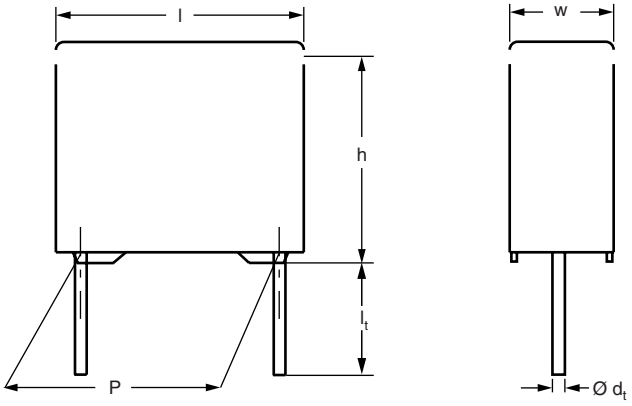
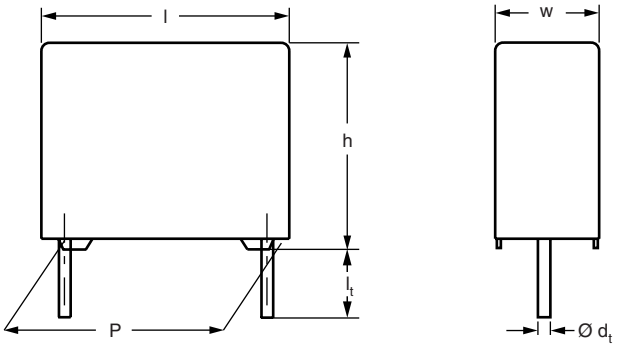
DC Film Capacitor
MKT Radial Potted Type

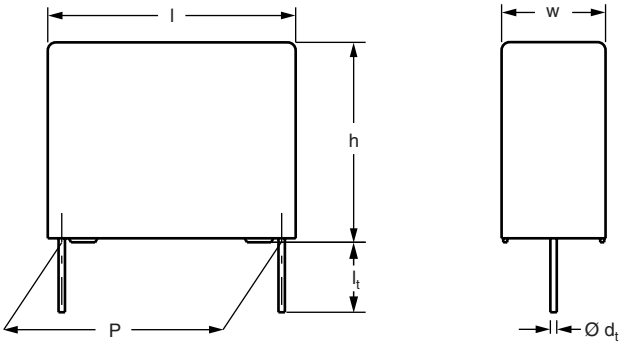
371



372



373



FEATURES

371: 7.62 mm lead pitch. Supplied loose in box and taped on reel or ammopack
372: 10 mm lead pitch. Supplied loose in box and taped on reel or ammopack
373: 15 mm to 27.5 mm lead pitch. Supplied loose in box and taped on reel.
RoHS compliant

Pb-free

e3

RoHS COMPLIANT

DIELECTRIC

Polyester film

ELECTRODES

Metallized

CONSTRUCTION

Mono construction

RATED (DC) VOLTAGE

371: 63 V, 100 V, 250 V, 400 V
372, 373: 100 V, 250 V, 400 V, 630 V

RATED (AC) VOLTAGE

371: 40 V, 63 V, 160 V, 220 V
372, 373: 63 V, 160 V, 220 V, 250 V

ENCAPSULATION

Flame retardant plastic case and epoxy resin (UL-class 94 V-0)

CLIMATIC TESTING CLASS ACC. TO IEC 60068-1

55/105/56

CAPACITANCE RANGE (E12 SERIES)

371: 0.0039 µF to 1.5 µF
372: 0.0047 µF to 0.68 µF
373: 0.047 µF to 15 µF

CAPACITANCE TOLERANCE

± 10 %, ± 5 %

LEADS

Tinned wire

RATED TEMPERATURE

85 °C

MAXIMUM APPLICATION TEMPERATURE

105 °C

PERFORMANCE GRADE

Grade 1 (long life)

APPLICATIONS

Blocking and coupling, bypass and energy reservoir.

REFERENCE STANDARDS

IEC 60384-2

MARKING

C-value; tolerance; rated voltage; manufacturer's symbol; year and week of manufacturer; manufacturer's type

DETAIL SPECIFICATION

For more detailed data and test requirements contact: dc-film@vishay.com

COMPOSITION OF CATALOG NUMBER: 371

TYPE AND PITCHES	
371	7.62 mm

CAPACITANCE (numerically)

MULTIPLIER (nF)	
0.1	2
1	3
10	4
100	5

Example:
104 = 10 x 10 = 100 nF

BFC2	**371**	**XX**	**YY**	**Y**
2222 (*)	**371**	**XX**	**YY**	**Y**

(*) Old ordering number

TYPE	PACKAGING	LEAD CONFIGURATION	PREFERRED TYPES				
			C-TOL.	63 V	100 V	250 V	400 V
371	Loose in box	Lead length 4.0 + 1.0/- 0.5 mm	± 10 %	11	21	41	51
			± 5 %	12	22	42	52
		Lead length 26.0 ± 2.0 mm	± 10 %	15	25	45	55
			± 5 %	16	26	46	56
	Taped on reel (1)	H (1) = 18.5 mm P_0 = 12.7 mm Reel diameter = 356 mm	± 10 %	35	65	75	85
			± 5 %	36	66	76	86
	Ammopack (1)	H (1) = 18.5 mm P_0 = 12.7 mm	± 10 %	38	68	78	88
			± 5 %	39	69	79	89

Notes

(1) For detailed tape specifications refer to packaging information: www.vishay.com/docs/28139/packinfo.pdf or end of catalogue

(2) SPQ = Standard Packing Quantity

SPECIFIC REFERENCE DATA

DESCRIPTION	VALUE			
Tangent of loss angle:	at 1 kHz	at 10 kHz	at 100 kHz	
C ≤ 0.1 µF	≤ 75 x 10^{-4}	≤ 130 x 10^{-4}	≤ 250 x 10^{-4}	
0.1 µF < C ≤ 0.47 µF	≤ 75 x 10^{-4}	≤ 130 x 10^{-4}	≤ 250 x 10^{-4}	
0.47 µF < C ≤ 1.5 µF	≤ 75 x 10^{-4}	≤ 130 x 10^{-4}	-	
Rated voltage pulse slope $(dU/dt)_R$ at	63 Vdc	100 Vdc	250 Vdc	400 Vdc
	18 V/µs	36 V/µs	70 V/µs	190 V/µs
R between leads, for C ≤ 0.33 µF at 10 V; 1 min at 100 V; 1 min	> 15 000 MΩ	> 15 000 MΩ	> 30 000 MΩ	> 30 000 MΩ
RC between leads, for C > 0.33 µF at 10 V; 1 min at 100 V; 1 min	> 5000 s	> 5000 s	-	-
R between interconnecting leads and case (foil method)	> 30 000 MΩ			
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	100 V; 1 min	160 V; 1 min	400 V; 1 min	640 V; 1 min
Withstanding (DC) voltage between leads and case	200 V; 1 min	20 V; 1 min	500 V; 1 min	800 V; 1 min
Maximum application temperature	105 °C			

U_{Rdc} = 63 V; U_{Rac} = 40 V

C (µF)	DIMENSIONS w x h x l (mm)	MASS (g) (1)	CATALOG NUMBER BFC2 371..... AND PACKAGING								
			LOOSE IN BOX				AMMOPACK		REEL		C-VALUE
			l_t = 4.0 + 1.0/- 0.5 mm		l_t = 26.0 ± 2.0 mm		H = 18.5 mm; P_0 = 12.7 mm		H = 18.5 mm; P_0 = 12.7 mm		
			C-tol. = ± 10 %	C-tol. = ± 5 %	C-tol. = ± 10 %	C-tol. = ± 5 %	C-tol. = ± 10 %	C-tol. = ± 5 %	C-tol. = ± 10 %	C-tol. = ± 5 %	
			XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	..YYY
Pitch = 7.62 + 0.30/-0.40 mm; d_t = 0.50 ± 0.05 mm											
0.056 0.068 0.082 0.1	2.5 x 6.5 x 10.0	0.24	**11...** (1000)	**12...** (1000)	**15...** (1000)	**16...** (1000)	**38...** (2000)	**39...** (2000)	**35...** (2000)	**36...** (2000)	**563** **683** **823** **104**
0.12 0.15 0.18 0.22	3.0 x 8.0 x 10.0	0.34	**11...** (1000)	**12...** (1000)	**15...** (1000)	**16...** (1000)	**38...** (1500)	**39...** (1500)	**35...** (1500)	**36...** (1500)	**124** **154** **184** **224**
0.27 0.33 0.39 0.47 0.56 0.68	4.0 x 9.0 x 10.0	0.51	**11...** (1000)	**12...** (1000)	**15...** (1000)	**16...** (1000)	**38...** (1000)	**39...** (1000)	**35...** (1500)	**36...** (1500)	**274** **334** **394** **474** **564** **684**
0.82 1.0	5.0 x 10.5 x 10.0	0.73	**11...** (1000)	**12...** (1000)	**15...** (1000)	**16...** (1000)	**38...** (1000)	**39...** (1000)	**35...** (1000)	**36...** (1000)	**824** **105**
1.2 1.5	6.0 x 11.5 x 10.0	1.0	**11...** (750)	**12...** (750)	**15...** (1000)	**16...** (1000)	**38...** (500)	**39...** (500)	**35...** (500)	**36...** (500)	**125** **155**

Note

(1) Weight for short lead products only

U_{Rdc} = 100 V; U_{Rac} = 63 V

C (µF)	DIMENSIONS w x h x l (mm)	MASS (g) (1)	CATALOG NUMBER BFC2 371..... AND PACKAGING								
			LOOSE IN BOX				AMMOPACK		REEL		C-VALUE
			l_t = 4.0 + 1.0/- 0.5 mm		l_t = 26.0 ± 2.0 mm		H = 18.5 mm; P_0 = 12.7 mm		H = 18.5 mm; P_0 = 12.7 mm		
			C-tol. = ± 10 %	C-tol. = ± 5 %	C-tol. = ± 10 %	C-tol. = ± 5 %	C-tol. = ± 10 %	C-tol. = ± 5 %	C-tol. = ± 10 %	C-tol. = ± 5 %	
			XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	..YYY
Pitch = 7.62 + 0.30/-0.40 mm; d_t = 0.50 ± 0.05 mm											
0.018 0.022 0.027 0.033 0.039 0.047	2.5 x 6.5 x 10.0	0.24	**21...** (1000)	**22...** (1000)	**25...** (1000)	**26...** (1000)	**68...** (2000)	**69...** (2000)	**65...** (2000)	**66...** (2000)	**183** **223** **273** **333** **393** **473**
0.056 0.068 0.082 0.1	3.0 x 8.0 x 10.0	0.34	**21...** (1000)	**22...** (1000)	**25...** (1000)	**26...** (1000)	**68...** (1500)	**69...** (1500)	**65...** (1500)	**66...** (1500)	**563** **683** **823** **104**
0.12 0.15 0.18 0.22	4.0 x 9.0 x 10.0	0.51	**21...** (1000)	**22...** (1000)	**25...** (1000)	**26...** (1000)	**68...** (1000)	**69...** (1000)	**65...** (1500)	**66...** (1500)	**124** **154** **184** **224**
0.27 0.33 0.39 0.47	5.0 x 10.5 x 10.0	0.73	**21...** (1000)	**22...** (1000)	**25...** (1000)	**26...** (1000)	**68...** (1000)	**69...** (1000)	**65...** (1000)	**66...** (1000)	**274** **334** **394** **474**

Note

(1) Weight for short lead products only

U_{Rdc} = 250 V; U_{Rac} = 160 V

C (µF)	DIMENSIONS w x h x l (mm)	MASS (g) [1]	CATALOG NUMBER BFC2 371.... AND PACKAGING								C-VALUE
			LOOSE IN BOX				AMMOPACK		REEL		
			l_t = 4.0 + 1.0/- 0.5 mm		l_t = 26.0 ± 2.0 mm		H = 18.5 mm; P_0 = 12.7 mm		H = 18.5 mm; P_0 = 12.7 mm		
			C-tol. = ± 10 %	C-tol. = ± 5 %	C-tol. = ± 10 %	C-tol. = ± 5 %	C-tol. = ± 10 %	C-tol. = ± 5 %	C-tol. = ± 10 %	C-tol. = ± 5 %	
			XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	..YYY
Pitch = 7.62 + 0.30/-0.40 mm; d_t = 0.50 ± 0.05 mm											
0.082 0.01 0.012 0.015	2.5 x 6.5 x 10.0	0.24	**41...** (1000)	**42...** (1000)	**45...** (1000)	**46...** (1000)	**78...** (2000)	**79...** (2000)	**75...** (2000)	**76...** (2000)	**822** **103** **123** **153**
0.018 0.022 0.027 0.033 0.039 0.047	3.0 x 8.0 x 10.0	0.34	**41...** (1000)	**42...** (1000)	**45...** (1000)	**46...** (1000)	**78...** (1500)	**79...** (1500)	**75...** (1500)	**76...** (1500)	**183** **223** **273** **333** **393** **473**
0.056 0.068 0.082 0.1	4.0 x 9.0 x 10.0	0.51	**41...** (1000)	**42...** (1000)	**45...** (1000)	**46...** (1000)	**78...** (1000)	**79...** (1000)	**75...** (1500)	**76...** (1500)	**563** **683** **823** **104**
0.12	5.0 x 10.5 x 10.0	0.73	**41...** (1000)	**42...** (1000)	**45...** (1000)	**46...** (1000)	**78...** (1000)	**79...** (1000)	**75...** (1000)	**76...** (1000)	**124**

