

# AC Filtering Metalized Polypropylene Film Capacitor Radial Type



## FEATURES

- Robustness under high humidity
- THB 40 °C, 93 % RH, 56 days at  $U_{NAC}$
- High peak current capabilities
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS  
COMPLIANT**

## APPLICATIONS

- AC filtering, UPS systems
- Renewable energy - grid interface
- Harmonic filter
- Welding equipment

QUICK REFERENCE DATA	
Rated capacitance range	1 $\mu$ F to 70 $\mu$ F
Capacitance tolerance	$\pm$ 10 %, other tolerances available on request
Maximum continuous AC voltage (50 Hz / 60 Hz) range, $U_{NAC}$	230 V <sub>AC</sub> , 250 V <sub>AC</sub> , 275 V <sub>AC</sub> , 310 V <sub>AC</sub> , 350 V <sub>AC</sub>
Climatic testing class	40 / 85 / 56
Maximum application temperature	105 °C
Maximum permissible case temperature	105 °C
Reference standards	IEC 61071, IEC 60068
Dielectric	Polypropylene film
Electrodes	Metallized dielectric film
Construction	Mono construction
Encapsulation	Plastic case sealed with resin; flame retardant
Terminals	Tinned wire
Self inductance ( $L_S$ )	< 1 nH per mm of lead spacing
Withstanding DC voltage between terminals <sup>(1)</sup>	1.5 $U_{NDC}$ for 10 s, cut off current 10 mA, rise time $\leq$ 1000 V/s
Insulation resistance	RC between leads, after 1 min > 10 000 s, measuring voltage: 500 V
Lifetime expectancy <sup>(2)</sup>	RT: < 10 x 10 <sup>9</sup> /h (10 per 10 <sup>9</sup> component hours) at 0.5 x $U_{NAC}$ , 40 °C
Marking	Manufacturer's name, C-value, tolerance, rated voltage, manufacturer's type designation, code for dielectric material, manufacturer location, year and week

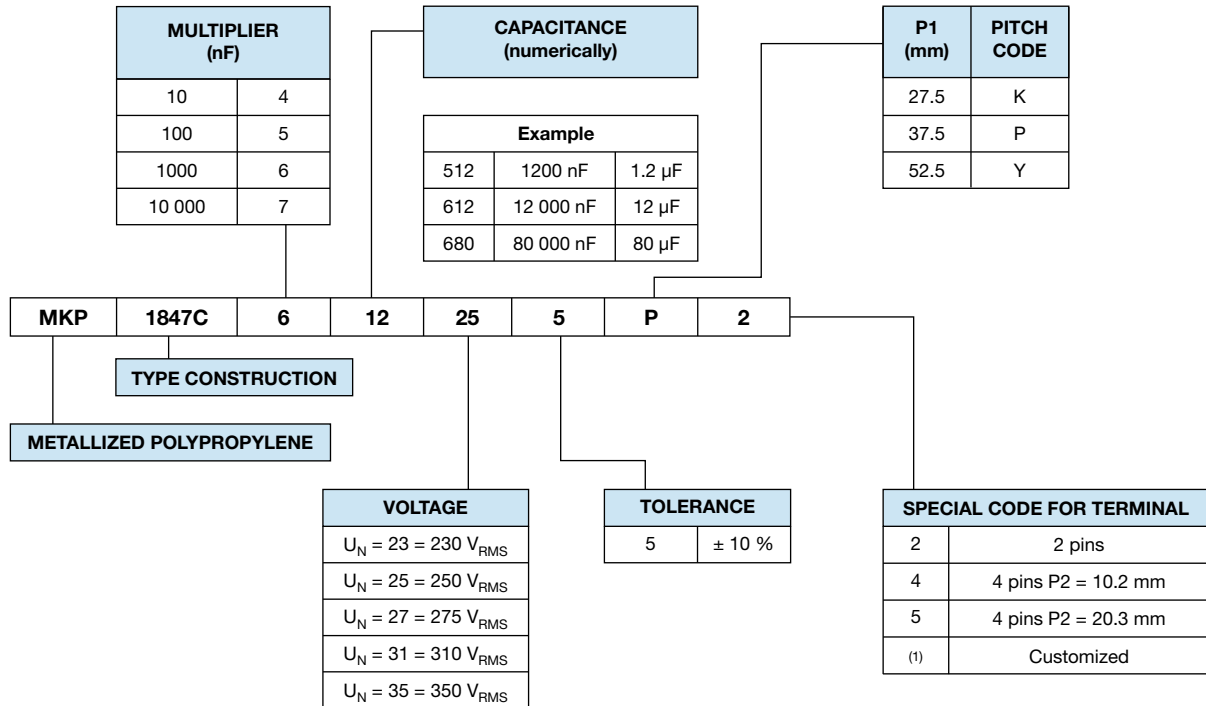
### Notes

- For more detailed data and test requirements, contact [dc-film@vishay.com](mailto:dc-film@vishay.com)
- For general information like characteristics and definitions used for film capacitors follow the link: [www.vishay.com/doc?28147](http://www.vishay.com/doc?28147)
- <sup>(1)</sup> See document "Voltage Proof Test for Metalized Capacitors" ([www.vishay.com/doc?28169](http://www.vishay.com/doc?28169))
- <sup>(2)</sup> Statements about life time are based on calculations which are based on internal tests. They have to be understood exclusively as estimations. Also due to external factors, the life time in the field application may deviate from the calculated life time. See APPLICATION NOTES AND LIMITING CONDITIONS on page 12 for intended continuous mains voltage.

## MAXIMUM AC VOLTAGE RATINGS ( $V_{RMS}$ )

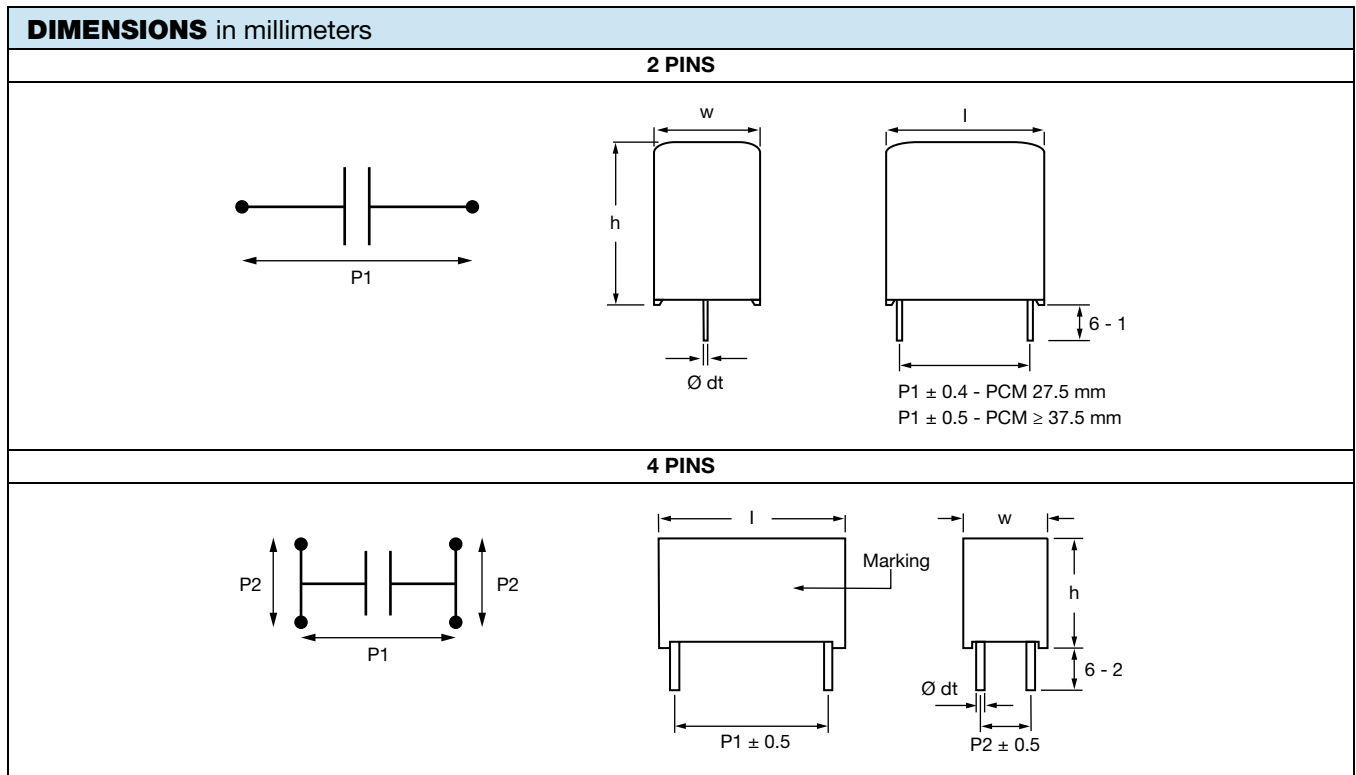
$U_{NAC}$	230 V	250 V	275 V	310 V	350 V
$U_{OPAC}$ at 85 °C	230 V	250 V	275 V	310 V	350 V
$U_{OPAC}$ at 105 °C	160 V	175 V	190 V	210 V	240 V

