

## Metallized Polyester Film Capacitors MKT Radial Epoxy Partly Lacquered Type


**FEATURES**

- Partly lacquered product
- Pitch 10 mm to 22.5 mm available loose in box
- Material categorization:  
For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

**APPLICATIONS**

- Blocking, coupling and decoupling
- Bypass and energy reservoir

QUICK REFERENCE DATA	
Capacitance range (E12 series)	0.01 $\mu$ F to 10 $\mu$ F
Capacitance tolerance	$\pm 10\%$ ; $\pm 5\%$
Rated DC voltage	250 V; 400 V; 630 V
Rated AC voltage	63 V; 100 V; 160 V
Rated temperature	85 °C
Climatic category	55/105/56
Maximum application temperature	105 °C
Leads	Tinned wire
Reference specifications	IEC 60384-2
Dielectric	Polyester film
Electrodes	Vacuum deposited aluminum
Construction	Wound mono construction
Coating	Flame retardant epoxy material (UL-class 94 V-0)
Performance grade	Grade 1 (long life)
Marking	C-value; rated voltage; tolerance

**Note**

- For more detailed data and test requirements contact: [dc-film@vishay.com](mailto:dc-film@vishay.com)

DIMENSIONS in millimeters

**COMPOSITION OF CATALOG NUMBER**


TYPE	PACKAGING	LEAD CONFIGURATION	PREFERRED			
			C-TOL.	250 V	400 V	630 V
303	Loose in box	Straight leads 3.5 mm	± 10 %	41	51	61
			± 5 %	42	52	62
			ON REQUEST			
303	Loose in box	Straight long leads	± 10 %	43	53	63
			± 5 %	44	54	64
			ON REQUEST (ALTERNATIVE DIMENSIONS)			
303	Loose in box	Straight lead 3.5 mm	± 10 %	45	55	65
			± 5 %	46	56	66
		Straight long leads	± 10 %	47	57	67
			± 5 %	48	58	68

SPECIFIC REFERENCE DATA			
DESCRIPTION	VALUE		
	at 1 kHz	at 10 kHz	at 100 kHz
Tangent of loss angle:			
$C \leq 0.47 \mu\text{F}$	$\leq 75 \times 10^{-4}$	$\leq 120 \times 10^{-4}$	$\leq 225 \times 10^{-4}$
$C > 0.47 \mu\text{F}$	$\leq 75 \times 10^{-4}$	$\leq 120 \times 10^{-4}$	-
Rated voltage pulse slope $(dU/dt)_R$ :	at 250 V <sub>DC</sub>	at 400 V <sub>DC</sub>	at 630 V <sub>DC</sub>
$I_{\text{max.}} = 12.5 \text{ mm}$	18 V/ $\mu\text{s}$	45 V/ $\mu\text{s}$	137 V/ $\mu\text{s}$
$I_{\text{max.}} = 17.5 \text{ mm}$	6 V/ $\mu\text{s}$	15 V/ $\mu\text{s}$	44 V/ $\mu\text{s}$
$I_{\text{max.}} = 26.0 \text{ mm}$	2 V/ $\mu\text{s}$	6 V/ $\mu\text{s}$	17 V/ $\mu\text{s}$
R between leads, for $C \leq 0.33 \mu\text{F}$ at 100 V; 1 min	> 30 000 M $\Omega$		
RC between leads, for $C > 0.33 \mu\text{F}$ at 100 V; 1 min	> 10 000 s		
R between interconnecting leads and casing; 100 V; 1 min	> 30 000 M $\Omega$		
Withstanding (DC) voltage (cut off current 10 mA) <sup>(1)</sup> ; rise time 1000 V/s	400 V; 1 min	640 V; 1 min	1008 V; 1 min
Withstanding (DC) voltage between leads and case	500 V; 1 min	800 V; 1 min	1260 V; 1 min

**Note**

<sup>(1)</sup> See "Voltage Proof Test for Metallized Film Capacitors": [www.vishay.com/doc?28169](http://www.vishay.com/doc?28169)



