

2024

CAPACITORS



metallized **Film**

Excellence
in Capacitors

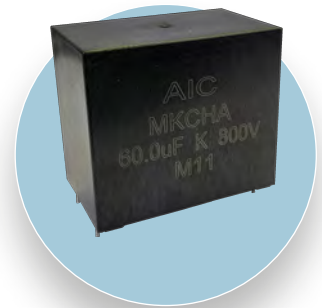
AIC EUROPE
Sales & Marketing in Europe of **AIC** Components

MKCHA · PCB mount · 105 °C

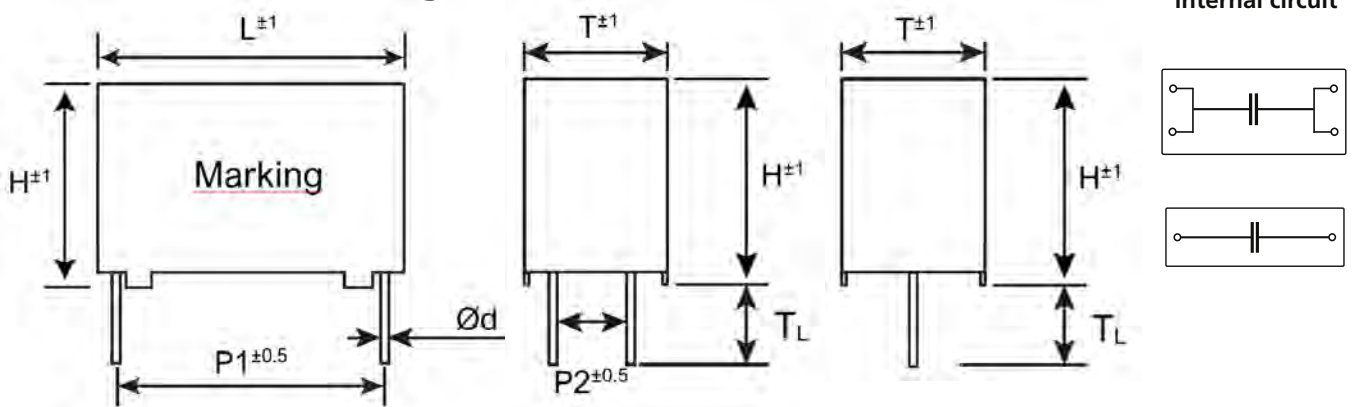
Resin-encased box type · Standard Performances

> Specifications · Spezifikationen

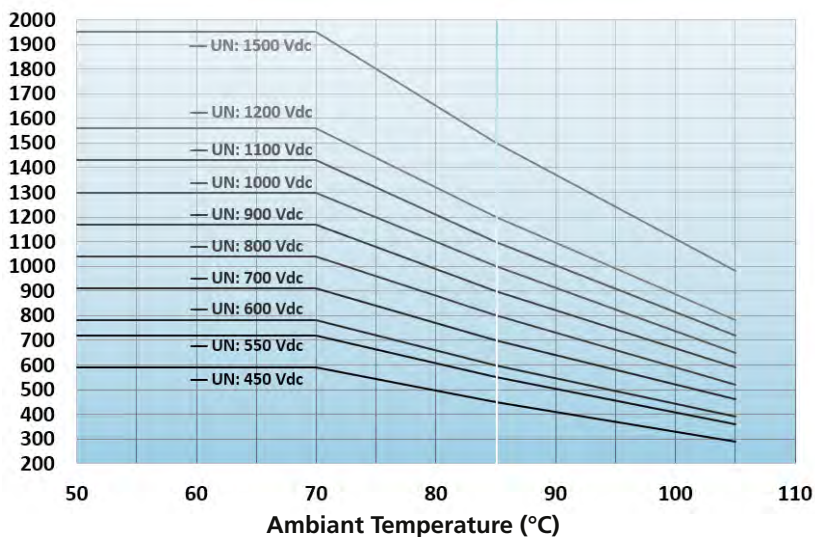
Items	Characteristics
Temperature range	-40 °C ~ +105 °C
	40/105/56 (IEC 61071)
Rated Voltage U_N	450 to 1.500 Vdc at 85 °C
	voltage derating when hotspot temp \geq 85 °C
Voltage test between terminals U_{TT}	1.5 X U_N / 10 s
Maximum ripple Voltage U_{AC} peak to peak	0.2 X U_N 85 °C
Terminals	tinned wired leads
Life Time Test / Standard	IEC 61071:2007
Life Time Expectancy	117 000 hrs ($T_{HOTSPOT}$ 70 °C, 1.0 x U_N)
Failure Rate	\leq 50 FIT = 50×10^{-9} Failures / hour
Dielectric	Polypropylene
Safety function	Self healing film
Case material	PBT conform to UL94V-0
Filling material	resin conform to UL94V-0
Product Compliance	RoHS, REACH, Conflict Minerals a.o. - refer to p.14 -15