## COMPOSITION OF CATALOG NUMBER



### Note

(1) Tabs terminals or customized terminals are available on request



### Note

- $\varnothing dt \pm 10 \%$  of standard diameter specified



ELECTRICAL DATA AND ORDERING CODE															
U <sub>NAC</sub> (V)	CAP. (1) (μF)	DIMENSION (2) (mm)			P1 (mm)	P2 (mm)	(dV/dt) (3) (V/μs)	I <sub>PEAK</sub> (A)	I <sub>RMS</sub> (4) (A)		tan δ 1 kHz (< 10 <sup>-4</sup> ) (5)		tan δ 10 kHz (< 10 <sup>-4</sup> ) (5)		ORDERING CODE (6)
		w	h	l					2 PINS	4 PINS	2 PINS	4 PINS	2 PINS	4 PINS	
<b>U<sub>OPAC</sub> AT 85 °C = 230 V<sub>RMS</sub>, U<sub>OPAC</sub> AT 105 °C = 160 V<sub>RMS</sub>, C-TOL. = ± 10 % (U<sub>NDC</sub> = 450 V)</b>															
230	2	11.0	21.0	32.0	27.5	-	45	90	3.5	-	7	-	30	-	MKP1847C 520 235K2
	3	13.0	23.0	32.0	27.5	-	45	135	5.0	-	7	-	30	-	MKP1847C 530 235K2
	4	15.0	25.0	32.0	27.5	-	45	180	6.0	-	7	-	30	-	MKP1847C 540 235K2
	5	18.0	28.0	32.0	27.5	-	45	225	7.5	-	7	-	30	-	MKP1847C 550 235K2
	6	18.0	28.0	32.0	27.5	-	45	270	8.0	-	7	-	30	-	MKP1847C 560 235K2
	7	18.0	28.0	32.0	27.5	-	45	315	8.5	-	7	-	30	-	MKP1847C 570 235K2
	8	21.0	31.0	32.0	27.5	-	45	360	10.0	-	7	-	30	-	MKP1847C 580 235K2
	9	21.0	31.0	32.0	27.5	-	45	405	10.5	-	7	-	30	-	MKP1847C 590 235K2
	10	20.0	35.0	32.0	27.5	-	45	450	11.5	-	7	-	30	-	MKP1847C 610 235K2
	10	18.5	35.5	43.0	37.5	-	20	200	7.5	-	10	-	75	-	MKP1847C 610 235P2
	12	18.5	35.5	43.0	37.5	-	20	240	8.5	-	10	-	75	-	MKP1847C 612 235P2
	15	21.5	38.5	43.0	37.5	10.2	20	300	10.0	12.0	10	8	75	70	MKP1847C 615 235 P*
	20	24.0	44.0	42.0	37.5	10.2	20	400	12.5	14.5	10	8	75	70	MKP1847C 620 235P*
	22	24.0	44.0	42.0	37.5	10.2	20	440	13.0	15.5	10	8	75	70	MKP1847C 622 235P*
	25	30.0	45.0	42.0	37.5	10.2 / 20.3	20	500	15.0	17.5	10	8	75	70	MKP1847C 625 235P*
	30	30.0	45.0	42.0	37.5	10.2 / 20.3	20	600	16.5	19.0	10	8	75	70	MKP1847C 625 235P*
	30	25.0	45.0	57.5	52.5	10.2	10	300	12.5	15.0	20	17	150	135	MKP1847C 630 235Y*
	35	25.0	45.0	57.5	52.5	10.2	10	350	13.5	16.0	20	17	150	135	MKP1847C 635 235Y*
	40	30.0	45.0	57.5	52.5	20.3	10	400	15.5	18.0	20	17	150	135	MKP1847C 640 235Y*
	45	30.0	45.0	57.5	52.5	20.3	10	450	16.5	19.0	20	17	150	135	MKP1847C 645 235Y*
50	35.0	50.0	57.5	52.5	20.3	10	500	18.5	21.5	20	17	150	135	MKP1847C 650 235Y*	
55	35.0	50.0	57.5	52.5	20.3	10	550	19.5	22.5	20	17	150	135	MKP1847C 655 235Y*	
60	35.0	50.0	57.5	52.5	20.3	10	600	20.5	23.5	20	17	150	135	MKP1847C 660 235Y*	
65	45.0	45.0	57.5	52.5	20.3	10	650	-	25.5	-	17	-	135	MKP1847C 665 235Y5	
70	45.0	45.0	57.5	52.5	20.3	10	700	-	26.0	-	17	-	135	MKP1847C 670 235Y5	
<b>U<sub>OPAC</sub> AT 85 °C = 250 V<sub>RMS</sub>, U<sub>OPAC</sub> AT 105 °C = 175 V<sub>RMS</sub>, C-TOL. = ± 10 % (U<sub>NDC</sub> = 500 V)</b>															
250	2	11.0	21.0	32.0	27.5	-	50	100	4.0	-	7	-	25	-	MKP1847C 520 255K2
	3	13.0	23.0	32.0	27.5	-	50	150	5.0	-	7	-	25	-	MKP1847C 530 255K2
	4	15.0	25.0	32.0	27.5	-	50	200	6.0	-	7	-	25	-	MKP1847C 540 255K2
	5	18.0	28.0	32.0	27.5	-	50	250	7.0	-	7	-	25	-	MKP1847C 550 255K2
	6	18.0	28.0	32.0	27.5	-	50	300	7.5	-	7	-	25	-	MKP1847C 560 255K2
	7	21.0	31.0	32.0	27.5	-	50	350	8.0	-	7	-	25	-	MKP1847C 570 255K2
	8	21.0	31.0	32.0	27.5	-	50	400	9.0	-	7	-	25	-	MKP1847C 580 255K2
	9	20.0	35.0	32.0	27.5	-	50	450	11.0	-	7	-	25	-	MKP1847C 590 255K2
	5	18.5	35.5	43.0	37.5	-	25	125	7.0	-	10	-	70	-	MKP1847C 550 255P2
	6	18.5	35.5	43.0	37.5	-	25	150	7.0	-	10	-	70	-	MKP1847C 560 255P2
	7	18.5	35.5	43.0	37.5	-	25	175	7.0	-	10	-	70	-	MKP1847C 570 255P2
	8	18.5	35.5	43.0	37.5	-	25	200	8.0	-	10	-	70	-	MKP1847C 580 255P2
	9	18.5	35.5	43.0	37.5	-	25	225	8.0	-	10	-	70	-	MKP1847C 590 255P2
	10	18.5	35.5	43.0	37.5	-	25	250	9.0	-	10	-	70	-	MKP1847C 610 255P2
	12	18.5	35.5	43.0	37.5	-	25	300	10.0	-	10	-	70	-	MKP1847C 612 255P2
	15	21.5	38.5	43.0	37.5	10.2	25	375	11.0	12.0	10	8	70	65	MKP1847C 615 255P*
	20	30.0	45.0	42.0	37.5	10.2 / 20.3	25	500	14.0	15.0	10	8	70	65	MKP1847C 620 255P*
	22	30.0	45.0	42.0	37.5	10.2 / 20.3	25	550	15.0	16.0	10	8	70	65	MKP1847C 622 255P*
	25	30.0	45.0	42.0	37.5	10.2 / 20.3	25	625	16.0	17.0	10	8	70	65	MKP1847C 625 255P*
	15	25.0	45.0	57.5	52.5	10.2	12	180	12.0	13.0	16	14	135	125	MKP1847C 615 255Y*
20	25.0	45.0	57.5	52.5	10.2	12	240	12.0	13.0	16	14	135	125	MKP1847C 620 255Y*	
22	25.0	45.0	57.5	52.5	10.2	12	264	12.0	13.0	16	14	135	125	MKP1847C 622 255Y*	
25	25.0	45.0	57.5	52.5	10.2	12	300	13.0	14.0	16	14	135	125	MKP1847C 625 255Y*	
30	30.0	45.0	57.5	52.5	20.3	12	360	15.0	16.0	16	14	135	125	MKP1847C 630 255Y*	
35	30.0	45.0	57.5	52.5	20.3	12	420	16.0	17.0	16	14	135	125	MKP1847C 635 255Y*	
40	35.0	50.0	57.5	52.5	20.3	12	480	19.0	20.0	16	14	135	125	MKP1847C 640 255Y*	
45	35.0	50.0	57.5	52.5	20.3	12	540	20.0	21.0	16	14	135	125	MKP1847C 645 255Y*	
50	35.0	50.0	57.5	52.5	20.3	12	600	21.0	22.0	16	14	135	125	MKP1847C 650 255Y*	
55	45.0	45.0	57.5	52.5	20.3	12	660	-	24.0	-	14	-	125	MKP1847C 655 255Y5	
60	45.0	45.0	57.5	52.5	20.3	12	720	-	25.0	-	14	-	125	MKP1847C 660 255Y5	



