIN 40040	GPG (class X) GPF (class Y)
Approval	DEMKO and VDE 0560-7 (class X and Y)



C_R nF	catalogue no.	case size D x L	class (IEC 161) (VDE 0560-7)
6,8	2222 276 60002	13 x 25	Y
10	60003	13 x 25	Y
10	10003	13 x 25	X
15	10004	13 x 25	X
22	10005	13 x 25	X
33	10006	13 x 25	X
47	10007	13 x 25	X
68	10008	13 x 25	X
100	10009	13 x 31	X
150 *	10011	16 x 36	X
220 *	10012	18 x 36	X
330 *	10013	20 x 41	X
safety capacitor			
4,7	2222 276 60101	13 x 31	Y

* Not VDE approved.

The safety capacitor is approved by:
ASEV (1016)
DEMKO (IEC 65, CEE1 and DHCR21)
NEMKO (IEC 65 and NEMKO 132.56)
SEMKO (IEC 65, CEE1 and SEMKO 101)
VDE (IEC 161, VDE 0560-7 and 0560-2)

film capacitors

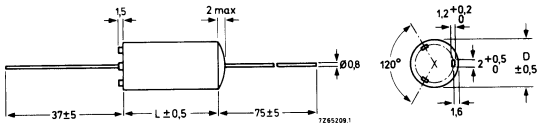
film/foil

2222 278

Paper/polypropylene dielectric

A series of dual dielectric capacitors specifically designed for use in tv line flyback circuits.

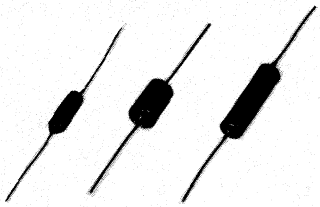
Rated capacitance range, C_R	1,5 to 27 nF
tolerance	5%
Peak voltage C = 10-27 nF	⩽ 750 V
C = 1,5-12 nF	⩽ 1500 V
C = 1,5-10 nF	⩽ 2000 V
Pulse duration	10 to 14 μs
Pulse steepness	⩽ 750 V/μs
Category temperature range	−25 to +70 °C



C_R nF	peak voltage V	case size L x D	catalogue no.
10	750	25 x 13	2222 278 52103
11		25 x 13	52113
12		25 x 13	52123
13		25 x 13	52133
15		25 x 13	52153
16		25 x 13	52163
18		31 x 13	52183
20		31 x 13	52203
22		31 x 13	52223
24		31 x 13	52243
27		31 x 13	52273
1,5	1500	31 x 13	72152
1,6		31 x 13	72162
1,8		31 x 13	72182
2		31 x 13	72202
2,2		31 x 13	72222
2,4		31 x 13	72242
2,7		31 x 13	72272
3		31 x 13	72302
3,3		31 x 13	72332
3,6		31 x 13	72362
3,9		36 x 16	72392
4,3		36 x 16	72432
4,7		36 x 16	72472
5,1		36 x 16	72512
5,6		36 x 16	72562
6,2		36 x 16	72622
6,8		36 x 16	72682
7,5		36 x 16	72752
8,2		36 x 16	72822
9,1		36 x 16	72912
10		36 x 16	72103
11		36 x 18	72113
12		36 x 18	72123

C_R nF	peak voltage V	case size L x D	catalogue no.
1,5	2000	31 x 13	2222 278 82152
1,6		31 x 13	82162
1,8		31 x 13	82182
2		31 x 13	82202
2,2		31 x 13	82222
2,4		31 x 13	82242
2,7		31 x 13	82272
3		31 x 13	82302
3,3		31 x 13	82332
3,6		31 x 13	82362
3,9		36 x 16	82392
4,3		36 x 16	82432
4,7		36 x 16	82472
5,1		36 x 16	82512
5,6		36 x 16	82562
6,2		36 x 16	82622
6,8		36 x 16	82682
7,5		36 x 16	82752
8,2		36 x 16	82822
9,1		36 x 16	82912
10		36 x 16	82103

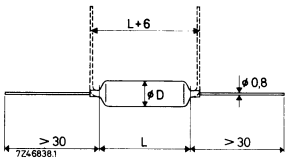
2222 311



PETP dielectric

Due to its construction this capacitor is very suitable for applications where high pulse steepness occurs.

