

Metallized Film Capacitor

Power Electronic Capacitors

Series/Type: MKP AC Filter – Single phase

Ordering code: 500A*

Date: September 2023

Version: 01

EMF 2004. Reproduction, publication and dissemination of this publication, enclosures hereto and the information contained therein without EMF' prior express consent is prohibited.

■ Features

- Metallized polypropylene film design,excellent self-healing property
- Anti-explosion design,more safety overpressure protection
- The capacitors particularly suit for AC filter circuit in power electric equipment and UPS power unit.They have ability to withstand high harmonic current, peak current and peak voltage
- For tab type, the capacitors meet 96H neutral salt spray

■ Reference Standards

- IEC61071
- IEC60831
- RoHS
- UL 810

■ Specifications

- Capacitance range 10μF~600μF
- Capacitance tolerance ±5%(J), ±10%(K)
- Rated RMS Voltage AC250V~AC850V
- Dielectric dissipation factor($\tan \delta_o$) 2×10^{-4}
- Loss factor($\tan \delta$)at 100Hz $\leq 1.0 \times 10^{-3}$
- Operating temperature range -40°C...70°C
- Storage temperature Range -40°C...85°C
- Maximum altitude $\leq 2000m$
- Rated frequency 50Hz/60Hz
- Service life expectancy 100,000h @ $\leq 1.0U_N$ @ $\theta_{HS} \leq 70^\circ C$
- Failure rate 50Fit
- Explosion-proof device Overpressure disconnector
- Internal stuffing Oil(Non PCB)
- Cooling Naturally air-cooled or force cooled

■ Test data

- Capacitance measurement $C_N \pm 5\%(J)$; $C_N \pm 10\%(K)$;
- Test voltage between terminals $1.5U_N @10S$ or $2.15U_{rms} @10S$
- Test voltage between terminals to case $(2 \cdot U_N + 1000)V.ac$, but no less 3000 V.ac @10S
- Loss factor($\tan \delta$)at 100Hz 1.0×10^{-3}