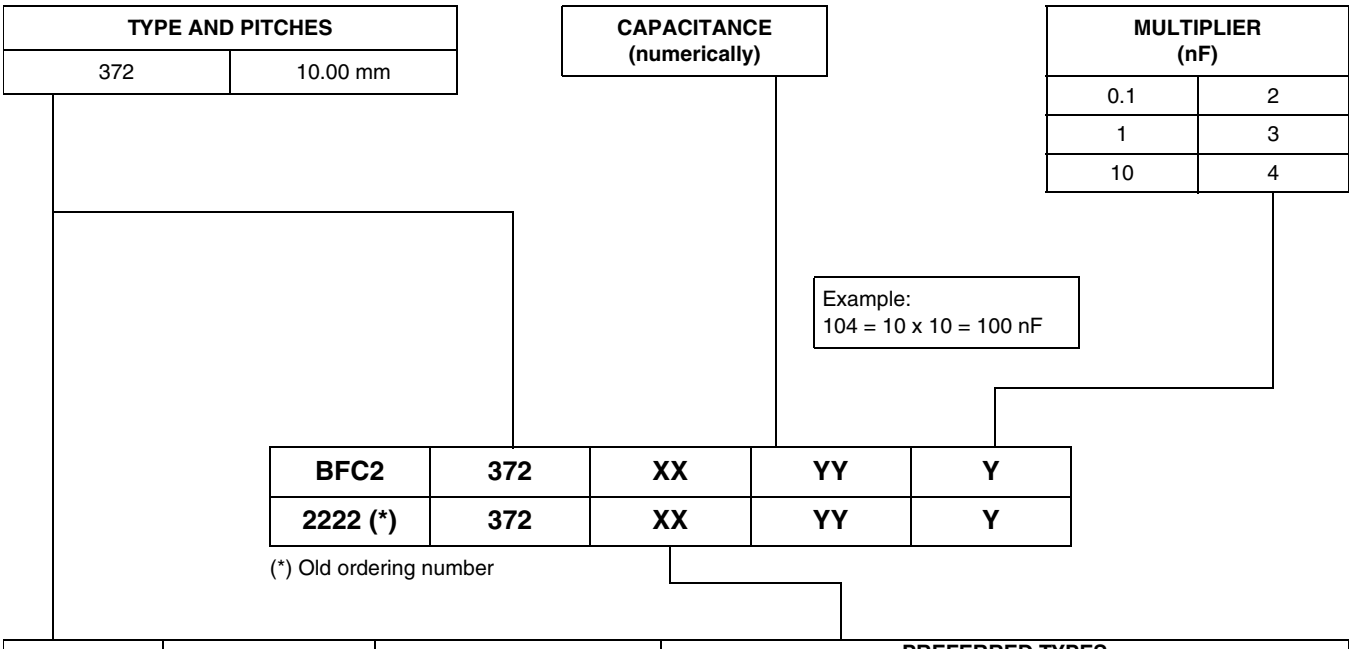
Note
[1] Weight for short lead products only

U_{Rdc} = 400 V; U_{Rac} = 220 V

C (µF)	DIMENSIONS w x h x l (mm)	MASS (g) [1]	CATALOG NUMBER BFC2 371..... AND PACKAGING								C-VALUE
			LOOSE IN BOX				AMMOPACK		REEL		
			l_t = 4.0 + 1.0/- 0.5 mm		l_t = 26.0 ± 2.0 mm		H = 18.5 mm; P_0 = 12.7 mm		H = 18.5 mm; P_0 = 12.7 mm		
			C-tol. = ± 10 %	C-tol. = ± 5 %	C-tol. = ± 10 %	C-tol. = ± 5 %	C-tol. = ± 10 %	C-tol. = ± 5 %	C-tol. = ± 10 %	C-tol. = ± 5 %	
			XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	..YYY
Pitch = 7.62 + 0.30/-0.40 mm; d_t = 0.50 ± 0.05 mm											
0.0039 0.0047 0.0056 0.0068	2.5 x 6.5 x 10.0	0.24	**51...** (1000)	**52...** (1000)	**55...** (1000)	**56...** (1000)	**88...** (2000)	**89...** (2000)	**85...** (2000)	**86...** (2000)	**392** **472** **562** **682**
0.0082 0.01	3.0 x 8.0 x 10.0	0.34	**51...** (1000)	**52...** (1000)	**55...** (1000)	**56...** (1000)	**88...** (1500)	**89...** (1500)	**85...** (1500)	**86...** (1500)	**822** **103**
0.012 0.015	4.0 x 9.0 x 10.0	0.51	**51...** (1000)	**52...** (1000)	**55...** (1000)	**56...** (1000)	**88...** (1000)	**89...** (1000)	**85...** (1500)	**86...** (1500)	**123** **153**
0.018 0.022 0.027 0.033 0.039	5.0 x 10.5 x 10.0	0.73	**51...** (1000)	**52...** (1000)	**55...** (1000)	**56...** (1000)	**88...** (1000)	**89...** (1000)	**85...** (1000)	**86...** (1000)	**183** **223** **273** **333** **393**

Note
[1] Weight for short lead products only

COMPOSITION OF CATALOG NUMBER: 372



(*) Old ordering number

TYPE	PACKAGING	LEAD CONFIGURATION	PREFERRED TYPES				
			C-TOL.	100 V	250 V	400 V	630 V
372	Loose in box	Lead length 4.0 + 1.0/- 0.5 mm	± 10 %	21	41	51	61
			± 5 %	22	42	52	62
	Taped on reel (1)	H (1) = 18.5 mm, P_0 = 12.7 mm, Reel diameter = 356 mm	± 10 %	25	45	55	65
			± 5 %	26	46	56	66
	Ammopack (1)	H (1) = 18.5 mm, P_0 = 12.7 mm	± 10 %	28	48	58	68
			± 5 %	29	49	59	69

Notes

(1) For detailed tape specifications refer to packaging information: www.vishay.com/docs/28139/packinfo.pdf or end of catalogue

(2) SPQ = Standard Packing Quantity

SPECIFIC REFERENCE DATA

DESCRIPTION	VALUE			
Tangent of loss angle:	at 1 kHz	at 10 kHz	at 100 kHz	
C ≤ 0.1 µF	≤ 75 x 10^{-4}	≤ 130 x 10^{-4}	≤ 250 x 10^{-4}	
0.1 µF < C ≤ 0.68 µF	≤ 75 x 10^{-4}	≤ 130 x 10^{-4}	≤ 250 x 10^{-4}	
Rated voltage pulse slope $(dU/dt)_R$ at	100 Vdc	250 Vdc	400 Vdc	630 Vdc
	34 V/µs	50 V/µs	80 V/µs	120 V/µs
R between leads, for C ≤ 0.33 µF at 10 V; 1 min at 100 V; 1 min	> 15 000 MΩ	> 15 000 MΩ	> 30 000 MΩ	> 30 000 MΩ
RC between leads, for C > 0.33 µF at 100 V; 1 min	> 5000 s			
R between interconnecting leads and case (foil method)	> 30 000 MΩ			
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	160 V; 1 min	400 V; 1 min	640 V; 1 min	1008 V; 1 min
Withstanding (DC) voltage between leads and case	200 V; 1 min	500 V; 1 min	800 V; 1 min	1260 V; 1 min
Maximum application temperature	105 °C			

U_{Rdc} = 100 V; U_{Rac} = 63 V

C (µF)	DIMENSIONS w x h x l (mm)	MASS (g) (1)	CATALOG NUMBER BFC2 372..... AND PACKAGING						C-VALUE
			LOOSE IN BOX		REEL		AMMOPACK		
			l_t = 4.0 + 1.0/- 0.5 mm		H = 18.5 mm; P_0 = 12.7 mm		H = 18.5 mm; P_0 = 12.7 mm		
			C-tol. = ± 10 %	C-tol. = ± 5 %	C-tol. = ± 10 %	C-tol. = ± 5 %	C-tol. = ± 10 %	C-tol. = ± 5 %	
			XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	..YYY
Pitch = 10.0 ± 0.4 mm; d_t = 0.60 ± 0.06 mm									
0.1 0.12 0.15 0.18 0.22 0.27 0.33	4.0 x 10.0 x 12.5	0.65	**21...** (1000)	**22...** (1000)	**25...** (1400)	**26...** (1400)	**28...** (750)	**29...** (750)	**104** **124** **154** **184** **224** **274** **334**
0.39 0.47	5.0 x 11.0 x 12.5	0.87	**21...** (1000)	**22...** (1000)	**25...** (1100)	**26...** (1100)	**28...** (600)	**29...** (600)	**394** **474**
0.56 0.68	6.0 x 12.0 x 12.5	1.15	**21...** (750)	**22...** (750)	**25...** (900)	**26...** (900)	**28...** (500)	**29...** (500)	**564** **684**

Note
(1) Weight for short lead products only

U_{Rdc} = 250 V; U_{Rac} = 160 V

C (µF)	DIMENSIONS w x h x l (mm)	MASS (g) (1)	CATALOG NUMBER BFC2 372..... AND PACKAGING						C-VALUE
			LOOSE IN BOX		REEL		AMMOPACK		
			l_t = 4.0 + 1.0/- 0.5 mm		H = 18.5 mm; P_0 = 12.7 mm		H = 18.5 mm; P_0 = 12.7 mm		
			C-tol. = ± 10 %	C-tol. = ± 5 %	C-tol. = ± 10 %	C-tol. = ± 5 %	C-tol. = ± 10 %	C-tol. = ± 5 %	
			XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	..YYY
Pitch = 10.0 ± 0.4 mm; d_t = 0.60 ± 0.06 mm									
0.047 0.056 0.068 0.082 0.1	4.0 x 10.0 x 12.5	0.65	**41...** (1000)	**42...** (1000)	**45...** (1400)	**46...** (1400)	**48...** (750)	**49...** (750)	**473** **563** **683** **823** **104**
0.12 0.15	5.0 x 11.0 x 12.5	0.87	**41...** (1000)	**42...** (1000)	**45...** (1100)	**46...** (1100)	**48...** (600)	**49...** (600)	**124** **154**
0.18 0.22	6.0 x 12.0 x 12.5	1.15	**41...** (750)	**42...** (750)	**45...** (900)	**46...** (900)	**48...** (500)	**49...** (500)	**184** **224**

Note
(1) Weight for short lead products only

U_{Rdc} = 400 V; U_{Rac} = 220 V

C (µF)	DIMENSIONS w x h x l (mm)	MASS (g) (1)	CATALOG NUMBER BFC2 372.... AND PACKAGING						
			LOOSE IN BOX		REEL		AMMOPACK		C-VALUE
			l_t = 4.0 + 1.0/- 0.5 mm		H = 18.5 mm; P_0 = 12.7 mm		H = 18.5 mm; P_0 = 12.7 mm		
			C-tol. = ± 10 %	C-tol. = ± 5 %	C-tol. = ± 10 %	C-tol. = ± 5 %	C-tol. = ± 10 %	C-tol. = ± 5 %	
			XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	..YYY
Pitch = 10.0 ± 0.4 mm; d_t = 0.60 ± 0.06 mm									
0.0047 0.0056 0.0068 0.0082 0.01 0.012 0.015 0.018 0.022 0.027 0.033	4.0 x 10.0 x 12.5	0.65	**51...** (1000)	**52...** (1000)	**55...** (1400)	**56...** (1400)	**58...** (750)	**59...** (750)	**472** **562** **682** **822** **103** **123** **153** **183** **223** **273** **333**
0.039 0.047 0.056	5.0 x 11.0 x 12.5	0.87	**51...** (1000)	**52...** (1000)	**55...** (1100)	**56...** (1100)	**58...** (600)	**59...** (600)	**393** **473** **563**
0.068 0.082	6.0 x 12.0 x 12.5	1.15	**51...** (750)	**52...** (750)	**55...** (900)	**56...** (900)	**58...** (500)	**59...** (500)	**683** **823**

