

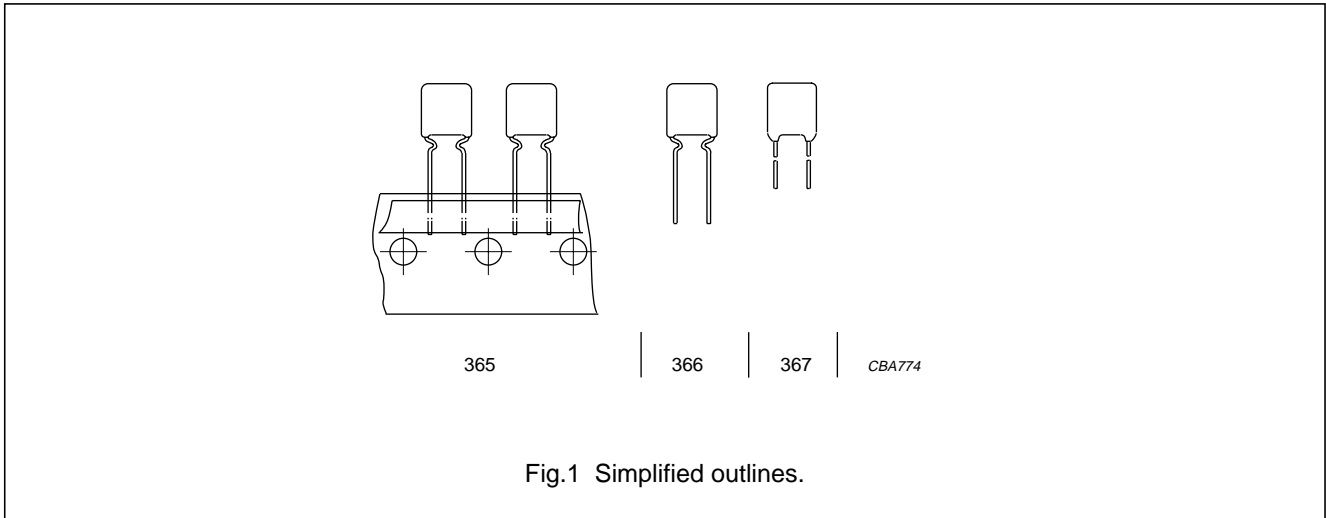
Metallized polyester film capacitors

MKT 365/366/367

MKT RADIAL EPOXY LACQUERED TYPE

PITCH 5 mm (kinked, straight and bent back leads)

PITCH 7.5 mm (kinked and straight leads)



FEATURES

- Low-inductive wound cell of metallized (PETP) film
- Cell protected by epoxy lacquer
- Radial leads of solder-coated wire
- Resistant to solvents and rinsing liquids.

APPLICATIONS

- Blocking and coupling
- Bypass and energy reservoir.

DETAIL SPECIFICATION

For more detailed data and test requirements see "Type detail specification HQN-384-02/105".

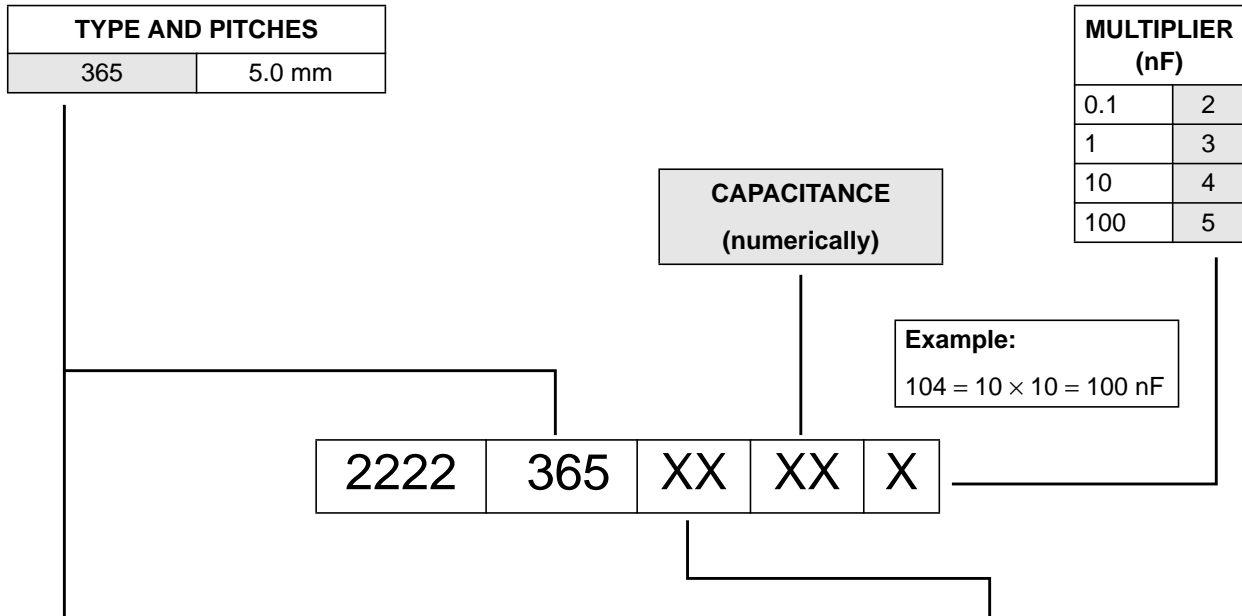
QUICK REFERENCE DATA

DESCRIPTION	VALUE
Capacitance range (E12 series)	0.01 to 1.0 μ F
Capacitance tolerance	$\pm 10\%$; $\pm 5\%$
Rated (DC) voltage	63 V; 100 V; 250 V; 400 V
Rated (AC) voltage	40 V; 63 V; 160 V; 220 V
Climatic category	55/100/56
Rated temperature	85 °C
Maximum application temperature	100 °C
Tangent of loss angle at 10 kHz	100×10^{-4}
Reference specification	IEC 60384-2
Performance grade	grade 1 (long life)

Metallized polyester film capacitors

MKT 365

COMPOSITION OF CATALOGUE NUMBER



TYPE	PACKAGING	LEAD CONFIGURATION	C-TOL	63 V	100 V	250 V	400 V
365	ammopack	kinked leads; H = 16.0 mm; P ₀ = 12.7 mm	±10%	75	85	–	–
			±5%	76	86	–	–
		bent back kinked leads; H = 16.0 mm; P ₀ = 12.7 mm	±10%	15	25	45	55
			±5%	16	26	46	56
	taped on reel	kinked leads; H = 16.0 mm; P ₀ = 12.7 mm	±10%	71	81	–	–
			±5%	72	82	–	–
		bent back kinked leads; H = 16.0 mm; P ₀ = 12.7 mm	±10%	11	21	41	51
			±5%	12	22	42	52

Metallized polyester film capacitors

MKT 366/367

TYPE AND PITCHES	
366	5.0 mm
367	7.5 mm

CAPACITANCE
(numerically)

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

Example:
104 = 10 × 10 = 100 nF

2222 36. XX XX X

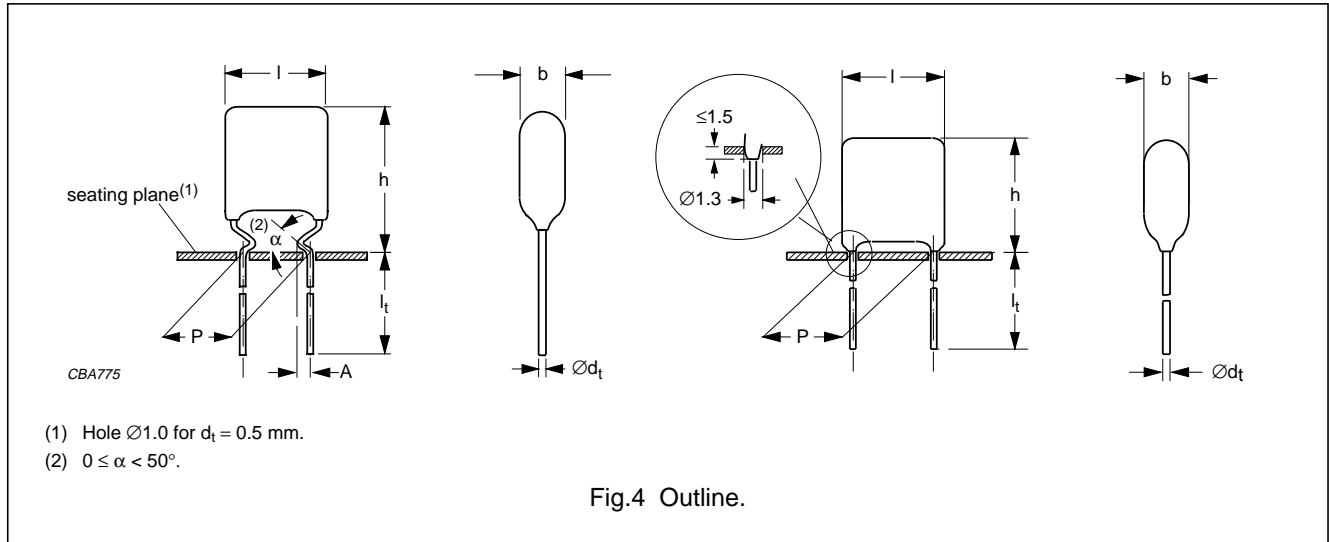
TYPE	PACKAGING	LEAD CONFIGURATION	C-TOL	63 V	100 V	250 V	400 V
366	loose in box	kinked; lead length 4.0 mm	±10%	75	85	–	–
			±5%	76	86	–	–
		kinked; lead length 17.0 mm	±10%	71	81	–	–
			±5%	72	82	–	–
367	loose in box	straight; lead length 4.0 mm	±10%	75	85	–	–
			±5%	76	86	–	–
		straight; lead length 22.0 mm	±10%	71	81	–	–
			±5%	72	82	–	–
Available on request with pitch = 7.5 mm				63 V	100 V	250 V	400 V
366	loose in box	kinked; lead length 4.0 mm	±10%	15	25	45	55
			±5%	16	26	46	56
		kinked; lead length 17.0 mm	±10%	11	21	41	51
			±5%	12	22	42	52
367	loose in box	straight; lead length 4.0 mm	±10%	15	25	45	55
			±5%	16	26	46	56
		straight; lead length 22.0 mm	±10%	11	21	41	51
			±5%	12	22	42	52

Metallized polyester film capacitors

MKT 365/366/367

MKT 365/366/367 GENERAL DATA

PITCH 5 mm (kinked and straight leads)



Specific reference data for the 63 V DC capacitors

DESCRIPTION	VALUE		
	at 1 kHz	at 10 kHz	at 100 kHz
Tangent of loss angle: $C \leq 0.1 \mu\text{F}$ $0.1 \mu\text{F} < C \leq 0.47 \mu\text{F}$ $0.47 \mu\text{F} < C \leq 1.0 \mu\text{F}$	$\leq 75 \times 10^{-4}$	$\leq 130 \times 10^{-4}$	$\leq 225 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ at 63 V (DC)	110 V/ μs		
R between leads, for $C \leq 0.33 \mu\text{F}$ at 10 V; 1 minute	$> 15000 \text{ M}\Omega$		
RC between leads, for $C > 0.33 \mu\text{F}$ at 100 V; 1 minute	$> 5000 \text{ s}$		
R between interconnecting leads and casing; 100 V; 1 minute	$> 30000 \text{ M}\Omega$		
Withstanding voltage DC (cut off current 10 mA); rise time 100 V/s	100 V; 1 minute		

Available 63 V DC versions

PACKAGING ⁽¹⁾	DIMENSIONS	LEAD CONFIGURATION	PITCH (mm)	FIRST 9 DIGITS OF CATALOGUE NUMBER		ORDERING
				C-tol = $\pm 10\%$	C-tol = $\pm 5\%$	
Ammopack	H = 16.0 mm; note 2	kinked	5	2222 365 75...	2222 365 76...	preferred
Taped on reel			5	2222 365 71...	2222 365 72...	on request
Loose in box	$l_t = 4.0 +1.0/-0.5$ mm		5	2222 366 75...	2222 366 76...	on request
	$l_t = 17.0 \pm 4.0$ mm		5	2222 366 71...	2222 366 72...	on request
Loose in box	$l_t = 4.0 +1.0/-0.5$ mm	straight	5	2222 367 75...	2222 367 76...	on request
	$l_t = 22.0 \pm 4.0$ mm		5	2222 367 71...	2222 367 72...	on request

Notes

- For SPQ refer to this handbook, chapter "Packaging information".
- H = in-tape height; for detailed specifications refer to this handbook, chapter "Packaging information".