ELECTRICAL DATA AND ORDERING CODE															
U <sub>NAC</sub> (V)	CAP. (1) (μF)	DIMENSION (2) (mm)			P1 (mm)	P2 (mm)	(dV/dt) (3) (V/μs)	I <sub>PEAK</sub> (A)	I <sub>RMS</sub> (4) (A)		tan δ 1 kHz (< 10 <sup>-4</sup> ) (5)		tan δ 10 kHz (< 10 <sup>-4</sup> ) (5)		ORDERING CODE (6)
		w	h	l					2 PINS	4 PINS	2 PINS	4 PINS	2 PINS	4 PINS	
		U <sub>OPAC</sub> AT 85 °C = 275 V <sub>RMS</sub> , U <sub>OPAC</sub> AT 105 °C = 190 V <sub>RMS</sub> , C-TOL. = ± 10 % (U <sub>NDC</sub> = 600 V)													
275	2	13.0	23.0	32.0	27.5	-	55	110	4.5	-	5	-	25	-	MKP1847C 520 275K2
	3	15.0	25.0	32.0	27.5	-	55	165	5.5	-	5	-	25	-	MKP1847C 530 275K2
	4	18.0	28.0	32.0	27.5	-	55	220	7.0	-	5	-	25	-	MKP1847C 540 275K2
	5	21.0	31.0	32.0	27.5	-	55	275	8.0	-	5	-	25	-	MKP1847C 550 275K2
	6	21.0	31.0	32.0	27.5	-	55	330	9.0	-	5	-	25	-	MKP1847C 560 275K2
	7	20.0	35.0	32.0	27.5	-	55	385	10.0	-	5	-	25	-	MKP1847C 570 275K2
	5	18.5	35.5	43.0	37.5	-	30	150	7.0	-	8	-	65	-	MKP1847C 550 275P2
	6	18.5	35.5	43.0	37.5	-	30	180	7.0	-	8	-	65	-	MKP1847C 560 275P2
	7	18.5	35.5	43.0	37.5	-	30	210	8.0	-	8	-	65	-	MKP1847C 570 275P2
	8	18.5	35.5	43.0	37.5	-	30	240	8.0	-	8	-	65	-	MKP1847C 580 275P2
	9	18.5	35.5	43.0	37.5	-	30	270	9.0	-	8	-	65	-	MKP1847C 590 275P2
	10	21.5	38.5	43.0	37.5	10.2	30	300	10.0	11.0	8	7	65	55	MKP1847C 610 275P*
	12	21.5	38.5	43.0	37.5	10.2	30	360	11.0	12.0	8	7	65	55	MKP1847C 612 275P*
	15	24.0	44.0	42.0	37.5	10.2	30	450	13.0	14.0	8	7	65	55	MKP1847C 615 275P*
	20	30.0	45.0	42.0	37.5	10.2 / 20.3	30	600	16.0	17.0	8	7	65	55	MKP1847C 620 275P*
	15	25.0	45.0	57.5	52.5	10.2	13	195	11.0	12.0	15	12	125	105	MKP1847C 615 275Y*
	20	25.0	45.0	57.5	52.5	10.2	13	260	12.0	13.0	15	12	125	105	MKP1847C 620 275Y*
	22	25.0	45.0	57.5	52.5	10.2	13	286	13.0	14.0	15	12	125	105	MKP1847C 622 275Y*
	25	30.0	45.0	57.5	52.5	20.3	13	325	15.0	16.0	15	12	125	105	MKP1847C 625 275Y*
	30	30.0	45.0	57.5	52.5	20.3	13	390	16.0	17.0	15	12	125	105	MKP1847C 630 275Y*
35	35.0	50.0	57.5	52.5	20.3	13	455	19.0	20.0	15	12	125	105	MKP1847C 635 275Y*	
40	35.0	50.0	57.5	52.5	20.3	13	520	20.0	21.0	15	12	125	105	MKP1847C 640 275Y*	
45	45.0	45.0	57.5	52.5	20.3	13	585	-	23.0	-	12	-	105	MKP1847C 645 275Y5	
50	45.0	45.0	57.5	52.5	20.3	13	650	-	24.0	-	12	-	105	MKP1847C 650 275Y5	
310	U <sub>OPAC</sub> AT 85 °C = 310 V <sub>RMS</sub> , U <sub>OPAC</sub> AT 105 °C = 210 V <sub>RMS</sub> , C-TOL. = ± 10 % (U <sub>NDC</sub> = 630 V)														
	1	11.0	21.0	32.0	27.5	-	68	68	3	-	5	-	20	-	MKP1847C 510 315 K2
	2	15.0	25.0	32.0	27.5	-	68	136	5	-	5	-	20	-	MKP1847C 520 315 K2
	3	18.0	28.0	32.0	27.5	-	68	204	7	-	5	-	20	-	MKP1847C 530 315 K2
	4	21.0	31.0	32.0	27.5	-	68	272	8	-	5	-	20	-	MKP1847C 540 315 K2
	5	21.0	31.0	32.0	27.5	-	68	340	9	-	5	-	20	-	MKP1847C 550 315 K2
	5	18.5	35.5	43.0	37.5	-	35	175	7	-	7	-	55	-	MKP1847C 550 315 P2
	6	18.5	35.5	43.0	37.5	-	35	210	8	-	7	-	55	-	MKP1847C 560 315 P2
	7	18.5	35.5	43.0	37.5	-	35	245	9	-	7	-	55	-	MKP1847C 570 315 P2
	8	21.5	38.5	43.0	37.5	10.2	35	280	10	11	7	6	55	50	MKP1847C 580 315 P*
	9	21.5	38.5	43.0	37.5	10.2	35	315	10	11	7	6	55	50	MKP1847C 590 315 P*
	10	21.5	38.5	43.0	37.5	10.2	35	350	11	12	7	6	55	50	MKP1847C 610 315 P*
	12	24.0	44.0	42.0	37.5	10.2	35	420	12	13	7	6	55	50	MKP1847C 612 315 P*
	15	30.0	45.0	42.0	37.5	10.2 / 20.3	35	525	15	16	7	6	55	50	MKP1847C 615 315 P*
	10	25.0	45.0	57.5	52.5	10.2	15	150	10	11	12	10	105	90	MKP1847C 610 315 Y*
	12	25.0	45.0	57.5	52.5	10.2	15	180	10	11	12	10	105	90	MKP1847C 612 315 Y*
	15	25.0	45.0	57.5	52.5	10.2	15	225	12	13	12	10	105	90	MKP1847C 615 315 Y*
	20	30.0	45.0	57.5	52.5	20.3	15	300	14	15	12	10	105	90	MKP1847C 620 315 Y*
	22	35.0	50.0	57.5	52.5	20.3	15	330	16	17	12	10	105	90	MKP1847C 622 315 Y*
	25	35.0	50.0	57.5	52.5	20.3	15	375	17	18	12	10	105	90	MKP1847C 625 315 Y*
30	45.0	45.0	57.5	52.5	20.3	15	450	-	21	-	10	-	90	MKP1847C 630 315 Y5	
35	45.0	45.0	57.5	52.5	20.3	15	525	-	22	-	10	-	90	MKP1847C 635 315 Y5	