Note
(1) Weight for short lead products only

U_{Rdc} = 630 V; U_{Rac} = 250 V

C (µF)	DIMENSIONS w x h x l (mm)	MASS (g) (1)	CATALOG NUMBER BFC2 372..... AND PACKAGING						
			LOOSE IN BOX		REEL		AMMOPACK		C-VALUE
			l_t = 4.0 + 1.0/- 0.5 mm		H = 18.5 mm; P_0 = 12.7 mm		H = 18.5 mm; P_0 = 12.7 mm		
			C-tol. = ± 10 %	C-tol. = ± 5 %	C-tol. = ± 10 %	C-tol. = ± 5 %	C-tol. = ± 10 %	C-tol. = ± 5 %	
			XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	..YYY
Pitch = 10.0 ± 0.4 mm; d_t = 0.60 ± 0.06 mm									
0.01 0.012 0.015 0.018 0.022	4.0 x 10.0 x 12.5	0.65	**61...** (1000)	**62...** (1000)	**65...** (1400)	**66...** (1400)	**68...** (750)	**69...** (750)	**103** **123** **153** **183** **223**
0.027 0.033	5.0 x 11.0 x 12.5	0.87	**61...** (1000)	**62...** (1000)	**65...** (1100)	**66...** (1100)	**68...** (600)	**69...** (600)	**273** **333**
0.039 0.047	6.0 x 12.0 x 12.5	1.15	**61...** (750)	**62...** (750)	**65...** (900)	**66...** (900)	**68...** (500)	**69...** (500)	**393** **473**

Note
(1) Weight for short lead products only

COMPOSITION OF CATALOG NUMBER: 373

TYPE AND PITCHES	
373	15.0 mm
	22.5 mm
	27.5 mm

CAPACITANCE (numerically)

MULTIPLIER (nF)	
0.1	2
1	3
10	4
100	5

Example:
104 = 10 x 10 = 100 nF

BFC2	**373**	**XX**	**YY**	**Y**
2222 (*)	**373**	**XX**	**YY**	**Y**

(*) Old ordering number

TYPE	PACKAGING	LEAD CONFIGURATION	PREFERRED TYPES				
			C-TOL.	100 V	250 V	400 V	630 V
373 compact	Loose in box	Lead length 5.0 ± 1.0 mm	± 10 %	23	43	53	63
			± 5 %	24	44	54	64
	Taped on reel (1)	H (1) = 18.5 mm P_0 = 12.7 mm Reel diameter = 356 mm	± 10 %	27	47	57	67
			± 5 %	28	48	58	68
373 standard	Loose in box	Lead length 5.0 ± 1.0 mm	± 10 %	21	41	51	
			± 5 %	22	42	52	
	Taped on reel (1)	H (1) = 18.5 mm P_0 = 12.7 mm Reel diameter = 356 mm	± 10 %	25	45	55	-
			± 5 %	26	46	56	

Notes

(1) For detailed tape specifications refer to packaging information: www.vishay.com/docs/28139/packinfo.pdf or end of catalogue

(2) SPQ = Standard Packing Quantity

SPECIFIC REFERENCE DATA

DESCRIPTION	VALUE			
Tangent of loss angle:	at 1 kHz	at 10 kHz	at 100 kHz	
C ≤ 0.1 µF	≤ 75 x 10^{-4}	≤ 130 x 10^{-4}	≤ 250 x 10^{-4}	
0.1 µF < C ≤ 0.47 µF	≤ 75 x 10^{-4}	≤ 130 x 10^{-4}	≤ 300 x 10^{-4}	
0.47 µF < C ≤ 1.0 µF	≤ 75 x 10^{-4}	≤ 130 x 10^{-4}	-	
1.0 µF < C ≤ 10 µF	≤ 75 x 10^{-4}	≤ 150 x 10^{-4}	-	
C > 10 µF	≤ 75 x 10^{-4}	-	-	
Rated voltage pulse slope $(dU/dt)_R$ at	63 Vdc	100 Vdc	250 Vdc	400 Vdc
P = 15 mm	14 V/µs	16 V/µs	34 V/µs	90 V/µs
P = 22.5 mm	5 V/µs	7 V/µs	14 V/µs	35 V/µs
P = 27.5 mm	4 V/µs	6 V/µs	12 V/µs	30 V/µs
R between leads, for C ≤ 0.33 µF at 100 V; 1 min at 500 V; 1 min	> 15 000 MΩ	> 15 000 MΩ	> 30 000 MΩ	> 30 000 MΩ
RC between leads, for C > 0.33 µF at 100 V; 1 min at 500 V; 1 min	> 5000 s	> 10 000 s	> 10 000 s	> 10 000 s
R between interconnecting leads and case (foil method)	> 30 000 MΩ			
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	160 V; 1 min	400 V; 1 min	640 V; 1 min	1008 V; 1 min
Withstanding (DC) voltage between leads and case	200 V; 1 min	500 V; 1 min	800 V; 1 min	1260 V; 1 min
Maximum application temperature	105 °C			

U_{Rdc} = 100 V; U_{Rac} = 63 V (compact size)

C (µF)	DIMENSIONS w x h x l (mm)	MASS (g) (1)	CATALOG NUMBER BFC2 373..... AND PACKAGING				C-VALUE
			LOOSE IN BOX		REEL		
			l_t = 5.0 ± 1.0 mm		H = 18.5 mm; P_0 = 12.7 mm		
			C-tol. = ± 10 %	C-tol. = ± 5 %	C-tol. = ± 10 %	C-tol. = ± 5 %	
			XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	..YYY
Pitch = 15.0 ± 0.4 mm; d_t = 0.60 ± 0.06 mm							
0.33 0.39 0.47 0.56 0.68 0.82 1 1.2 1.5 1.8	5.0 x 11.0 x 17.5	1.1	**23...** (1000)	**24...** (1000)	**27...** (1100)	**28...** (1100)	**334** **394** **474** **564** **684** **824** **105** **125** **155** **185**
2.2	6.0 x 12.0 x 17.5	1.5	**23...** (1000)	**24...** (1000)	**27...** (900)	**28...** (900)	**225**
Pitch = 15.0 ± 0.4 mm; d_t = 0.80 ± 0.08 mm							
2.7 3.3	7.0 x 13.5 x 17.5	2.0	**23...** (1000)	**24...** (1000)	**27...** (800)	**28...** (800)	**275** **335**
3.9 4.7	8.5 x 15.0 x 17.5	2.7	**23...** (1000)	**24...** (1000)	**27...** (650)	**28...** (650)	**395** **475**

Note

(1) Weight for short lead products only

U_{Rdc} = 250 V; U_{Rac} = 160 V (compact size)

C (µF)	DIMENSIONS w x h x l (mm)	MASS (g) (1)	CATALOG NUMBER BFC2 373..... AND PACKAGING				C-VALUE
			LOOSE IN BOX		REEL		
			l_t = 5.0 ± 1.0 mm		H = 18.5 mm; P_0 = 12.7 mm		
			C-tol. = ± 10 %	C-tol. = ± 5 %	C-tol. = ± 10 %	C-tol. = ± 5 %	
			XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	..YYY
Pitch = 15.0 ± 0.40 mm; d_t = 0.60 ± 0.06 mm							
0.15 0.18 0.22 0.27 0.32	5.0 x 11.0 x 17.5	1.1	**43...** (1000)	**44...** (1000)	**47...** (1100)	**48...** (1100)	**154** **184** **224** **274** **334**
0.39 0.47	6.0 x 12.0 x 17.5	1.5	**43...** (1000)	**44...** (1000)	**47...** (900)	**48...** (900)	**394** **474**
Pitch = 15.0 ± 0.40 mm; d_t = 0.80 ± 0.08 mm							
0.56 0.68	7.0 x 13.5 x 17.5	2.0	**43...** (1000)	**44...** (1000)	**47...** (800)	**48...** (800)	**564** **684**
0.82 1	8.5 x 15.0 x 17.5	2.7	**43...** (1000)	**44...** (1000)	**47...** (650)	**48...** (650)	**824** **105**
1.2	10.0 x 16.5 x 17.5	3.5	**43...** (500)	**44...** (500)	**47...** (600)	**48...** (600)	**125**
Pitch = 22.5 ± 0.4 mm; d_t = 0.80 ± 0.08 mm							
1.5 1.8	8.5 x 18.0 x 26.0	4.5	**43...** (200)	**44...** (200)	**47...** (450)	**48...** (450)	**155** **185**
2.2 2.7	10.0 x 19.5 x 26.0	5.7	**43...** (200)	**44...** (200)	**47...** (350)	**48...** (350)	**225** **275**
Pitch = 27.5 ± 0.4 mm; d_t = 0.80 ± 0.08 mm							
3.3	11.0 x 21.0 x 31.0	8.2	**43...** (100)	**44...** (100)	-	-	**335**
3.9 4.7	13.0 x 23.0 x 31.0	10.2	**43...** (100)	**44...** (100)	-	-	**395** **475**

Note

(1) Weight for short lead products only

U_{Rdc} = 400 V; U_{Rac} = 220 V (compact size)

C (µF)	DIMENSIONS w x h x l (mm)	MASS (g) (1)	CATALOG NUMBER BFC2 373..... AND PACKAGING				
			LOOSE IN BOX		REEL		C-VALUE
			l_t = 5.0 ± 1.0 mm		H = 18.5 mm; P_0 = 12.7 mm		
			C-tol. = ± 10 %	C-tol. = ± 5 %	C-tol. = ± 10 %	C-tol. = ± 5 %	
			XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	..YYY
Pitch = 15.0 ± 0.4 mm; d_t = 0.60 ± 0.06 mm							
0.047 0.056 0.068 0.082 0.1 0.12 0.15	5.0 x 11.0 x 17.5	1.1	**53...** (1000)	**54...** (1000)	**57...** (1100)	**58...** (1100)	**473** **563** **683** **823** **104** **124** **154**
0.18 0.22	6.0 x 12.0 x 17.5	1.5	**53...** (1000)	**54...** (1000)	**57...** (900)	**58...** (900)	**184** **224**
Pitch = 15.0 ± 0.4 mm; d_t = 0.80 ± 0.08 mm							
0.27 0.33	7.0 x 13.5 x 17.5	2.0	**53...** (1000)	**54...** (1000)	**57...** (800)	**58...** (800)	**274** **334**
0.39 0.47	8.5 x 15.0 x 17.5	2.7	**53...** (1000)	**54...** (1000)	**57...** (650)	**58...** (650)	**394** **474**
0.56	10.0 x 16.5 x 17.5	3.5	**53...** (500)	**54...** (500)	**57...** (600)	**58...** (600)	**564**
Pitch = 22.5 ± 0.4 mm; d_t = 0.80 ± 0.08 mm							
0.68 0.82	8.5 x 18.0 x 26.0	4.5	**53...** (200)	**54...** (200)	**57...** (450)	**58...** (450)	**684** **824**
1 1.2	10.0 x 19.5 x 26.0	5.7	**53...** (200)	**54...** (200)	**57...** (350)	**58...** (350)	**105** **125**
Pitch = 27.5 ± 0.4 mm; d_t = 0.80 ± 0.08 mm							
1.5	11.0 x 21.0 x 31.0	8.2	**53...** (100)	**54...** (100)	-	-	**155**
1.8 2.2	13.0 x 23.0 x 31.0	10.2	**53...** (100)	**54...** (100)	-	-	**185** **225**

Note

(1) Weight for short lead products only

U_{Rdc} = 630 V; U_{Rac} = 250 V (compact size)

C (µF)	DIMENSIONS w x h x l (mm)	MASS (g) [1]	CATALOG NUMBER BFC2 373..... AND PACKAGING				
			LOOSE IN BOX		REEL		C-VALUE
			l_t = 5.0 ± 1.0 mm		H = 18.5 mm; P_0 = 12.7 mm		
			C-tol. = ± 10 %	C-tol. = ± 5 %	C-tol. = ± 10 %	C-tol. = ± 5 %	
			XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	..YYY
Pitch = 15.0 ± 0.4 mm; d_t = 0.60 ± 0.06 mm							
0.047 0.056	5.0 x 11.0 x 17.5	1.1	**63...** (1000)	**64...** (1000)	**67...** (1100)	**68...** (1100)	**473** **563**
0.068 0.082	6.0 x 12.0 x 17.5	1.5	**63...** (1000)	**64...** (1000)	**67...** (900)	**68...** (900)	**683** **823**
Pitch = 15.0 ± 0.4 mm; d_t = 0.80 ± 0.08 mm							
0.1 0.12	7.0 x 13.5 x 17.5	2.0	**63...** (1000)	**64...** (1000)	**67...** (800)	**68...** (800)	**104** **124**
0.15 0.18	8.5 x 15.0 x 17.5	2.7	**63...** (1000)	**64...** (1000)	**67...** (650)	**68...** (650)	**154** **184**
0.22	10.0 x 16.5 x 17.5	3.5	**63...** (500)	**64...** (500)	**67...** (600)	**68...** (600)	**224**
Pitch = 22.5 ± 0.4 mm; d_t = 0.80 ± 0.08 mm							
0.27 0.33	8.5 x 18.0 x 26.0	4.5	**63...** (200)	**64...** (200)	**67...** (450)	**68...** (450)	**274** **334**
0.39 0.47	10.0 x 19.5 x 26.0	5.7	**63...** (200)	**64...** (200)	**67...** (350)	**68...** (350)	**394** **474**
Pitch = 27.5 ± 0.4 mm; d_t = 0.80 ± 0.08 mm							
0.56	11.0 x 21.0 x 31.0	8.2	**63...** (100)	**64...** (100)	-	-	**564**
0.68 0.82	13.0 x 23.0 x 31.0	10.2	**63...** (100)	**64...** (100)			**684** **824**
1	15.0 x 25.0 x 31.0	13.4	**63...** (100)	**64...** (100)			**105**