Metallized polyester film capacitors

MKT 365/366/367

 $U_{Rdc} = 63 \text{ V}$; $U_{Rac} = 40 \text{ V}$

Pitch 5 mm (kinked and straight leads)

C (μF)	DIMENSIONS ⁽¹⁾ $b_{\text{max}} \times h_{\text{max}} \times l_{\text{max}}$ (mm)	MASS (g)	CATALOGUE NUMBER	
			AMMOPACK; H = 16.0 mm	
			C-tol = $\pm 10\%$	C-tol = $\pm 5\%$
			catalogue number ⁽²⁾	last 5 digits ⁽²⁾
Pitch = 5.0 +0.4/-0.2 mm; $d_t = 0.50 \pm 0.05 \text{ mm}$; A = 1.7 $\pm 0.3 \text{ mm}$				
0.047	4.0 \times 12.5 (7.5) \times 7.3	0.3	2222 365 75473	.. 76473
0.056			2222 365 75563	.. 76563
0.068			2222 365 75683	.. 76683
0.082			2222 365 75823	.. 76823
0.1			2222 365 75104	.. 76104
0.12			2222 365 75124	.. 76124
0.15	4.0 \times 13.0 (8.0) \times 7.3	0.3	2222 365 75154	.. 76154
0.18	4.0 \times 13.5 (8.5) \times 7.3	0.4	2222 365 75184	.. 76184
0.22	4.2 \times 13.5 (8.5) \times 7.3	0.4	2222 365 75224	.. 76224
0.27	4.5 \times 14.0 (9.0) \times 7.3	0.4	2222 365 75274	.. 76274
0.33	4.5 \times 14.5 (10.5) \times 7.3	0.4	2222 365 75334	.. 76334
0.39			2222 365 75394	.. 76394
0.47	4.5 \times 15.5 (11.5) \times 7.3	0.4	2222 365 75474	.. 76474
0.56	5.0 \times 14.0 (10.0) \times 7.3	0.4	2222 365 75564	.. 76564
0.68	5.5 \times 14.5 (10.5) \times 7.3	0.4	2222 365 75684	.. 76684
0.82	5.5 \times 15.0 (11.0) \times 7.3	0.5	2222 365 75824	.. 76824
1.0	5.5 \times 15.5 (11.5) \times 7.3	0.5	2222 365 75105	.. 76105

Notes

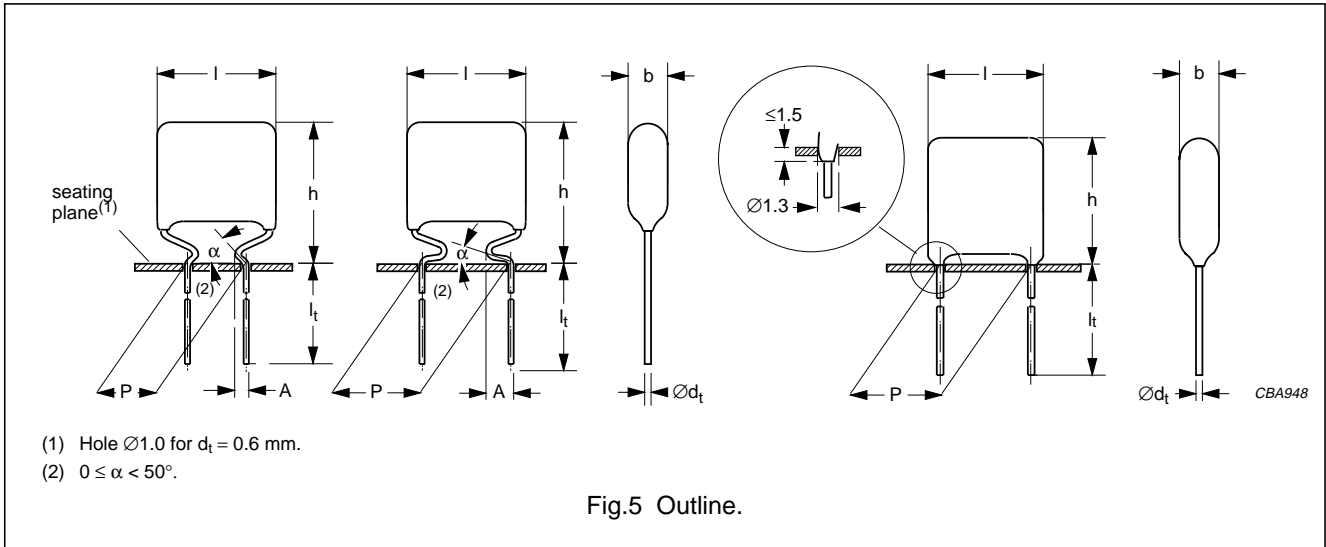
1. Dimensions in brackets for straight leads.
2. The shading indicates preferred types.

Metallized polyester film capacitors

MKT 365/366/367

MKT 365/366/367 GENERAL DATA

PITCH 5 mm (bent back leads)
 PITCH 7.5 mm (kinked and straight leads)



Specific reference data for the 63 V DC capacitors

DESCRIPTION	VALUE		
	at 1 kHz	at 10 kHz	at 100 kHz
Tangent of loss angle: $C \leq 0.1 \mu\text{F}$ $0.1 \mu\text{F} < C \leq 0.47 \mu\text{F}$ $0.47 \mu\text{F} < C \leq 1.0 \mu\text{F}$	$\leq 75 \times 10^{-4}$ $\leq 75 \times 10^{-4}$ $\leq 75 \times 10^{-4}$	$\leq 130 \times 10^{-4}$ $\leq 130 \times 10^{-4}$ $\leq 130 \times 10^{-4}$	$\leq 225 \times 10^{-4}$ $\leq 300 \times 10^{-4}$ -
Rated voltage pulse slope $(dU/dt)_R$ at 63 V (DC)	110 V/ μs		
R between leads, for $C \leq 0.33 \mu\text{F}$ at 10 V; 1 minute	$>15000 \text{ M}\Omega$		
RC between leads, for $C > 0.33 \mu\text{F}$ at 100 V; 1 minute	$>5000 \text{ s}$		
R between interconnecting leads and casing; 100 V; 1 minute	$>30000 \text{ M}\Omega$		
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	100 V; 1 minute		

Available 63 V DC versions

PACKAGING ⁽¹⁾	DIMENSIONS	LEAD CONFIGURATION	PITCH (mm)	FIRST 9 DIGITS OF CATALOGUE NUMBER		ORDERING
				C-tol = $\pm 10\%$	C-tol = $\pm 5\%$	
Ammopack	H = 16.0 mm; note 2	bent back	5	2222 365 15...	2222 365 16...	preferred
Taped on reel			5	2222 365 11...	2222 365 12...	on request
Loose in box	$l_t = 4.0 +1.0/-0.5 \text{ mm}$	kinked	7.5	2222 366 15...	2222 366 16...	on request
	$l_t = 17.0 \pm 4.0 \text{ mm}$		7.5	2222 366 11...	2222 366 12...	on request
Loose in box	$l_t = 4.0 +1.0/-0.5 \text{ mm}$	straight	7.5	2222 367 15...	2222 367 16...	on request
	$l_t = 22.0 \pm 4.0 \text{ mm}$		7.5	2222 367 11...	2222 367 12...	on request

Notes

- For SPQ refer to this handbook, chapter "Packaging information".
- H = in-tape height; for detailed specifications refer to this handbook, chapter "Packaging information".

Metallized polyester film capacitors

MKT 365/366/367

 $U_{Rdc} = 63 \text{ V}$; $U_{Rac} = 40 \text{ V}$

Pitch 5 mm (bent back leads)

C (μF)	DIMENSIONS $b_{\text{max}} \times h_{\text{max}} \times l_{\text{max}}$ (mm)	MASS (g)	PACKAGING	
			AMMOPACK; H = 16.0 mm	
			C-tol = $\pm 10\%$	C-tol = $\pm 5\%$
			catalogue number ⁽¹⁾	last 5 digits ⁽¹⁾
Pitch = 5.0 +0.4/-0.2 mm; $d_t = 0.60 \pm 0.06 \text{ mm}$; A = 1.7 $\pm 0.3 \text{ mm}$⁽²⁾				
0.12	4.0 \times 13.5 \times 10.0	0.4	2222 365 15124	.. 16124
0.15			2222 365 15154	.. 16154
0.18			2222 365 15184	.. 16184
0.22			2222 365 15224	.. 16224
0.27	4.5 \times 14.0 \times 10.0	0.5	2222 365 15274	.. 16274
0.33	5.0 \times 14.5 \times 10.0	0.6	2222 365 15334	.. 16334
0.39			2222 365 15394	.. 16394
0.47	5.5 \times 15.0 \times 10.0	0.7	2222 365 15474	.. 16474
0.56			2222 365 15564	.. 16564
0.68			2222 365 15684	.. 16684
0.82			2222 365 15824	.. 16824
1.0			2222 365 15105	.. 16105

Notes

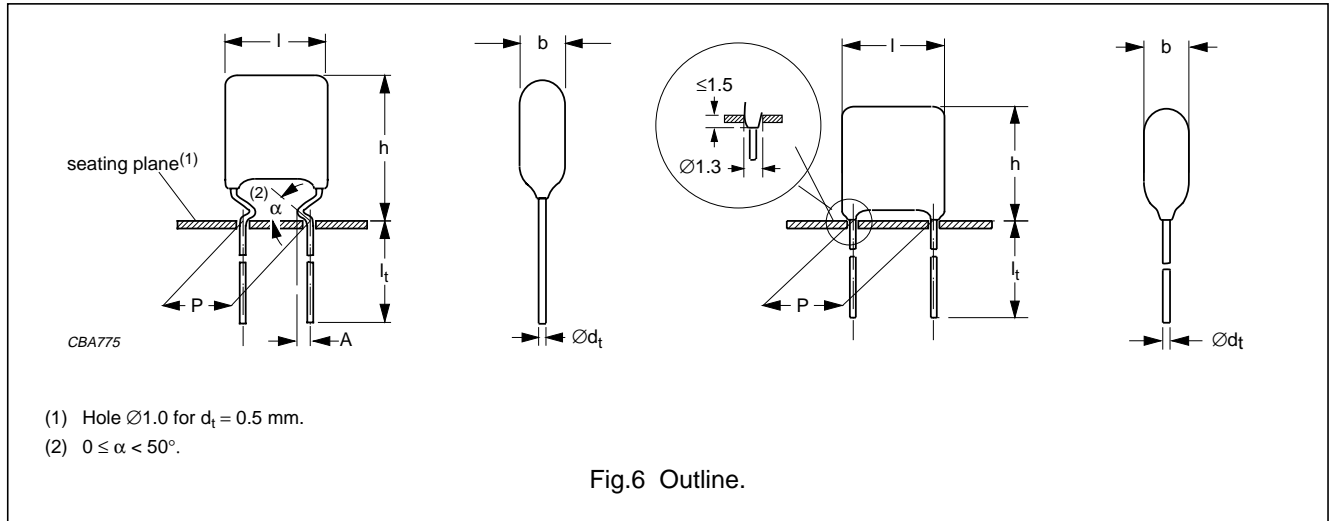
1. The shading indicates preferred types.
2. Pitch = 7.5 mm (kinked and straight leads) is available on request; for dimensions and package quantities see "Type detail specification HQN-384-02/105".

Metallized polyester film capacitors

MKT 365/366/367

MKT 365/366/367 GENERAL DATA

PITCH 5 mm (kinked and straight leads)



Specific reference data for the 100 V DC capacitors

DESCRIPTION	VALUE		
	at 1 kHz	at 10 kHz	at 100 kHz
Tangent of loss angle: $C \leq 0.1 \mu\text{F}$ $0.1 \mu\text{F} < C \leq 0.47 \mu\text{F}$	$\leq 75 \times 10^{-4}$ $\leq 75 \times 10^{-4}$	$\leq 130 \times 10^{-4}$ $\leq 130 \times 10^{-4}$	$\leq 225 \times 10^{-4}$ $\leq 225 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ at 100 V (DC)	110 V/ μs		
R between leads, for $C \leq 0.33 \mu\text{F}$ at 100 V; 1 minute	$>15000 \text{ M}\Omega$		
RC between leads, for $C > 0.33 \mu\text{F}$ at 100 V; 1 minute	$>5000 \text{ s}$		
R between interconnecting leads and casing; 100 V; 1 minute	$>30000 \text{ M}\Omega$		
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	160 V; 1 minute		

Available 100 V DC versions

PACKAGING ⁽¹⁾	DIMENSIONS	LEAD CONFIGURATION	PITCH (mm)	FIRST 9 DIGITS OF CATALOGUE NUMBER		ORDERING
				C-tol = $\pm 10\%$	C-tol = $\pm 5\%$	
Ammopack	H = 16.0 mm; note 2	kinked	5	2222 365 85...	2222 365 86...	preferred
Taped on reel			5	2222 365 81...	2222 365 82...	on request
Loose in box	$l_t = 4.0 +1.0/-0.5$ mm		5	2222 366 85...	2222 366 86...	on request
	$l_t = 17.0 \pm 4.0$ mm		5	2222 366 81...	2222 366 82...	on request
Loose in box	$l_t = 4.0 +1.0/-0.5$ mm	straight	5	2222 367 85...	2222 367 86...	on request
	$l_t = 22.0 \pm 4.0$ mm		5	2222 367 81...	2222 367 82...	on request

Notes

- For SPQ refer to this handbook, chapter "Packaging information".
- H = in-tape height; for detailed specifications refer to this handbook, chapter "Packaging information".

Metallized polyester film capacitors

MKT 365/366/367

 $U_{Rdc} = 100 \text{ V}$; $U_{Rac} = 63 \text{ V}$

Pitch 5 mm (kinked and straight leads)

C (μF)	DIMENSIONS ⁽¹⁾ $b_{\text{max}} \times h_{\text{max}} \times l_{\text{max}}$ (mm)	MASS (g)	CATALOGUE NUMBER	
			AMMOPACK; H = 16.0 mm	
			C-tol = $\pm 10\%$	C-tol = $\pm 5\%$
			catalogue number ⁽²⁾	last 5 digits ⁽²⁾
Pitch = 5.0 +0.4/-0.2 mm; $d_t = 0.50 \pm 0.05 \text{ mm}$; A = 1.7 $\pm 0.3 \text{ mm}$				
0.01	3.7 \times 12.5 (7.5) \times 7.3	0.3	2222 365 85103	.. 86103
0.012			2222 365 85123	.. 86123
0.015			2222 365 85153	.. 86153
0.018			2222 365 85183	.. 86183
0.022			2222 365 85223	.. 86223
0.027			2222 365 85273	.. 86273
0.033			2222 365 85333	.. 86333
0.039			2222 365 85393	.. 86393
0.047	4.0 \times 12.5 (7.5) \times 7.3	0.3	2222 365 85473	.. 86473
0.056			2222 365 85563	.. 86563
0.068			2222 365 85683	.. 86683
0.082	4.0 \times 13.0 (8.0) \times 7.3	0.3	2222 365 85823	.. 86823
0.1	4.0 \times 13.5 (8.5) \times 7.3	0.4	2222 365 85104	.. 86104
0.12			2222 365 85124	.. 86124
0.15			2222 365 85154	.. 86154
0.18			2222 365 85184	.. 86184
0.22	4.2 \times 13.5 (8.5) \times 7.3	0.4	2222 365 85224	.. 86224
0.27	4.5 \times 14.0 (9.0) \times 7.3	0.4	2222 365 85274	.. 86274

Notes

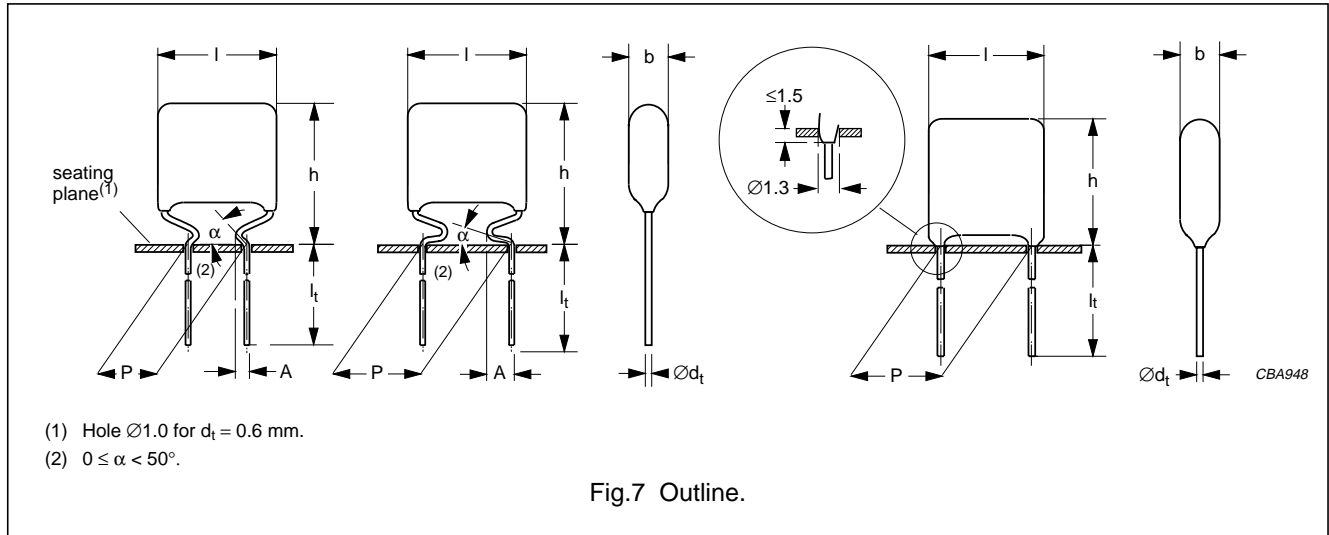
1. Dimensions in brackets for straight leads.
2. The shading indicates preferred types.