ELECTRICAL DATA AND ORDERING CODE															
U <sub>NAC</sub> (V)	CAP. (1) (μF)	DIMENSION (2) (mm)			P1 (mm)	P2 (mm)	(dV/dt) (3) (V/μs)	I <sub>PEAK</sub> (A)	I <sub>RMS</sub> (4) (A)		tan δ 1 kHz (< 10 <sup>-4</sup> ) (5)		tan δ 10 kHz (< 10 <sup>-4</sup> ) (5)		ORDERING CODE (6)
		w	h	l					2 PINS	4 PINS	2 PINS	4 PINS	2 PINS	4 PINS	
U <sub>OPAC</sub> AT 85 °C = 350 V <sub>RMS</sub> , U <sub>OPAC</sub> AT 105 °C = 240 V <sub>RMS</sub> , C-TOL. = ± 10 % (U <sub>NDC</sub> = 700 V)															
350	1	11.0	21.0	32.0	27.5	-	100	100	3	-	7	-	20	-	MKP1847C 510 355 K2
	2	15.0	25.0	32.0	27.5	-	100	200	5	-	7	-	20	-	MKP1847C 520 355 K2
	3	18.0	28.0	32.0	27.5	-	100	300	7	-	7	-	20	-	MKP1847C 530 355 K2
	4	21.0	31.0	32.0	27.5	-	100	400	9	-	7	-	20	-	MKP1847C 540 355 K2
	5	18.5	35.5	43.0	37.5	-	50	250	7	-	7	-	50	-	MKP1847C 550 355 P2
	6	18.5	35.5	43.0	37.5	-	50	300	8	-	7	-	50	-	MKP1847C 560 355 P2
	7	21.5	38.5	43.0	37.5	10.2	50	350	9	10	7	6	50	45	MKP1847C 570 355 P*
	8	21.5	38.5	43.0	37.5	10.2	50	400	10	11	7	6	50	45	MKP1847C 580 355 P*
	9	24.0	44.0	42.0	37.5	10.2	50	450	11	12	7	6	50	45	MKP1847C 590 355 P*
	10	24.0	44.0	42.0	37.5	10.2	50	500	12	13	7	6	50	45	MKP1847C 610 355 P*
	12	30.0	45.0	42.0	37.5	10.2 / 20.3	50	600	14	15	7	6	50	45	MKP1847C 612 355 P*
	10	25.0	45.0	57.5	52.5	10.2	25	250	10	11	12	10	100	85	MKP1847C 610 355 Y*
	12	25.0	45.0	57.5	52.5	10.2	25	300	11	12	12	10	100	85	MKP1847C 612 355 Y*
	15	25.0	45.0	57.5	52.5	10.2	25	375	12	13	12	10	100	85	MKP1847C 615 355 Y*
	20	30.0	45.0	57.5	52.5	20.3	25	500	15	16	12	10	100	85	MKP1847C 620 355 Y*
	22	35.0	50.0	57.5	52.5	20.3	25	550	17	18	12	10	100	85	MKP1847C 622 355 Y*
	25	35.0	50.0	57.5	52.5	20.3	25	625	18	19	12	10	100	85	MKP1847C 625 355 Y*
30	45.0	45.0	57.5	52.5	20.3	25	750	-	22	-	10	-	85	MKP1847C 630 355 Y5	

Notes

- (1) Intermediate capacitance values available on request
- (2) Standard dimension. For tolerances see chapter "Space Requirements for Printed-Circuit Board Applications and Dimension Tolerances"
- (3) Rated voltage pulse slope (dU/dt)<sub>R</sub> at voltage U<sub>NDC</sub>
- (4) Maximum RMS current at 10 kHz, +85 °C, capacitance tolerance specified
- (5) Equivalent series resistance typical values at f = 10 kHz
- (6) Change the "\*" symbol with special code for the terminals

PACKAGING INFORMATION					
U <sub>NAC</sub> (V)	CAP. (1) (μF)	Ø dt (mm)	ORDERING CODE (2)	MASS (g)	SPQ (3) (pcs)
230	2	0.8	MKP1847C520235K2	9	130
	3	0.8	MKP1847C530235K2	10	115
	4	0.8	MKP1847C540235K2	12	100
	5	0.8	MKP1847C550235K2	17	80
	6	0.8	MKP1847C560235K2	15	80
	7	0.8	MKP1847C570235K2	16	80
	8	0.8	MKP1847C580235K2	23	65
	9	0.8	MKP1847C590235K2	22	65
	10	0.8	MKP1847C610235K2	22	70
	10	1.0	MKP1847C610235P2	33	105
	12	1.0	MKP1847C612235P2	31	105
	15	1.0	MKP1847C615235P*	39	91
	20	1.0	MKP1847C620235P*	50	77
	22	1.0	MKP1847C622235P*	49	77
	25	1.0	MKP1847C625235P*	66	63
	30	1.0	MKP1847C630235P*	60	63
	30	1.2	MKP1847C630235Y*	73	55
	35	1.2	MKP1847C635235Y*	70	55
	40	1.2	MKP1847C640235Y*	97	45
	45	1.2	MKP1847C645235Y*	93	45
50	1.2	MKP1847C650235Y*	115	40	
55	1.2	MKP1847C655235Y*	110	40	
60	1.2	MKP1847C660235Y*	105	40	
65	1.2	MKP1847C665235Y5	130	30	
70	1.2	MKP1847C670235Y5	126	30	



PACKAGING INFORMATION					
U <sub>NAC</sub> (V)	CAP. <sup>(1)</sup> (μF)	Ø dt (mm)	ORDERING CODE <sup>(2)</sup>	MASS (g)	SPQ <sup>(3)</sup> (pcs)
250	2	0.8	MKP1847C520255K2	9	130
	3	0.8	MKP1847C530255K2	10	115
	4	0.8	MKP1847C540255K2	12	100
	5	0.8	MKP1847C550255K2	17	80
	6	0.8	MKP1847C560255K2	15	80
	7	0.8	MKP1847C570255K2	22	65
	8	0.8	MKP1847C580255K2	21	65
	9	0.8	MKP1847C590255K2	21	70
	5	1.0	MKP1847C550255P2	36	105
	6	1.0	MKP1847C560255P2	35	105
	7	1.0	MKP1847C570255P2	34	105
	8	1.0	MKP1847C580255P2	33	105
	9	1.0	MKP1847C590255P2	32	105
	10	1.0	MKP1847C610255P2	31	105
	12	1.0	MKP1847C612255P2	28	105
	15	1.0	MKP1847C615255P*	35	91
	20	1.0	MKP1847C620255P*	65	63
	22	1.0	MKP1847C622255P*	62	63
	23	1.0	MKP1847C625255P*	59	63
	15	1.2	MKP1847C615255Y*	84	55
	20	1.2	MKP1847C620255Y*	78	55
	22	1.2	MKP1847C622255Y*	76	55
	23	1.2	MKP1847C625255Y*	73	55
	30	1.2	MKP1847C630255Y*	100	45
	35	1.2	MKP1847C635255Y*	93	45
	40	1.2	MKP1847C640255Y*	114	40
45	1.2	MKP1847C645255Y*	108	40	
50	1.2	MKP1847C650255Y*	102	40	
55	1.2	MKP1847C655255Y5	126	30	
60	1.2	MKP1847C660255Y5	121	30	
275	2	0.8	MKP1847C520275K2	11	115
	3	0.8	MKP1847C530275K2	12	100
	4	0.8	MKP1847C540275K2	17	80
	5	0.8	MKP1847C550275K2	23	65
	6	0.8	MKP1847C560275K2	21	65
	7	0.8	MKP1847C570275K2	21	70
	5	1.0	MKP1847C550275P2	35	105
	6	1.0	MKP1847C560275P2	33	105
	7	1.0	MKP1847C570275P2	32	105
	8	1.0	MKP1847C580275P2	31	105
	9	1.0	MKP1847C590275P2	29	105
	10	1.0	MKP1847C610275P*	39	91
	12	1.0	MKP1847C612275P*	36	91
	15	1.0	MKP1847C615275P*	47	77
	20	1.0	MKP1847C620275P*	59	63
	15	1.2	MKP1847C615275Y*	80	55
	20	1.2	MKP1847C620275Y*	73	55
	22	1.2	MKP1847C622275Y*	71	55
	25	1.2	MKP1847C625275Y*	99	45
	30	1.2	MKP1847C630275Y*	92	45
35	1.2	MKP1847C635275Y*	112	40	
40	1.2	MKP1847C640275Y*	103	40	
45	1.2	MKP1847C645275Y5	126	30	
50	1.2	MKP1847C650275Y5	116	30	