Note

[1] Weight for short lead products only

U_{Rdc} = 100 V; U_{Rac} = 63 V (compact size)

C (µF)	DIMENSIONS w x h x l (mm)	MASS (g) (1)	CATALOG NUMBER BFC2 373..... AND PACKAGING				
			LOOSE IN BOX		REEL		C-VALUE
			l_t = 5.0 ± 1.0 mm		H = 18.5 mm; P_0 = 12.7 mm		
			C-tol. = ± 10 %	C-tol. = ± 5 %	C-tol. = ± 10 %	C-tol. = ± 5 %	
			XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	..YYY
Pitch = 15.0 ± 0.4 mm; d_t = 0.60 ± 0.06 mm							
0.33 0.39 0.47 0.56 0.68	5.0 x 11.0 x 17.5	1.1	**21...** (1000)	**22...** (1000)	**25...** (1100)	**26...** (1100)	**334** **394** **474** **565** **684**
0.82 1	6.0 x 12.0 x 17.5	1.5	**21...** (1000)	**22...** (1000)	**25...** (900)	**26...** (900)	**824** **105**
Pitch = 15.0 ± 0.4 mm; d_t = 0.80 ± 0.08 mm							
1.2 1.5	7.0 x 13.5 x 17.5	2.0	**21...** (1000)	**22...** (1000)	**25...** (800)	**26...** (800)	**125** **155**
1.8 2.2	8.5 x 15.0 x 17.5	2.7	**21...** (1000)	**22...** (1000)	**25...** (650)	**26...** (650)	**185** **225**
Pitch = 22.5 ± 0.4 mm; d_t = 0.80 ± 0.08 mm							
2.7 3.3	8.5 x 18.0 x 26.0	4.5	**21...** (200)	**22...** (200)	**25...** (450)	**26...** (450)	**275** **335**
3.9 4.7	10.0 x 19.5 x 26.0	5.7	**21...** (200)	**22...** (200)	**25...** (350)	**26...** (350)	**395** **475**
Pitch = 27.5 ± 0.4 mm; d_t = 0.80 ± 0.08 mm							
5.6 6.8	11.0 x 21.0 x 31.0	8.2	**21...** (100)	**22...** (100)	-	-	**565** **685**
8.2 10	13.0 x 23.0 x 31.0	10.2	**21...** (100)	**22...** (100)			**825** **106**
12 15	15.0 x 25.0 x 31.0	18.4	**21...** (100)	**22...** (100)			**126** **156**

Note
(1) Weight for short lead products only

Available on request

C (µF)	DIMENSIONS w x h x l (mm)	MASS (g) (1)	CATALOG NUMBER BFC2 373..... AND PACKAGING					
			LOOSE IN BOX			REEL		
			l_t = 5.0 ± 1.0 mm			H = 18.5 mm		
			C-tol. = ± 10 %	C-tol. = ± 5 %	SPQ	C-tol. = ± 10 %	C-tol. = ± 5 %	SPQ
Pitch = 22.5 ± 0.4 mm; d_t = 0.80 ± 0.08 mm								
1.5	6.0 x 15.5 x 26.0	2.7	90012	90013	300	90018	90019	600
1.8 2.2	7.0 x 16.5 x 26.0	3.3	90022 90002	90023 90003	200	90028 90008	90029 90009	550
Pitch = 27.5 ± 0.4 mm; d_t = 0.80 ± 0.08 mm								
4.7	9.0 x 19.0 x 31.0	6.1	90032	90033	100	-		

Note
(1) Weight for short lead products only

U_{Rdc} = 250 V; U_{Rac} = 160 V (standard size)

C (µF)	DIMENSIONS w x h x l (mm)	MASS (g) (1)	CATALOG NUMBER BFC2 373..... AND PACKAGING				
			LOOSE IN BOX		REEL		C-VALUE
			l_t = 5.0 ± 1.0 mm		H = 18.5 mm; P_0 = 12.7 mm		
			C-tol. = ± 10 %	C-tol. = ± 5 %	C-tol. = ± 10 %	C-tol. = ± 5 %	
			XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	..YYY
Pitch = 15.0 ± 0.4 mm; d_t = 0.60 ± 0.06 mm							
0.15 0.18 0.22	5.0 x 11.0 x 17.5	1.1	**41...** (1000)	**42...** (1000)	**45...** (1100)	**46...** (1100)	**154** **184** **224**
0.27 0.33 0.39 0.47	6.0 x 12.0 x 17.5	1.5	**41...** (1000)	**42...** (1000)	**45...** (900)	**46...** (900)	**274** **334** **394** **474**
Pitch = 15.0 ± 0.4 mm; d_t = 0.80 ± 0.08 mm							
0.56 0.68	7.0 x 13.5 x 17.5	2.0	**41...** (1000)	**42...** (1000)	**45...** (800)	**46...** (800)	**564** **684**
0.82 1	8.5 x 15.0 x 17.5	2.7	**41...** (1000)	**42...** (1000)	**45...** (650)	**46...** (650)	**824** **105**
Pitch = 22.5 ± 0.4 mm; d_t = 0.80 ± 0.08 mm							
1.2 1.5	8.5 x 18.0 x 26.0	4.5	**41...** (200)	**42...** (200)	**45...** (450)	**46...** (450)	**125** **155**
1.8 2.2	10.0 x 19.5 x 26.0	5.7	**41...** (200)	**42...** (200)	**45...** (350)	**46...** (350)	**185** **225**
Pitch = 27.5 ± 0.4 mm; d_t = 0.80 ± 0.08 mm							
2.7 3.3	13.0 x 23.0 x 31.0	10.2	**41...** (100)	**42...** (100)	-	-	**275** **335**
3.9 4.7	15.0 x 28.0 x 31.0	13.4	**41...** (100)	**42...** (100)			**395** **475**

Note

(1) Weight for short lead products only

Available on request

C (µF)	DIMENSIONS w x h x l (mm)	MASS (g) (1)	CATALOG NUMBER BFC2 373..... AND PACKAGING					
			LOOSE IN BOX			REEL		
			l_t = 5.0 ± 1.0 mm			H = 18.5 mm		
			C-tol. = ± 10 %	C-tol. = ± 5 %	SPQ	C-tol. = ± 10 %	C-tol. = ± 5 %	SPQ
Pitch = 22.5 ± 0.4 mm; d_t = 0.80 ± 0.08 mm								
0.47 0.56 0.67	6.0 x 15.5 x 26.0	2.7	90042 90052 90062	90046 90053 90063	300	90048 90058 90068	90049 90059 90069	600
0.85 1	7.0 x 16.5 x 26.0	3.3	90072 90082	90073 90083	200	90078 90088	90079 90089	550
Pitch = 27.5 ± 0.4 mm; d_t = 0.80 ± 0.08 mm								
1.2 1.5	9.0 x 19.0 x 31.0	6.1	90172 90092	90173 90093	100	-		
1.8 2.2	9.0 x 21.0 x 31.0	8.2	90102 90112	90103 90113	100			

Note

(1) Weight for short lead products only

U_{Rdc} = 400 V; U_{Rac} = 220 V (standard size)

C (µF)	DIMENSIONS w x h x l (mm)	MASS (g) (1)	CATALOG NUMBER BFC2 373..... AND PACKAGING				
			LOOSE IN BOX		REEL		C-VALUE
			l_t = 5.0 ± 1.0 mm		H = 18.5 mm; P_0 = 12.7 mm		
			C-tol. = ± 10 %	C-tol. = ± 5 %	C-tol. = ± 10 %	C-tol. = ± 5 %	
			XX (SPQ)	XX (SPQ)	XX (SPQ)	XX (SPQ)	..YYY
Pitch = 15.0 ± 0.4 mm; d_t = 0.60 ± 0.06 mm							
0.047 0.056 0.068 0.082 0.1	5.0 x 11.0 x 17.5	1.1	**51...** (1000)	**52...** (1000)	**55...** (1100)	**56...** (1100)	**473** **563** **683** **823** **104**
0.12 0.15	6.0 x 12.0 x 17.5	1.5	**51...** (1000)	**52...** (1000)	**55...** (900)	**56...** (900)	**124** **154**
Pitch = 15.0 ± 0.4 mm; d_t = 0.80 ± 0.08 mm							
0.18 0.22	7.0 x 13.5 x 17.5	2.0	**51...** (1000)	**52...** (1000)	**55...** (800)	**56...** (800)	**184** **224**
0.27 0.33	8.5 x 15.0 x 17.5	2.7	**51...** (1000)	**52...** (1000)	**55...** (650)	**56...** (650)	**274** **334**
Pitch = 22.5 ± 0.4 mm; d_t = 0.80 ± 0.08 mm							
0.39 0.47	8.5 x 18.0 x 26.0	4.5	**51...** (200)	**52...** (200)	**55...** (450)	**56...** (450)	**394** **474**
0.56 0.68	10.0 x 19.5 x 26.0	5.7	**51...** (200)	**52...** (200)	**55...** (350)	**56...** (350)	**564** **684**
Pitch = 27.5 ± 0.4 mm; d_t = 0.80 ± 0.08 mm							
0.82 1	13.0 x 23.0 x 31.0	10.2	**51...** (100)	**52...** (100)	-	-	**824** **105**
1.2 1.5	15.0 x 28.0 x 31.0	13.4	**51...** (100)	**52...** (100)			**125** **155**

Note
(1) Weight for short lead products only

Available on request

C (µF)	DIMENSIONS w x h x l (mm)	MASS (g) (1)	CATALOG NUMBER BFC2 373..... AND PACKAGING					
			LOOSE IN BOX			REEL		
			l_t = 5.0 ± 1.0 mm			H = 18.5 mm		
			C-tol. = ± 10 %	C-tol. = ± 5 %	SPQ	C-tol. = ± 10 %	C-tol. = ± 5 %	SPQ
Pitch = 22.5 ± 0.4 mm; d_t = 0.80 ± 0.08 mm								
0.22	6.0 x 15.5 x 26.0	2.7	90122	90123	300	90128	90129	600
0.27 0.33	7.0 x 16.5 x 26.0	3.3	90132 90142	90133 90143	200	90138 90148	90139 90149	550
Pitch = 27.5 ± 0.4 mm; d_t = 0.80 ± 0.08 mm								
0.68	9.0 x 19.0 x 31.0	6.1	90152	90153	100	-		

Note
(1) Weight for short lead products only

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/docs/28139/packinfo.pdf or end of catalogue.

Specific Method of Mounting to Withstand Vibration and Shock

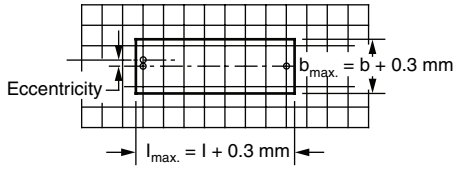
In order to withstand vibration and shock tests, it must be ensured that stand-off pips are in good contact with the printed-circuit board.