Metallized polyester film capacitors

MKT 365/366/367

MKT 365/366/367 GENERAL DATA

PITCH 5 mm (bent back leads)
 PITCH 7.5 mm (kinked and straight leads)



Specific reference data for the 100 V DC capacitors

DESCRIPTION	VALUE		
	at 1 kHz	at 10 kHz	at 100 kHz
Tangent of loss angle: $C \leq 0.1 \mu\text{F}$ $0.1 \mu\text{F} < C \leq 0.47 \mu\text{F}$	$\leq 75 \times 10^{-4}$ $\leq 75 \times 10^{-4}$	$\leq 130 \times 10^{-4}$ $\leq 130 \times 10^{-4}$	$\leq 225 \times 10^{-4}$ $\leq 225 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ at 100 V (DC)	110 V/ μs		
R between leads, for $C \leq 0.33 \mu\text{F}$ at 100 V; 1 minute	$> 15000 \text{ M}\Omega$		
RC between leads, for $C > 0.33 \mu\text{F}$ at 100 V; 1 minute	$> 5000 \text{ s}$		
R between interconnecting leads and casing; 100 V; 1 minute	$> 30000 \text{ M}\Omega$		
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	160 V; 1 minute		

Available 100 V DC versions

PACKAGING ⁽¹⁾	DIMENSIONS	LEAD CONFIGURATION	PITCH (mm)	FIRST 9 DIGITS OF CATALOGUE NUMBER		ORDERING
				C-tol = $\pm 10\%$	C-tol = $\pm 5\%$	
Ammopack	H = 16.0 mm; note 2	bent back	5	2222 365 25...	2222 365 26...	preferred
Taped on reel			5	2222 365 21...	2222 365 22...	on request
Loose in box	$l_t = 4.0 +1.0/-0.5 \text{ mm}$	kinked	7.5	2222 366 25...	2222 366 26...	on request
	$l_t = 17.0 \pm 4.0 \text{ mm}$		7.5	2222 366 21...	2222 366 22...	on request
Loose in box	$l_t = 4.0 +1.0/-0.5 \text{ mm}$	straight	7.5	2222 367 25...	2222 367 26...	on request
	$l_t = 22.0 \pm 4.0 \text{ mm}$		7.5	2222 367 21...	2222 367 22...	on request

Notes

1. For SPQ refer to this handbook, chapter "Packaging information".
2. H = in-tape height; for detailed specifications refer to this handbook, chapter "Packaging information".

Metallized polyester film capacitors

MKT 365/366/367

 $U_{Rdc} = 100 \text{ V}$; $U_{Rac} = 63 \text{ V}$

Pitch 5 mm (bent back leads)

C (μF)	DIMENSIONS $b_{\max} \times h_{\max} \times l_{\max}$ (mm)	MASS (g)	CATALOGUE NUMBER	
			AMMOPACK; H = 16.0 mm	
			C-tol = $\pm 10\%$	C-tol = $\pm 5\%$
			catalogue number ⁽¹⁾	last 5 digits ⁽¹⁾
Pitch = 5.0 +0.4/-0.2 mm; $d_t = 0.60 \pm 0.06 \text{ mm}$; $A = 1.7 \pm 0.3 \text{ mm}^{(2)}$				
0.039	4.0 × 13.5 × 10.0	0.4	2222 365 25393	.. 26393
0.047			2222 365 25473	.. 26473
0.056			2222 365 25563	.. 26563
0.068			2222 365 25683	.. 26683
0.082			2222 365 25823	.. 26823
0.1			2222 365 25104	.. 26104
0.12	4.5 × 14.0 × 10.5	0.5	2222 365 25124	.. 26124
0.15	5.0 × 14.5 × 10.5	0.6	2222 365 25154	.. 26154
0.18			2222 365 25184	.. 26184
0.22	5.5 × 15.0 × 10.5	0.7	2222 365 25224	.. 26224
0.27	6.0 × 15.5 × 10.5	0.7	2222 365 25274	.. 26274
0.33			2222 365 25334	.. 26334
0.39			2222 365 25394	.. 26394
0.47			2222 365 25474	.. 26474

Notes

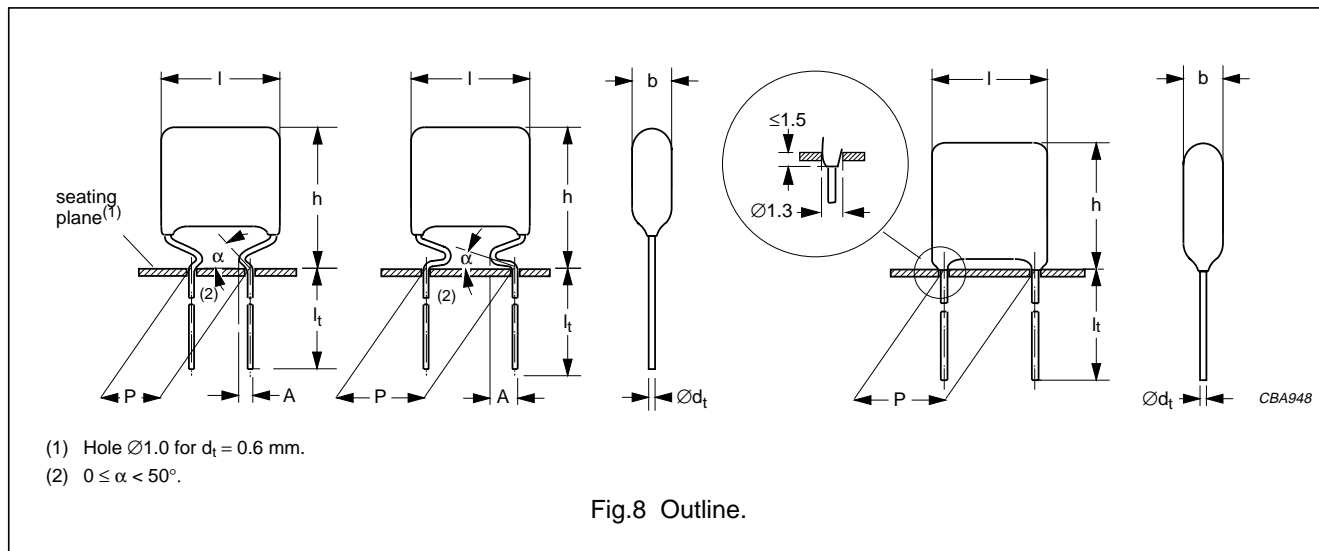
1. The shading indicates preferred types.
2. Pitch = 7.5 mm (kinked and straight leads) is available on request; for dimensions and package quantities see "Type detail specification HQN-384-02/105".

Metallized polyester film capacitors

MKT 365/366/367

MKT 365/366/367 GENERAL DATA

PITCH 5 mm (bent back leads)
 PITCH 7.5 mm (kinked and straight leads)



Specific reference data for the 250 V DC capacitors

DESCRIPTION	VALUE		
	at 1 kHz	at 10 kHz	at 100 kHz
Tangent of loss angle: $C \leq 0.1 \mu\text{F}$ $0.1 \mu\text{F} < C \leq 0.15 \mu\text{F}$	$\leq 75 \times 10^{-4}$ $\leq 75 \times 10^{-4}$	$\leq 130 \times 10^{-4}$ $\leq 120 \times 10^{-4}$	$\leq 225 \times 10^{-4}$ $\leq 225 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ at 250 V (DC)	70 V/ μs		
R between leads, for $C \leq 0.33 \mu\text{F}$ at 100 V; 1 minute	$>30000 \text{ M}\Omega$		
R between interconnected leads and casing; 100 V; 1 minute	$>30000 \text{ M}\Omega$		
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	400 V; 1 minute		

Available 250 V DC versions

PACKAGING ⁽¹⁾	DIMENSIONS	LEAD CONFIGURATION	PITCH (mm)	FIRST 9 DIGITS OF CATALOGUE NUMBER		ORDERING
				C-tol = $\pm 10\%$	C-tol = $\pm 5\%$	
Ammopack	H = 16.0 mm; note 2	bent back	5	2222 365 45...	2222 365 46...	preferred
Taped on reel			5	2222 365 41...	2222 365 42...	on request
Loose in box	$l_t = 4.0 +1.0/-0.5$ mm	kinked	7.5	2222 366 45...	2222 366 46...	on request
	$l_t = 17.0 \pm 4.0$ mm		7.5	2222 366 41...	2222 366 42...	on request
Loose in box	$l_t = 4.0 +1.0/-0.5$ mm	straight	7.5	2222 367 45...	2222 367 46...	on request
	$l_t = 22.0 \pm 4.0$ mm		7.5	2222 367 41...	2222 367 42...	on request

Notes

- For SPQ refer to this handbook, chapter "Packaging information".
- H = in-tape height; for detailed specifications refer to this handbook, chapter "Packaging information".

Metallized polyester film capacitors

MKT 365/366/367

 $U_{Rdc} = 250 \text{ V}$; $U_{Rac} = 160 \text{ V}$

Pitch 5 mm (bent back leads)

C (μF)	DIMENSIONS $b_{\text{max}} \times h_{\text{max}} \times l_{\text{max}}$ (mm)	MASS (g)	CATALOGUE NUMBER	
			AMMOPACK; H = 16.0 mm	
			C-tol = $\pm 10\%$	C-tol = $\pm 5\%$
			catalogue number ⁽¹⁾	last 5 digits ⁽¹⁾
Pitch = 5.0 +0.4/-0.2 mm; $d_t = 0.60 \pm 0.06 \text{ mm}$; $A = 1.7 \pm 0.3 \text{ mm}^{(2)}$				
0.018	4.0 × 13.5 × 10.0	0.4	2222 365 45183	.. 46183
0.022			2222 365 45223	.. 46223
0.027			2222 365 45273	.. 46273
0.033			2222 365 45333	.. 46333
0.039			2222 365 45393	.. 46393
0.047			2222 365 45473	.. 46473
0.056			2222 365 45563	.. 46563
0.068	4.5 × 13.0 × 10.0	0.5	2222 365 45683	.. 46683
0.082			2222 365 45823	.. 46823
0.1	5.0 × 13.5 × 10.0	0.6	2222 365 45104	.. 46104
0.12	5.5 × 14.0 × 10.0	0.6	2222 365 45124	.. 46124
0.15	5.5 × 15.5 × 10.0	0.7	2222 365 45154	.. 46154

Notes

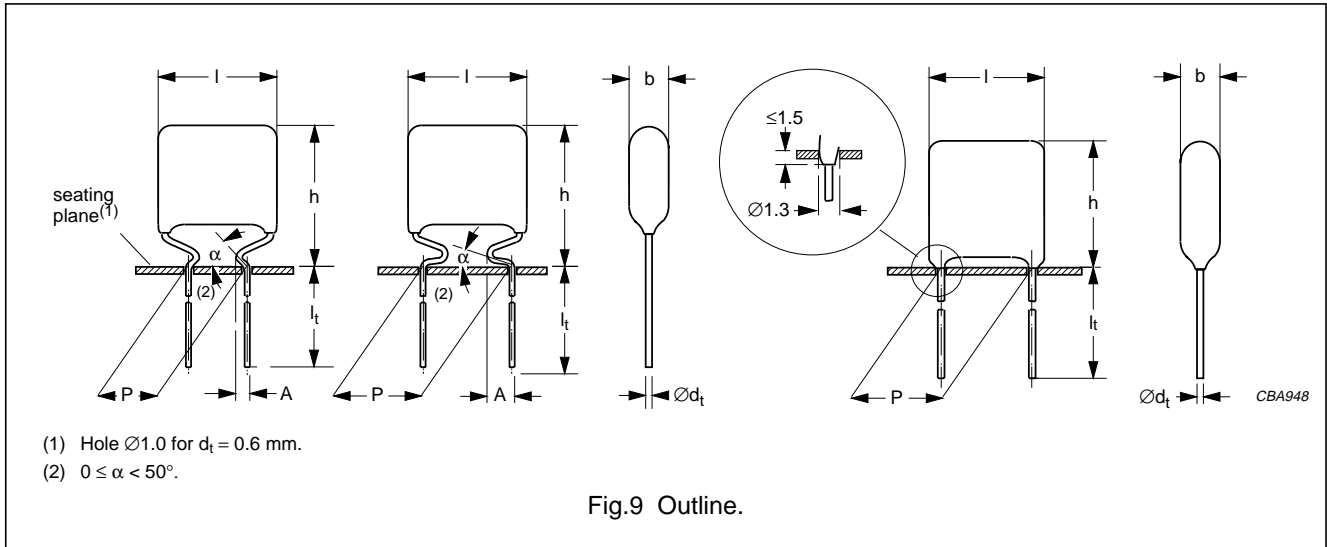
1. The shading indicates preferred types.
2. Pitch = 7.5 mm (kinked and straight leads) is available on request; for dimensions and package quantities see "Type detail specification HQN-384-02/105".