PACKAGING INFORMATION					
U <sub>NAC</sub> (V)	CAP. <sup>(1)</sup> (μF)	Ø dt (mm)	ORDERING CODE <sup>(2)</sup>	MASS (g)	SPQ <sup>(3)</sup> (pcs)
310	1	0.8	MKP1847C510315K2	9	130
	2	0.8	MKP1847C520315K2	13	100
	3	0.8	MKP1847C530315K2	17	80
	4	0.8	MKP1847C540315K2	23	65
	5	0.8	MKP1847C550315K2	21	65
	5	1.0	MKP1847C550315P2	33	105
	6	1.0	MKP1847C560315P2	31	105
	7	1.0	MKP1847C570315P2	30	105
	8	1.0	MKP1847C580315P*	39	91
	9	1.0	MKP1847C590315P*	37	91
	10	1.0	MKP1847C610315P*	35	91
	12	1.0	MKP1847C612315P*	48	77
	15	1.0	MKP1847C615315P*	61	63
	10	1.2	MKP1847C610315Y*	84	55
	12	1.2	MKP1847C612315Y*	80	55
	15	1.2	MKP1847C615315Y*	75	55
	20	1.2	MKP1847C620315Y*	98	45
	22	1.2	MKP1847C622315Y*	122	40
23	1.2	MKP1847C623315Y*	116	40	
30	1.2	MKP1847C630315Y5	135	30	
35	1.2	MKP1847C635315Y5	128	30	
350	1	0.8	MKP1847C510355K2	9	130
	2	0.8	MKP1847C520355K2	12	100
	3	0.8	MKP1847C530355K2	16	80
	4	0.8	MKP1847C540355K2	22	65
	5	1.0	MKP1847C550355P2	32	105
	6	1.0	MKP1847C560355P2	29	105
	7	1.0	MKP1847C570355P*	38	91
	8	1.0	MKP1847C580355P*	36	91
	9	1.0	MKP1847C590355P*	49	77
	10	1.0	MKP1847C610355P*	47	77
	12	1.0	MKP1847C612355P*	63	63
	10	1.2	MKP1847C610355Y*	80	55
	12	1.2	MKP1847C612355Y*	76	55
	15	1.2	MKP1847C615355Y*	71	55
	20	1.2	MKP1847C620355Y*	93	45
	22	1.2	MKP1847C622355Y*	115	40
23	1.2	MKP1847C623355Y*	107	40	
30	1.2	MKP1847C630355Y5	126	30	

**Notes**

- (1) Intermediate capacitance values available on request
- (2) Change the "\*" symbol with special code for the terminals
- (3) SPQ = Standard Packing Quantity

## CONSTRUCTION

Low inductive wound cell elements of metallized polypropylene film, potted with resin in a flame retardant case.

## SPECIFIC METHOD OF MOUNTING TO WITHSTAND VIBRATION AND SHOCK

The capacitor unit is designed for mounting on a printed circuit board.

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

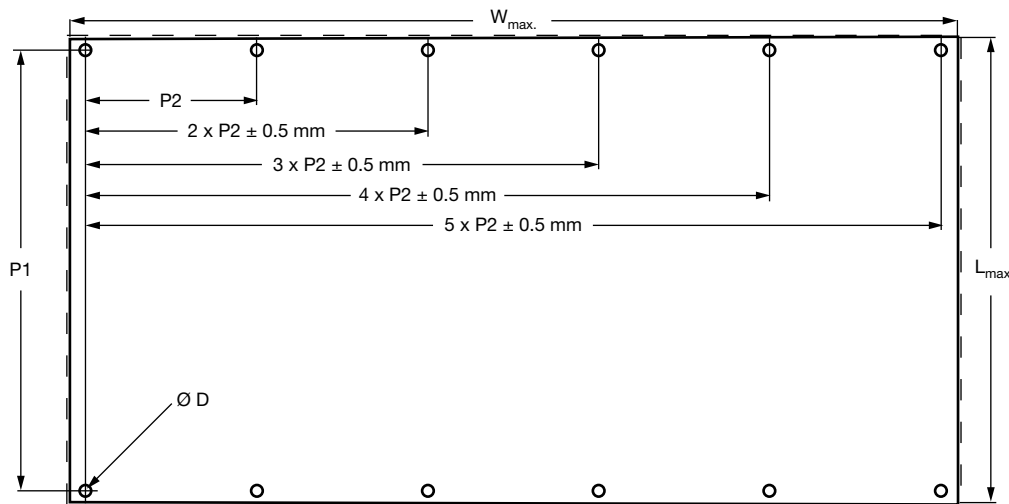
The capacitors shall be mechanically fixed by the leads and the body clamped.

## SPACE REQUIREMENTS ON PRINTED-CIRCUIT BOARD AND DIMENSIONS TOLERANCES

For the maximum product dimensions and maximum space requirements for length ( $l_{max.}$ ), width ( $w_{max.}$ ) following tolerances must be taken in account in the envelopment of the components as shown in the drawings below:

$$L_{max.} = l + \Delta l$$

$$W_{max.} = w + \Delta w$$



P1 (mm)	$L_{max.}$ (mm)	$W_{max.}$ (mm)	Ø D (mm)	Δh (mm)
27.5	$l + 2$	$w + 1.6$	1.2	0.2
37.5	$l + 3$	$w + 2.0$	1.5	0.5
52.5	$l + 4$	$w + 2.4$	1.7	0.5

For the maximum height  $h_{max.}$ , a  $\Delta h$  of 0.5 mm must be taken in account on the height dimension  $h$ .

For the minimum product dimensions for length ( $l_{min.}$ ), width ( $w_{min.}$ ), and height ( $h_{min.}$ ) following tolerances of the components are valid:

$$l_{min.} = l - \Delta l, w_{min.} = w - \Delta w \text{ and } h_{min.} = h - \Delta h$$

For products with pitch = 27.5 mm,  $\Delta l = 1.5$  mm, and  $\Delta w = \Delta h = 0.5$  mm

For products with pitch = 37.5 mm,  $\Delta l = 1.5$  mm, and  $\Delta w = \Delta h = 1.0$  mm

For products with pitch = 52.5 mm,  $\Delta l = 1.5$  mm, and  $\Delta w = \Delta h = 1.0$  mm

## SOLDERING CONDITIONS

For general soldering conditions and wave soldering profile we refer to the document "Characteristics and Definitions Used for Film Capacitors": [www.vishay.com/doc?26033](http://www.vishay.com/doc?26033).

## STORAGE TEMPERATURE

$T_{stg} = -23$  °C to  $+35$  °C with relative humidity of maximum 75 % without condensation

## RATINGS AND CHARACTERISTICS REFERENCE CONDITIONS

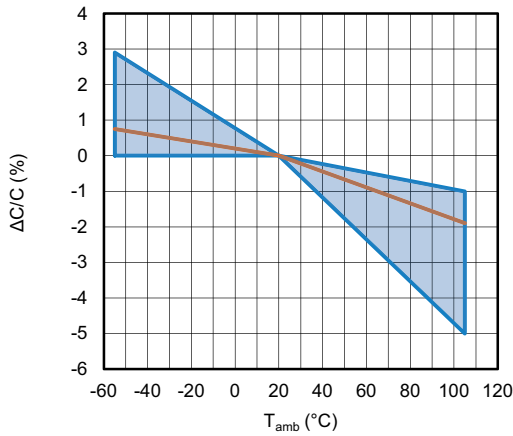
Unless otherwise specified, all electrical values apply to an ambient temperature of  $23$  °C  $\pm 1$  °C, an atmospheric pressure of 86 kPa to 106 kPa and a relative humidity of  $50$  %  $\pm 2$  %.

For reference testing, a conditioning period shall be applied over  $96$  h  $\pm 4$  h by heating the products in a circulating air oven at the rated temperature and a relative humidity of  $50$  %  $\pm 2$  %.