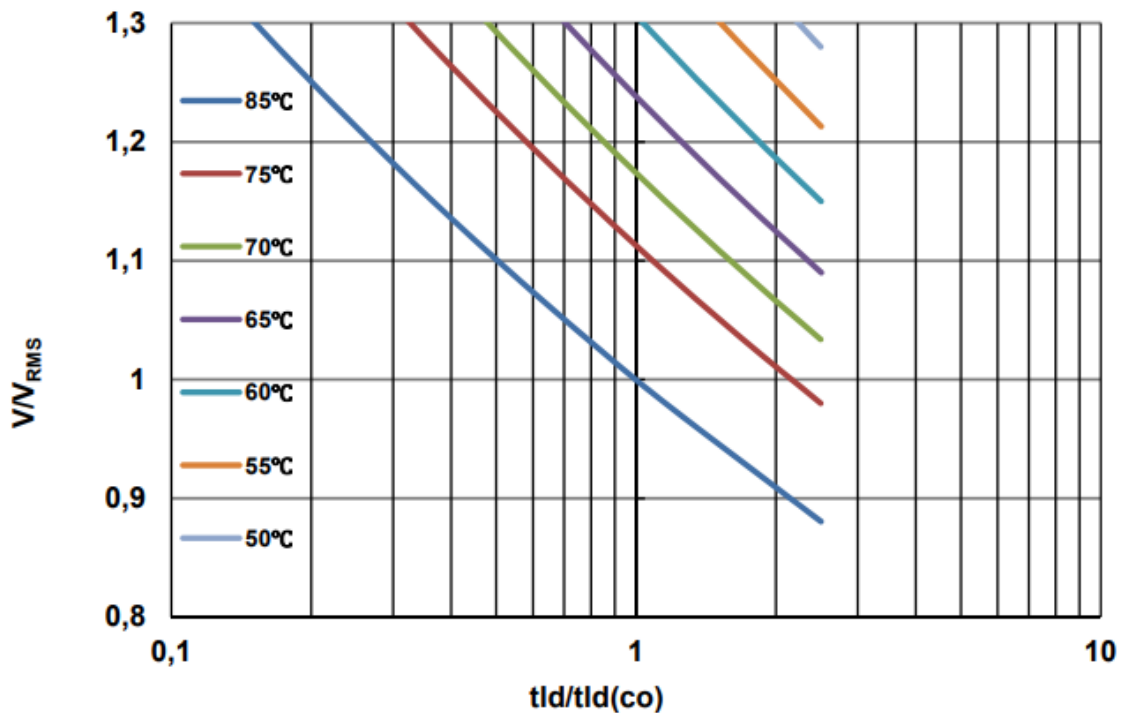
■ **Installation**

- **Mounting and grounding** M8/M10/M12 threaded bolt on bottom of the aluminum case
- **Terminal form** Tab or Male terminals
- **Max. torque(case)** M8:5N.m; M10:7N.m; M12:10N.m
- **Max. torque terminal** M6:3N.m; M8:6N.m; M10:8N.m

■ **Expected lifetime curve**

The lifetime estimations below show the standard expected lifetime of 100,000 hours(at +85°C hotspot) are only theoretical calculations based on endurance test results performed according to IEC61071 standard.

Expected life time at T_{hs}



Services life t_{LD} at different hot-spot temperature(T_{hs})and rated voltage

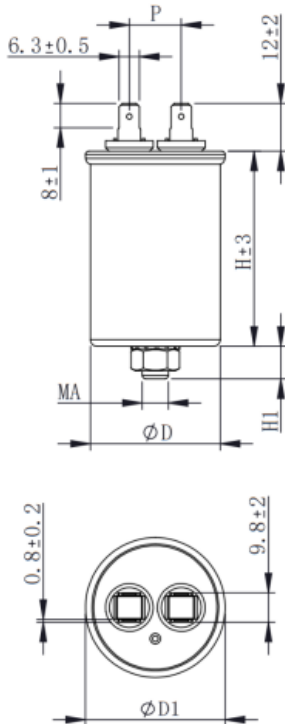
■ **Structure of ordering code**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
C	5	0	0	A	4	4	1	1	5	6	J	0	0	1	1
Capacitor series					Rated RMS voltage			Rated Capacitance			Capacitance tolerance		Internal use		

- C500A—Capacitor series
- 441—Rated RMS voltage 440V
- 156J0—Rated capacitance 15µF
- J—Capacitance tolerance ±5%
- 011—Internal use

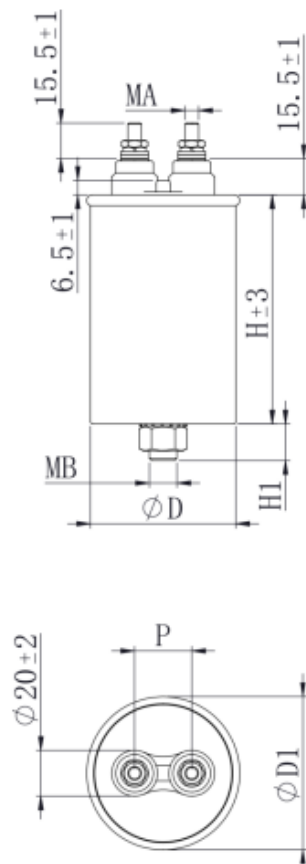
■ Outline Drawing(Specific according to customer requirements)

- Tab type design(Without channeling)



D±1	40	45/50	55	60
H1±1	10	10	12	16
P±1.5	16	18	20	20
MA	M8	M8	M10	M12

- Bolt type design(Without channeling)



D±1	63.5/65	76/86/96	106/116
H1±1	16	16	16
P±1	25	30	35
MA	M6	M8	M10
MB	M12	M12	M12

Technical data(Tab type)