<b>ELECTRICAL DATA AND ORDERING INFORMATION (<math>U_{RAC} = 63 V</math>)</b>									
$U_{RDC}$ (V)	CAP. <sup>(2)</sup> ( $\mu F$ )	DIMENSIONS $W_{max} \times H_{max} \times L_{max}$ (mm)	MASS (g)	CATALOG NUMBER 2222 303 ..... AND PACKAGING					
				LOOSE IN BOX					
				$l_t = 3.5 \text{ mm} \pm 0.5 \text{ mm}$			LONG LEADS <sup>(1)</sup>		
				C-TOL. = $\pm 10 \%$	C-TOL. = $\pm 5 \%$	SPQ	C-TOL. = $\pm 10 \%$	C-TOL. = $\pm 5 \%$	SPQ
LAST 5 DIGITS OF CATALOG NUMBER	LAST 5 DIGITS OF CATALOG NUMBER	LAST 5 DIGITS OF CATALOG NUMBER	LAST 5 DIGITS OF CATALOG NUMBER						
250	<b>PITCH = 10.0 mm <math>\pm</math> 0.4 mm; <math>d_t = 0.60 \text{ mm} \pm 0.06 \text{ mm}</math>; <math>A \leq 3.5 \text{ mm}</math></b>								
	0.10	4.7 x 9.4 x 12.5	0.5	41104	42104	2000	43104	44104	1000
	0.12	4.3 x 9.1 x 12.5	0.4	41124	42124	2000	43124	44124	1250
	0.15	4.8 x 9.5 x 12.5	0.5	41154	42154	2000	43154	44154	1000
	0.18	5.2 x 9.9 x 12.5	0.6	41184	42184	2000	43184	44184	1000
	0.22	4.5 x 9.3 x 12.5	0.5	41224	42224	2000	43224	44224	1000
	0.27	5.0 x 9.7 x 12.5	0.5	41274	42274	2000	43274	44274	1000
	0.33	4.6 x 9.3 x 12.5	0.5	41334	42334	2000	43334	44334	1000
	0.39	4.9 x 9.6 x 12.5	0.5	41394	42394	2000	43394	44394	1000
	0.47	5.4 x 10.1 x 12.5	0.6	41474	42474	2000	43474	44474	900
	0.56	5.8 x 10.5 x 12.5	0.7	41564	42564	2000	43564	44564	900
	<b>PITCH = 15.0 mm <math>\pm</math> 0.4 mm; <math>d_t = 0.80 \text{ mm} \pm 0.08 \text{ mm}</math>; <math>A \leq 4.0 \text{ mm}</math></b>								
	<i>0.39</i>	<i>5.8 x 10.5 x 17.5</i>	0.9	45394	46394	1500	47394	48394	900
	<i>0.47</i>	<i>6.4 x 11.1 x 17.5</i>	1.1	45474	46474	1500	47474	48474	800
	0.56	5.5 x 10.2 x 17.5	0.9	45564	46564	2000	47564	48564	900
	0.68	6.0 x 10.7 x 17.5	1.0	41684	42684	1500	43684	44684	800
	0.82	5.4 x 10.2 x 17.5	0.8	41824	42824	2000	43824	44824	1000
	1.0	6.0 x 10.7 x 17.5	1.0	41105	42105	1500	43105	44105	800
	1.2	6.5 x 11.2 x 17.5	1.1	41125	42125	1500	43125	44125	750
	1.5	7.3 x 12.0 x 17.5	1.3	41155	42155	1250	43155	44155	650
	1.8	7.9 x 12.7 x 17.5	1.5	41185	42185	1250	43185	44185	600
	<b>PITCH = 22.5 mm <math>\pm</math> 0.4 mm; <math>d_t = 0.80 \text{ mm} \pm 0.08 \text{ mm}</math>; <math>A \leq 4.0 \text{ mm}</math></b>								
	1.8	8.7 x 16.5 x 26.0	3.3	45185	46185	800	47185	48185	500
	2.2	9.7 x 17.5 x 26.0	3.8	41225	42225	700	43225	44225	500
	2.7	8.3 x 16.1 x 26.0	3.0	41275	42275	900	43275	44275	600
	3.3	9.2 x 17.1 x 26.0	3.6	41335	42335	750	43335	44335	500
	3.9	8.2 x 16.0 x 26.0	3.0	41395	42395	900	43395	44395	600
	4.7	9.0 x 16.9 x 26.0	3.4	41475	42475	750	43475	44475	500
	5.6	9.9 x 17.7 x 26.0	4.0	41565	42565	600	43565	44565	500