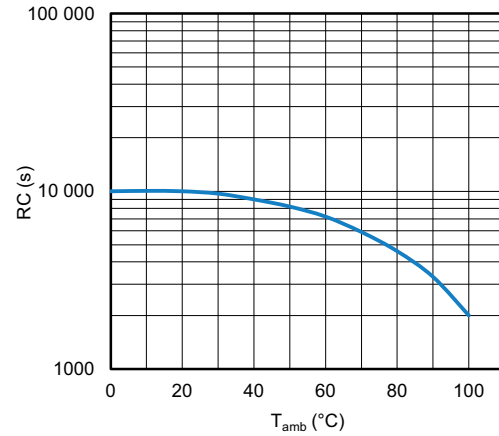




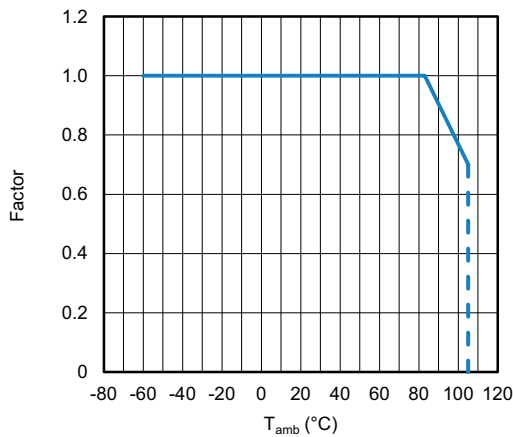
## CHARACTERISTICS



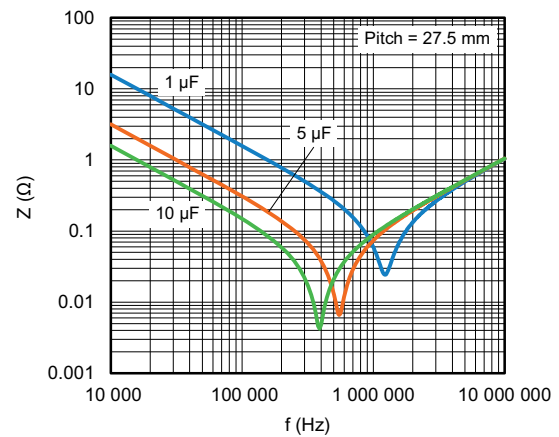
Capacitance as a function of ambient temperature (typical)



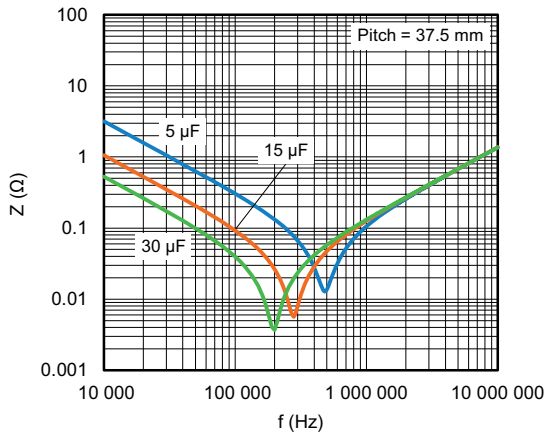
Insulation resistance as a function of ambient temperature (typical)



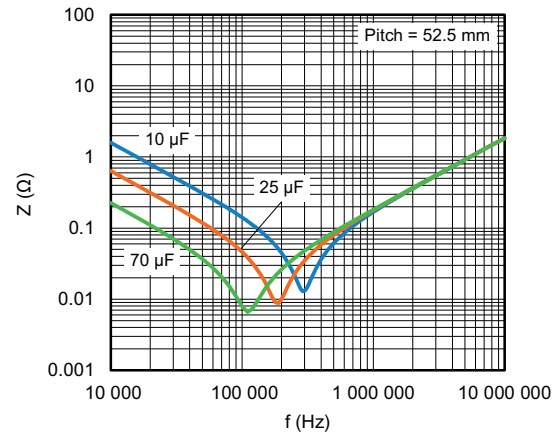
RMS voltage in function of temperature



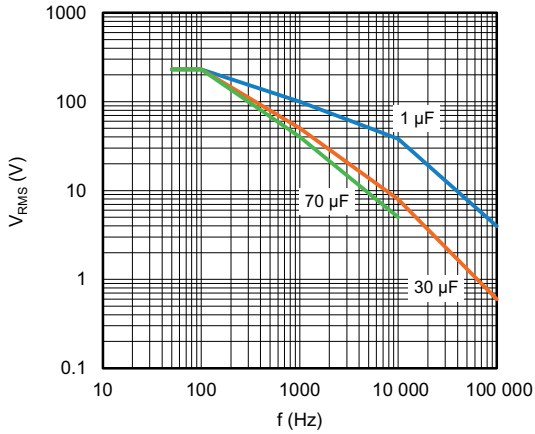
Impedance vs. Frequency (typical)



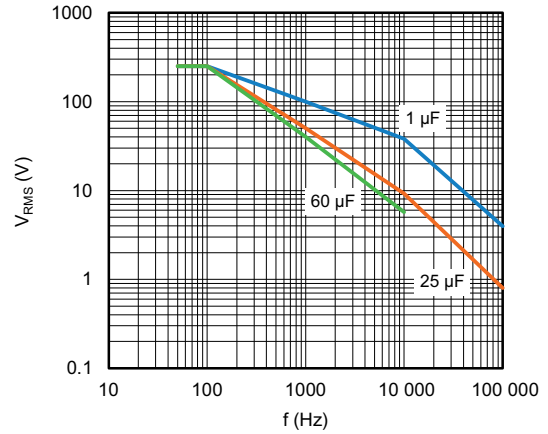
Impedance vs. Frequency (typical)



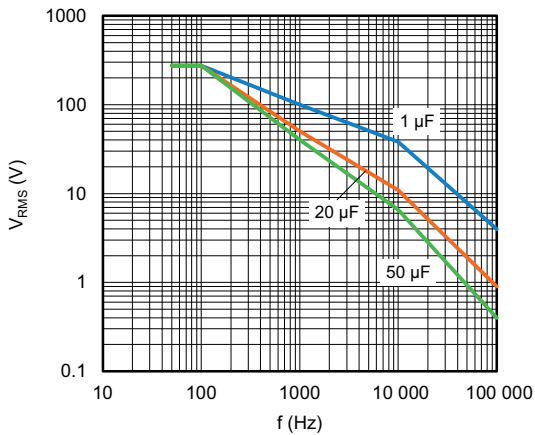
Impedance vs. Frequency (typical)



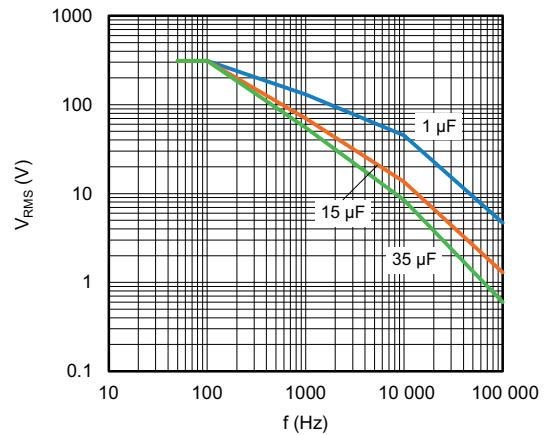
Maximum RMS voltage as function of frequency  
 $T_{amb} \leq 85\text{ }^{\circ}\text{C}$ ;  $U_r = 230\text{ V}_{AC}$



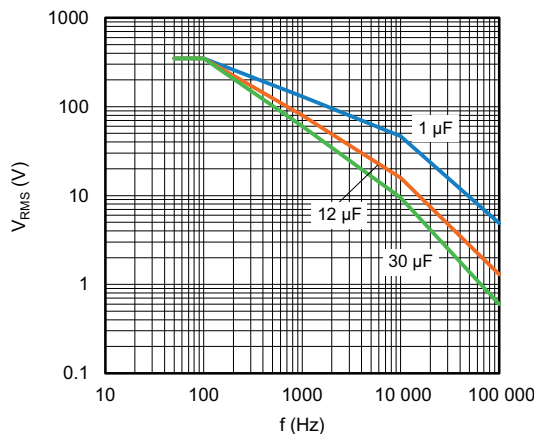
Maximum RMS voltage as function of frequency  
 $T_{amb} \leq 85\text{ }^{\circ}\text{C}$ ;  $U_r = 250\text{ V}_{AC}$



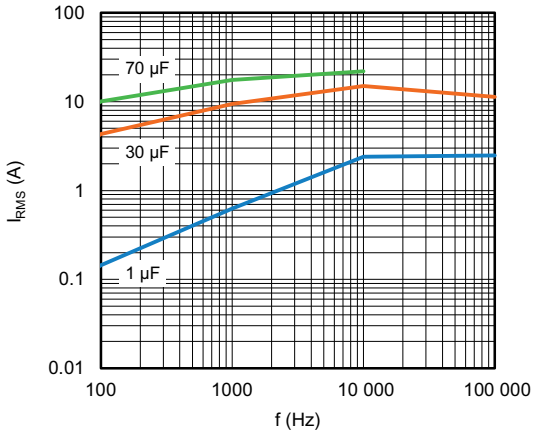
Maximum RMS voltage as function of frequency  
 $T_{amb} \leq 85\text{ }^{\circ}\text{C}$ ;  $U_r = 275\text{ V}_{AC}$