C _N (μF)	D (mm)	D1 (mm)	H (mm)	P (mm)	İ (KA)	I _{MAX} (A)	ESR (mΩ)	ESL (nH)	R _{th} (K/W)	W (kg)	Part number
U_N AC350V, U_{RMS} AC250V											
15	40	44	65	16	0.2	10	7.1	80	21.4	0.10	C500A251156****
25	45	49	75	18	0.3	12	6.6	100	17.1	0.14	C500A251256****
35	50	54	75	20	0.4	14	5.1	100	15.1	0.17	C500A251356****
50	55	59	80	20	0.6	16	4.0	100	12.9	0.22	C500A251506****
60	60	64	80	20	0.7	16	3.5	100	11.4	0.26	C500A251606****
80	60	64	90	20	0.8	16	3.7	120	10.6	0.29	C500A251806****
100	60	64	105	20	0.7	16	4.3	150	9.4	0.34	C500A251107****
120	60	64	115	20	0.8	16	4.6	170	8.6	0.38	C500A251127****
140	60	64	130	20	0.8	16	5.1	210	7.8	0.43	C500A251147****
150	60	64	130	20	0.8	16	4.9	210	7.8	0.43	C500A251157****
U_N AC460V, U_{RMS} AC330V											
15	45	49	65	18	0.3	11	5.8	80	18.7	0.12	C500A331156****
20	45	49	75	18	0.3	12	6.5	100	16.5	0.14	C500A331206****
25	50	54	75	18	0.4	13	5.5	100	15.0	0.17	C500A331256****
30	55	59	75	18	0.5	14	4.8	100	14.3	0.17	C500A331306****
35	60	64	80	20	0.6	16	4.3	100	12.9	0.22	C500A331356****
40	60	64	80	20	0.6	16	3.9	100	12.1	0.26	C500A331406****
50	60	64	90	20	0.7	16	4.3	120	10.9	0.29	C500A331506****
60	60	64	09	20	0.8	16	3.8	120	10.3	0.29	C500A331606****
80	60	64	115	20	0.7	16	5.2	170	8.7	0.38	C500A331806****
100	60	64	130	20	0.8	16	5.5	210	7.7	0.43	C500A331107****
U_N AC700V, U_{RMS} AC500V											
10	45	49	75	18	0.3	11	5.3	100	16.7	0.14	C500A501106****
12	45	49	75	18	0.4	12	4.6	100	15.9	0.14	C500A501126****
15	50	54	75	20	0.5	14	4.0	100	14.5	0.17	C500A501156****
20	55	59	80	20	0.7	16	3.3	100	12.5	0.22	C500A501206****
25	60	64	80	20	0.9	16	2.9	100	11.4	0.26	C500A501256****
30	60	64	90	20	0.8	16	3.3	120	10.5	0.29	C500A501306****
35	60	64	105	20	0.7	16	3.9	150	9.6	0.34	C500A501356****
40	60	64	105	20	0.9	16	3.6	150	9.1	0.34	C500A501406****
45	60	64	115	20	0.8	16	4.0	170	8.5	0.38	C500A501456****
50	60	64	130	20	0.8	16	4.6	210	7.9	0.43	C500A501506****

Technical data(Bolt type)