Metallized polyester film capacitors

MKT 365/366/367

MKT 365/366/367 GENERAL DATA

PITCH 5 mm (bent back leads)
 PITCH 7.5 mm (kinked and straight leads)



Specific reference data for the 400 V DC capacitors

DESCRIPTION	VALUE		
	at 1 kHz	at 10 kHz	at 100 kHz
Tangent of loss angle: $C \leq 0.056 \mu\text{F}$ $C \leq 0.1 \mu\text{F}$	$\leq 75 \times 10^{-4}$ $\leq 75 \times 10^{-4}$	$\leq 120 \times 10^{-4}$ $\leq 130 \times 10^{-4}$	$\leq 200 \times 10^{-4}$ $\leq 225 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ at 400 V (DC)	110 V/ μs		
R between leads, for $C \leq 0.33 \mu\text{F}$ at 100 V; 1 minute	$>30000 \text{ M}\Omega$		
R between interconnected leads and casing; 100 V; 1 minute	$>30000 \text{ M}\Omega$		
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	640 V; 1 minute		

Available 400 V DC versions

PACKAGING ⁽¹⁾	DIMENSIONS	LEAD CONFIGURATION	PITCH (mm)	FIRST 9 DIGITS OF CATALOGUE NUMBER		ORDERING
				C-tol = $\pm 10\%$	C-tol = $\pm 5\%$	
Ammopack	H = 16.0 mm; note 2	bent back	5	2222 365 55...	2222 365 56...	preferred
Taped on reel			5	2222 365 51...	2222 365 52...	on request
Loose in box	$l_t = 4.0 +1.0/-0.5$ mm	kinked	7.5	2222 366 55...	2222 366 56...	on request
	$l_t = 17.0 \pm 4.0$ mm		7.5	2222 366 51...	2222 366 52...	on request
Loose in box	$l_t = 4.0 +1.0/-0.5$ mm	straight	7.5	2222 367 55...	2222 367 56...	on request
	$l_t = 22.0 \pm 4.0$ mm		7.5	2222 367 51...	2222 367 52...	on request

Notes

- For SPQ refer to this handbook, chapter "Packaging information".
- H = in-tape height; for detailed specifications refer to this handbook, chapter "Packaging information".

Metallized polyester film capacitors

MKT 365/366/367

 $U_{Rdc} = 400 \text{ V}; U_{Rac} = 220 \text{ V}$

Pitch 5 mm (bent back leads)

C (μF)	DIMENSIONS $b_{\text{max}} \times h_{\text{max}} \times l_{\text{max}}$ (mm)	MASS (g)	CATALOGUE NUMBER	
			AMMOPACK; H = 16.0 mm	
			C-tol = $\pm 10\%$	C-tol = $\pm 5\%$
			catalogue number ⁽¹⁾	last 5 digits ⁽¹⁾
Pitch = 5.0 +0.4/-0.2 mm; $d_t = 0.60 \pm 0.06 \text{ mm}$; A = 1.7 $\pm 0.3 \text{ mm}$⁽²⁾				
0.0033	4.0 \times 13.5 \times 10.0	0.4	2222 365 55332	.. 56332
0.0039			2222 365 55392	.. 56392
0.0047			2222 365 55472	.. 56472
0.0056			2222 365 55562	.. 56562
0.0068			2222 365 55682	.. 56682
0.0082			2222 365 55822	.. 56822
0.01			2222 365 55103	.. 56103
0.012			2222 365 55123	.. 56123
0.015			2222 365 55153	.. 56153
0.018	4.5 \times 13.0 \times 10.0	0.6	2222 365 55183	.. 56183
0.022	5.0 \times 13.5 \times 10.0	0.7	2222 365 55223	.. 56223
0.027	4.0 \times 12.5 \times 10.0	0.4	2222 365 55273	.. 56273
0.033	4.5 \times 13.0 \times 10.0	0.5	2222 365 55333	.. 56333
0.039	5.0 \times 13.5 \times 10.0	0.5	2222 365 55393	.. 56393
0.047	5.0 \times 13.5 \times 10.0	0.6	2222 365 55473	.. 56473
0.056	5.5 \times 14.0 \times 10.0	0.7	2222 365 55563	.. 56563

Notes

1. The shading indicates preferred types.
2. Pitch = 7.5 mm (kinked and straight leads) is available on request; for dimensions and package quantities see "Type detail specification HQN-384-02/105".

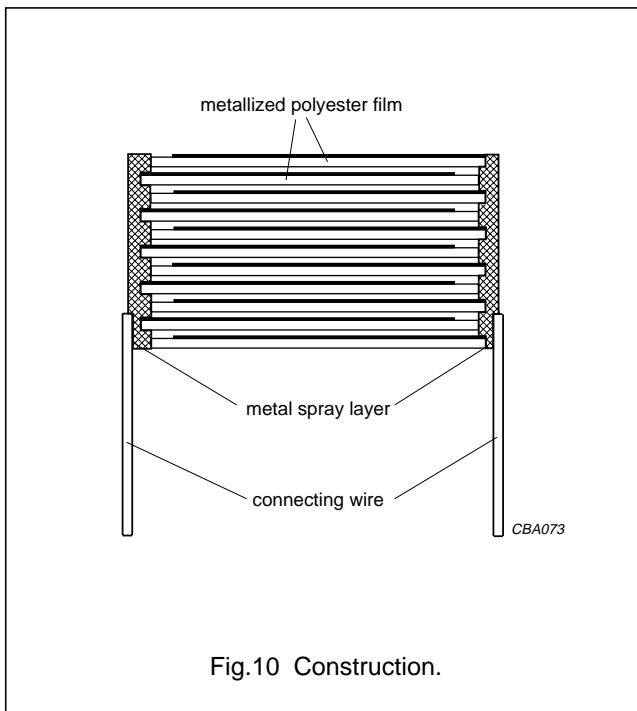
Metallized polyester film capacitors

MKT 365/366/367

CONSTRUCTION

Description

- Low-inductive wound cell of metallized polyethylene terephthalate film
- Protected by a hard, water repellent, solvent resistant epoxy lacquer
- Radial leads, solder coated:
 - Copper clad steel wire for pitch = 5 mm (kinked and straight leads)
 - Copper wire for pitch = 5 mm (bent back leads) and pitch = 7.5 mm (kinked and straight leads).



Mounting

NORMAL USE

The capacitors are designed for mounting on printed-circuit boards. The capacitors packed in bandoliers are designed for mounting on printed-circuit boards by means of automatic insertion machines. For detailed tape specifications refer to this handbook, chapter "Packaging information".

SPECIFIED METHOD OF MOUNTING TO WITHSTAND VIBRATION AND SHOCK

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

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

Storage temperature

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

RATINGS AND CHARACTERISTICS REFERENCE CONDITIONS

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

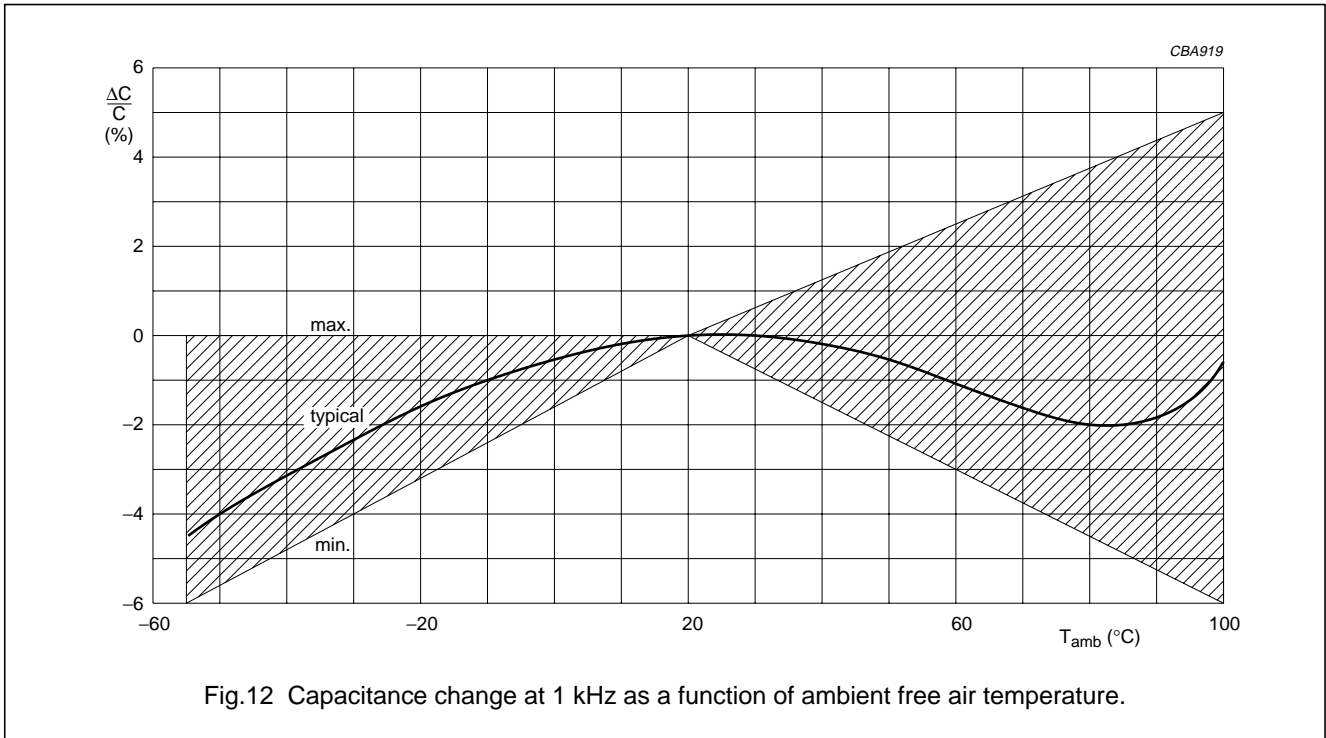
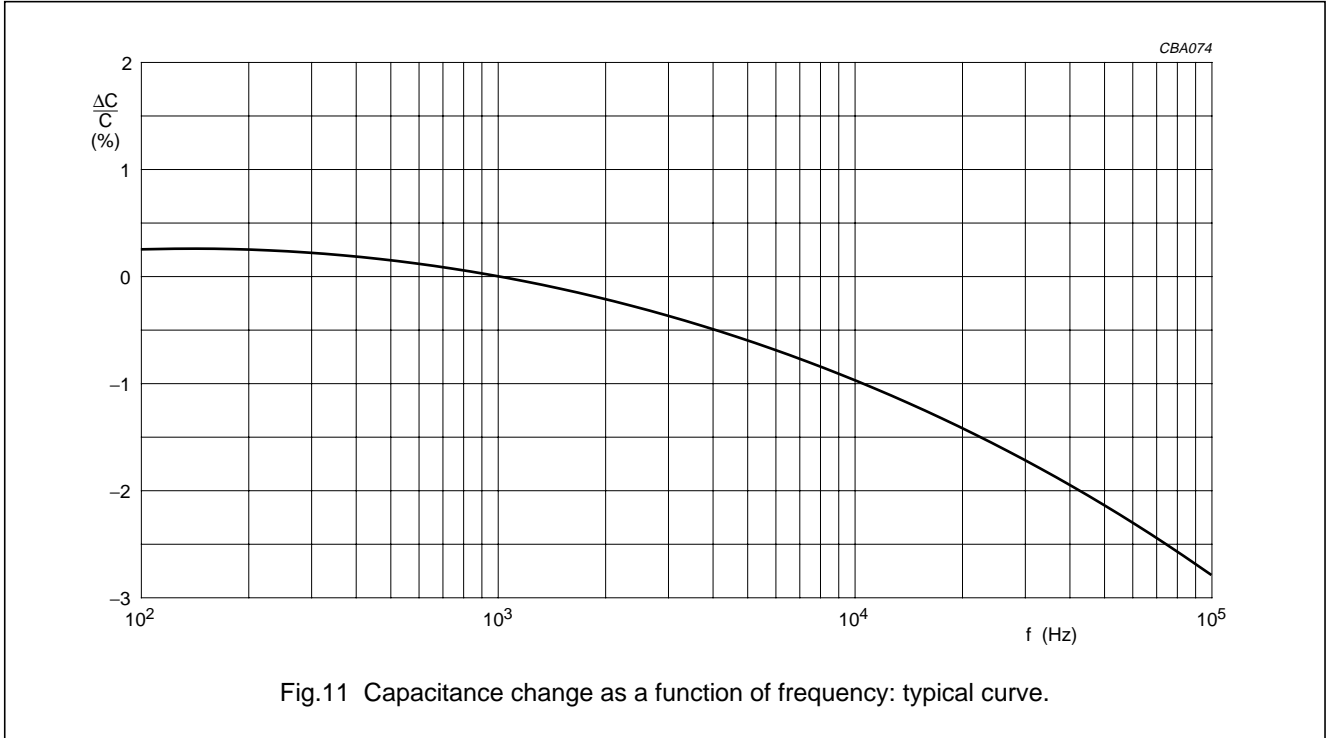
For reference testing, a conditioning period shall be applied over 96 ± 4 hours by heating the products in a circulating air oven at the rated temperature and a relative humidity not exceeding 20%.

