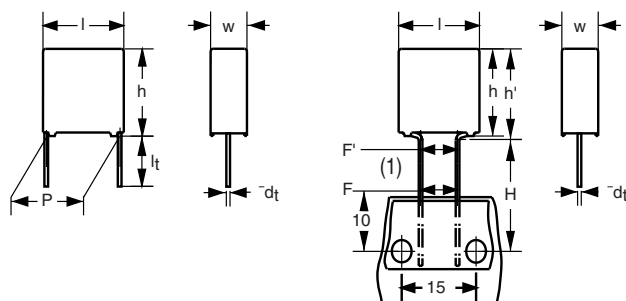


Interference Suppression Film Capacitors MKP Radial Potted Type



Dimensions in mm

Note

(1) $|F - F'| < 0.3 \text{ mm}$
 $F = 7.5 \text{ mm} + 0.6 \text{ mm} / - 0.1 \text{ mm}$

APPLICATIONS

For standard line bypass (between line and ground) Y2 applications

See also application note:

www.vishay.com/doc?28153

REFERENCE STANDARDS

"IEC 60384-14 ed-3 and EN 60384-14"

"IEC 60065 requires, pass. flamm. class B"

UL1414; CSA - C22.2 No. 1;

UL1283; ENEC; CSA E 384-14-95

MARKING

C-value; tolerance; rated voltage; sub-class; manufacturer's type designation; code for dielectric material, manufacturer location; manufacturer's logo, year and week; safety approvals

DIELECTRIC

Polypropylene film

ELECTRODES

Metallized film

CONSTRUCTION

Series construction



Triple construction



RATED VOLTAGE

AC 300 V; 50 Hz to 60 Hz

FEATURES

- AEC-Q200 qualified
- 7.5 mm to 27.5 mm lead pitch, 15 mm and 10 mm bent back to 7.5 mm, supplied loose in box, taped on ammpack or reel
- Compliant to RoHS Directive 2002/95/EC

PERMISSIBLE DC VOLTAGE

DC 1000 V

ENCAPSULATION

Plastic case, epoxy resin sealed, flame retardant class UL 94 V-0

CLIMATIC TESTING CLASS ACC. TO IEC 60068-1

55/105/56/B

CAPACITANCE RANGE (E12 SERIES)

E12 series 0.001 μF to 0.47 μF

Preferred values acc. to E6

CAPACITANCE TOLERANCE

$\pm 20 \%$; $\pm 10 \%$; $\pm 5 \%$

LEADS

Tinned wire

MAXIMUM APPLICATION TEMPERATURE

105 °C

DETAIL SPECIFICATION

For more detailed data and test requirements contact:

RFI@vishay.com

AUTOMOTIVE
GRADE



RoHS
COMPLIANT

COMPOSITION OF CATALOG NUMBER

TYPE AND PITCHES		CAPACITANCE (numerically)					MULTIPLIER (nF)	
338 6 Y2	7.5 mm						0.1	2
	7.5 mm (bent back)						1	3
	10.0 mm						10	4
	15.0 mm						100	5
	22.5 mm						Example: 104 = 10 x 10 = 100 nF (except special numbers)	
	27.5 mm							
		BFC2	338	6X	XX	X		
		2222 (*)	338	6X	XX	X		
		(*) old ordering code						

TYPE	PACKAGING	STANDARD DIMENSIONS	C-TOL	PREFERRED TYP
338 6 Y2	Loose in box	Lead length 3.5 mm + 1 mm/- 0.5 mm (pitch 7.5 mm and 10 mm)	± 20 %	BFC2 338 60
		Lead length 3.5 mm ± 0.3 mm (pitch > 10 mm)		BFC2 338 62
		Lead length 5.0 mm ± 1.0 mm		BFC2 338 64
	Taped ammo	Lead length 25.0 mm ± 2.0 mm		BFC2 338 66
		Pitch = 7.5 mm H = 18.5 mm; P ₀ = 12.7 mm		
		ALTERNATIVE PITCH SIZES		ON REQUEST
338 6 Y2	Loose in box	Lead length 3.5 mm + 1 mm/- 0.5 mm (pitch 7.5 mm and 10 mm)	± 20 %	See tables for deta
		Lead length 3.5 mm ± 0.3 mm (pitch > 10 mm)		
		Lead length 5.0 mm ± 1.0 mm		
		Lead length 25.0 mm ± 2.0 mm		
		ALTERNATIVE TAPED VERSION		ON REQUEST
338 6 Y2	Taped reel (1)	Pitch = 7.5 mm and 10.0 mm H = 18.5 mm; for P ₀ = 12.7 mm; reel diameter = 500 mm	± 20 %	See tables for deta
		Pitch bent back to 7.5 mm H = 16.0 mm; P ₀ = 15.0 mm; reel diameter = 500 mm		
		ALTERNATIVE C-TOL		ON REQUEST
338 6 Y2	Loose in box	Lead length 3.5 mm + 1 mm/- 0.5 mm (pitch 7.5 mm and 10 mm)	± 10 %	See tables for deta
		Lead length 3.5 mm ± 0.3 mm (pitch > 10 mm)	± 5 %	
		Lead length 5.0 mm ± 1.0 mm	± 10 %	
			± 5 %	
	Taped ammo (1)	Lead length 25.0 mm ± 2.0 mm	± 10 %	
			± 5 %	
		Pitch = 7.5 mm H = 18.5 mm; for P ₀ = 12.7 mm	± 10 %	
	Taped reel (1)	Pitch bent back to 7.5 mm H = 16.0 mm; P ₀ = 15.0 mm; reel diameter = 500 mm	± 5 %	
			± 10 %	
		Pitch = 7.5 mm and 10.0 mm H = 18.5 mm; P ₀ = 12.7 mm; reel diameter = 500 mm	± 10 %	
			± 5 %	

Note

(1) For detailed tape specification refer to "Packaging Information" www.vishay.com/doc?28139
SPECIFIC REFERENCE DATA

DESCRIPTION	VALUE	
Rated AC voltage (U _{RAC})	300 V	
Permissible DC voltage (U _{RDC})	1000 V	
Tangent of loss angle	at 1 kHz	at 10 kHz
C ≤ 470 nF	≤ 10 x 10 ⁻⁴	≤ 20 x 10 ⁻⁴
Rated voltage pulse slope (dU/dt) _R at 420 V _{DC}	100 V/μs	
R between leads, for C ≤ 0.33 μF at 100 V; 1 min	> 15 000 MΩ	
RC between leads, for C > 0.33 μF at 100 V; 1 min	> 5000 s	
R between leads and case; 100 V; 1 min	> 30 000 MΩ	
Withstanding (DC) voltage (cut off current 10 mA) (1); rise time ≤ 1000 V/s	3400 V; 1 min	
Withstanding (AC) voltage between leads and case	2100 V; 1 min	
Maximum application temperature	105 °C	