C _N (μF)	D (mm)	D1 (mm)	H (mm)	P (mm)	İ (KA)	I _{MAX} (A)	ESR (mΩ)	ESL (nH)	R _{th} (K/W)	W (kg)	Part number
U_N AC350V, U_{RMS} AC250V											
150	76	80	120	30	2.4	35	2.8	140	7.3	0.60	C500A251157****
160	76	80	120	30	2.6	36	2.6	140	7.1	0.60	C500A251167****
180	76	80	130	30	2.4	35	2.9	160	6.7	0.60	C500A251187****
200	76	80	130	30	2.7	37	2.7	160	6.5	0.60	C500A251207****
230	76	80	145	30	2.4	36	3.0	190	6.0	0.70	C500A251237****
250	76	80	170	30	2.6	47	2.0	110	5.3	0.80	C500A251257****
300	76	80	200	30	4.8	51	1.9	140	4.7	1.0	C500A251307****
350	76	80	200	30	5.6	54	1.8	140	4.4	1.0	C500A251357****
400	86	90	200	30	6.4	57	1.6	140	4.3	1.3	C500A251407****
500	86	90	220	30	6.6	59	1.7	160	3.8	1.4	C500A251507****
600	86	90	250	30	6.2	59	1.8	190	3.4	1.6	C500A251607****
U_N AC460V, U_{RMS} AC330V											
80	63.5	57.5	110	25	1.2	25	3.7	140	8.7	0.4	C500A331806****
100	76	80	120	30	1.6	31	3.1	140	7.4	0.6	C500A331107****
120	76	80	120	30	1.9	34	2.8	140	6.9	0.6	C500A331127****
140	76	80	145	30	1.4	31	3.7	190	6.3	0.7	C500A331147****
150	76	80	145	30	1.6	32	3.5	190	6.1	0.7	C500A331157****
160	76	80	145	30	1.7	33	3.4	190	6.0	0.7	C500A331167****
180	76	80	170	30	1.9	49	1.7	110	5.2	0.8	C500A331187****
200	76	80	200	30	3.2	51	2.0	140	4.8	1.0	C500A331207****
230	76	80	200	30	3.7	54	2.0	140	4.6	1.0	C500A331237****
250	76	80	200	30	4.0	55	1.9	140	4.4	1.0	C500A331257****
300	86	90	200	30	4.8	54	1.7	140	4.1	1.3	C500A331307****
350	86	90	220	30	4.6	55	1.7	160	4.8	1.4	C500A331357****
400	86	90	250	30	4.1	54	2.0	190	4.5	1.6	C500A331407****
U_N AC700V, U_{RMS} AC500V											
20	76	80	75	30	1.2	22	1.9	80	9.8	0.4	C500A501206****
50	76	80	120	30	1.2	32	2.6	140	7.5	0.6	C500A501506****
60	76	80	120	30	1.4	34	2.3	140	7.1	0.6	C500A501606****
70	76	80	145	30	1.1	32	3.1	190	6.4	0.8	C500A501706****
80	76	80	145	30	1.2	34	2.8	190	6.1	0.8	C500A501806****
90	76	80	145	30	1.4	36	2.6	190	5.8	0.8	C500A501906****
100	76	80	200	30	2.3	48	1.7	140	4.9	1.1	C500A501107****
133	86	90	200	30	3.1	53	1.5	140	4.4	1.1	C500A501137*3***
150	86	90	200	30	3.5	55	1.4	140	4.2	1.1	C500A501157****
200	86	90	220	30	3.9	58	1.4	160	3.7	1.2	C500A501207****
250	86	90	250	30	3.8	59	1.5	190	3.2	1.4	C500A501257****
U_N AC760V, U_{RMS} AC540V											
22	76	80	85	30	1.4	29	1.8	80	9.6	0.4	C500A541226****
33	76	80	105	30	1.4	33	1.8	120	8.3	0.5	C500A541336****
47	76	80	120	30	1.1	33	2.4	140	7.1	0.6	C500A541476****
60	76	80	145	30	0.9	33	3.1	190	6.2	0.7	C500A541606****
68	76	80	145	30	1.0	35	2.8	190	5.9	0.7	C500A541686****
82	76	80	170	30	2.7	50	1.4	110	4.9	0.8	C500A541826****
100	86	90	170	30	3.3	54	1.3	110	4.6	1.0	C500A541107****
120	86	90	250	30	1.8	49	2.1	190	3.8	1.2	C500A541127****
150	86	90	250	30	2.3	53	1.9	190	3.6	1.5	C500A541157****
200	96	101	250	30	3.0	58	1.6	190	3.2	1.9	C500A541207****
250	106	111	250	35	3.8	62	1.4	190	2.9	2.3	C500A541257****
300	106	111	250	35	4.5	64	1.3	190	2.7	2.3	C500A541307****

Technical data(Bolt type)