Rated capacitance range, C_R	1 to 1000 nF
tolerance	10%
Capacitance series	E6
on request	E12
Rated voltage range, U_R (d.c.)	160 and 400 V
U_R (a.c.) 50–60 Hz	90 and 150 V
Test voltage	2 x U_R
Category temperature range	−40 to +85 °C
Tan δ at 1 kHz	$< 60 \times 10^{-4}$
Insulation resistance at 20 °C	
$C \leqslant 0{,}33\ \mu F$	$R > 50000\ M\Omega$
$C > 0{,}33\ \mu F$	$RC > 16500$ s



Composition of the catalogue no.

2222 311 . . . . .

160 V version 31 — capacitance code in table

400 V version 51

Selection chart for C_R–U_R and relevant sizes

C_R nF	cap. code	U_R (V) d.c. 160 a.c. 90 D x L	400 150 D x L
1	102		7,5 x 18
1,5	152		7,5 x 18
2,2	222		7,5 x 18
3,3	332		7,5 x 18
4,7	472		7,5 x 18
6,8	682		7,5 x 18
10	103	7,5 x 18	7,5 x 18
15	153	7,5 x 18	7,5 x 18
22	223	7,5 x 18	8,5 x 18
33	333	7,5 x 18	10 x 18
47	473	8 x 18	11,5 x 18
68	683	9 x 18	9,5 x 32
100	104	10,5 x 18	11 x 32
150	154	12 x 18	12,5 x 32
220	224	10 x 32	14,5 x 32
330	334	12 x 32	17 x 32
470	474	14 x 32	19,5 x 32
680	684	16 x 32	
1000	105	18,5 x 32	

film capacitors

film/foil

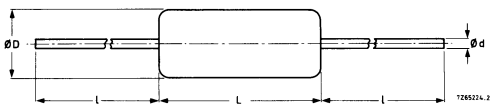
2222 424 to 2222 431 (micropoco)

Polystyrene dielectric

Due to their narrow tolerances, high stability, and low losses these axial lead capacitors are very suitable for use in tuned circuits and filters.

Capacitors are also available on reel.

Rated capacitance range, C_R	51 to 162000 pF
tolerance	1, 2 and 5%
Capacitance series	E24 (E48 and E96 on request)
Rated voltage range, U_R (d.c.)	63 to 500 V
U_R (a.c.) 50–60 Hz	25 to 250 V
Test voltage (d.c.)	2 x U_R
Temperature range 63 V	–40 to +70 °C
125 V to 500 V	–40 to +85 °C
Tan δ at 1 MHz C ⩽ 1 nF	⩽ 10×10^{-4}
at 100 kHz C ⩽ 20 nF	⩽ 5×10^{-4}
at 10 kHz C > 20 nF	⩽ 5×10^{-4}
Insulation resistance at 20 °C	
C ⩽ 100 nF	R > 100 000 MΩ
C > 100 nF	RC > 10 000 s



L	l_{min}	d
10,9	28	0,6
15	25,5	0,6
26	38	0,8

Selection chart for C_R–U_R and relevant sizes

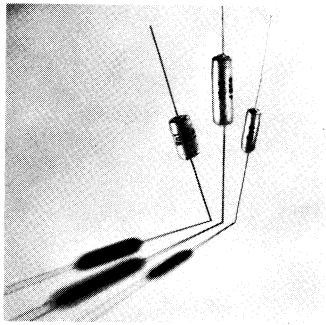
		U_R (V)		
		d.c. 125	250	500
C_R	cap.	a.c. 63	125	250
pF	code	D x L	D x L	D x L
51	5109			3,5 x 10,9
56	5609			3,5
62	6209			3,5
68	6809			3,5
75	7509			3,5
82	8209			3,5
91	9109			3,5
100	1001			3,5
110	1101			3,5
120	1201			3,5
130	1301			3,5
150	1501			3,5
160	1601			3,5
180	1801			3,5
200	2001			3,5
220	2201			3,5
240	2401			3,5
270	2701			3,5
300	3001			3,5
330	3301			3,5
360	3601			3,5
390	3901		3,5 x 10,9	4
430	4301		3,5	4
470	4701		3,5	4
510	5101		3,5	4
560	5601		3,5	4
620	6201		3,5	4,5
680	6801		3,5	4,5
750	7501		3,5	5
820	8201	3,5 x 10,9	4	5
910	9101	3,5	4	5
1000	1002	3,5	4	5
1100	1102	3,5	4,5	5