Note

(1) See "Voltage Proof Test for Metalized Film Capacitors": www.vishay.com/doc?28169

Vishay BCcomponents Interference Suppression Film Capacitors

MKP Radial Potted Type

$U_{RAC} = 300 \text{ V}$; $C\text{-tol} = \pm 20 \%$ ($U_{RDC} = 1000 \text{ V}$)

C (μF)	DIMENSIONS w x h x l (mm)	MASS (g) ⁽¹⁾	CATALOG NUMBER BFC2 338 6X XXX AND PACKAGING								
			LOOSE IN BOX					AMMOPACK		REEL 500 mm ⁽¹⁾⁽²⁾	
			Short leads			Long leads					
			$l_t = 3.5 \text{ mm} + 1 \text{ mm}/ - 0.5 \text{ mm}$	$l_t = 5.0 \text{ mm} \pm 1.0 \text{ mm}$	SPQ	$l_t = 25.0 \text{ mm} \pm 2.0 \text{ mm}$	SPQ	H = 18.5 mm; P ₀ = 12.7 mm	SPQ	REEL: Ø = 500 mm H = 18.5 mm; P ₀ = 12.7 mm	SPQ
Pitch = 7.5 mm ± 0.4 mm; d _t = 0.50 mm ± 0.05 mm											
0.001	4.0 x 9.0 x 10.0	0.4	60102	62102	1500	64102	1000	66102	1250	68129	2500
0.0012			60122	62122		64122		66122		68131	
0.0015			60152	62152		64152		66152		68132	
0.0018			60182	62182		64182		66182		68133	
0.0022			60222	62222		64222		66222		68134	
0.0027			60272	62272		64272		66272		68135	
0.0033	5.0 x 10.5 x 10.0	0.4	60332	62332	1000	64332	1250	66332	1000	68136	2000
0.0039			60392	62392		64392		66392		68137	
0.0047	6.0 x 11.5 v 10.0	0.8	60472	62472	750	64472	1000	66472	750	68138	1900
0.0056			60562	62562		64562		66562		68139	
Pitch = 10.0 mm ± 0.4 mm; d _t = 0.60 mm ± 0.06 mm											
0.001	4.0 x 10.0 x 12.5	0.6	68392	68401	1000	68409	1250			68418	1400
0.0012			68393	68402		68411				68419	
0.0015			68394	68403		68412				68421	
0.0018			68395	68404		68413				68422	
0.0022			68396	68405		68414				68423	
0.0027			68397	68406		68415				68424	
0.0033			68398	68407		68416				68425	
0.0039			68399	68408		68417				68426	
0.0047	5.0 x 11.0 x 12.5	0.82	68101	68106	1000	68112	1000			68141	1100
0.0056			68102	68107		68113				68142	
0.0068			68103	68108		68114				68143	
0.0082	6.0 x 12.0 x 12.5	1.1	68104	68109	750	68115	750			68144	900
0.01			68105	68111		68116				68145	

Notes

- SPQ = Standard Packing Quantity

⁽¹⁾ H = In-tape height; P₀ = Sprocket hole distance; for detailed specifications refer to "Packaging Information"

⁽²⁾ Reel diameter = 365 mm is available on request

⁽³⁾ Weight for short lead product only

C (µF)	DIMENSIONS w x h x l (mm)	MASS (g) ⁽¹⁾	CATALOG NUMBER BFC2 338 6X XXX AND PACKAGING								
			LOOSE IN BOX					AMMOPACK		REEL 500 mm ⁽¹⁾⁽²⁾	
			Short leads			Long leads				REEL: Ø = 500 mm H = 18.5 mm; P ₀ = 12.7 mm	SPQ
			l _t = 3.5 mm + 1 mm/- 0.5 mm	l _t = 5.0 mm ± 1.0 mm	SPQ	l _t = 25.0 mm ± 2.0 mm	SPQ	H = 18.5 mm; P ₀ = 12.7 mm	SPQ		
Pitch = 15.0 mm ± 0.4 mm; d _t = 0.60 mm ± 0.06 mm											
0.0068 0.0082 0.01 0.012	5.0 x 11.0 x 17.5	1.0	60682 60822 60103 60123	62682 62822 62103 62123	1000	64682 64822 64103 64123	1000		68146 68147 68148 68149	1100	
0.015 0.018	6.0 x 12.0 x 17.5	1.4	60153 60183	62153 62183	1000	64153 64183	1000		68151 68152	900	
Pitch = 15.0 mm ± 0.4 mm; d _t = 0.80 mm ± 0.08 mm											
0.022 0.027	7.0 x 13.5 x 17.5	1.8	60223 60273	62223 62273	750	64223 64273	500			68153 68154	800
0.033 0.039	8.5 x 15.0 x 17.5	2.4	60333 60393	62333 62393	750	64333 64393	500	68155 68156		650	
0.047 0.056	10.0 x 16.5 x 17.5	3.0	60473 60563	62473 62563	500	64473 64563	450	68157 68158		600	
Pitch = 22.5 mm ± 0.4 mm; d _t = 0.80 mm ± 0.08 mm											
0.047 0.056	7.0 x 16.5 x 26.0	2.9	68123 68124	68125 68126	200	68127 68128	250				
0.068 0.082	8.5 x 18.0 x 26.0	3.8	60683 60823	62683 62823	200	64683 64823	250				
0.1	10.0 x 19.5 x 26.0	6.8	60104	62104	200	64104	200				
0.12 0.15	12.0 x 22.0 x 26.0	7.8	60124 60154	62124 62154	150	64124 64154	200				
Pitch = 27.5 mm ± 0.4 mm; d _t = 0.80 mm ± 0.08 mm											
0.18 0.22	13.0 x 23.0 x 31.0	9.2	60184 60224	62184 62224	100	64184 64224	125				
0.27	15.0 x 25.0 x 31.0	12.3	60274	62274	100	64274	125				
0.33 0.39	18.0 x 28.0 x 31.0	16.1	60334 60394	62334 62394	100	64334 64394	100				
0.47	21.0 x 31.0 x 31.0	20.3	60474	62474	50	64474	75				