**Notes**

- (1) Length of long leads:
  - a)  $l_t = 19.0 \text{ mm} \pm 4.0 \text{ mm}$  for pitch = 10 mm and 15.0 mm.
  - b)  $l_t = 25.0 \text{ mm} \pm 4.0 \text{ mm}$  for pitch = 22.5 mm.
- (2) Values in *Italic* indicate alternative dimensions.



<b>ELECTRICAL DATA AND ORDERING INFORMATION (<math>U_{RAC} = 100\text{ V}</math>)</b>									
$U_{RDC}$ (V)	CAP. <sup>(2)</sup> ( $\mu\text{F}$ )	DIMENSIONS $W_{max} \times H_{max} \times L_{max}$ (mm)	MASS (g)	CATALOG NUMBER 2222 303 ..... AND PACKAGING					
				LOOSE IN BOX					
				$l_t = 3.5\text{ mm} \pm 0.5\text{ mm}$			LONG LEADS <sup>(1)</sup>		
				C-TOL. = $\pm 10\%$	C-TOL. = $\pm 5\%$	SPQ	C-TOL. = $\pm 10\%$	C-TOL. = $\pm 5\%$	SPQ
LAST 5 DIGITS OF CATALOG NUMBER	LAST 5 DIGITS OF CATALOG NUMBER	LAST 5 DIGITS OF CATALOG NUMBER	LAST 5 DIGITS OF CATALOG NUMBER						
400	<b>PITCH = 10.0 mm <math>\pm</math> 0.4 mm; <math>d_t = 0.60\text{ mm} \pm 0.06\text{ mm}</math>; <math>A \leq 3.5\text{ mm}</math></b>								
	0.10	4.7 x 9.4 x 12.5	0.5	51104	52104	2000	53104	54104	1000
	0.12	4.3 x 9.1 x 12.5	0.4	51124	52124	2000	53124	54124	1250
	0.15	4.8 x 9.5 x 12.5	0.5	51154	52154	2000	53154	54154	1000
	0.18	5.2 x 9.9 x 12.5	0.6	51184	52184	2000	53184	54184	1000
	0.22	5.7 x 10.4 x 12.5	0.6	51224	52224	2000	53224	54224	900
	<b>PITCH = 15.0 mm <math>\pm</math> 0.4 mm; <math>d_t = 0.80\text{ mm} \pm 0.08\text{ mm}</math>; <math>A \leq 4.0\text{ mm}</math></b>								
	0.12	<i>5.7 x 10.4 x 17.5</i>	1.1	55124	56124	2000	57124	58124	900
	0.15	<i>5.4 x 10.1 x 17.5</i>	0.8	55154	56154	2000	57154	58154	1000
	0.18	<i>5.9 x 10.6 x 17.5</i>	1.0	55184	56184	1500	57184	58184	800
	0.22	<i>5.3 x 10.0 x 17.5</i>	0.8	55224	56224	2000	57224	58224	1000
	0.27	<i>5.8 x 10.5 x 17.5</i>	0.9	51274	52274	1500	53274	54274	900
	0.33	<i>5.4 x 10.1 x 17.5</i>	0.8	51334	52334	2000	53334	54334	1000
	0.39	<i>5.8 x 10.5 x 17.5</i>	0.9	51394	52394	1500	53394	54394	900
	0.47	<i>6.4 x 11.1 x 17.5</i>	1.1	51474	52474	1500	53474	54474	800
	0.56	<i>6.9 x 11.7 x 17.5</i>	1.2	51564	52564	1500	53564	54564	700
	0.68	<i>7.6 x 12.3 x 17.5</i>	1.4	51684	52684	1250	53684	54684	600
	0.82	<i>8.4 x 13.1 x 17.5</i>	1.7	51824	52824	1000	53824	54824	500
	<b>PITCH = 22.5 mm <math>\pm</math> 0.4 mm; <math>d_t = 0.80\text{ mm} \pm 0.08\text{ mm}</math>; <math>A \leq 4.0\text{ mm}</math></b>								
	0.56	<i>9.9 x 17.7 x 26.0</i>	4.0	55564	56564	600	57564	58564	500
	0.68	<i>7.9 x 15.8 x 26.0</i>	2.8	55684	56684	900	57684	58684	600
	0.82	<i>8.7 x 16.6 x 26.0</i>	3.3	55824	56824	800	57824	58824	500
	1.0	<i>7.7 x 15.5 x 26.0</i>	2.7	51105	52105	900	53105	54105	600
	1.2	<i>8.4 x 16.3 x 26.0</i>	3.1	51125	52125	800	53125	54125	600
	1.5	<i>7.9 x 15.8 x 26.0</i>	2.8	51155	52155	900	53155	54155	600
	1.8	<i>8.7 x 16.6 x 26.0</i>	3.3	51185	52185	800	53185	54185	500
	2.2	<i>9.7 x 17.5 x 26.0</i>	3.8	51225	52225	700	53225	54225	500