Composition of the catalogue no.

2222 4 .. ..

capacitance code in table

	U_R		%	
packed in boxes	63	24	5	2
	125	25	2	3
	250	26	1	4
	500	27		
on bandolier	63	28	5	6
and reel	125	29	2	7
	250	30	1	8
	500	31		

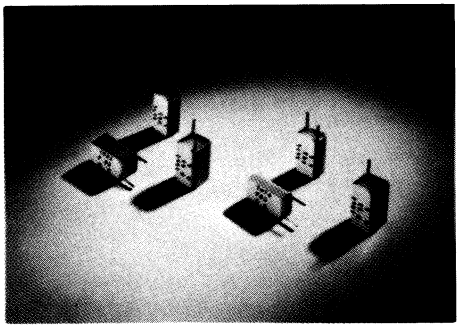


Selection chart for C_R–U_R and relevant sizes

C_R pF	cap. code	U_R (V) d.c. 63 a.c. 25 D x L	125 63 D x L	250 125 D x L	500 250 D x L
1200	1202	3,5 x 10,9	4 x 10,9	4,5 x 10,9	5 x 10,9
1300	1302	3,5	4	4,5	5 x 15
1500	1502	3,5	4	4,5	5
1600	1602	3,5	4	5	5,5
1800	1802	3,5	4,5	5	5,5
2000	2002	3,5	4,5	5	5,5
2200	2202	3,5	4,5	5	5,5
2400	2402	3,5	4,5	5 x 15	5,5
2700	2702	4	4,5	5	6
3000	3002	4	5	5	6,5
3300	3302	4	5	5	6,5
3600	3602	4	5	5	7
3900	3902	4	5	5	7
4300	4302	4,5	5 x 15	5	7,5
4700	4702	4,5	5	5,5	8
5100	5102	4,5	5	5,5	8
5600	5602	4,5	5	6	8
6200	6202	5	5	6	7,5 x 26
6800	6802	5	5	6,5	7,5
7500	7502	5 x 15	5,5	6,5	8
8200	8202	5	6	7	8
9100	9102	5	6	7,5	8,5
10000	1003	5	6	7,5	9
11000	1103	5,5	6,5	7,5	9
12000	1203	5,5	6,5	7 x 26	9,5
13000	1303	5,5	6,5	7	10
15000	1503	5,5	7	7,5	10,5
16000	1603	6	7	7,5	11
18000	1803	6	6,5 x 26	8	11,5
20000	2003	6	7	8,5	12
22000	2203	6,5	7	8,5	12,5
24000	2403	6,5	7,5	9	12,5
27000	2703	7	7,5	9,5	
30000	3003	7	8	10	
33000	3303	7,5	8,5	10,5	
36000	3603	7,5	8,5	10,5	
39000	3903	8	9	11	
43000	4303	7 x 26	9,5	11,5	
47000	4703	7,5	9,5	12	
51000	5103	7,5	10		
56000	5603	8	10,5		
62000	6203	8,5	11		
68000	6803	8,5	11,5		
75000	7503	9	12		
82000	8203	9,5	12,5		
91000	9103	9,5			
100000	1004	10			
110000	1104	10,5			
120000	1204	11			
130000	1304	11,5			
150000	1504	12			
160000	1604	12,5			
162000	1624	12,5			

film capacitors

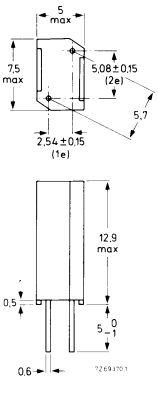
film/foil



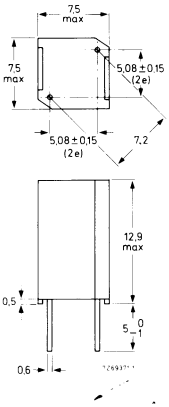
2222 443 (p.f.c.)