Notes

- SPQ = Standard Packing Quantity

⁽¹⁾ H = In-tape height; P₀ = Sprocket hole distance; for detailed specifications refer to "Packaging Information"

⁽²⁾ Reel diameter = 365 mm is available on request

⁽³⁾ Weight for short lead product only

Vishay BCcomponents Interference Suppression Film Capacitors

MKP Radial Potted Type

Bent back pitch 7.5 mm

C (μF)	DIMENSIONS w x h x l (mm)	MASS (g) ⁽¹⁾	CATALOG NUMBER BFC2 338 6X XXX AND PACKAGING								
			LOOSE IN BOX					AMMOPACK		REEL 500 mm ⁽¹⁾⁽²⁾	
			Short leads			Long leads					
			l _t = 3.5 mm + 1 mm/ - 0.5 mm	l _t = 5.0 mm ± 1.0 mm	SPQ	l _t = 25.0 mm ± 2.0 mm	SPQ	H = 16 mm; P ₀ = 15 mm	SPQ	REEL: Ø = 500 mm H = 16 mm; P ₀ = 15 mm	SPQ
Original pitch = 10.0 mm; bent back pitch = 7.5 mm ± 0.4 mm; d _t = 0.60 mm ± 0.06 mm											
0.001	4.0 x 12.0 x 12.5	0.6						68525	1300	68427	2000
0.0012								68526		68428	
0.0015								68527		68429	
0.0018								68528		68431	
0.0022								68529		68432	
0.0027								68531		68433	
0.0033								68532		68434	
0.0039								68533		68435	
0.0047	5.0 x 13.0 x 12.5	0.82						68534	1000	68117	1900
0.0056								68535		68118	
Original pitch = 15.0 mm; bent back pitch = 7.5 mm ± 0.4 mm; d _t = 0.60 mm ± 0.06 mm											
0.0068	5.0 x 13.0 x 17.5	1.1								66682	950
0.0082										66822	
0.01										66103	
0.012										66123	
0.015	6.0 x 14.0 x 17.5	1.4								66153	800
0.018										66183	
Original pitch = 15.0 mm; bent back pitch = 7.5 mm ± 0.4 mm; d _t = 0.80 mm ± 0.08 mm											
0.022	7.0 x 15.5 x 17.5	1.8								66223	700
0.027										66273	
0.033	8.5 x 17.0 x 17.5	2.4								66333	550
0.039										66393	
0.047	10.0 x 18.5 x 17.5	3.0								66473	500
0.056										66563	

Notes

- SPQ = Standard Packing Quantity

⁽¹⁾ H = In-tape height; P₀ = Sprocket hole distance; for detailed specifications refer to "Packaging Information"

⁽²⁾ Reel diameter = 365 mm is available on request

⁽³⁾ Weight for short lead product only

Interference Suppression Film Capacitors Vishay BCcomponents
MKP Radial Potted Type $U_{RAC} = 300 \text{ V}$; $C\text{-Tol} = 10 \%$ ($U_{RDC} = 1000 \text{ V}$)

C (μF)	DIMENSIONS w x h x l (mm)	MASS (g) ⁽¹⁾	CATALOG NUMBER BFC2 338 6X XXX AND PACKAGING								
			LOOSE IN BOX					AMMOPACK		REEL 500 mm ⁽¹⁾⁽²⁾	
			Short leads			Long leads					
			l _t = 3.5 mm + 1 mm/ - 0.5 mm	l _t = 5.0 mm ± 1.0 mm	SPQ	l _t = 25.0 mm ± 2.0 mm	SPQ	H = 18.5 mm; P ₀ = 12.7 mm	SPQ	REEL: Ø = 500 mm H = 18.5 mm; P ₀ = 12.7 mm	SPQ
Pitch = 7.5 mm ± 0.4 mm; d _t = 0.50 mm ± 0.05 mm											
0.001	4.0 x 9.0 x 10.0	0.4	61102	63102	1500	65102	1000	67102	1250	68179	2500
0.0012			61122	63122		65122		67122		68181	
0.0015			61152	63152		65152		67152		68182	
0.0018			61182	63182		65182		67182		68183	
0.0022			61222	63222		65222		67222		68184	
0.0027			61272	63272		65272		67272		68185	
0.0033	5.0 x 10.5 x 10.0	0.4	61332	63332	1000	65332	1250	67332	1000	68186	2000
0.0039			61392	63392		65392		67392		68187	
0.0047	6.0 x 11.5 x 10.0	0.8	61472	63472	750	65472	1000	67472	750	68188	1900
0.0056			61562	63562		65562		67562		68189	
Pitch = 10.0 mm ± 0.4 mm; d _t = 0.60 mm ± 0.06 mm											
0.001	4.0 x 10.0 x 12.5	0.6	68436	68445	1000	68454	1250			68463	1400
0.0012			68437	68446		68455				68464	
0.0015			68438	68447		68456				68465	
0.0018			68439	68448		68457				68466	
0.0022			68441	68449		68458				68467	
0.0027			68442	68451		68459				68468	
0.0033			68443	68452		68461				68469	
0.0039			68444	68453		68462				68471	
0.0047	5.0 x 11.0 x 12.5	0.82	68159	68164	1000	68168	1000			68191	1100
0.0056			68161	68165		68169				68192	
0.0068	6.0 x 12.0 x 12.5	1.1	68162	68166	750	68171	750	68193	900		
0.0082			68163	68167		68172		68194			

Notes

- SPQ = Standard Packing Quantity

⁽¹⁾ H = In-tape height; P₀ = Sprocket hole distance; for detailed specifications refer to "Packaging Information"

⁽²⁾ Reel diameter = 365 mm is available on request

⁽³⁾ Weight for short lead product only

Vishay BCcomponents Interference Suppression Film Capacitors
MKP Radial Potted Type