- For $L \leq 15$ 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 length and width of film capacitors is shown in the drawing:

- Eccentricity as in drawing. The maximum eccentricity is smaller than or equal to the lead diameter of the product concerned.
- Product height with seating plane as given by “IEC 60717” as reference: $h_{max.} \leq h + 0.3$ mm



Storage Temperature

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

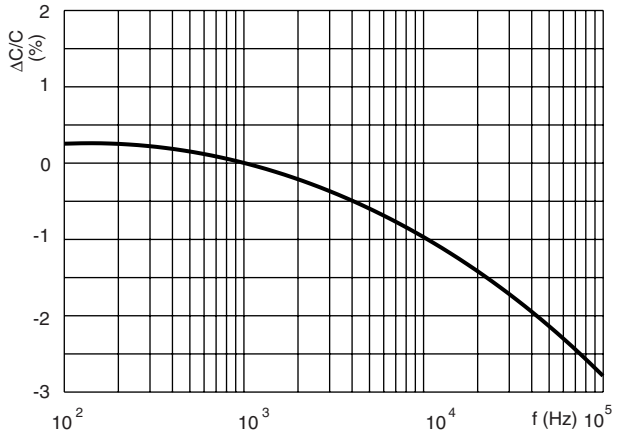
Ratings and Characteristics Reference Conditions

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

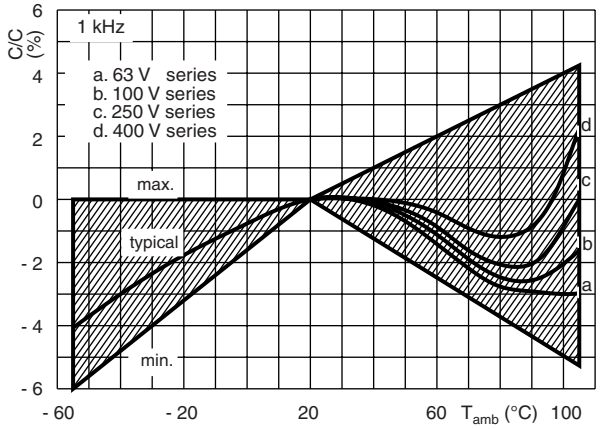
For reference testing, a conditioning period shall be applied over 96 ± 4 h by heating the products in a circulating air oven at the rated temperature and a relative humidity not exceeding 20 %.

CHARACTERISTICS

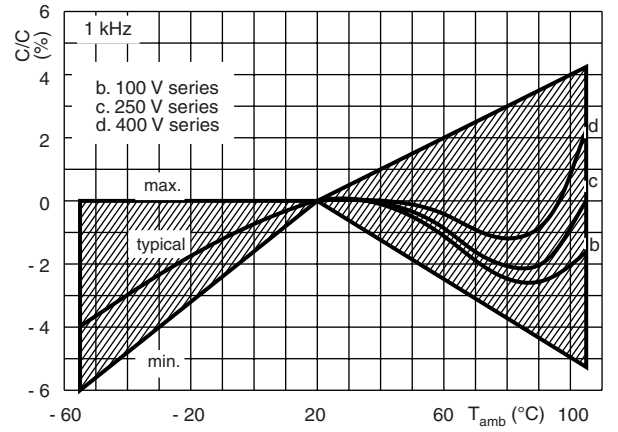
371, 372, 373 - Capacitance as a function of frequency



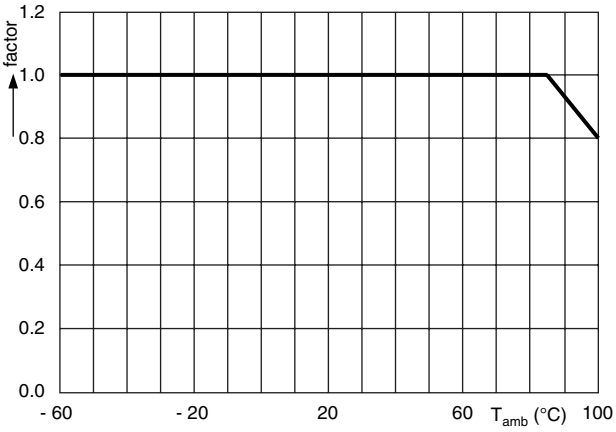
371 - Capacitance as a function of ambient temperature



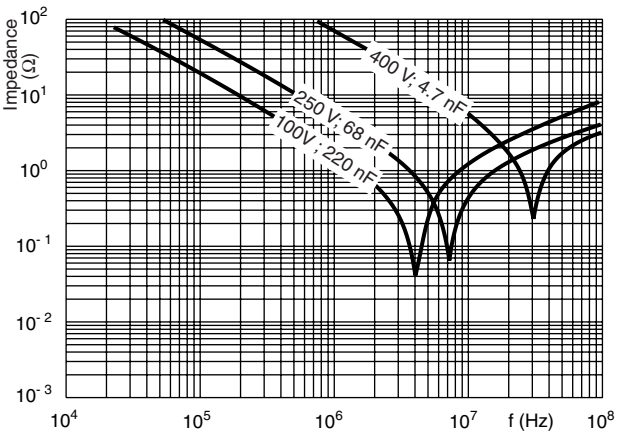
372, 373 - Capacitance as a function of ambient temperature



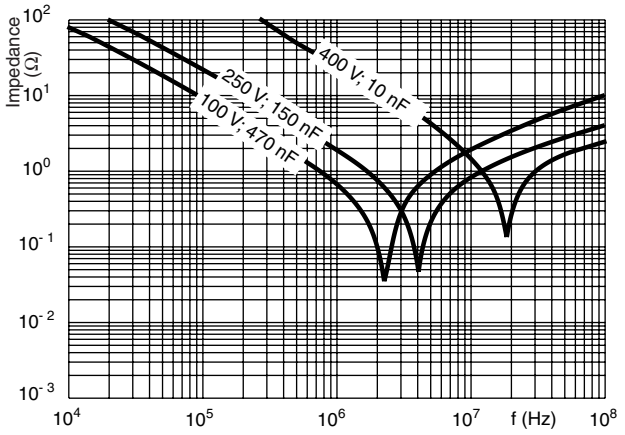
371, 372, 373 - Max. DC and AC Voltage as a function of temperature



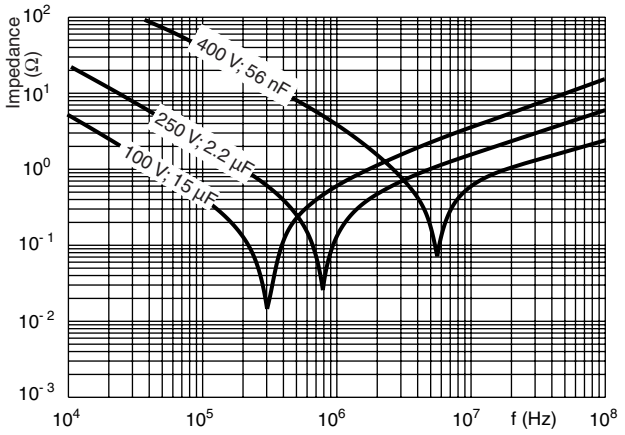
371 - Impedance as a function of frequency



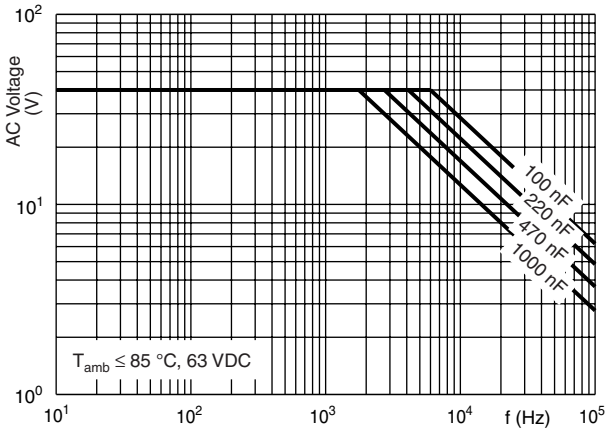
372 - Impedance as a function of frequency



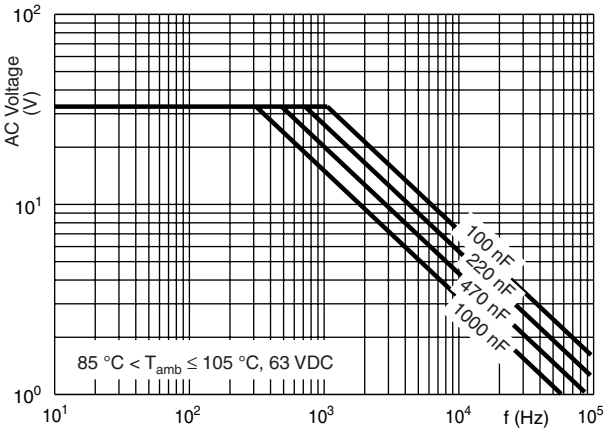
373 - Impedance as a function of frequency



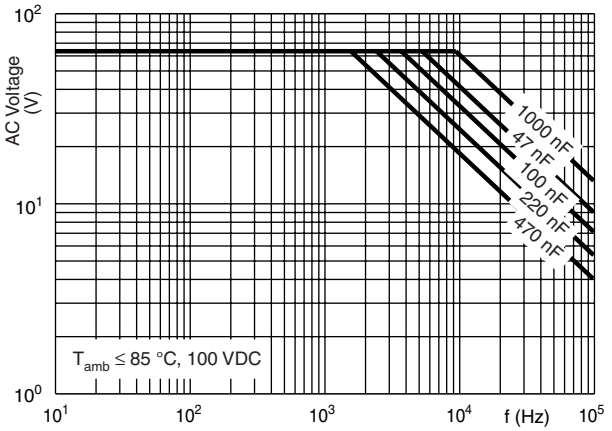
371 - Max. AC voltage as a function of temperature



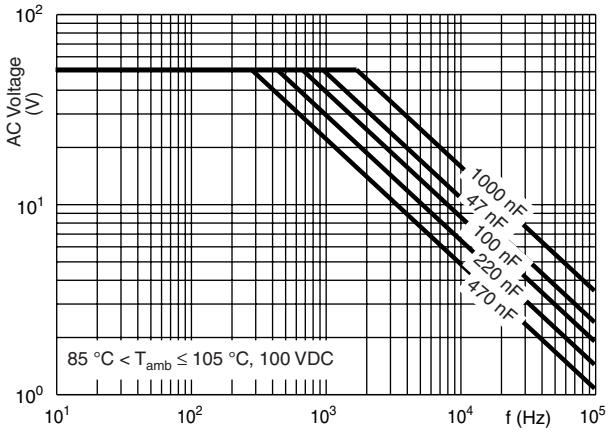
371 - Max. AC voltage as a function of frequency



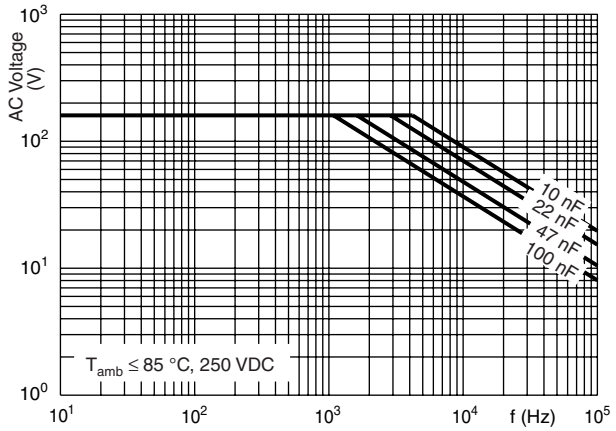
371 - Max. AC voltage as a function of frequency



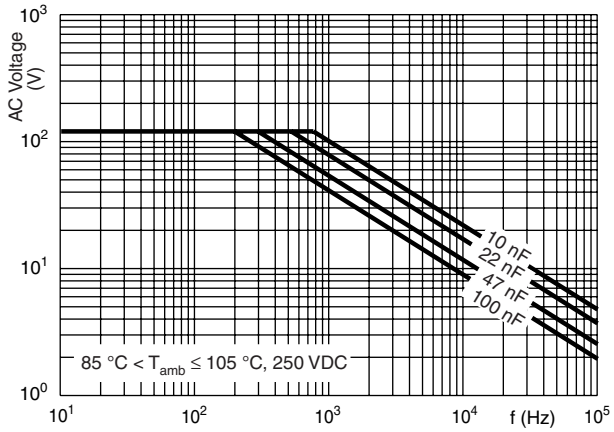
371 - Max. AC voltage as a function of frequency



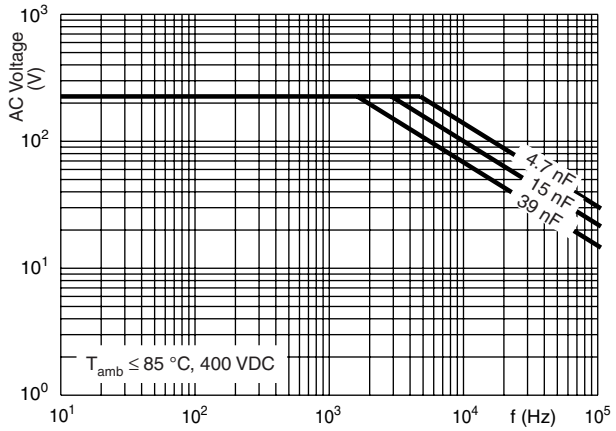
371 - Max. AC voltage as a function of frequency