Polystyrene dielectric
Professional LC filters need these very stable and accurate capacitors (as in telephony equipment).
The 443 series, in combination with our ferrites, offer an advantage when it comes to package density.

Rated capacitance range (E96 series), C_R	100 to 12100 pF
tolerance	± 1%
Rated voltage, U_R (d.c.)	63 V
(a.c.) 50 to 60 Hz	25 V
Test voltage	2 x U_R
Category temperature range	−40 to +70 °C
Insulation resistance at 23 °C	> 500 000 MΩ
Tan δ at 1 MHz; C ≤ 500 pF	≤ 5 x 10^{-4}
500 pF < C ≤ 1000 pF	≤ 10 x 10^{-4}
at 1 kHz; C > 1000 pF	≤ 2 x 10^{-4}
Climatic category IEC 68	40/70/56
Basic specification	IEC 275



Style 1, capacitors of rated capacitance range 100 to 3920 pF



Style 2, capacitors of rated capacitance range 100 to 12100 pF.

Composition of the catalogue no.

2222 443 . . . . .

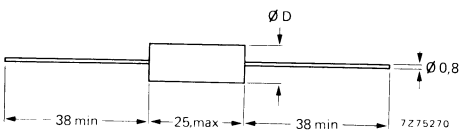
4 = style 1; C ≤ 3920 pF	first three digits of	factor: 1 = 1
or style 2; C > 3920 pF	capacitance value	2 = 10
8 = style 2; C ≤ 3920 pF	in pF	3 = 100

Example:
Capacitor 1650 pF, style 2, catalogue no. 2222 443 81652.

2222 444 to 2222 447 (wrap and fill)

These polystyrene "wrap and fill" types are for use in circuits where precision, reliability and low losses are important e.g. in tuned circuits, filter networks, etc.

Rated capacitance range, C_R (E24-E48 and E96 series)	6,2 to 162 nF
tolerance	± 5% (E24) ± 2% (E48) ± 1% (E96)
Rated voltage range, U_R (d.c.)	63, 125, 250, 500 V
Rated temperature: 63 V	70 °C
125 to 500 V	85 °C
Tan δ at 100 kHz; $C \leqslant 20$ nF at 10 kHz; $C > 20$ nF	$\leqslant 5 \times 10^{-4}$
Climatic category, IEC 68: 63 V	40/70/56
125 to 500 V	40/85/56
Basic specification	IEC 275 revised version 40 (central office) 363



Selection chart for C_R–U_R and relevant sizes

C_R	D_{max}			
nF	63 V	125 V	250 V	500 V
6,2				7,5
6,8				7,5
7,5				8
8,2				8
9,1				8,5
10				9
11				9
12			7	9,5
13			7	10
15			7,5	10,5
16			7,5	11
18		6,5	8	11,5
20		7	8,5	12
22		7	8,5	12,5
24		7,5	9	12,5
27		7,5	9,5	
30		8	10	
33		8,5	10,5	
36		8,5	10,5	
39		9	11	
43	7	9,5	11,5	
47	7,5	9,5	12	
51	7,5	10		
56	8	10,5		
62	8,5	11		
68	8,5	11,5		
75	9	12		
82	9,5	12,5		
91	9,5			
100	10			
110	10,5			
120	11			
130	11,5			
150	12			
160	12,5			
162	12,5			

Composition of the catalogue no.

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U_R	tolerance	first three	factor
4 = 63 V	on C_R	digits of	2 = 0,01
5 = 125 V	2 = ± 5%	cap. value	3 = 0,1
6 = 250 V	3 = ± 2%	in nF	4 = 1
7 = 500 V	4 = ± 1%		