Metallized polyester film capacitors

MKT 365/366/367

CHARACTERISTICS

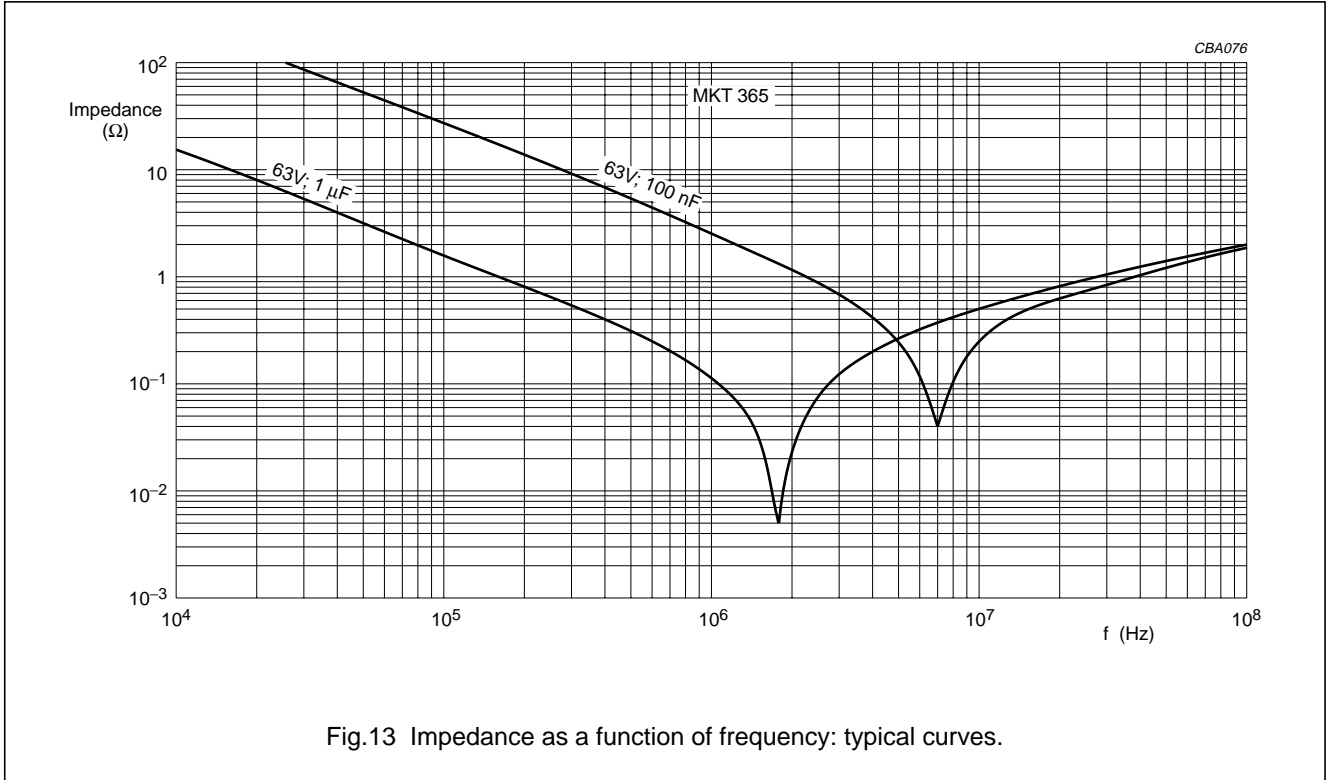
Capacitance



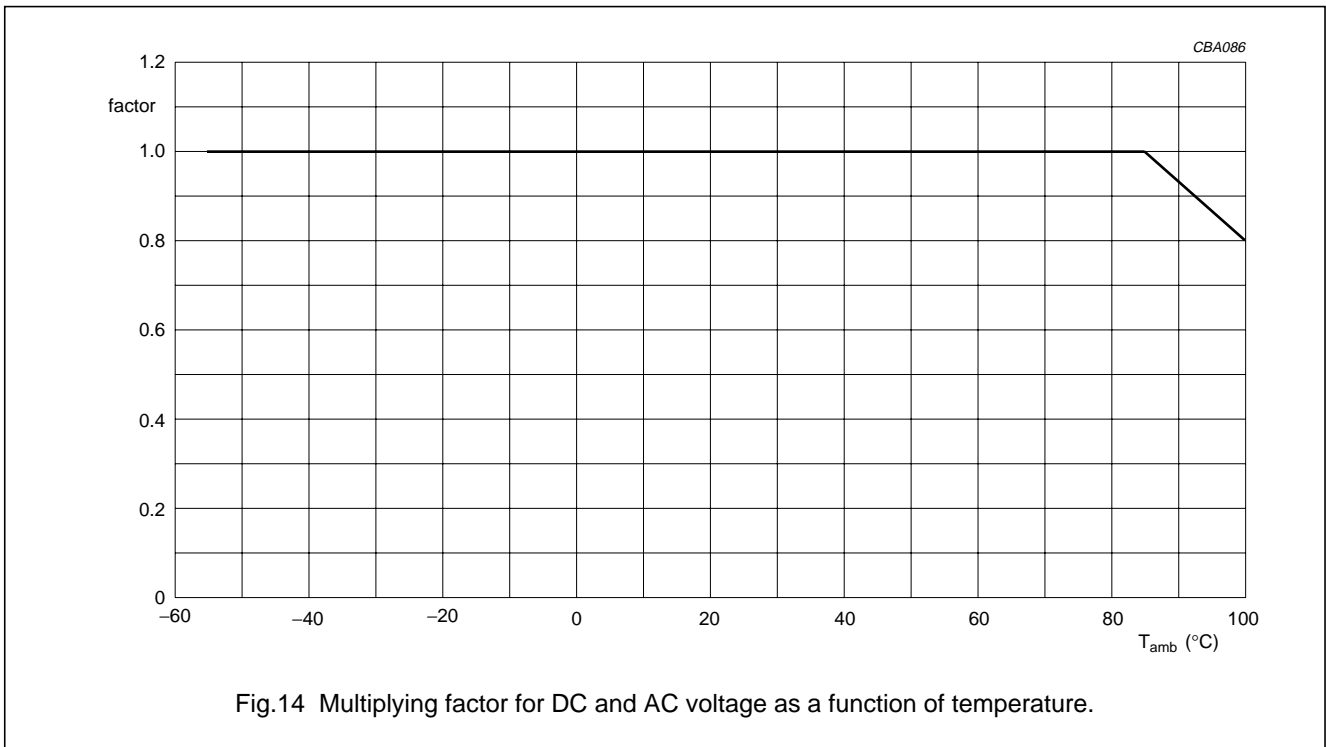
Metallized polyester film capacitors

MKT 365/366/367

Impedance



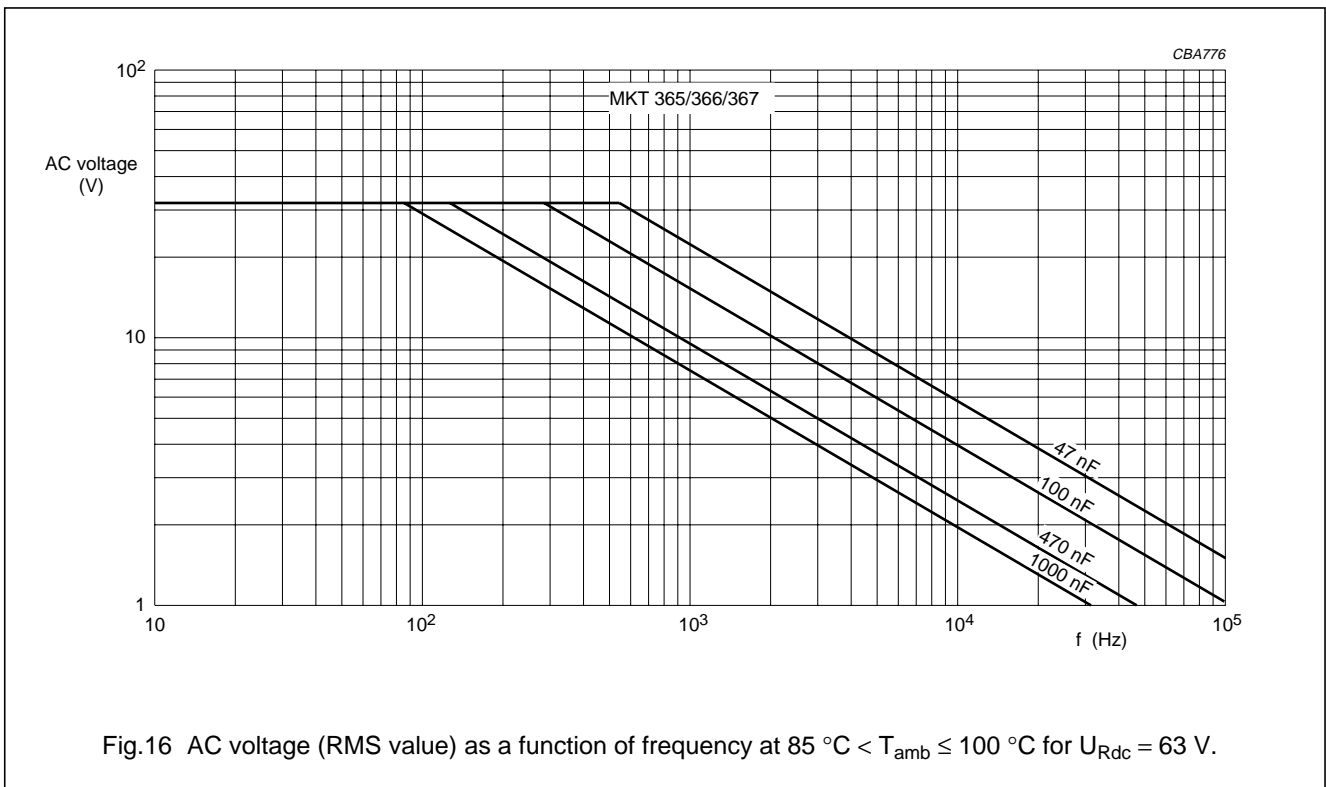
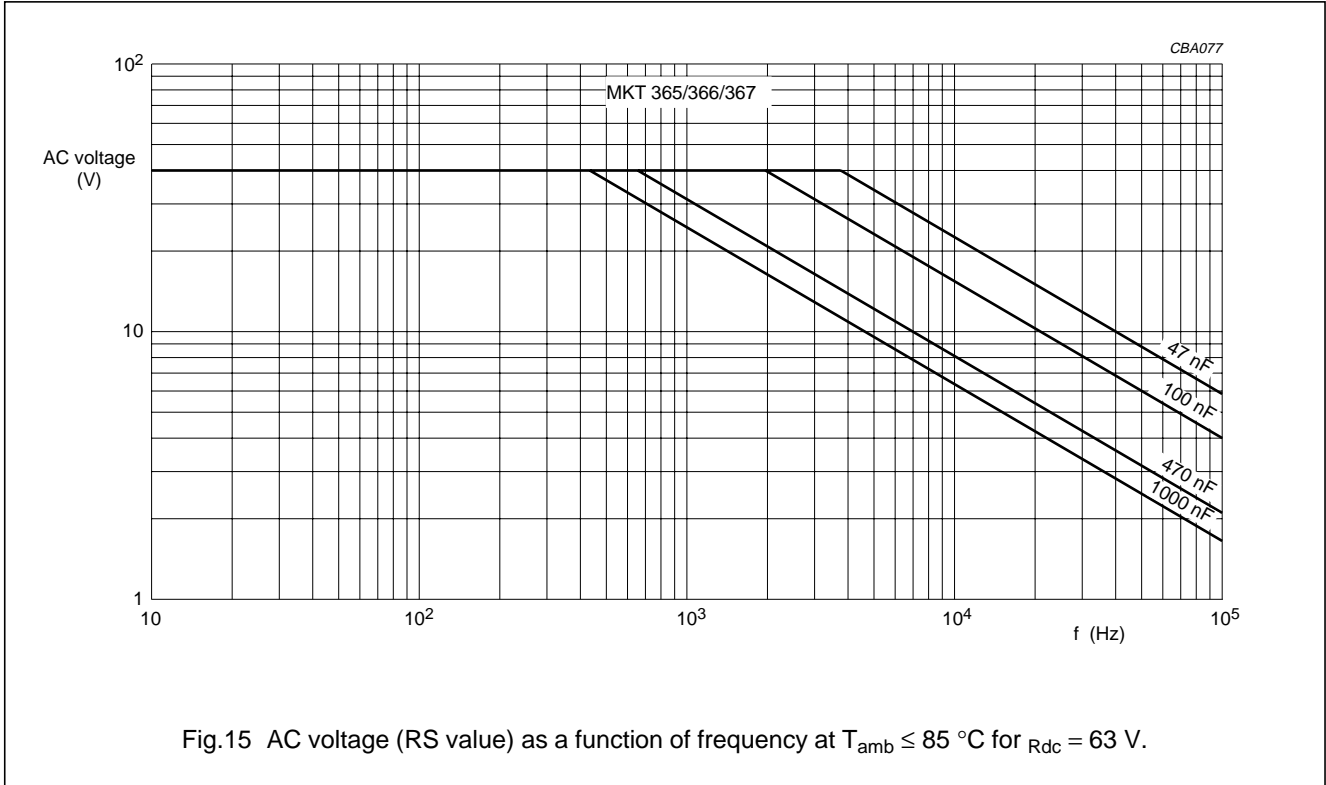
Maximum DC and AC voltage as a function of temperature