C (μF)	DIMENSIONS w x h x l (mm)	MASS (g) ⁽¹⁾	CATALOG NUMBER BFC2 338 6X XXX AND PACKAGING								
			LOOSE IN BOX					AMMOPACK		REEL 500 mm ⁽¹⁾⁽²⁾	
			Short leads			Long leads					
			l _t = 3.5 mm + 1 mm/ - 0.5 mm	l _t = 5.0 mm ± 1.0 mm	SPQ	l _t = 25.0 mm ± 2.0 mm	SPQ	H = 18.5 mm; P ₀ = 12.7 mm	SPQ	REEL: Ø = 500 mm H = 18.5 mm; P ₀ = 12.7 mm	SPQ
Pitch = 15.0 mm ± 0.4 mm; d _t = 0.60 mm ± 0.06 mm											
0.0068 0.0082 0.01 0.012	5.0 x 11.0 x 17.5	1	61682	63682	1000	65682	1000		68202	1100	
61822			63822	65822		68203					
61103			63103	65103		68204					
61123			63123	65123		68205					
0.015 0.018	6.0 x 12.0 x 17.5	1.4	61153	63153		65153			68206	900	
61183			63183	65183		68207					
Pitch = 15.0 mm ± 0.4 mm; d _t = 0.80 mm ± 0.08 mm											
0.022	7.0 x 13.5 x 17.5	1.8	61223	63223	750	65223	500		68208	800	
0.027 0.033	8.5 x 15.0 x 17.5	2.4	61273 61333	63273 63333		65273 65333			68209 68211	650	
0.039 0.047			10.0 x 16.5 x 17.5	3	61393 61473	63393 63473	500		65393 65473	450	68212 68213
Pitch = 22.5 mm ± 0.4 mm; d _t = 0.80 mm ± 0.08 mm											
0.047	7.0 x 16.5 x 26.0	2.9	68173	68175	200	68177	250				
0.056 0.068	8.5 x 18.0 x 26.0	3.8	68174 61683	68176 63683		68178 65683					
0.082 0.1			10.0 x 19.5 x 26.0	6.8		61823 61104	63823 63104			65823 65104	200
0.12 0.15	12.0 x 22.0 x 26.0	7.8			61124 61154	63124 63154	150			65124 65154	200
Pitch = 27.5 mm ± 0.4 mm; d _t = 0.80 mm ± 0.08 mm											
0.18	13.0 x 23.0 x 31.0	9.2	61184	63184	100	65184	125				
0.22	15.0 x 25.0 x 31.0	12.3	61224	63224		65224					
0.27 0.33	18.0 x 28.0 x 31.0	16.1	61274 61334	63274 63334		65274 65334	100				
0.39 0.47			21.0 x 31.0 x 31.0	20.3	61394 61474	63394 63474	50			65394 65474	75

Notes

- SPQ = Standard Packing Quantity

⁽¹⁾ H = In-tape height; P₀ = Sprocket hole distance; for detailed specifications refer to "Packaging Information"

⁽²⁾ Reel diameter = 365 mm is available on request

⁽³⁾ Weight for short lead product only



Bent back pitch 7.5 mm

C (μF)	DIMENSIONS w x h x l (mm)	MASS (g) ⁽¹⁾	CATALOG NUMBER BFC2 338 6X XXX AND PACKAGING								
			LOOSE IN BOX					AMMOPACK		REEL 500 mm ⁽¹⁾⁽²⁾	
			Short leads			Long leads				REEL: Ø = 500 mm H = 16 mm; P ₀ = 15 mm	SPQ
			l _t = 3.5 mm + 1 mm/ - 0.5 mm	l _t = 5.0 mm ± 1.0 mm	SPQ	l _t = 25.0 mm ± 2.0 mm	SPQ				
Original pitch = 10.0 mm; bent back pitch = 7.5 mm ± 0.4 mm; d _t = 0.60 mm ± 0.06 mm											
0.001	4.0 x 12.0 x 12.5	0.6						68539	1300	68472	2000
0.0012								68541		68473	
0.0015								68542		68474	
0.0018								68543		68475	
0.0022								68544		68476	
0.0027								68545		68477	
0.0033								68546		68478	
0.0039								68547		68479	
0.0047	5.0 x 13.0 x 12.5	1.1						68548	1000	68196	1900
0.0056								68549		68197	
Original pitch = 15.0 mm; bent back pitch = 7.5 mm ± 0.4 mm; d _t = 0.60 mm ± 0.06 mm											
0.0068	5.0 x 13.0 x 17.5	1.0								67682	950
0.0082										67822	
0.01										67103	
0.012										67123	
0.015	6.0 x 14.0 x 17.5	1.4								67153	800
0.018										67183	
Original pitch = 15.0 mm; bent back pitch = 7.5 mm ± 0.4 mm; d _t = 0.80 mm ± 0.08 mm											
0.022	7.0 x 15.5 x 17.5	1.8								67223	700
0.027	8.5 x 17.0 x 17.5	2.4								67273	550
0.033										67333	
0.039	10.0 x 18.5 x 17.5	3.0								67393	500
0.047			67473								

Notes

- SPQ = Standard Packing Quantity

⁽¹⁾ H = In-tape height; P₀ = Sprocket hole distance; for detailed specifications refer to "Packaging Information"

⁽²⁾ Reel diameter = 365 mm is available on request

⁽³⁾ Weight for short lead product only

Vishay BCcomponents Interference Suppression Film Capacitors

MKP Radial Potted Type

$U_{RAC} = 300 \text{ V}$; $C\text{-tol} = 5 \%$ ($U_{RDC} = 1000 \text{ V}$)

C (μF)	DIMENSIONS w x h x l (mm)	MASS (g) ⁽¹⁾	CATALOG NUMBER BFC2 338 6X XXX AND PACKAGING								
			LOOSE IN BOX					AMMOPACK		REEL 500 mm ⁽¹⁾⁽²⁾	
			Short leads			Long leads					
			l _t = 3.5 mm + 1 mm/ - 0.5 mm	l _t = 5.0 mm ± 1.0 mm	SPQ	l _t = 25.0 mm ± 2.0 mm	SPQ	H = 18.5 mm; P ₀ = 12.7 mm	SPQ	REEL: Ø = 500 mm H = 18.5 mm; P ₀ = 12.7 mm	SPQ
Pitch = 7.5 mm ± 0.4 mm; d _t = 0.50 mm ± 0.05 mm											
0.001	4.0 x 9.0 x 10.0	0.4	68215	68225	1500	68235	1000	68335	1250	68346	2500
0.0012			68216	68226		68236		68336		68347	
0.0015			68217	68227		68237		68337		68348	
0.0018			68218	68228		68238		68338		68349	
0.0022			68219	68229		68239		68339		68351	
0.0027	5.0 x 10.5 x 10.0	0.4	68221	68231	1000	68241	1250	68341	1000	68352	2000
0.0033			68222	68232		68242		68342		68353	
0.0039	6.0 x 11.5 x 10.0	0.8	68223	68233	750	68243	1000	68343	750	68354	1900
0.0047			68224	68234		68244		68344		68355	
Pitch = 10.0 mm ± 0.4 mm; d _t = 0.60 mm ± 0.06 mm											
0.001	4.0 x 10.0 x 12.5	0.6	68481	68489	1000	68498	1250			68507	1400
0.0012			68482	68491		68499				68508	
0.0015			68483	68492		68501				68509	
0.0018			68484	68493		68502				68511	
0.0022			68485	68494		68503				68512	
0.0027			68486	68495		68504				68513	
0.0033			68487	68496		68505				68514	
0.0039			68488	68497		68506				68515	
0.0047	5.0 x 11.0 x 12.5	0.82	68245	68249	1000	68254	1000			68357	1100
0.0056			68246	68251		68255				68358	
0.0068	6.0 x 12.0 x 12.5	1.1	68247	68252	750	68256	750			68359	900
0.0082			68248	68253		68257				68361	