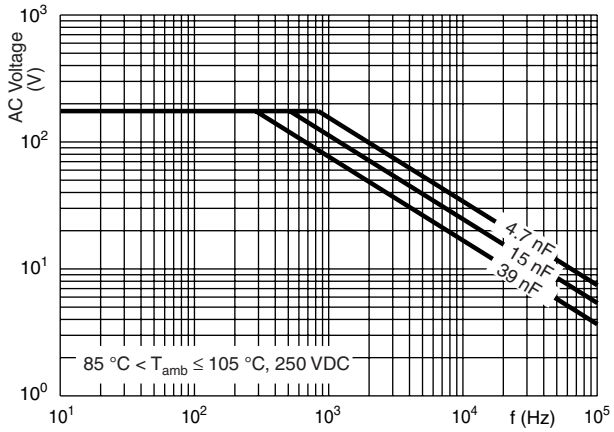
371 - Max. AC voltage as a function of frequency



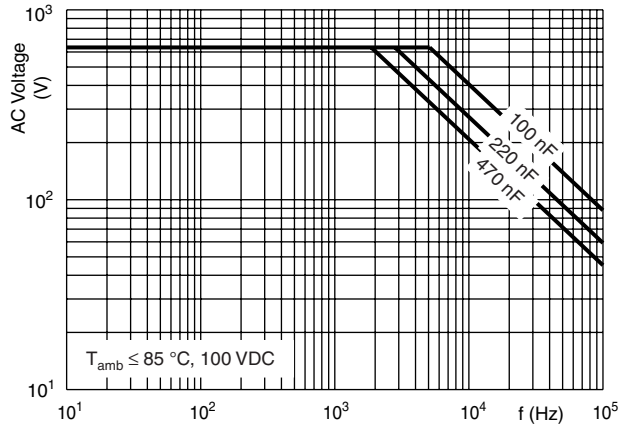
371 - Max. AC voltage as a function of frequency



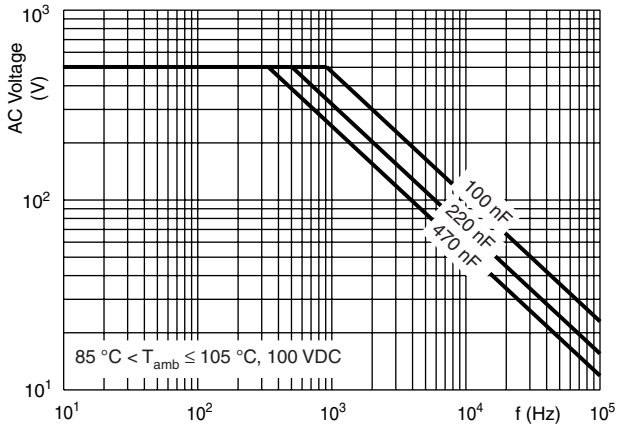
371 - Max. AC voltage as a function of frequency



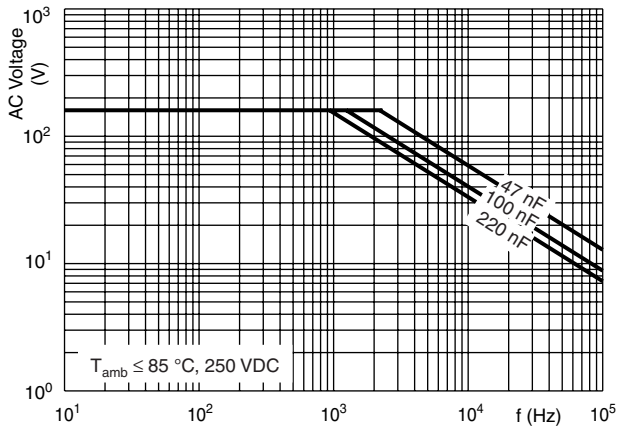
372 - Max. AC voltage as a function of temperature



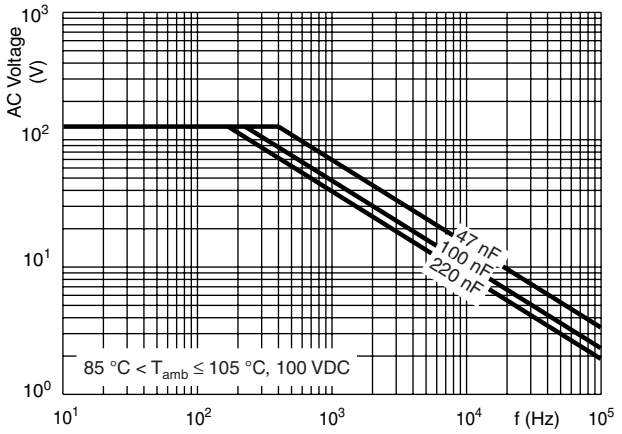
373 - Max. AC voltage as a function of temperature



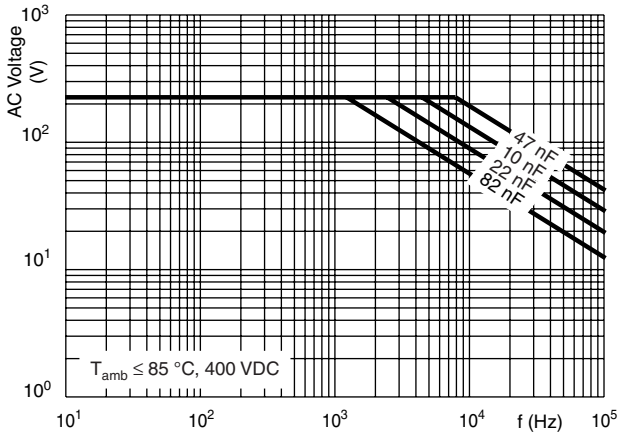
374 - Max. AC voltage as a function of frequency



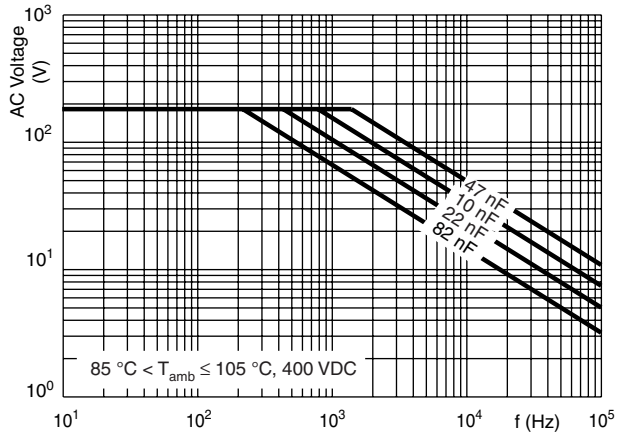
375 - Max. AC voltage as a function of frequency



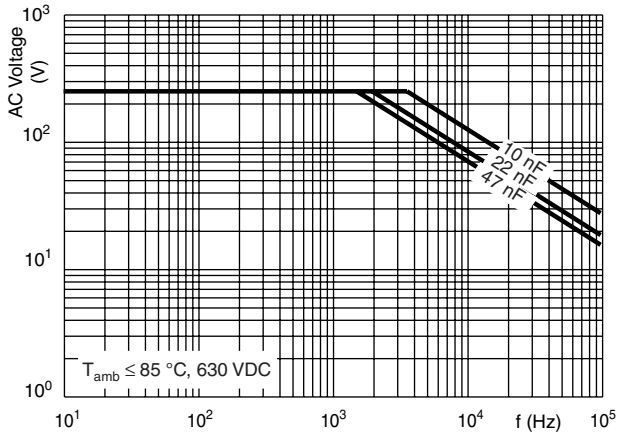
376 - Max. AC voltage as a function of frequency



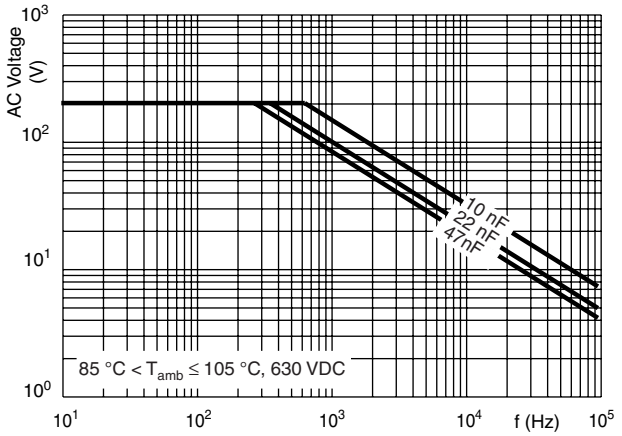
377 - Max. AC voltage as a function of frequency



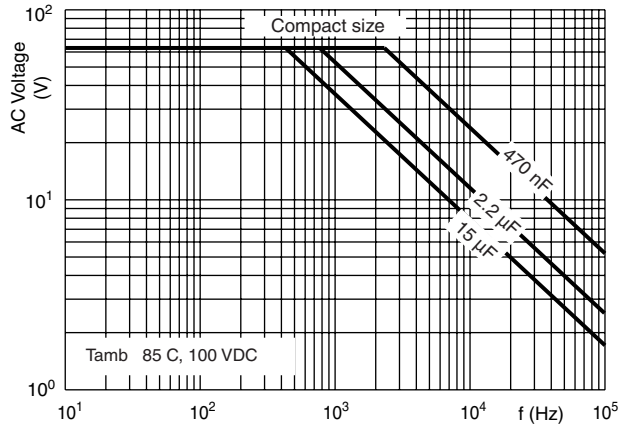
378 - Max. AC voltage as a function of frequency



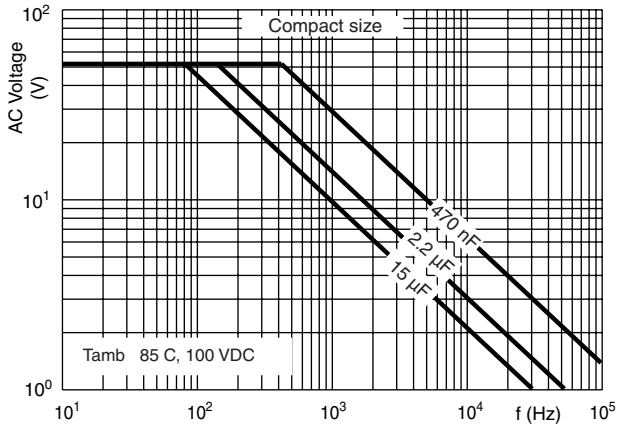
379 - Max. AC voltage as a function of frequency



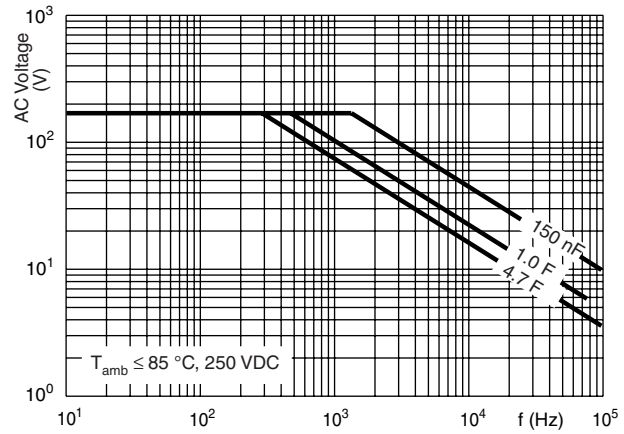
373 - Max. AC voltage as a function of temperature



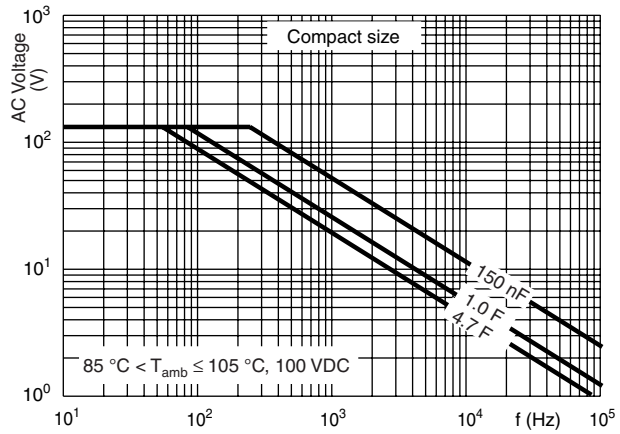
373 - Max. AC voltage as a function of frequency



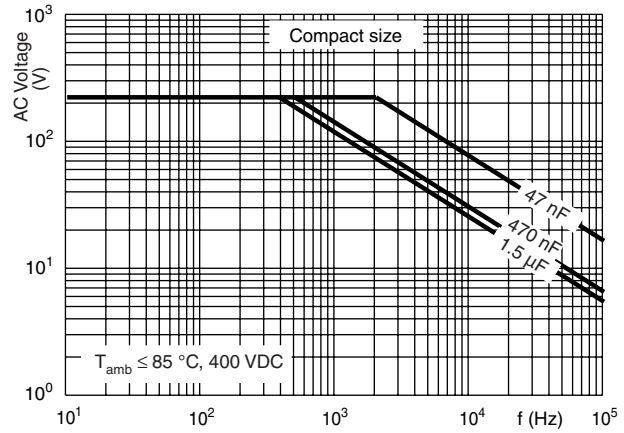
373 - Max. AC voltage as a function of frequency