Metallized polyester film capacitors

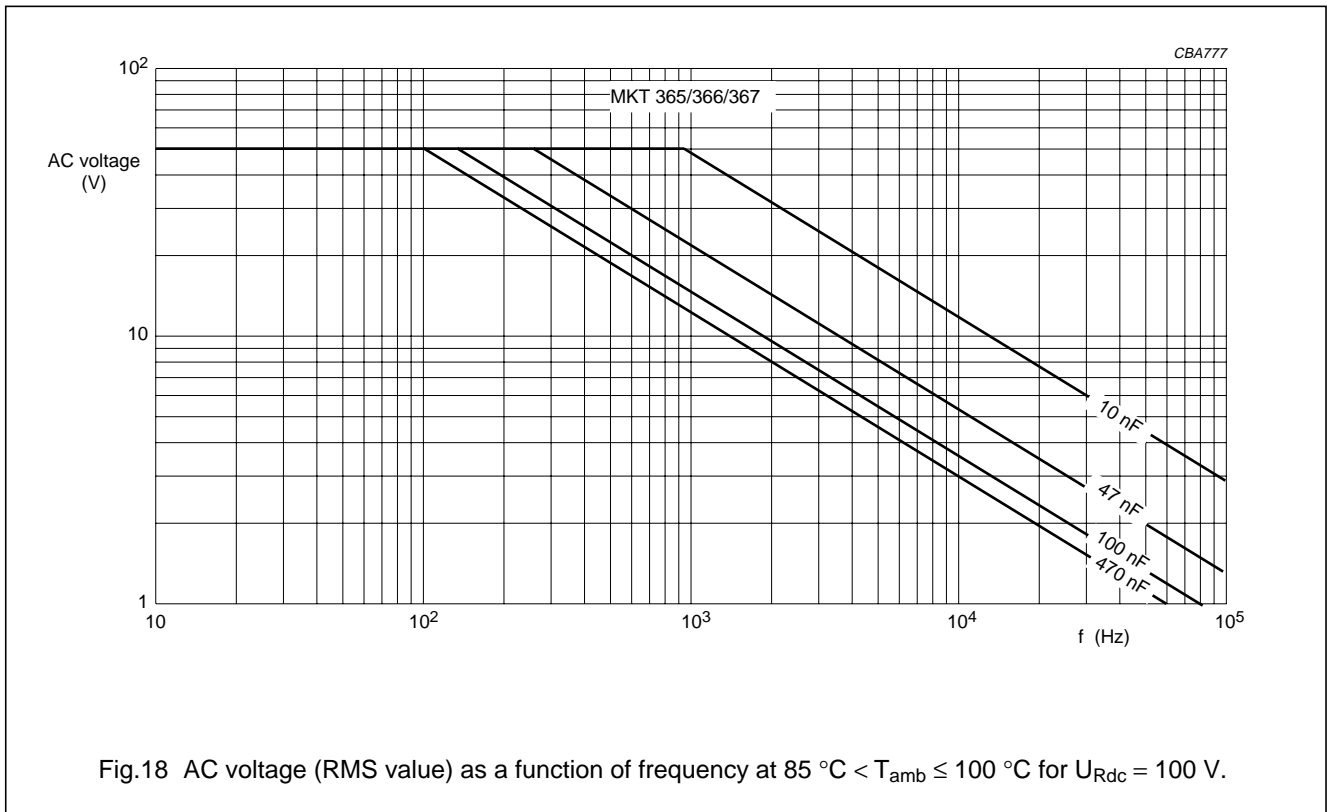
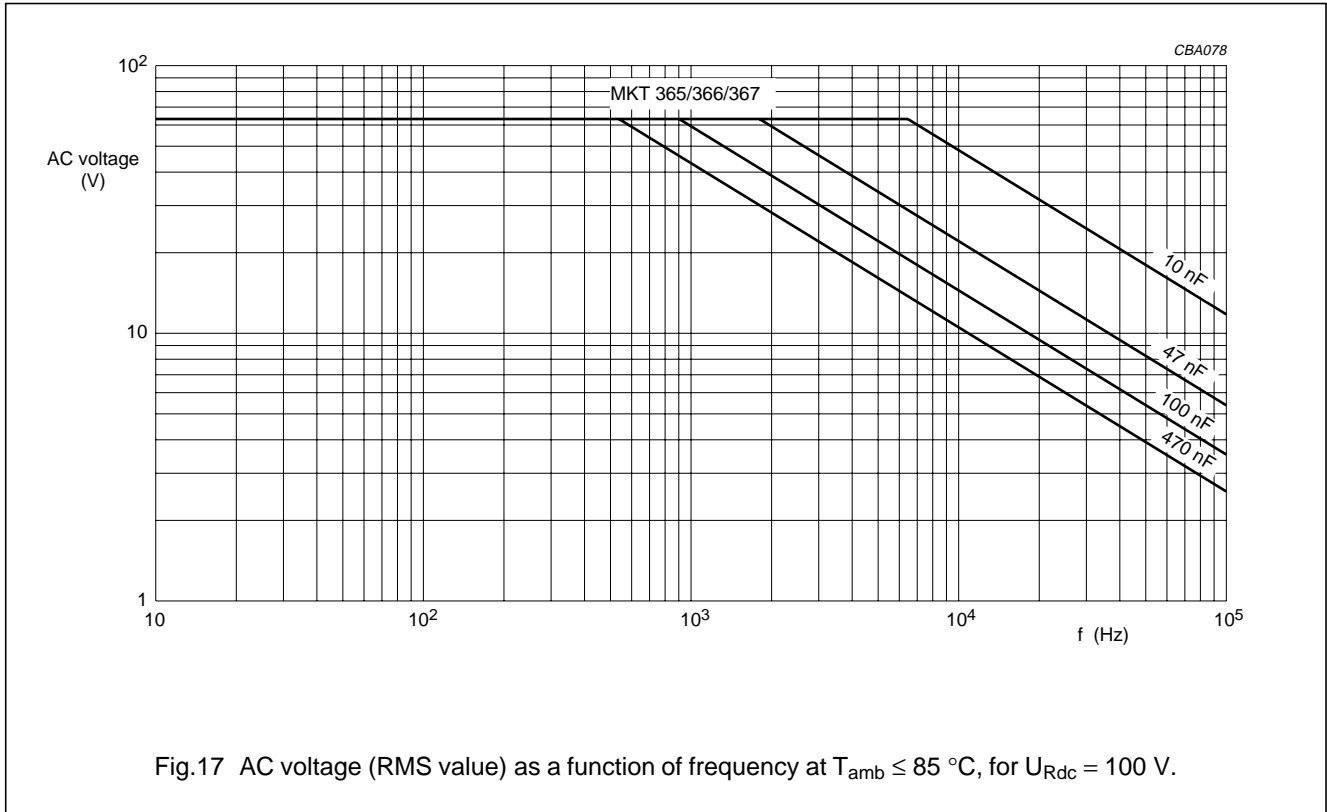
MKT 365/366/367

Maximum RMS voltage (sinewave) as a function of frequency



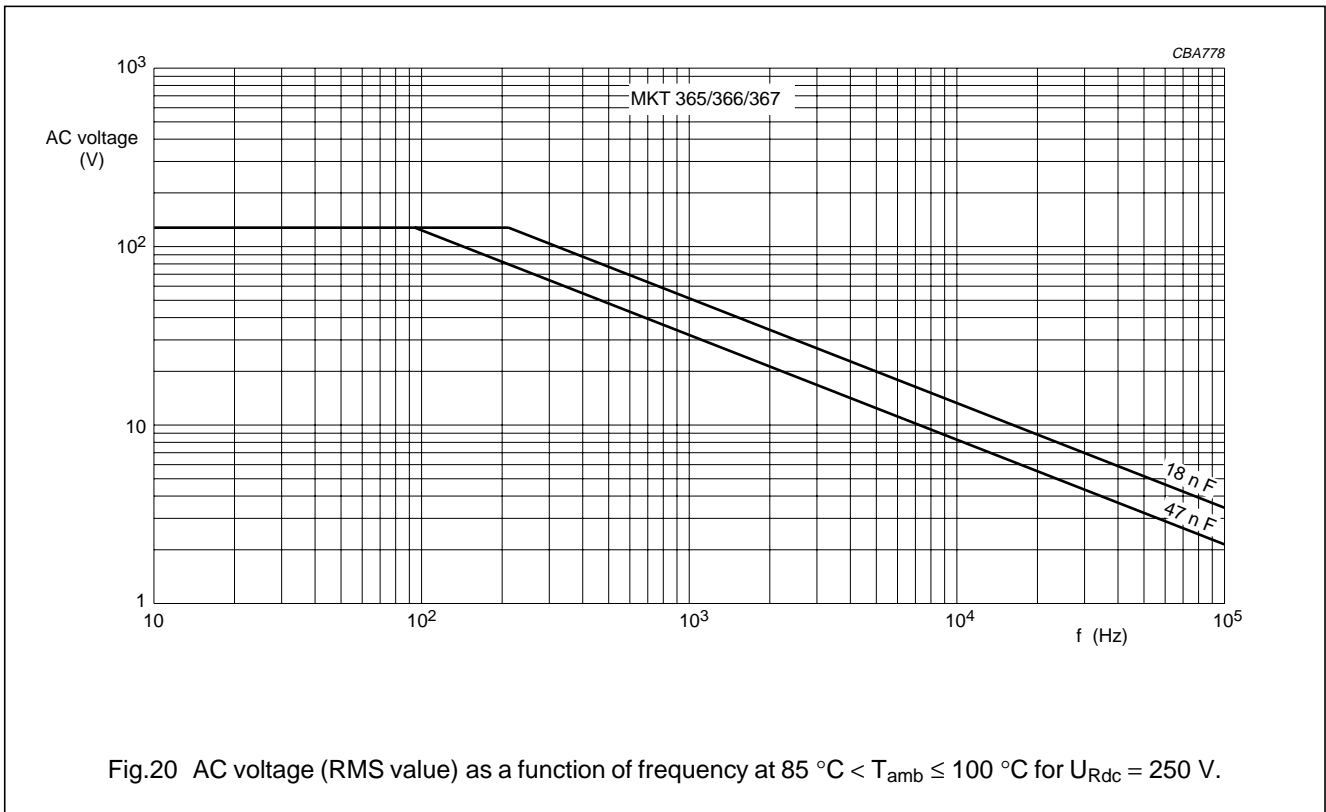
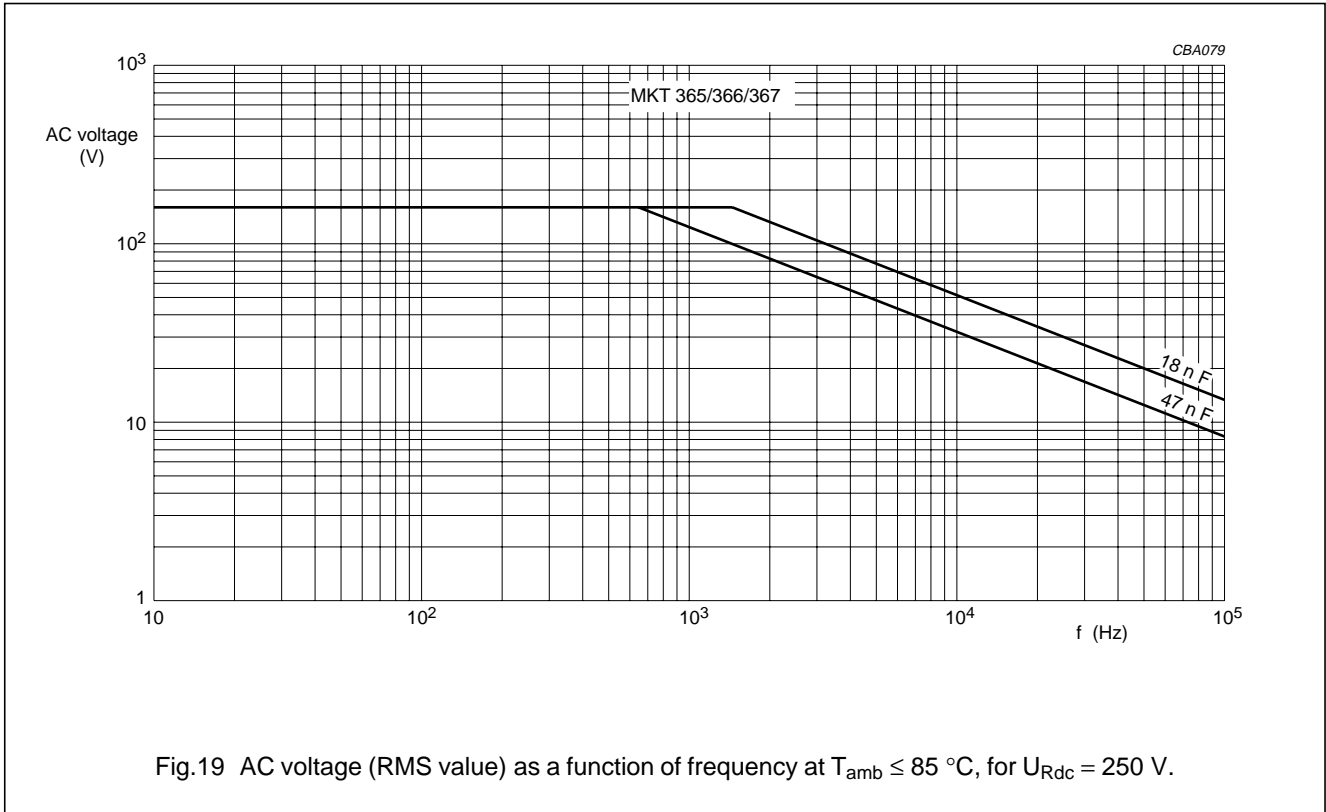
Metallized polyester film capacitors