Notes

- SPQ = Standard Packing Quantity

⁽¹⁾ H = In-tape height; P₀ = Sprocket hole distance; for detailed specifications refer to "Packaging Information"

⁽²⁾ Reel diameter = 365 mm is available on request

⁽³⁾ Weight for short lead product only

Interference Suppression Film Capacitors Vishay BCcomponents
MKP Radial Potted Type $U_{RAC} = 300 \text{ V}$; $C\text{-tol} = 5 \%$ ($U_{RDC} = 1000 \text{ V}$)

C (μF)	DIMENSIONS w x h x l (mm)	MASS (g) ⁽¹⁾	CATALOG NUMBER BFC2 338 6X XXX AND PACKAGING								
			LOOSE IN BOX					AMMOPACK		REEL 500 mm ⁽¹⁾⁽²⁾	
			Short leads			Long leads				REEL: Ø = 500 mm H = 18.5 mm; P ₀ = 12.7 mm	SPQ
			l _t = 3.5 mm + 1 mm/ - 0.5 mm	l _t = 5.0 mm ± 1.0 mm	SPQ	l _t = 25.0 mm ± 2.0 mm	SPQ				
Pitch = 15.0 mm ± 0.4 mm; d _t = 0.60 mm ± 0.06 mm											
0.0068	5.0 x 11.0 x 17.5	1.0	68258	68284	1000	68309	1000		68381	1100	
0.0082			68259	68285		68311			68382		
0.01			68261	68286		68312			68383		
0.012	6.0 x 12.0 x 17.5	1.4	68262	68287		68313			68384	900	
0.015			68263	68288		68314			68385		
Pitch = 15.0 mm ± 0.4 mm; d _t = 0.80 mm ± 0.08 mm											
0.018	7.0 x 13.5 x 17.5	1.8	68264	68289	750	68315	500		68386	800	
0.022			68265	68291		68316			68387		
0.027	8.5 x 15.0 x 17.5	2.4	68266	68292		68317				68388	650
0.033			68267	68293	68318	68389					
0.039	10.0 x 16.5 x 17.5	3.0	68268	68294	500	68319	450		68391	600	
Pitch = 22.5 mm ± 0.4 mm; d _t = 0.80 mm ± 0.08 mm											
0.047	7.0 x 16.5 x 26.0	2.9	68269	68295	200	68321	250				
0.056	8.5 x 18.0 x 26.0	3.8	68271	68296		68322					
0.068			68272	68297		68323					
0.082	10.0 x 19.5 x 26.0	6.8	68273	68298	150	68324	200				
0.1	12.0 x 22.0 x 26.0	7.8	68274	68299		68325					
0.12			68275	68301		68326					
Pitch = 27.5 mm ± 0.4 mm; d _t = 0.80 mm ± 0.08 mm											
0.15	13.0 x 23.0 x 31.0	9.2	68276	68302	100	68327	125				
0.18			68277	68303		68328					
0.22	15.0 x 25.0 x 31.5	12.3	68278	68304		68329	100				
0.27	18.0 x 28.0 x 31.5	16.1	68279	68305	68331						
0.33			68281	68306	68332						
0.39	21.0 x 31.0 x 31.0	20.3	68282	68307	50	68333	75				

Notes

- SPQ = Standard Packing Quantity

⁽¹⁾ H = In-tape height; P_0 = Sprocket hole distance; for detailed specifications refer to "Packaging Information"

⁽²⁾ Reel diameter = 365 mm is available on request

⁽³⁾ Weight for short lead product only

Bent back pitch = 7.5 mm

C (μF)	DIMENSIONS w x h x l (mm)	MASS (g) ⁽¹⁾	CATALOG NUMBER BFC2 338 6X XXX AND PACKAGING								
			LOOSE IN BOX					AMMOPACK		REEL 500 mm ⁽¹⁾⁽²⁾	
			Short leads			Long leads					
			l _t = 3.5 mm + 1 mm/ - 0.5 mm	l _t = 5.0 mm ± 1.0 mm	SPQ	l _t = 25.0 mm ± 2.0 mm	SPQ	H = 16 mm; P ₀ = 15 mm	SPQ	REEL: Ø = 500 mm H = 16 mm; P ₀ = 15 mm	SPQ
Original pitch = 10.0 mm; bent back pitch = 7.5 mm ± 0.4 mm; d _t = 0.60 mm ± 0.06 mm											
0.001 0.0012 0.0015 0.0018 0.0022 0.0027 0.0033 0.0039	4.0 x 12.0 x 12.5	0.6						68553 68554 68555 68556 68557 68558 68559 68561	1300	68516 68517 68518 68519 68521 68522 68523 68524	2000
0.0047 0.0056	5.0 x 13.0 x 12.5	0.82						68562 68563		1000	
Original pitch = 15.0 mm; bent back pitch = 7.5 mm ± 0.4 mm; d _t = 0.60 mm ± 0.06 mm											
0.0068 0.0082 0.01	5.0 x 13.0 x 17.5	1.1								68368 68369 68371	950
0.012 0.015	6.0 x 14.0 x 17.5	1.4								68372 68373	
Original pitch = 15.0 mm; bent back pitch = 7.5 mm ± 0.4 mm; d _t = 0.80 mm ± 0.08 mm											
0.018 0.022	7.0 x 15.5 x 17.5	1.8								68374 68375	700
0.027 0.033	8.5 x 17.0 x 17.5	2.4								68376 68377	
0.039	10.0 x 18.5 x 17.5	3								68378	500