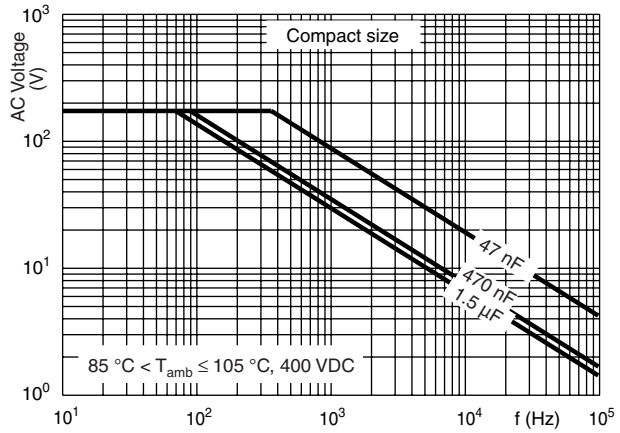
373 - Max. AC voltage as a function of frequency



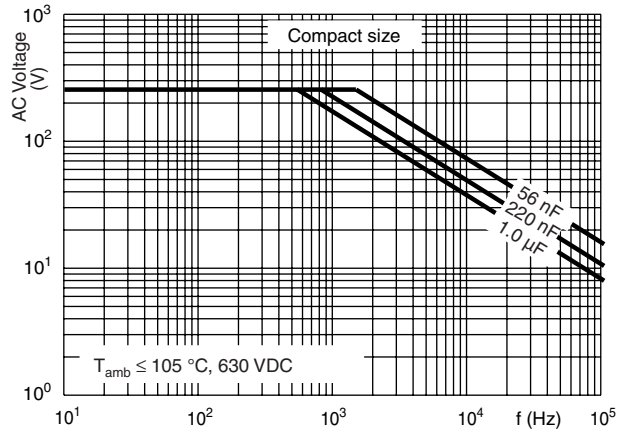
373 - Max. AC voltage as a function of frequency



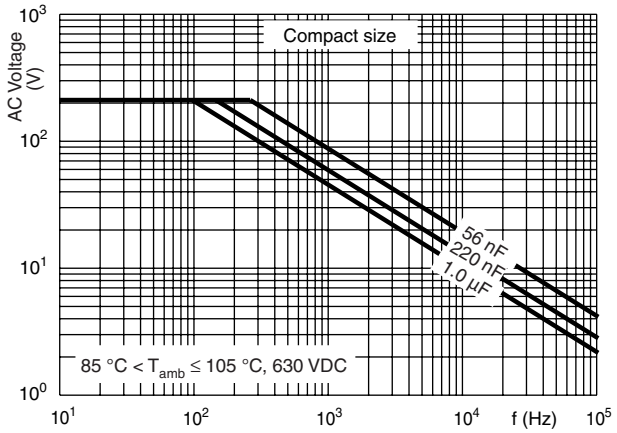
373 - Max. AC voltage as a function of frequency



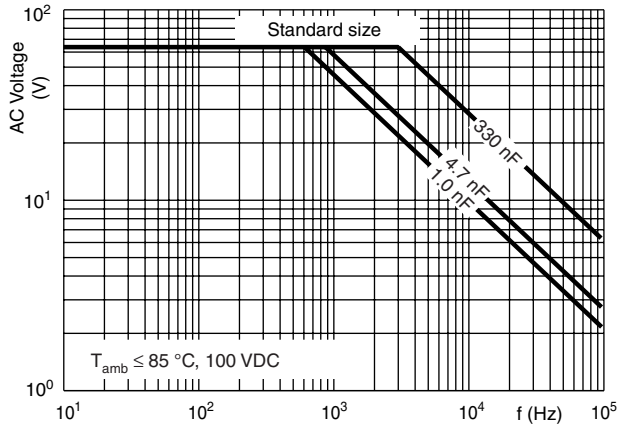
373 - Max. AC voltage as a function of frequency



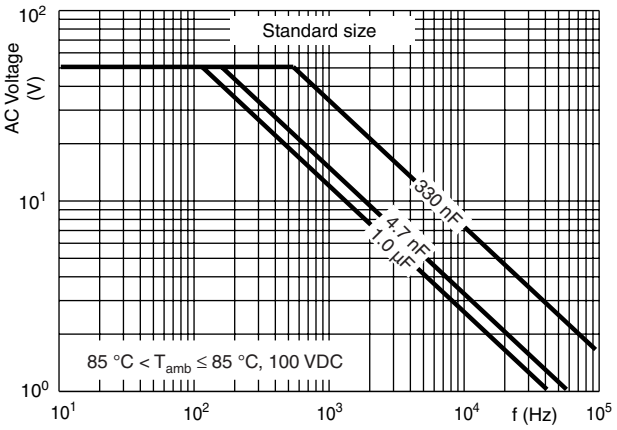
373 - Max. AC voltage as a function of frequency



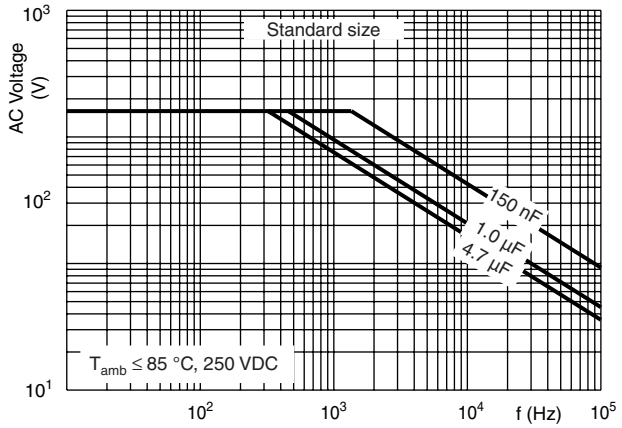
373 - Max. AC voltage as a function of frequency



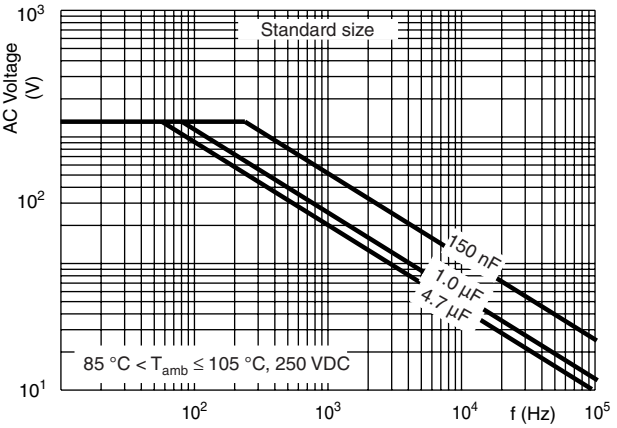
373 - Max. AC voltage as a function of frequency



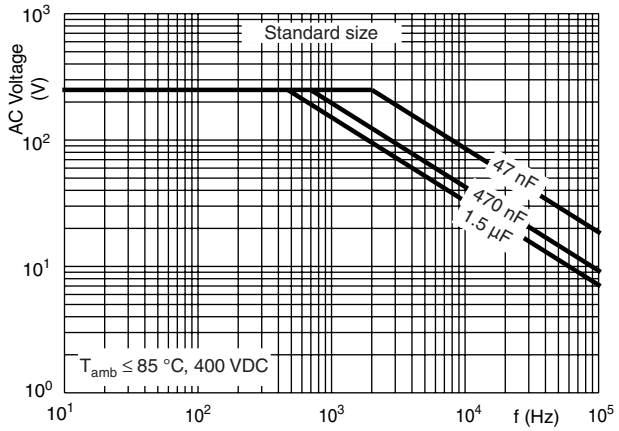
373 - Max. AC voltage as a function of frequency



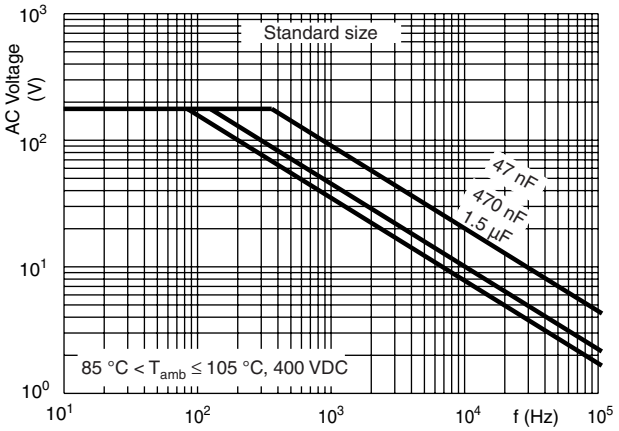
373 - Max. AC voltage as a function of frequency



373 - Max. AC voltage as a function of frequency



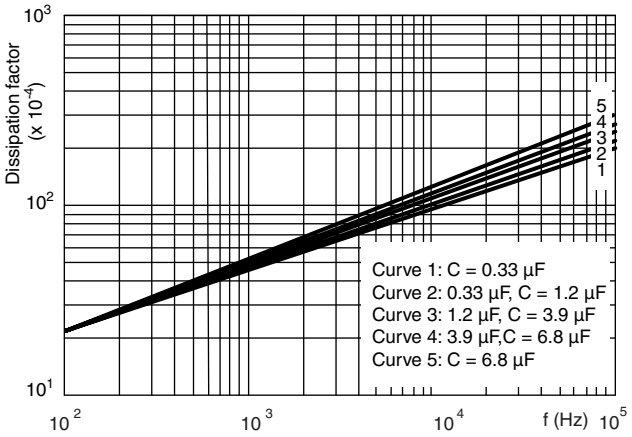
373 - Max. AC voltage as a function of frequency



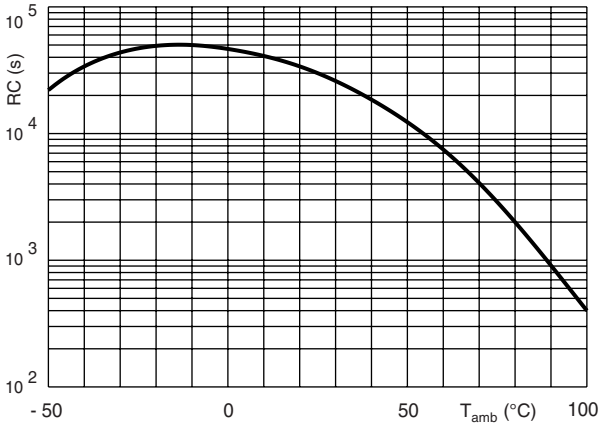
Maximum RMS current (sinewave) as a function of frequency

U_{ac} is the maximum AC voltage depending on the ambient temperature in the curves “Max. RMS voltage and AC current as a function of frequency”.

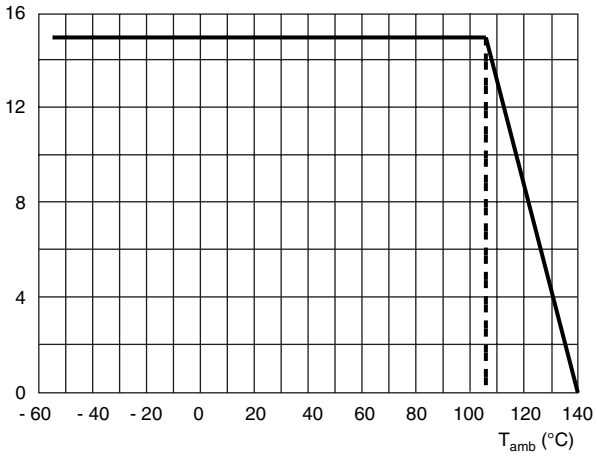
371, 372, 373 - Tangent of loss angle as a function of frequency



371, 372, 373 - Insulation resistance as a function of the ambient temperature (typical curve)



371, 372, 373 - Tangent of loss angle as a function of frequency



HEAT CONDUCTIVITY (G) AS A FUNCTION OF (ORIGINAL) PITCH AND CAPACITOR BODY THICKNESS IN mW/°C

$W_{max.}$ (mm)	HEAT CONDUCTIVITY (mW/°C)				
	PITCH 7.62 mm	PITCH 10.0 mm	PITCH 15.0 mm	PITCH 22.5 mm	PITCH 27.5 mm
2.5	3	-	-	-	-
3.0	4	-	-	-	-
3.5	-	-	-	-	-
4.0	5	6.0	-	-	-
4.5	-	-	-	-	-
5.0	6	7.5	10	-	-
6.0	7	9.0	11	19	-
7.0	-	-	12	21	-
8.5	-	-	16	25	-
10.0	-	-	18	28	-
11.0	-	-	-	-	36
13.0	-	-	-	-	42
15.0	-	-	-	-	48
18.0	-	-	-	-	57

POWER DISSIPATION AND MAXIMUM COMPONENT TEMPERATURE RISE

The power dissipation must be limited in order not to exceed the maximum allowed component temperature rise as a function of the free ambient temperature.