**Notes**

- (1) Length of long leads:
  - a)  $l_t = 19.0\text{ mm} \pm 4.0\text{ mm}$  for pitch = 10 mm and 15.0 mm.
  - b)  $l_t = 25.0\text{ mm} \pm 4.0\text{ mm}$  for pitch = 22.5 mm.
- (2) Values in *Italic* indicate alternative dimensions.



ELECTRICAL DATA AND ORDERING INFORMATION ( $U_{RAC} = 160 V$ )									
$U_{RDC}$ (V)	CAP. <sup>(2)</sup> ( $\mu F$ )	DIMENSIONS $W_{max} \times H_{max} \times L_{max}$ (mm)	MASS (g)	CATALOG NUMBER 2222 303 ..... AND PACKAGING					
				LOOSE IN BOX					
				$l_t = 3.5 mm \pm 0.5 mm$			LONG LEADS <sup>(1)</sup>		
				C-TOL. = $\pm 10\%$		C-TOL. = $\pm 5\%$	SPQ	C-TOL. = $\pm 10\%$	
LAST 5 DIGITS OF CATALOG NUMBER		LAST 5 DIGITS OF CATALOG NUMBER	LAST 5 DIGITS OF CATALOG NUMBER		LAST 5 DIGITS OF CATALOG NUMBER				
<b>PITCH = 10.0 mm <math>\pm</math> 0.4 mm; <math>d_t = 0.60 mm \pm 0.06 mm</math>; <math>A \leq 3.5 mm</math></b>									
630									
0.010		4.1 x 8.8 x 12.5	0.4	61103	62103	2000	63103	64103	1250
0.012		4.5 x 9.3 x 12.5	0.5	61123	62123	2000	63123	64123	1000
0.015		4.9 x 9.6 x 12.5	0.5	61153	62153	2000	63153	64153	1000
0.018		4.4 x 9.1 x 12.5	0.4	61183	62183	2000	63183	64183	1250
0.022		4.8 x 9.5 x 12.5	0.5	61223	62223	2000	63223	64223	1000
0.027		4.2 x 8.9 x 12.5	0.4	61273	62273	2000	63273	64273	1250
0.033		4.0 x 8.7 x 12.5	0.4	61333	62333	2000	63333	64333	1250
0.039		4.3 x 9.0 x 12.5	0.4	61393	62393	2000	63393	64393	1250
0.047		4.7 x 9.4 x 12.5	0.5	61473	62473	2000	63473	64473	1000
0.056		5.1 x 9.8 x 12.5	0.5	61563	62563	2000	63563	64563	1000
0.068		5.5 x 10.3 x 12.5	0.6	61683	62683	2000	63683	64683	900
<b>PITCH = 15.0 mm <math>\pm</math> 0.4 mm; <math>d_t = 0.80 mm \pm 0.08 mm</math>; <math>A \leq 4.0 mm</math></b>									