Notes

- SPQ = Standard Packing Quantity

⁽¹⁾ H = In-tape height; P₀ = Sprocket hole distance; for detailed specifications refer to "Packaging Information"

⁽²⁾ Reel diameter = 365 mm is available on request

⁽³⁾ Weight for short lead product only

APPROVALS

SAFETY APPROVALS Y2	VOLTAGE	VALUE	FILE NUMBERS
EN 60384-14 (ENEC) (= IEC 60384-14 ed-3)	300 V _{AC}	1 nF to 470 nF	FI 2008062 A1
UL1414 and CSA-C22.2 No 1 antenna coupling	250 V _{AC}	1 nF to 470 nF	E112471
UL1283	300 V _{AC}	1 nF to 470 nF	E109565
CSA-E384-14-95	300 V _{AC}	1 nF to 470 nF	1377022
CB-Test Certificate	300 V _{AC}	1 nF to 470 nF	FI 5265 A1
The EneC-approval together with the CB-Certificate replace all national marks of the following countries (they have already signed the ENEC-Agreement): Austria; Belgium; Czech. Republic; Denmark; Finland; France; Germany; Greece; Hungary; Ireland; Italy; Luxembourg; Netherlands; Norway; Portugal; Slovenian; Spain; Switzerland and United Kingdom.			
  			

MOUNTING

Normal Use

The capacitors are designed for mounting on printed-circuit boards. The capacitors packed in bandoliers are designed for mounting in printed circuit boards by means of automatic insertion machines.

For detailed tape specifications refer to packaging information: www.vishay.com/doc?28139

Specific Method of Mounting to Withstand Vibration and Shock

In order to withstand vibration and shock tests, it must be ensured that the stand-off pips are in good contact with the printed-circuit board:

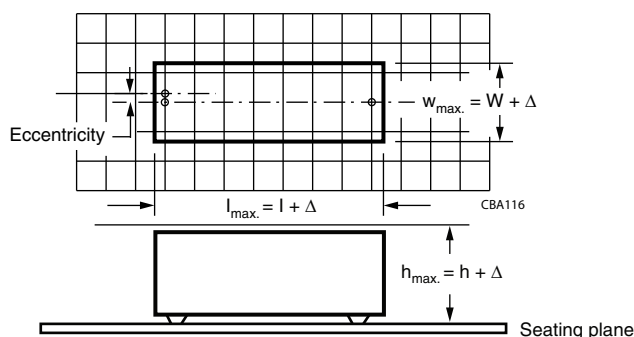
- For pitches ≤ 15 mm capacitors shall be mechanically fixed by the leads
- For larger pitches the capacitors shall be mounted in the same way and the body clamped

Space Requirements on Printed-Circuit Board

The maximum space for length ($l_{max.}$), width ($w_{max.}$), and height ($h_{max.}$) of film capacitors to take in account on the printed-circuit board is shown in the drawings:

- For products with pitch ≤ 15 mm, $\Delta w = \Delta l = 0.3$ mm; $\Delta h = 0.1$ mm
- For products with $15 \text{ mm} < \text{pitch} \leq 27.5$ mm, $\Delta w = \Delta l = 0.5$ mm; $\Delta h = 0.1$ mm

Eccentricity defined as in drawing. The maximum eccentricity is smaller than or equal to the lead diameter of the product concerned.



SOLDERING CONDITIONS

For general soldering conditions and wave soldering profile, we refer to the application note:

“Soldering Guidelines for Film Capacitors”: www.vishay.com/doc?28171

Storage Temperature

- Storage temperature: $T_{stg} = -25$ °C to $+40$ °C with RH maximum 80 % without condensation

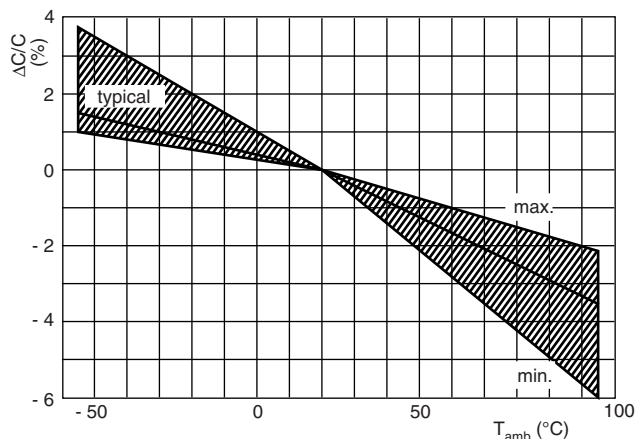
Ratings and Characteristics Reference Conditions

Unless otherwise specified, all electrical values apply to an ambient temperature of 23 °C ± 1 °C, an atmospheric pressure of 86 kPa to 106 kPa and a relative humidity of 50 % ± 2 %.

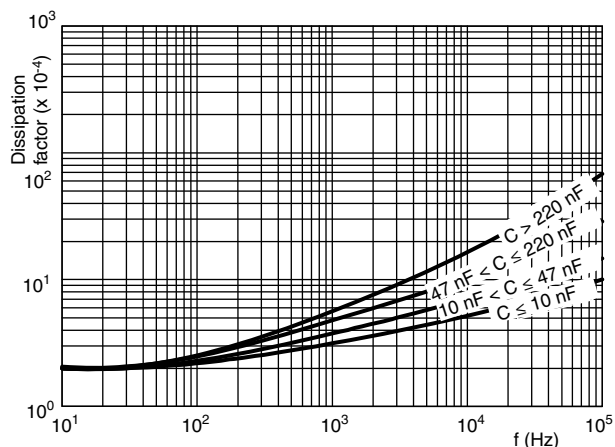
For reference testing, a conditioning period shall be applied over 96 h ± 4 h by heating the products in a circulating air oven at the rated temperature and a relative humidity not exceeding 20 %.