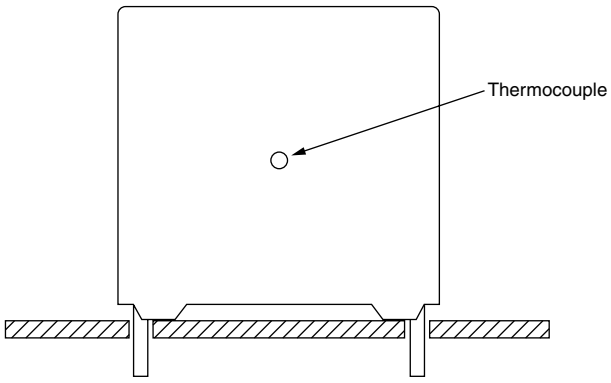
The power dissipation can be calculated according type detail specification “HQN-384-01/101: Technical Information Film Capacitors”.

The component temperature rise (ΔT) can be measured (see section “Measuring the component temperature” for more details) or calculated by $\Delta T = P/G$:

- ΔT = Component temperature rise (°C)
- P = Power dissipation of the component (mW)
- G = Heat conductivity of the component (mW/°C)

MEASURING THE COMPONENT TEMPERATURE

A thermocouple must be attached to the capacitor body as in:



The temperature is measured in unloaded (T_{amb}) and maximum loaded condition (T_C).

The temperature rise is given by $\Delta T = T_C - T_{amb}$.

To avoid radiation or convection, the capacitor should be tested in a wind-free box.

APPLICATION NOTE AND LIMITING CONDITIONS

These capacitors are not suitable for mains applications as across-the-line capacitors without additional protection, as described hereunder. These mains applications are strictly regulated in safety standards and therefore electromagnetic interference suppression capacitors conforming the standards must be used.

To select the capacitor for a certain application, the following conditions must be checked:

1. The peak voltage (U_P) shall not be greater than the rated DC voltage (U_{Rdc})
2. The peak-to-peak voltage (U_{P-P}) shall not be greater than $2\sqrt{2} \times U_{Rac}$ to avoid the ionisation inception level
3. The voltage peak slope (dU/dt) shall not exceed the rated voltage pulse slope in an RC-circuit at rated voltage and without ringing. If the pulse voltage is lower than the rated DC voltage, the rated voltage pulse slope may be multiplied by U_{Rdc} and divided by the applied voltage.

   For all other pulses following equation must be fulfilled:

$$2 \times \int_0^T \left(\frac{dU}{dt}\right)^2 \times dt < U_{Rdc} \times \left(\frac{dU}{dt}\right)_{rated}$$

   T is the pulse duration.
4. The maximum component surface temperature rise must be lower than the limits (see graph max. allowed component temperature rise).
5. Since in circuits used at voltages over 280 V peak-to-peak the risk for an intrinsically active flammability after a capacitor breakdown (short circuit) increases, it is recommended that the power to the component is limited to 100 times the values mentioned in the table: “Heat conductivity”
6. When using these capacitors as across-the-line capacitor in the input filter for mains applications or as series connected with an impedance to the mains the applicant must guarantee that the following conditions are fulfilled in any case (spikes and surge voltages from the mains included).

Voltage Conditions for 6 Above

ALLOWED VOLTAGES	$T_{amb} \leq 85$ °C	85 °C < $T_{amb} \leq 105$ °C
Maximum continuous RMS voltage	U_{Rac}	See “Max. AC voltage as function of temperature CBB952” per characteristics
Maximum temperature RMS-overvoltage (< 24 h)	1.25 x U_{Rac}	U_{Rac}
Maximum peak voltage (V_{O-P}) (< 2 s)	1.6 x U_{Rdc}	1.3 x U_{Rdc}

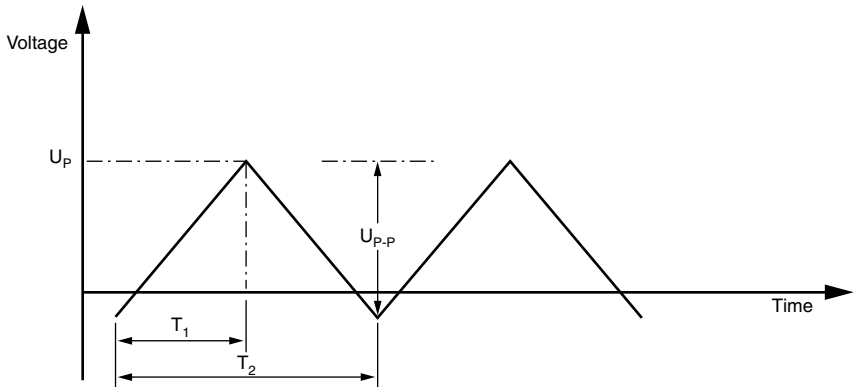
EXAMPLE

C = 330 nF - 63 V used for the voltage signal shown in next drawing.
U_{P-P} = 40 V; U_P = 35 V; T_1 = 100 µs; T_2 = 200 µs
The ambient temperature is 35 °C

Checking conditions:

1. The peak voltage U_P = 35 V is lower than 63 Vdc
2. The peak-to-peak voltage 40 V is lower than $2\sqrt{2}$ x 40 Vac = 113 U_{P-P}
3. The voltage pulse slope (dU/dt) = 40 V/100 µs = 0.4 V/µs
   This is lower than 60 V/µs (see specific reference data for each version)
4. The dissipated power is 16.2 mW as calculated with fourier terms
   The temperature rise for $W_{max.}$ = 3.5 mm and pitch = 5 mm will be 16.2 mW/3.0 mW/°C = 5.4 °C
   This is lower than 15 °C temperature rise at 35 °C, according figure max. allowed component temperature rise
5. Not applicable
6. Not applicable

Voltage Signal



INSPECTION REQUIREMENTS

General Notes:
Sub-clause numbers of tests and performance requirements refer to the “Sectional Specification, Publication IEC 60384-2 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
4.3.1	Initial measurements	Capacitance Tangent of loss angle: For C ≤ 470 nF at 100 kHz for 470 nF < C ≤ 10 µF at 10 kHz for C > 10 µF at 1 kHz	
4.3	Robustness of terminations	Tensile and bending	No visible damage
4.4	Resistance to soldering heat	Method: 1A Solder bath: 280 °C ± 5 °C Duration: 10 s	
4.14	Component solvent resistance	Isopropylalcohol at room temperature Method: 2 Immersion time: 5 ± 0.5 min Recovery time: Min. 1 h, max. 2 h	
4.4.2	Final measurements	Visual examination	No visible damage Legible marking
		Capacitance	$\lvert\Delta C/C\rvert \leq 2$ % of the value measured initially
		Tangent of loss angle	Increase of tan δ ≤ 0.005 for: C ≤ 100 nF or ≤ 0.010 for: 100 nF < C ≤ 220 nF or ≤ 0.015 for: 220 nF < C ≤ 470 nF and ≤ 0.003 for: C > 470 nF Compared to values measured in 4.3.1

SUB-CLAUSE NUMBER AND TEST		CONDITIONS	PERFORMANCE REQUIREMENTS
SUB-GROUP C1B PART OF SAMPLE OF SUB-GROUP C1			
4.6.1	Initial measurements	Capacitance Tangent of loss angle: For C ≤ 470 nF at 100 kHz for 470 nF < C ≤ 10 µF at 10 kHz for C > 10 µF at 1 kHz	No visible damage
4.6	Rapid change of temperature	θA = - 55 °C θB = + 105 °C 5 cycles Duration t = 30 min	
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/s² (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" of this specification Pulse shape: Half sine Acceleration: 490 m/s² Duration of pulse: 11 ms	
4.9.3	Final measurements	Visual examination	No visible damage
		Capacitance	|ΔC/C| ≤ 3 % of the value measured in 4.6.1
		Tangent of loss angle	Increase of tan δ ≤ 0.010 (370 and 371) ≤ 0.005 (372 and 373) for: C ≤ 100 nF or ≤ 0.010 for: 100 nF < C ≤ 220 nF or ≤ 0.015 for: 220 nF < C ≤ 470 nF and ≤ 0.003 for: C > 470 nF Compared to values measured in 4.6.1
		Insulation resistance	As specified in section "Insulation Resistance" of this specification
SUB-GROUP C1 COMBINED SAMPLE OF SPECIMENS OF SUB-GROUPS C1A AND C1B			
4.10	Climatic sequence		
4.10.2	Dry heat	Temperature: + 105 °C Duration: 16 h	
4.10.3	Damp heat cyclic Test Db, first cycle		
4.10.4	Cold	Temperature: - 55 °C Duration: 2 h	
4.10.6	Damp heat cyclic Test Db, remaining cycles		
4.10.6.2	Final measurements	Voltage proof = U_{Rdc} for 1 min within 15 min after removal from testchamber	No breakdown of flash-over
		Visual examination	No visible damage Legible marking
		Capacitance	|ΔC/C| ≤ 3 % of the value measured in 4.4.2 or 4.9.3
		Tangent of loss angle	Increase of tan δ ≤ 0.010 (370 and 371) ≤ 0.005 (372 and 373) for: C ≤ 100 nF or ≤ 0.010 for: 100 nF < C ≤ 220 nF or ≤ 0.015 for: 220 nF < C ≤ 470 nF and ≤ 0.005 for: C > 470 nF Compared to values measured in 4.3.1 or 4.6.1
		Insulation resistance	≥ 50 % of values specified in section "Insulation Resistance" of this specification

SUB-CLAUSE NUMBER AND TEST	CONDITIONS	PERFORMANCE REQUIREMENTS
SUB-GROUP C2		
4.11 Damp heat steady state	56 days, 40 °C, 90 % to 95 % RH	
4.11.1 Initial measurements	Capacitance Tangent of loss angle at 1 kHz	
4.11.3 Final measurements	Voltage proof = U_{Rdc} for 1 min within 15 min after removal from testchamber	No breakdown of flash-over
	Visual examination	No visible damage Legible marking
	Capacitance	$\lvert\Delta C/C\rvert \leq 5$ % of the value measured in 4.11.1.
	Tangent of loss angle	Increase of tan $\delta \leq 0.005$ Compared to values measured in 4.11.1
	Insulation resistance	≥ 50 % of values specified in section "Insulation Resistance" of this specification
SUB GROUP C3		
4.12 Endurance	Duration: 2000 h 1.25 x U_{Rdc} at 85 °C 0.8 x 1.25 U_{Rdc} at 105 °C	
4.12.1 Initial measurements	Capacitance Tangent of loss angle: For C ≤ 470 nF at 100 kHz for 470 nF < C ≤ 10 µF at 10 kHz for C > 10 µF at 1 kHz	
4.12.5 Final measurements	Visual examination	No visible damage Legible marking
	Capacitance	$\lvert\Delta C/C\rvert \leq 5$ % compared to values measured in 4.12.1
	Tangent of loss angle	Increase of tan δ ≤ 0.005 at 85 °C (370 and 371) ≤ 0.010 at 100 °C (370 and 371) ≤ 0.005 (372 and 373) for: C ≤ 100 nF or ≤ 0.010 for: 100 nF < C ≤ 220 nF or ≤ 0.015 for: 220 nF < C ≤ 470 nF and ≤ 0.003 for: C > 470 nF Compared to values measured in 4.12.1
	Insulation resistance	≥ 50 % of values specified in section "Insulation Resistance" of this specification
SUB-GROUP C4		
4.13 Charge and discharge	10 000 cycles Charged to U_{Rdc} Discharge resistance: $R = \frac{U_R}{C \times 2.5 \times (dU/dt)_R}$	
4.13.1 Initial measurements	Capacitance Tangent of loss angle: For C ≤ 470 nF at 100 kHz for 470 nF < C ≤ 10 µF at 10 kHz for C > 10 µF at 1 kHz	
4.13.3 Final measurements	Capacitance	$\lvert\Delta C/C\rvert \leq 3$ % compared to values measured in 4.13.1
	Tangent of loss angle	Increase of tan δ ≤ 0.005 for: C ≤ 100 nF or ≤ 0.010 for: 100 nF < C ≤ 220 nF or ≤ 0.015 for: 220 nF < C ≤ 470 nF and ≤ 0.003 for: C > 470 nF Compared to values measured in 4.13.1
	Insulation resistance	≥ 50 % of values specified in section "Insulation Resistance" of this specification

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