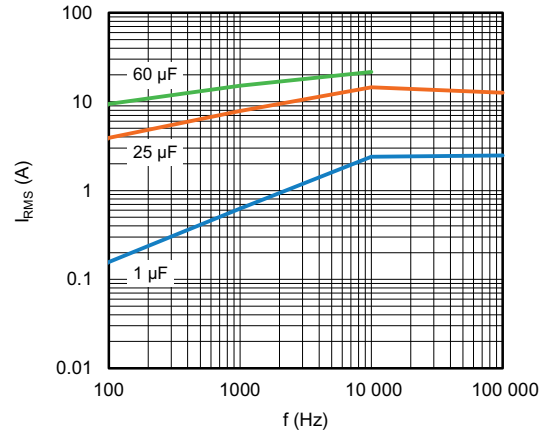
Maximum RMS voltage as function of frequency  
 $T_{amb} \leq 85\text{ }^{\circ}\text{C}$ ;  $U_r = 310\text{ V}_{AC}$



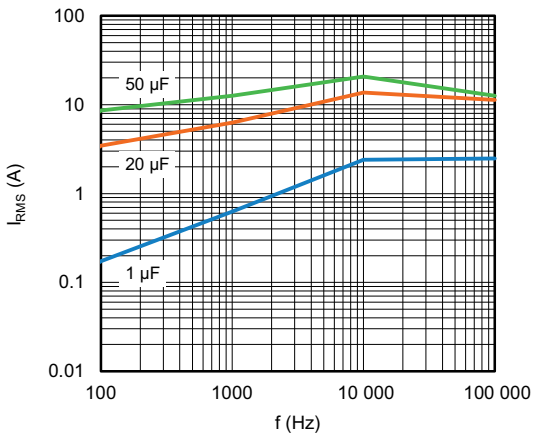
Maximum RMS current as function of frequency  
 $T_{amb} \leq 85\text{ }^{\circ}\text{C}$ ;  $U_r = 350\text{ V}_{AC}$



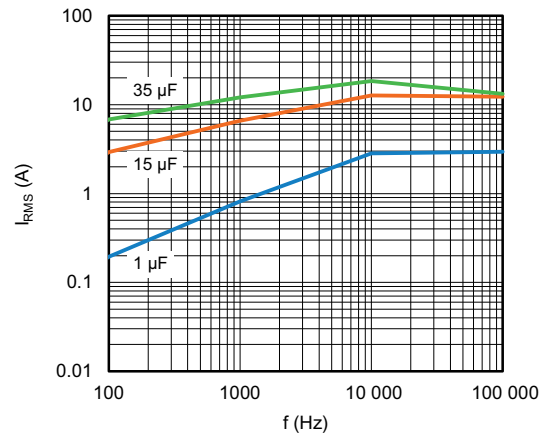
Maximum RMS current as function of frequency  
 $T_{amb} \leq 85\text{ }^{\circ}\text{C}$ ;  $U_r = 230\text{ V}_{AC}$



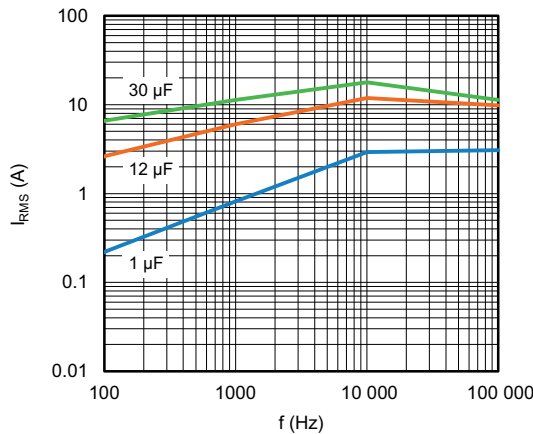
Maximum RMS current as function of frequency  
 $T_{amb} \leq 85\text{ }^{\circ}\text{C}$ ;  $U_r = 250\text{ V}_{AC}$



Maximum RMS current as function of frequency  
 $T_{amb} \leq 85\text{ }^{\circ}\text{C}$ ;  $U_r = 275\text{ V}_{AC}$



Maximum RMS current as function of frequency  
 $T_{amb} \leq 85\text{ }^{\circ}\text{C}$ ;  $U_r = 310\text{ V}_{AC}$



Maximum RMS current as function of frequency  
 $T_{amb} \leq 85\text{ }^{\circ}\text{C}$ ;  $U_r = 350\text{ V}_{AC}$

<b>HEAT CONDUCTIVITY</b>			
<b>DIMENSION (mm)</b>			<b>G (mW/°C)</b>
<b>w</b>	<b>h</b>	<b>l</b>	
9.0	19.0	32.0	16
11.0	21.0	32.0	19
13.0	23.0	32.0	22
15.0	25.0	32.0	25
18.0	28.0	32.0	30
21.0	31.0	32.0	35
20.0	35.0	32.0	37
18.5	35.5	43.0	45
21.5	38.5	43.0	52
24.0	44.0	42.0	59
30.0	45.0	42.0	68
25.0	45.0	57.5	78
30.0	45.0	57.5	85
35.0	50.0	57.5	100
45.0	45.0	57.5	109

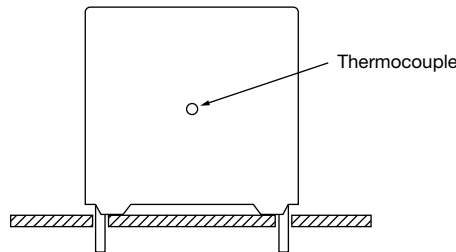
### POWER DISSIPATION AND MAXIMUM COMPONENT TEMPERATURE RISE

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.

The component temperature rise ( $\Delta T$ ) can be measured or calculated by  $\Delta T = P/G$ :

- $\Delta T$  = component temperature rise (°C) with a maximum of 15 °C
- P = power dissipation of the component (mW)
- G = heat conductivity of the component (mW/°C)

### MEASURING THE COMPONENT TEMPERATURE



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

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

To avoid thermal radiation or convection, the capacitor must be tested in a closed area from air circulation.

### APPLICATION NOTES AND LIMITING CONDITIONS

- These capacitors are not suitable for mains applications as across-the-line capacitors without additional protection
- These mains applications are strictly regulated in safety standards and therefore electromagnetic interference suppression capacitors conforming the standards must be used
- To ensure withstanding high humidity requirements in the application the epoxy adhesion at the leads shall not be damaged. Therefore the leads may not be damaged or not be bent before soldering
- To choose a component family please refer to Vishay application note: [www.vishay.com/doc?28245](http://www.vishay.com/doc?28245) and note additionally following conditions:
  - The peak voltage ( $U_{p+}$ ) shall not be greater than  $\sqrt{2} \times U_{RMS}$
  - The peak-to-peak ripple voltage ( $U_{pp}$ ) shall not be greater than  $2 \times \sqrt{2} \times U_{RMS}$
  - The voltage pulse slope ( $dU/dt$ ) shall not exceed the rated pulse slope at the DC voltage rating

If the pulse voltage is lower than the rated DC voltage, the rated voltage pulse slope may be multiplied by  $U_{NDC}$  and divided by the applied voltage.

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

T is the pulse duration

- The maximum component surface temperature must be lower than 105 °C and maximum temperature rise between case and free air ambient shall be lower than 15 °C
- For continuous operation, 24 hours per day for several years, please refer to application note: [www.vishay.com/doc?28245](http://www.vishay.com/doc?28245)