CHARACTERISTICS

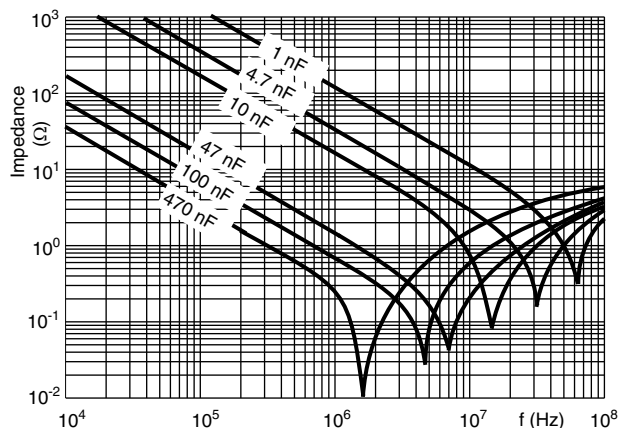
Capacitance as a function of ambient temperature
(typical curve)



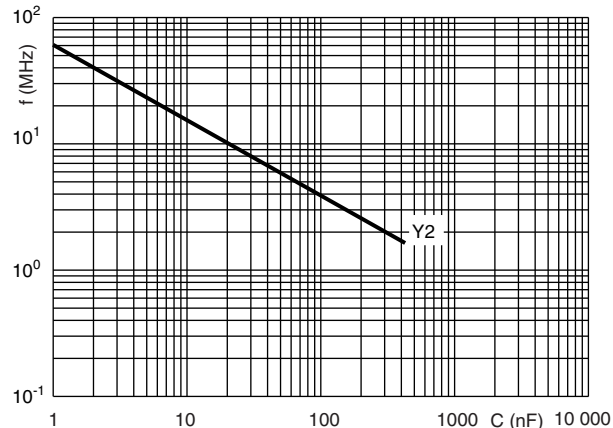
Tangent of loss angle as a function of frequency (typical curve)



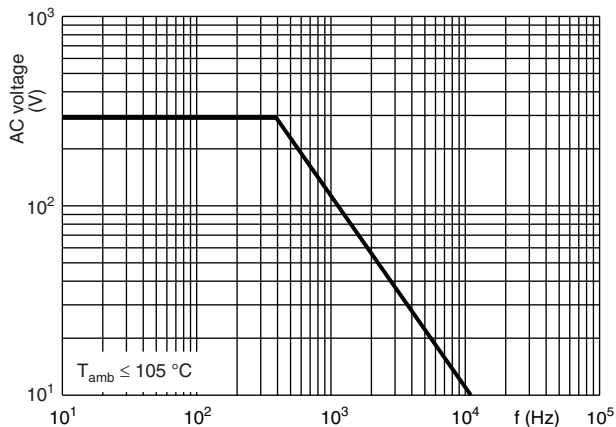
Impedance as a function of frequency (typical curve)



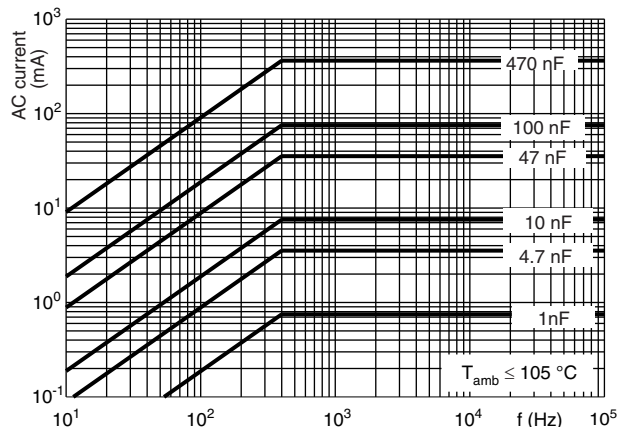
Resonant frequency as a function of capacitance (typical curve)



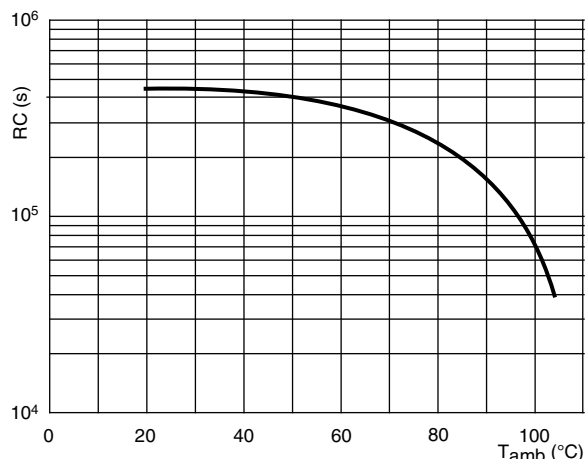
Max. RMS voltage as a function of frequency



Max. RMS current as a function of frequency



Insulation resistance as a function of ambient temperature



APPLICATION NOTES

- For X2 electromagnetic interference suppression in **standard across the line application** (50 Hz/60 Hz) with a maximum mains voltage of 310 V_{AC}
- For series impedance applications we refer to the “Application Note”: www.vishay.com/doc?28153
- For capacitors connected in parallel, normally the proof voltage and possibly the rated voltage must be reduced. For information depending of the capacitance value and the number of parallel connections contact: dc-film@vishay.com
- These capacitors are not intended for continuous pulse applications. For these situations, capacitors of the AC and pulse program must be used.
- The maximum ambient temperature must not exceed 110 °C (125 °C for less than 1000 h) for C ≤ 470 nF and 110 °C for C > 470 nF.
- Rated voltage pulse slope:
If the pulse voltage is lower than the rated voltage, the values of the specific reference data can be multiplied by 435 V_{DC} and divided by the applied voltage.

INSPECTION REQUIREMENTS**General Notes:**

1. Sub-clause numbers of tests and performance requirements refer to the "Sectional Specification, Publication IEC 60384-14 ed-3 and Specific Reference Data".

Group C Inspection Requirements

SUB-CLAUSE NUMBER AND TEST	CONDITIONS	PERFORMANCE REQUIREMENTS
SUB-GROUP C1A PART OF SAMPLE OF SUB-GROUP C1		
4.1 Dimensions (detail)		As specified in chapters "General Data" of this specification
Initial measurements	Capacitance Tangent of loss angle: at 10 kHz	
4.3 Robustness of terminations	Tensile: load 10 N; 10 s Bending: load 5 N; 4 x 90°	No visible damage
4.4 Resistance to soldering heat	No pre-drying Method: 1A Solder bath: 280 °C ± 5 °C Duration: 10 s	
4.19 Component solvent resistance	Isopropylalcohol at room temperature Method: 2 Immersion time: 5 min ± 0.5 min Recovery time: Min. 1 h, max. 2 h	
4.4.2 Final measurements	Visual examination	No visible damage Legible marking
	Capacitance	$ \Delta C/C \leq 5\%$ of the value measured initially
	Tangent of loss angle	Increase of $\tan \delta \leq 0.008$ Compared to values measured initially
	Insulation resistance	As specified in section "Insulation Resistance" of this specification