MKT 365/366/367



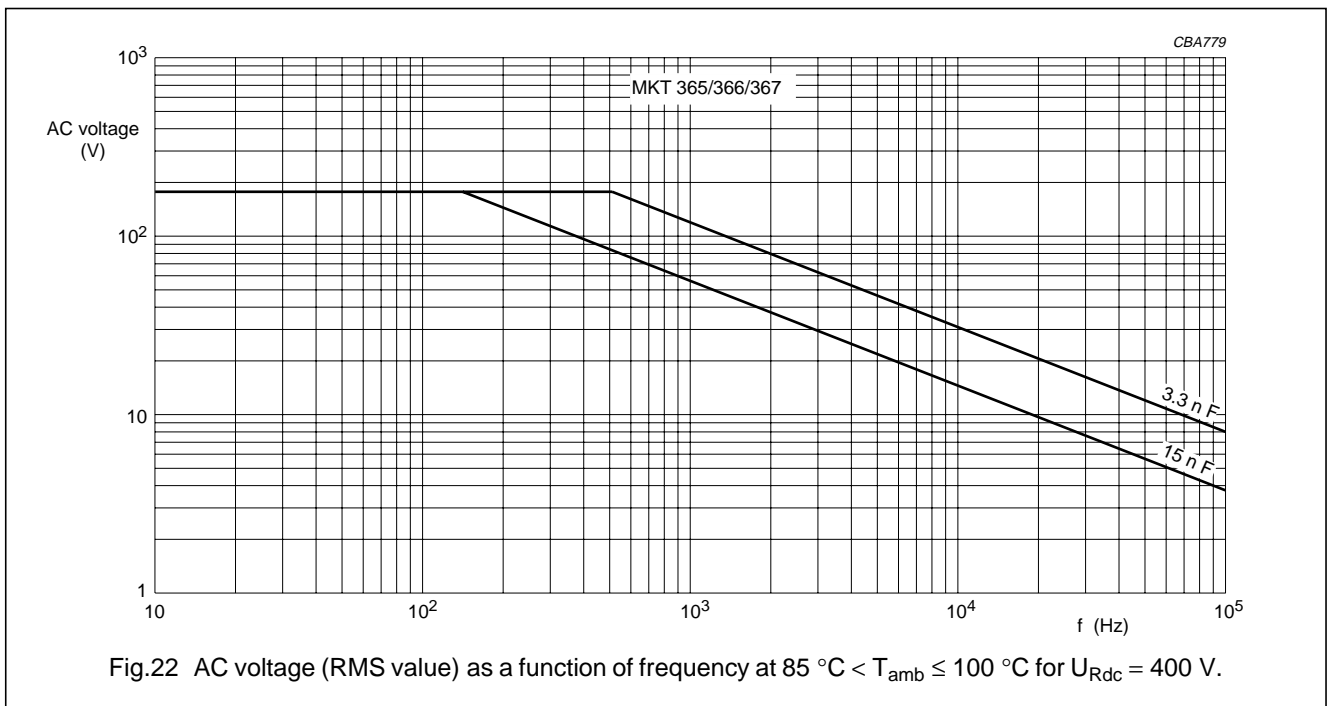
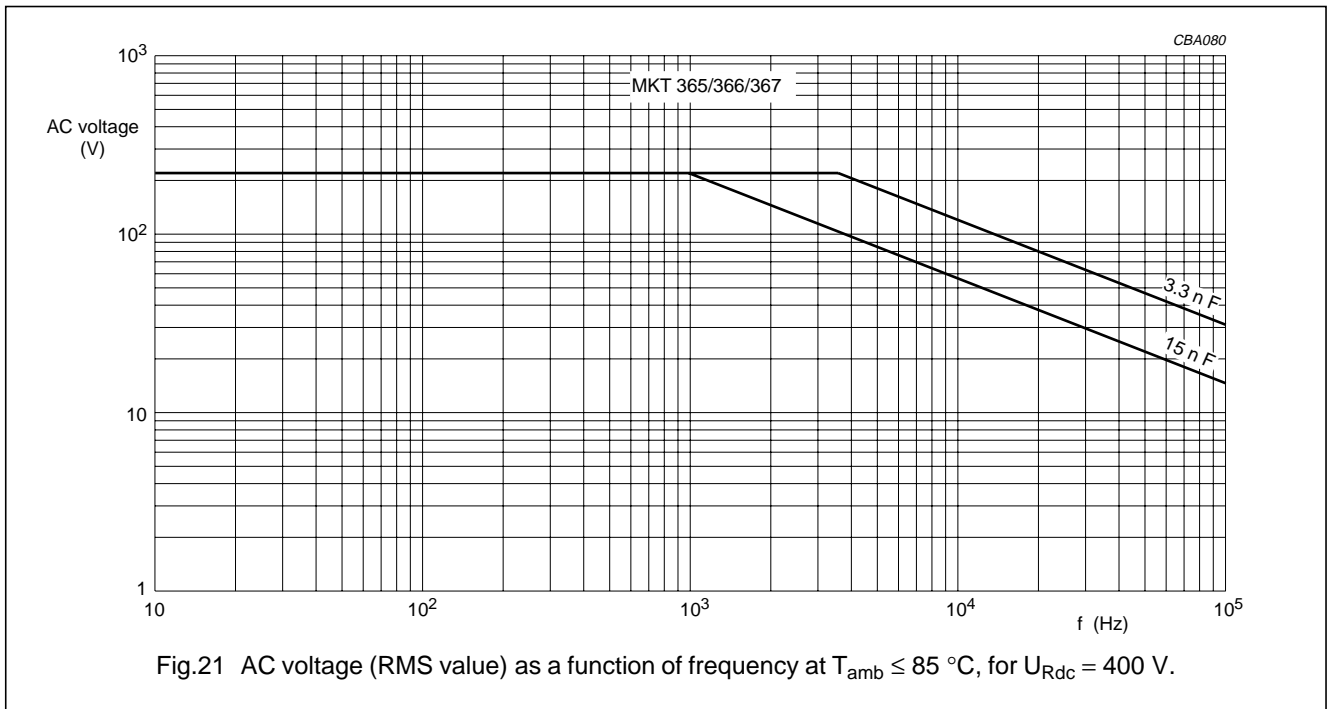
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MKT 365/366/367



Metallized polyester film capacitors

MKT 365/366/367



Maximum RMS current (sinewave) as a function of frequency

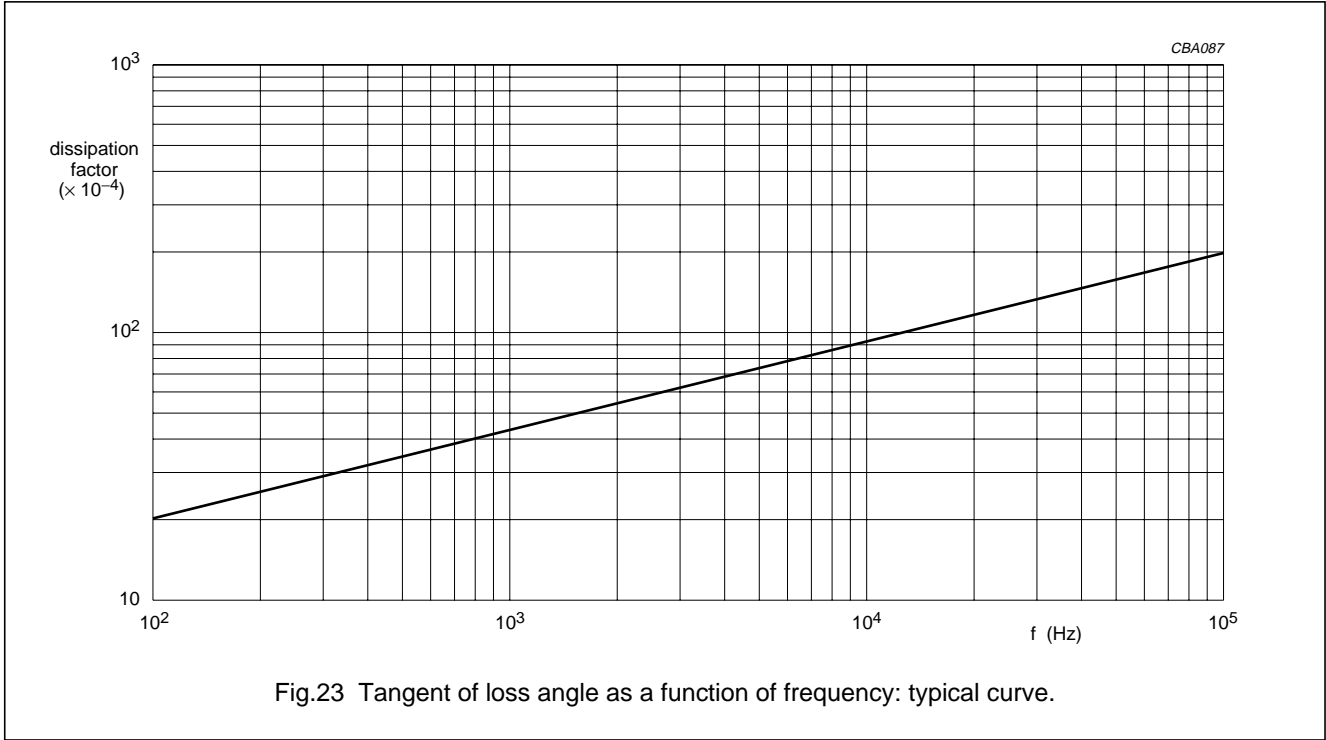
The maximum RMS current is defined by $I_{ac} = \omega \times C \times U_{ac}$.

U_{ac} is the maximum AC voltage depending on the ambient temperature in Figs 15 to 22.

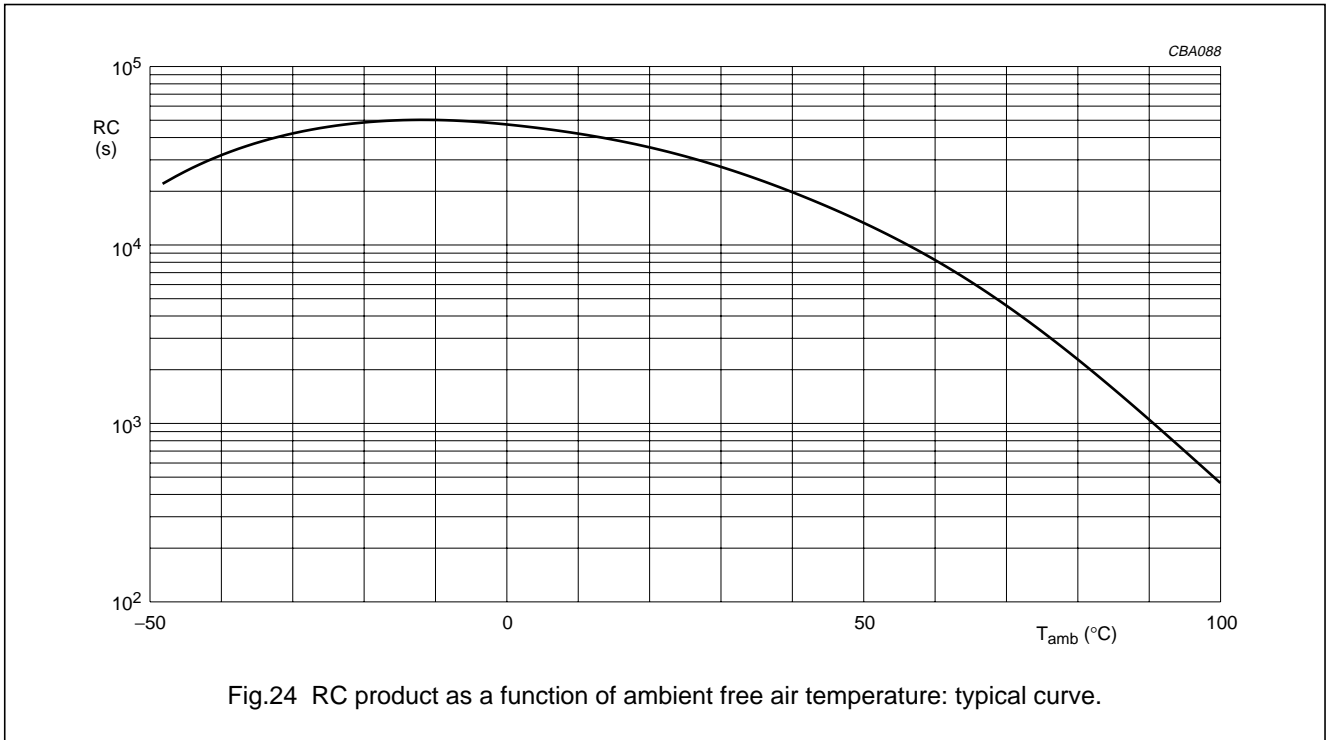
Metallized polyester film capacitors

MKT 365/366/367

Tangent of loss angle



Insulation resistance



Metallized polyester film capacitors

MKT 365/366/367

Maximum allowed component temperature rise (ΔT) as a function of the ambient temperature (T_{amb})

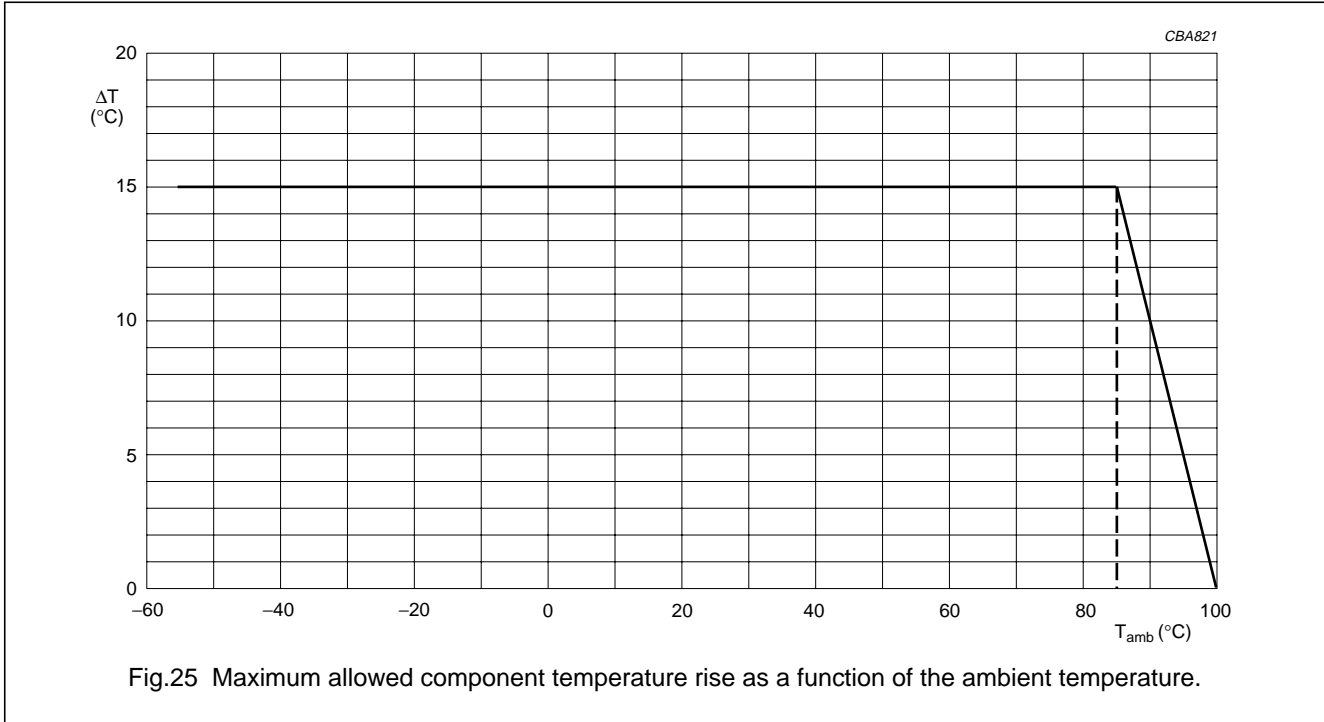


Fig.25 Maximum allowed component temperature rise as a function of the ambient temperature.