C _N (μF)	D (mm)	D1 (mm)	H (mm)	P (mm)	İ (KA)	I _{MAX} (A)	ESR (mΩ)	ESL (nH)	R _{th} (K/W)	W (kg)	Part number
U_N AC850V, U_{RMS} AC600V											
22	76	80	105	30	0.8	28	2.6	120	8.2	0.5	C500A601226****
33	76	80	120	30	0.8	31	2.7	140	7.1	0.6	C500A601336****
47	76	80	170	30	1.7	41	2.1	120	5.3	0.8	C500A601476****
50	76	80	170	30	1.8	42	2.1	120	5.2	0.8	C500A601506****
60	86	90	170	30	2.2	45	1.9	110	4.8	1.0	C500A601606****
68	86	90	170	30	2.4	51	1.4	110	4.7	1.0	C500A601686****
82	86	90	170	30	2.1	52	1.7	140	4.1	1.2	C500A601826****
100	76	80	200	30	1.6	51	2.2	190	3.5	1.2	C500A601107****
120	86	90	250	30	2.0	54	1.9	190	3.4	1.5	C500A601127****
150	96	101	250	30	2.4	57	1.7	190	3.1	1.9	C500A601157****
180	106	111	250	35	2.9	62	1.6	190	2.8	2.3	C500A601187****
200	116	121	250	35	3.3	64	1.4	190	2.8	2.8	C500A601207****
U_N AC980V, U_{RMS} AC690V											
15	76	80	95	30	0.8	25	2.4	100	9.4	0.5	C500A691156****
22	76	80	105	30	0.9	28	2.4	120	8.2	0.5	C500A691226****
33	76	80	170	30	1.3	36	2.1	120	6.1	0.8	C500A691336****
47	86	90	170	30	1.9	42	2.1	110	5.3	1.0	C500A691476****
60	86	90	200	30	1.7	43	1.8	140	4.6	1.2	C500A691606****
68	86	90	200	30	1.9	49	2.0	140	4.4	1.2	C500A691686****
82	86	90	250	30	1.5	48	1.6	190	3.8	1.5	C500A691826****
100	86	90	250	30	1.8	52	2.0	190	3.5	1.5	C500A691107****
120	96	101	250	30	2.2	55	1.9	190	3.4	1.9	C500A691127****
150	106	111	250	35	2.7	59	1.7	190	3.1	2.3	C500A691157****
200	116	121	250	35	3.3	64	1.4	190	2.8	2.8	C500A691207****
U_N AC1070V/AC1200V, U_{RMS} AC760V/AC850V											
10	76	80	95	30	0.6	22	2.7	100	8.8	0.5	C500A***106****
15	76	80	105	30	0.7	26	2.7	120	7.6	0.5	C500A***156****
22	76	80	145	30	0.5	25	4.4	190	6.3	0.7	C500A***226****
33	76	80	170	30	1.5	40	1.9	110	4.9	0.8	C500A***336****
47	86	90	200	30	1.7	43	2.1	140	4.2	1.2	C500A***476****
68	86	90	250	30	1.4	49	2.0	190	3.4	1.5	C500A***686****
82	96	111	250	30	1.7	52	1.8	190	3.2	1.9	C500A***826****
100	96	111	250	30	2.1	56	1.6	190	2.9	1.9	C500A***107****
150	116	121	250	35	2.9	62	1.5	190	2.6	2.8	C500A***157****

■ Term and characteristics

Term	Characteristics
C_N	Rated capacitance
U_N	Rated AC voltage
U_{NDC}	Rated DC voltage
U_r	Ripplr voltage
U_s	Non- recurrent surge voltage
U_{T-T}	Test voltage between terminals
U_{T-C}	Test voltage between terminals to case
\hat{I}	Maximum peak cirrent
I_{max}	Maximum cirrent
\hat{I}_s	Maximum surge cirrent
$\tan\delta_0$	Dielectric dissipation factor
$\tan\delta$	Loss factor
ESL	Self inductance
ESR	Equivalent series inductance of a capacitor
R_{ins}	Insulation resistance
f_r	Resonance frequency
W_R	Rated power
θ_{min}	Lowest operating temperature
θ_{max}	Maximum operating temperature
θ_{amb}	Cooling-air temperature
θ_{HS}	Hotspot temperature
θ_{ST}	Storage temperature
F_T	Derating factor
t_{LD}	Inverter and charge hybrid operating load duration
λ	Failure rate (FIT)