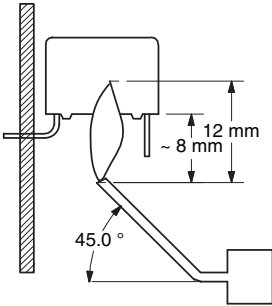


SUB-CLAUSE NUMBER AND TEST	CONDITIONS	PERFORMANCE REQUIREMENTS
SUB-GROUP C1B PART OF SAMPLE OF SUB-GROUP C1		
Initial measurements	Capacitance Tangent of loss angle: at 10 kHz	
4.20 Solvent resistance of the marking:	Isopropylalcohol at room temperature Method: 1 Rubbing material: cotton wool Immersion time: 5 min ± 0.5 min	No visible damage Legible marking
4.6 Rapid change of temperature	θA = - 55 °C θB = + 105 °C 5 cycles Duration t = 30 min	
4.6.1 Inspection 4.7 Vibration	Visual examination Mounting: see Section "Mounting" of this specification Procedure B4: Frequency range: 10 Hz to 55 Hz Amplitude: 0.75 mm or Acceleration 98 m/s ² (whichever is less severe) Total duration 6 h	No visible damage
4.7.2 Final inspection	Visual examination	No visible damage
4.9 Shock	Mounting: see Section "Mounting" for more information Pulse shape: half sine Acceleration: 490 m/s ² Duration of pulse: 11 ms	
4.9.2 Final measurements	Visual examination	No visible damage
	Capacitance	$ \Delta C/C \leq 5\%$ of the value measured initially
	Tangent of loss angle	Increase of $\tan \delta \leq 0.008$ Compared to values measured initially
	Insulation resistance	As specified in section "Insulation Resistance" of this specification

SUB-CLAUSE NUMBER AND TEST	CONDITIONS	PERFORMANCE REQUIREMENTS
SUB-GROUP C1 COMBINED SAMPLE OF SPECIMENS OF SUB-GROUPS C1A AND C1B		
4.11 Climatic sequence 4.11.1 Initial measurements 4.11.2 Dry heat 4.11.3 Damp heat cyclic Test Db First cycle 4.11.4 Cold 4.11.5 Damp heat cyclic Test Db remaining cycles 4.11.6 Final measurements	Capacitance Measured in 4.4.2 and 4.9.2 Tangent of loss angle: Measured initially in C1A and C1B Temperature: 105 °C Duration: 16 h Temperature: - 55 °C Duration: 2 h Visual examination Capacitance Tangent of loss angle Voltage proof 2250 V _{DC} ; 1 min between terminations Insulation resistance	No visible damage Legible marking $ \Delta C/C \leq 5\%$ of the value measured in 4.11.1. Increase of $\tan \delta \leq 0.008$ Compared to values measured in 4.11.1 No permanent breakdown or flash-over $\geq 50\%$ of values specified in section "Insulation Resistance" of this specification
SUB-GROUP C2		
4.12 Damp heat steady state 4.12.1 Initial measurements 4.12.3 Final measurements	56 days, 40 °C, 90 % to 95 % RH, no load Capacitance Tangent of loss angle at 1 kHz Visual examination Capacitance Tangent of loss angle Voltage proof 2250 V _{DC} ; 1 min between terminations Insulation resistance	No visible damage Legible marking $ \Delta C/C \leq 5\%$ of the value measured in 4.12.1. Increase of $\tan \delta \leq 0.007$ Compared to values measured in 4.12.1. No permanent breakdown or flash-over $\geq 50\%$ of values specified in section "Insulation Resistance" of this specification



SUB-CLAUSE NUMBER AND TEST	CONDITIONS	PERFORMANCE REQUIREMENTS
SUB-GROUP C3		
4.13.1 Initial measurements	Capacitance Tangent of loss angle: at 10 kHz	
4.13 Impulse voltage	3 successive impulses, full wave, peak voltage: X1: 5 kV Max. 24 pulses	No selfhealing breakdowns or flash-over
4.14 Endurance	Duration: 1000 h 1.7 x U _{RAC} at 105 °C Once in every hour the voltage is increased to 1000 V _{RMS} for 0.1 s via resistor of 47 Ω ± 5 %	
4.14.7 Final measurements	Visual examination	No visible damage Legible marking
	Capacitance	$ \Delta C/C \leq 10 \%$ compared to values measured in 4.13.1.
	Tangent of loss angle	Increase of $\tan \delta \leq 0.008$ Compared to values measured in 4.13.1.
	Voltage proof 2250 V _{DC} ; 1 min between terminations 2100 V _{AC} ; 1 min between terminations and case	No permanent breakdown or flash-over
	Insulation resistance	$\geq 50 \%$ of values specified in section "Insulation Resistance" of this specification
SUB-GROUP C4		
4.15 Charge and discharge	10 000 cycles charged to 420 V _{DC} Discharge resistance: $R = \frac{420 \text{ Vdc}}{1.5 \times C (dU/dt)}$	
4.15.1 Initial measurements	Capacitance Tangent of loss angle: at 10 kHz	
4.15.3 Final measurements	Capacitance	$ \Delta C/C \leq 10 \%$ compared to values measured in 4.15.1.
	Tangent of loss angle	Increase of $\tan \delta \leq 0.008$ Compared to values measured in 4.15.1.
	Insulation resistance	$\geq 50 \%$ of values specified in section "Insulation Resistance" of this specification

SUB-CLAUSE NUMBER AND TEST	CONDITIONS	PERFORMANCE REQUIREMENTS
SUB-GROUP C5		
4.16 Radio frequency characteristic	Resonance frequency	≥ 0.9 times the value as specified in section "Resonant Frequency" of this specification
SUB-GROUP C6		
4.17 Passive flammability Class B	Bore of gas jet: $\varnothing 0.5$ mm Fuel: butane Test duration for actual volume V in mm³: $V \leq 250$: 10 s $250 < V \leq 500$: 20 s $500 < V \leq 1750$: 30 s $V > 1750$: 60 s One flame application 	After removing test flame from capacitor, the capacitor must not continue to burn for more than 10 s. No burning particle must drop from the sample.
SUB-GROUP C7		
4.18 Active flammability	20 cycles of 5 kV discharges on the test capacitor connected to U_{RAC}	The cheese cloth around the capacitors shall not burn with a flame. No electrical measurements are required.



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<u>BFC233866183</u>	<u>BFC233866223</u>					