Heat conductivity (G) as a function of pitch and capacitor body thickness in $mW/^{\circ}C$

Table 1 Heat conductivity

b_{max} (mm)	ORIGINAL PITCH (mm)	
	5	7.5
3.5	1.5	3.0
4.0	2.0	3.5
4.5	2.5	3.5
5.0	2.5	4.0
5.5	3.0	4.0
6.0	3.5	4.5
6.5	–	5.0

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 air ambient temperature.

Power dissipation can be calculated in accordance with chapter "Introduction", section "Maximum power dissipation".

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 ($^{\circ}C$).
- P = power dissipation of the component (mW).
- G = heat conductivity of the component ($mW/^{\circ}C$).

Metallized polyester film capacitors

MKT 365/366/367

Measuring the component temperature

A thermocouple must be attached to the capacitor body; see Fig.26.

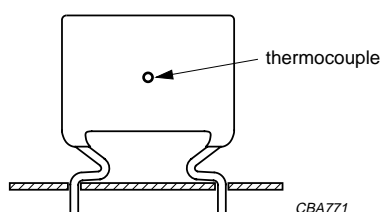


Fig.26 Mounting the thermocouple.

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.

Metallized polyester film capacitors

MKT 365/366/367

Application note and limiting conditions

These capacitors are not suitable for mains applications as across-the-line capacitors without additional protection, as described below. These mains applications are strictly regulated by safety standards and therefore electromagnetic interference suppression capacitors conforming to 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 the maximum U_{p-p} to avoid the ionisation inception level.
3. The voltage pulse 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.

The rated voltage pulse slope is valid for ambient temperatures up to 85 °C. For higher temperatures a derating factor of 3% per K shall be applied.

4. The maximum component surface temperature rise must be lower than the limits in 0.
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 Table 1.
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 following conditions are fulfilled in any case (spikes and surge voltages from the mains included).

VOLTAGE CONDITIONS FOR 6 ABOVE

ALLOWED VOLTAGES	$T_{amb} \leq 85 \text{ °C}$	$85 \text{ °C} < T_{amb} \leq 100 \text{ °C}$
Maximum continuous RMS voltage	U_{Rac}	$0.8 \times U_{Rac}$
Maximum temporary RMS overvoltage (<24 hours)	$1.25 \times U_{Rac}$	U_{Rac}
Maximum peak voltage (V_{o-p}) (<2 s)	$1.6 \times U_{Rdc}$	$1.3 \times U_{Rdc}$

Metallized polyester film capacitors

MKT 365/366/367

Example

$C = 330 \text{ nF} - 63 \text{ V}$ used for the voltage signal shown in Fig.27.

$$U_{p-p} = 40 \text{ V}; U_p = 35 \text{ V}; T_1 = 100 \mu\text{s}; T_2 = 200 \mu\text{s}.$$

The ambient temperature is $35 \text{ }^\circ\text{C}$.

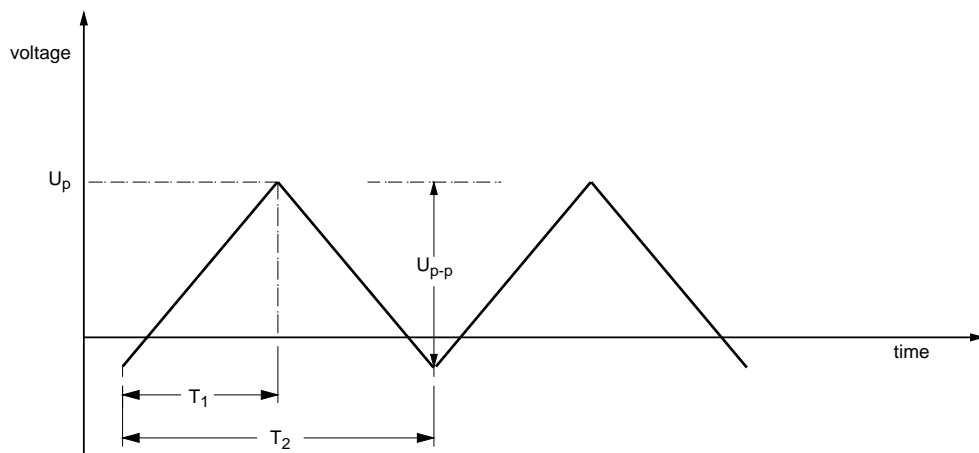
Checking the conditions:

1. The peak voltage $U_p = 35 \text{ V}$ is lower than 63 V (DC).
2. The peak-to-peak voltage 40 V is lower than $2 \times \sqrt{2} \times 40 \text{ V (AC)} = 113 U_{p-p}$.
3. The voltage pulse slope $dU/dt = 40 \text{ V}/100 \mu\text{s} = 0.4 \text{ V}/\mu\text{s}$.
This is lower than $110 \text{ V}/\mu\text{s}$ (see specific reference data for each version).
4. The dissipated power is 16.2 mW as calculated with Fourier terms.

$$\text{The temperature rise for } b_{\text{max}} = 4.5 \text{ mm and pitch} = 5 \text{ mm will be } \frac{16.2 \text{ mW}}{2.5 \text{ mW}/^\circ\text{C}} = 6.5 \text{ }^\circ\text{C}.$$

This is lower than $15 \text{ }^\circ\text{C}$ temperature rise at $35 \text{ }^\circ\text{C}$; see Fig.25.

5. Not applicable.
6. Not applicable.



CBA865

Fig.27 Voltage signal.

Metallized polyester film capacitors

MKT 365/366/367

MARKING**Product marking**

COUNTRY OF ORIGIN: BELGIUM

The capacitors are marked on the top with black ink (see Figs 28 and 29), containing the following information:

1. Rated capacitance code in nF or μ F
2. Tolerance on rated capacitance: K = $\pm 10\%$; J = $\pm 5\%$
3. Rated (DC) voltage.



0.047
K 63

CBA091

Fig.28 Example of marking for capacitors with pitch = 5 mm (kinked and straight leads).



470 K 100

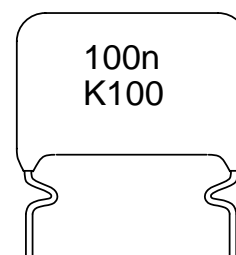
CBA092

Fig.29 Example of marking for capacitors with pitch = 5 mm (bent back leads) and pitch = 7.5 mm (kinked and straight leads).

COUNTRY OF ORIGIN: PRC (PEOPLE'S REPUBLIC OF CHINA)

The capacitors are marked on the side with black ink (see Fig.30), containing the following information:

1. Rated capacitance code in nF or μ F
2. Tolerance on rated capacitance: K = $\pm 10\%$; J = $\pm 5\%$
3. Rated (DC) voltage.



100n
K100

CBA465

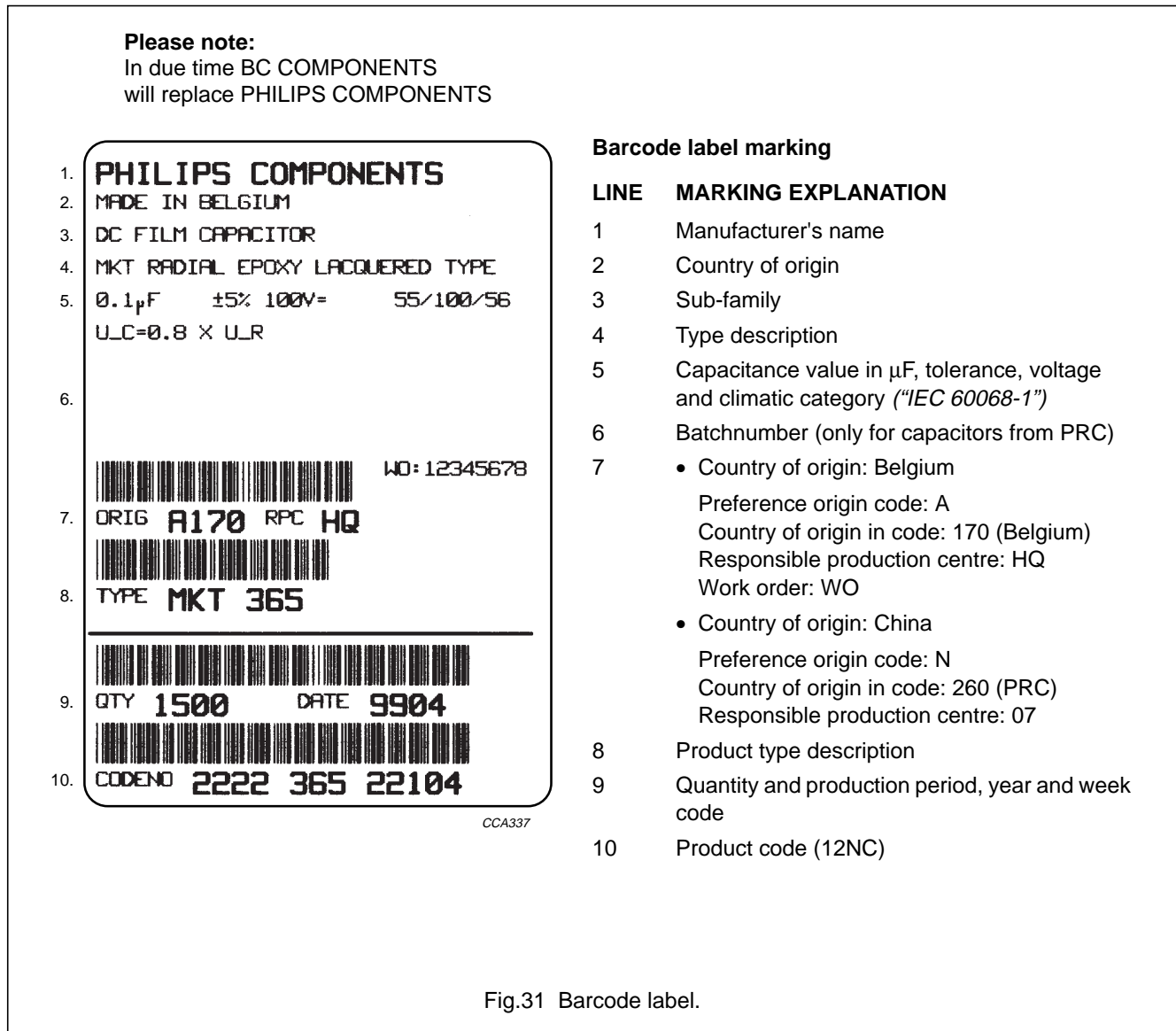
Fig.30 Example of marking for capacitors with pitch = 5 and 7.5 mm.

Metallized polyester film capacitors

MKT 365/366/367

Package marking

The package containing the capacitors is marked as shown in Fig.31.



Metallized polyester film capacitors

MKT 365/366/367

QUICK REFERENCE TEST REQUIREMENTS (see note 1)

TEST	PROCEDURE (quick reference)	REQUIREMENTS
Robustness of leads		
Tensile strength: "IEC 60068-2-21"	load 10 N; 10 s	no visible damage legible marking $ \Delta C/C \leq 2\%$ $\Delta \tan \delta \leq 30 \times 10^{-4}$; note 2
Bending: "IEC 60068-2-21"	load 5 N; $4 \times 90^\circ$	
Resistance to soldering heat: "IEC 60068-2-20"	solder bath: 260 °C; 10 s	
Component solvent resistance	isopropyl alcohol; 23 °C; 5 minutes	
Robustness of component		
Vibration: "IEC 60068-2-6"	10 to 55 Hz; amplitude 0.75 mm or acceleration 98 m/s ² ; 6 hours	$ \Delta C/C \leq 3\%$
Shock: "IEC 60068-2-27"	half sinewave; 490 m/s ² ; 11 ms	$\Delta \tan \delta \leq 30 \times 10^{-4}$; note 2
Climatic sequence		
Dry heat: "IEC 60068-2-2"	16 hours; 100 °C	$ \Delta C/C \leq 5\%$ $\Delta \tan \delta \leq 50 \times 10^{-4}$; note 2 $R_{ins} \geq 50\%$ of specified value
Damp heat cyclic, first cycle: "IEC 60068-2-30":		
Cold: "IEC 60068-2-1"	2 hours; -55 °C	
Damp heat, remaining cycles: "IEC 60068-2-30"		
Other applicable tests		
Damp heat steady state: "IEC 60068-2-3"	56 days; 40 °C; 90 to 95% RH	$ \Delta C/C \leq 5\%$ $\Delta \tan \delta \leq 50 \times 10^{-4}$; note 2 $R_{ins} \geq 50\%$ of specified value
Endurance (DC): "IEC 60384-2"	2000 hours: $1.25 \times U_{Rdc}$; 85 °C $1 \times U_{Rdc}$; 100 °C	$ \Delta C/C \leq 5\%$ $\Delta \tan \delta \leq 30 \times 10^{-4}$; note 2 $R_{ins} \geq 50\%$ of specified value
Heat storage: "IEC 60384-2"	2000 hours; 100 °C	$ \Delta C/C \leq 3\%$ $\Delta \tan \delta \leq 30 \times 10^{-4}$; note 2
Resistance to soldering heat with preheating: "IEC 60384-2"	body temperature: 100 °C; bath temperature: 260 °C; dwell time: 5 s	$ \Delta C/C \leq 2\%$ ($C \leq 10$ nF) $ \Delta C/C \leq 1\%$ ($C > 10$ nF) $\Delta \tan \delta \leq 30 \times 10^{-4}$; note 2

Notes

- For detailed information, see "Type detail specification HQN-384-02/105".
- Measuring frequency 100 kHz for $C \leq 470$ nF and 10 kHz for $C > 470$ nF.