INSPECTION REQUIREMENTS				
SUB-CLAUSE NUMBER AND TEST	CONDITIONS	PERFORMANCE REQUIREMENTS		
<b>ROUTINE TEST - FINAL INSPECTION</b>				
5.14.2-1 External inspection, visual examination		Legible marking as specified		
5.14.2-2 Dimensions		See specification drawing		
5.3-1 Capacitance	1 kHz at room temperature	See specific reference data		
5.3-2 tan $\delta$	10 kHz at room temperature	See specific reference data		
5.5.1-2 DC voltage test between terminals	1.5 x U <sub>NDC</sub> at T <sub>amb</sub> Duration: 2 s	No visible damage or puncture No flashover		
5.7 Insulation resistance	Measuring voltage 500 V at room temperature Duration: 1 min	See specific reference data		
<b>TYPE TESTS</b>				
5.14.2 External inspection	Check for finish, marking, and overall dimensions	Legible marking and finish as specified Dimensions: see specification drawing		
5.14.0 Initial measurements	Capacitance at 1 kHz tan $\delta$ at 10 kHz			
5.14.1-1/4 Robustness of terminations IEC 60068-2-21	Tensile Ua1			
	Wire diameter		Section	Load
	d ≤ 0.80 mm		S ≤ 0.5 mm <sup>2</sup>	10 N (± 10 %)
	d ≤ 1.23 mm		S ≤ 1.2 mm <sup>2</sup>	20 N (± 10 %)
	Duration: 10 s ± 1 s			
	Bending, Ub method 1			
Wire diameter	Section modulus		Load	
d ≤ 0.80 mm	Z <sub>x</sub> ≤ 0.050 mm <sup>3</sup>		5 N (± 10 %)	
d ≤ 1.23 mm	Z <sub>x</sub> ≤ 0.019 mm <sup>3</sup>	10 N (± 10 %)		
5.14.1-6 Resistance to soldering heat IEC 60068-2-20	4 x 90°, duration: 2 s to 3 s/bend  No pre-drying, method 1A Solder bath: 280 °C ± 5 °C Duration: 10 s ± 1 s			
5.14.4 Final measurements	Capacitance tan $\delta$	\Delta C/C  ≤ 0.5 % Increase of tan $\delta$ ≤ 0.0050 compared to the values measured in 5.14.0		
5.14.0 Initial measurements	Capacitance at 1 kHz tan $\delta$ at 10 kHz	No visible damage		
5.14.3-1 Vibration IEC 60068-2-6	10 Hz to 55 Hz; a = ± 0.35 mm or acceleration 98 m/s <sup>2</sup> Test duration: 10 frequency cycles (3 axes offset from each other by 90°) 1 octave/min			
5.14.3-2 Shock or impact IEC 60068-2-6	Visual examination  Pulse shape: half sine Acceleration: 490 m/s <sup>2</sup> Duration of pulse: 11 ms			
5.14.4 Final measurements	Visual examination			
	Capacitance tan $\delta$		\Delta C/C  ≤ 0.5 % Increase of tan $\delta$ ≤ 0.0050 compared to the values measured in 5.14.0	



INSPECTION REQUIREMENTS		
SUB-CLAUSE NUMBER AND TEST	CONDITIONS	PERFORMANCE REQUIREMENTS
5.5.3-1 Initial measurements	Capacitance at 1 kHz tan $\delta$ at 10 kHz Insulation resistance	
5.5.3-2 DC voltage test between terminals	1.5 x U <sub>NDC</sub> at T <sub>amb</sub> Duration: 10 s	
5.5.3-3 Final measurements	Capacitance tan $\delta$ Insulation resistance	$ \Delta C/C  \leq 0.5\%$ Increase of tan $\delta \leq 0.0050$ Insulation resistance $\geq 50\%$ of specified values
5.9-1 Initial measurements	Capacitance at 1 kHz tan $\delta$ at 10 kHz	
5.9-2 Surge discharge test	1.1 x U <sub>NDC</sub> Number of discharges: 5 Time lapse: every 2 min (10 min total)	
5.9-2 DC voltage test between terminals	Within 5 min after the surge discharge test Duration: 10 s 1.5 x U <sub>NDC</sub> at T <sub>amb</sub>	
5.9-3 Final measurements	Capacitance tan $\delta$	$ \Delta C/C  \leq 1.0\%$ tan $\delta \leq 1.2 \times$ initial tan $\delta + 0.0001$ compared to the values measured in 5.9-1
5.11-1 Initial measurements	Capacitance at 1 kHz tan $\delta$ at 10 kHz	
5.11-2 Self healing test	1.5 x U <sub>NDC</sub> , duration: 10 s Increase the voltage at 100 V/s till 5 clearings occur or until voltage reach max. of 2.5 x U <sub>NDC</sub> for a duration of 10 s	Number of clearings $\leq 5$ Clearing = voltage drop of 5 %
5.11-3 Final measurements	Capacitance tan $\delta$	$ \Delta C/C  \leq 0.5\%$ tan $\delta \leq 1.2 \times$ initial tan $\delta + 0.0001$ compared to the values measured in 5.11-1
5.13-0 Initial measurements	Capacitance at 1 kHz tan $\delta$ at 10 kHz	
5.13-1 Change of temperature according to IEC 60068-2-14	Test Nb T <sub>max.</sub> = +85 °C T <sub>min.</sub> = -40 °C Transition time: 1 h, equivalent to 1 °C/min. 5 cycles	
5.13.2 Damp heat steady state according to IEC 60068-2-78	Test Ca T = 40 °C $\pm$ 2 °C RH = 93 % $\pm$ 3 % Duration: 56 days	
5.5.3-2 DC voltage test between terminals	1.5 x U <sub>NDC</sub> at ambient temperature Duration: 10 s	
5.13-3 Final measurements	Visual examination	No puncturing or flashover Self healing punctures are permitted
	Capacitance tan $\delta$	$ \Delta C/C  \leq 2.0\%$ Increase of tan $\delta \leq 0.0150$ compared to the values measured in 5.13-0
5.13A-0 Initial measurements	Capacitance at 1 kHz tan $\delta$ at 1 kHz	
5.13A.2 Damp heat steady state with load	T = 40 °C RH = 93 % at U <sub>N</sub> Duration: 56 days	
5.13.3 Final measurements	Capacitance at 1 kHz tan $\delta$	$ \Delta C/C  < 10\%$ Increase of tan $\delta$ : $\leq 0.008$ for: C $\leq 10 \mu\text{F}$ or $\leq 0.005$ for: C $> 10 \mu\text{F}$ Compared to the values measured in 5.13A-0
	Insulation resistance	Insulation resistance $\geq 50\%$ of specified values



INSPECTION REQUIREMENTS		
SUB-CLAUSE NUMBER AND TEST	CONDITIONS	PERFORMANCE REQUIREMENTS
5.10-0 Initial measurements  5.10-1 Thermal stability test under overload conditions  5.10-2 Final measurements	Capacitance at 1 kHz tan $\delta$ at 10 kHz  Natural cooling $T_{amb} \pm 5 \text{ }^\circ\text{C}$ $1.21 \times P_{max.} = 1.21 \times (I_{RMS}^2/w \times C) \times \tan \delta(f)$ with $w = 2 \times \pi \times f$ For $I_{RMS}$ see specific reference data $f = 10 \text{ kHz}$ Duration: 48 h  Measure the temperature every 1.5 h during the last 6 h  Capacitance tan $\delta$ at 10 kHz	Temperature rise $< 1 \text{ }^\circ\text{C}$  $ \Delta C/C  \leq 2 \%$ Increase of $\tan \delta \leq 0.0150$
5.12 Resonance frequency measurement	Impedance analyzer at $T_{amb}$	$> 0.9$ times the value as specified in typical curve "Resonant frequency" of this specification
5.15-0 Initial measurements  5.15-1 Endurance test between terminals  5.15-2 Final measurement	Capacitance at 1 kHz tan $\delta$ at 10 kHz  Sequence: $1.25 \times (U_{RMS} \text{ at } 85 \text{ }^\circ\text{C}) \text{ at } T_{max.} = 85 \text{ }^\circ\text{C}$ $1.25 \times (U_{RMS} \text{ at } 105 \text{ }^\circ\text{C}) \text{ at } T_{max.} = 105 \text{ }^\circ\text{C}$ Duration: 500 h  $1000 \times$ discharge at $1.4 \times \hat{I}$ (maximum peak current)  $1.25 \times (U_{RMS} \text{ at } 85 \text{ }^\circ\text{C}) \text{ at } T_{max.} = 85 \text{ }^\circ\text{C}$ $1.25 \times (U_{RMS} \text{ at } 105 \text{ }^\circ\text{C}) \text{ at } T_{max.} = 105 \text{ }^\circ\text{C}$ Duration: 500 h  Capacitance tan $\delta$	$ \Delta C/C  \leq 3.0 \%$ Increase of $\tan \delta \leq 0.0150$ compared to the values measured in 5.15-0
5.16.3-0 Initial measurements  5.16.3-1 Destruction test sequence for non-segmented film  High DC voltage test  High AC voltage test  5.16.3-2 Final measurements	Capacitance at 1 kHz  The capacitors must be put in an oven at $T_{max.} = 85 \text{ }^\circ\text{C}$ product enveloped with cheese cloth  $2 \times U_{NDC}$ or DC voltage until repetitive product healings occur Duration: 15 min  $AC_{RMS}$ voltage = $1 \times U_{NAC}$ , with minimum of $250 V_{AC}$ Duration: 15 min Repeat destruction sequence 3 x  Visual examination	Audible healings or check healings with oscilloscope       No puncturing, flashover or burning of the cheese cloth. Self-healing punctures are permitted

**Note**

- Sub-clause numbers of tests and performance requirements refer to the "Sectional Specification, Publication IEC 61071"



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