0.056		<i>5.9 x 10.6 x 17.5</i>	1.0	65563	66563	1500	67563	68563	800
0.068		<i>6.4 x 11.1 x 17.5</i>	1.1	65683	66683	1500	67683	68683	800
0.082		<i>5.4 x 10.1 x 17.5</i>	0.8	61823	62823	2000	63823	64823	1000
0.10		5.2 x 9.9 x 17.5	0.8	61104	62104	2000	63104	64104	1000
0.12		5.7 x 10.4 x 17.5	0.9	61124	62124	2000	63124	64124	900
0.15		6.3 x 11.0 x 17.5	1.1	61154	62154	1500	63154	64154	800
0.18		6.9 x 11.6 x 17.5	1.2	61184	62184	1500	63184	64184	700
0.22		7.6 x 12.3 x 17.5	1.4	61224	62224	1250	63224	64224	600
0.27		8.4 x 13.1 x 17.5	1.7	61274	62274	1000	63274	64274	500
<b>PITCH = 22.5 mm <math>\pm</math> 0.4 mm; <math>d_t = 0.80 mm \pm 0.08 mm</math>; <math>A \leq 4.0 mm</math></b>									
0.27		8.9 x 16.8 x 26.0	3.4	65274	66274	800	67274	68274	500
0.33		9.9 x 17.8 x 26.0	4.0	61334	62334	600	63334	64334	500
0.39		8.1 x 16.0 x 26.0	2.9	61394	62394	900	63394	64394	600
0.47		7.7 x 15.6 x 26.0	2.7	61474	62474	900	63474	64474	600
0.56		8.4 x 16.3 x 26.0	3.1	61564	62564	800	63564	64564	600
0.68		9.4 x 17.2 x 26.0	3.7	61684	62684	700	63684	64684	500

Notes

- (1) Length of long leads:
  - a)  $l_t = 19.0 mm \pm 4.0 mm$  for pitch = 10 mm and 15.0 mm.
  - b)  $l_t = 25.0 mm \pm 4.0 mm$  for pitch = 22.5 mm.
- (2) Values in *italic* indicate alternative dimensions.

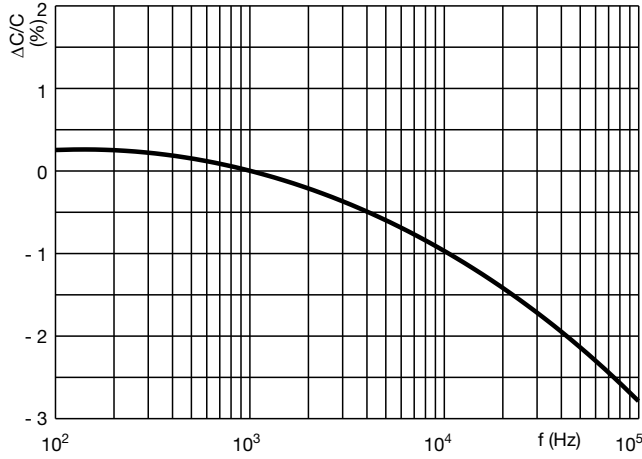


MAXIMUM RMS VOLTAGE (SINEWAVE) AS A FUNCTION OF FREQUENCY





**CAPACITANCE**



**IMPEDANCE**





## Disclaimer

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## Material Category Policy

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.**

**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.**





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Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.