> Dimensions · Abmessungen



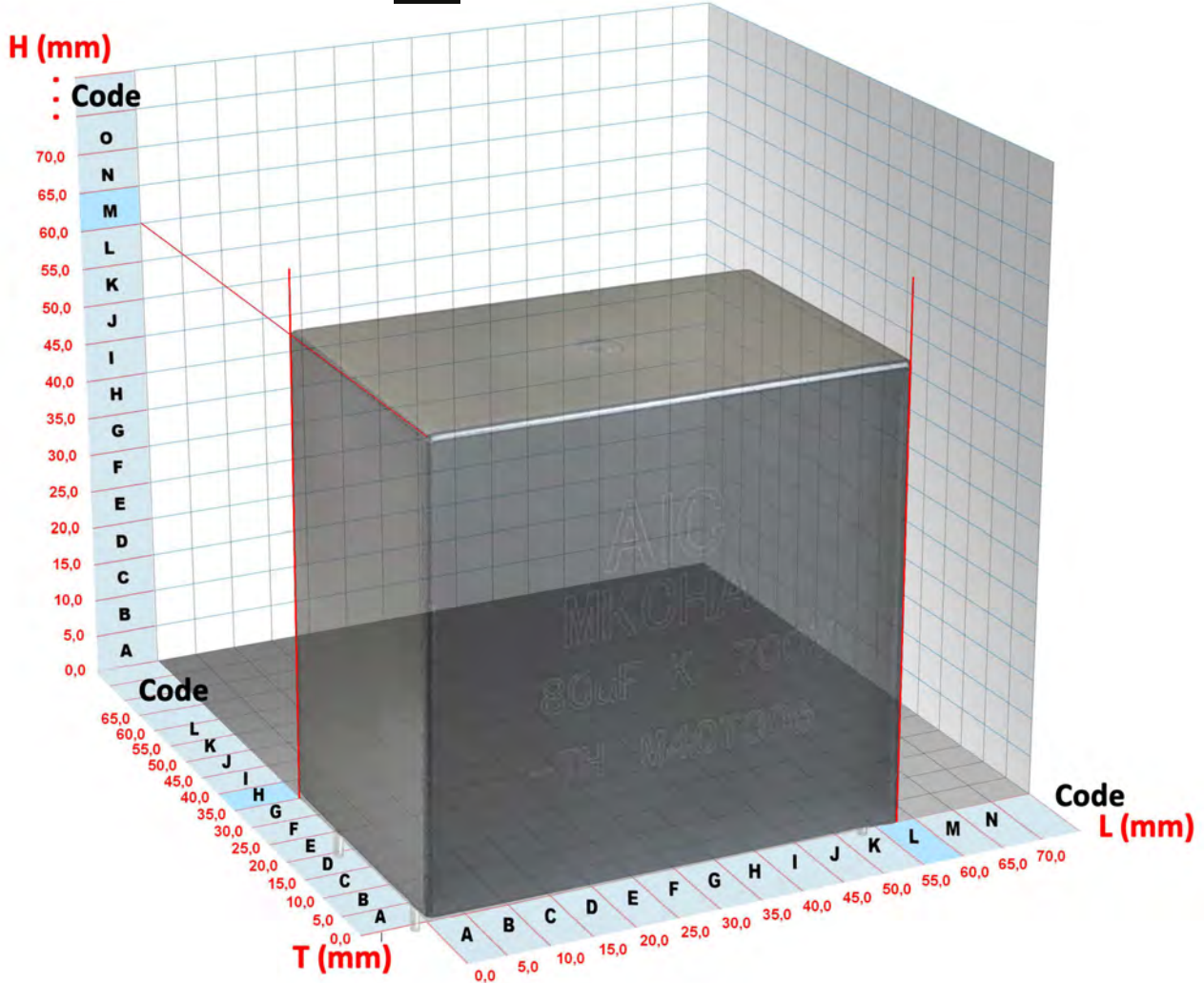
> Voltage derating · Spannung Abstufung



> Case Code · Gehäuse Codierung

Capacitor : MKCHA, 700V, 80µF±10%, T = 35.0 mm, H = 60.0 mm, L = 57.5 mm

Product Code : MKCHA-700V806KHMLAD



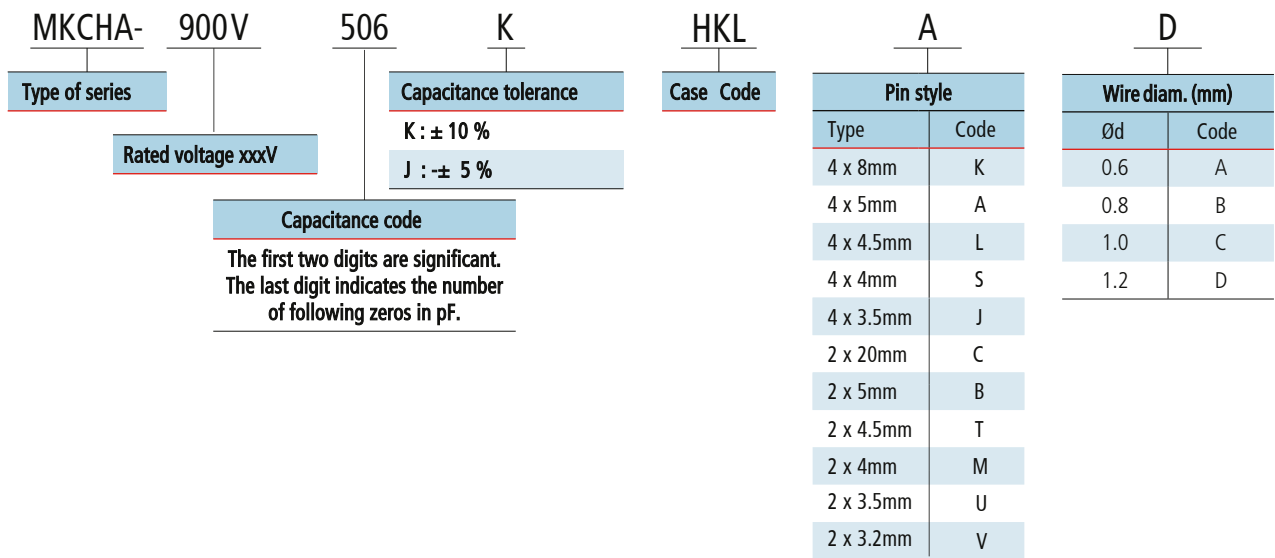
Case dimension code	Case (mm)			Terminals (mm)	
	T	H	L	P1	P2
DGI	16.0	31.0	41.0	37.5	5.0
	18.0	32.0	42.0	37.5	10.2
ECG	20.0	14.0	31.5	27.5	5.0
EHI	21.5	38.5	43.0	37.5	10.2
EGI	23.0	34.0	43.0	37.5	10.2
EII	24.0	44.0	42.0	37.5	10.2
FJL	25.0	45.0	57.5	52.5	10.2
FEI	27.0	21.0	42.0	37.5	10.2
FHI	27.0	36.0	41.0	37.5	10.2
FII	28.0	42.5	42.0	37.5	10.2
	29.0	44.0	41.0	37.5	15.0
GJI	30.0	45.0	42.0	37.5	20.3
GJL	30.0	45.0	57.5	52.5	20.3
GLI	30.0	55.0	42.0	37.5	20.3

Case dimension code	Case (mm)			Terminals (mm)	
	T	H	L	P1	P2
HEL	35.0	24.0	57.5	52.5	20.3
HKL	35.0	50.0	57.5	52.5	20.3
HML	35.0	60.0	57.5	52.5	20.3
HNL	35.0	65.0	57.5	52.5	20.3
HQL	35.0	80.0	57.5	52.5	20.3
HEL	39.0	24.0	57.5	52.5	20.3
IEL	43.0	22.0	57.5	52.5	20.3
JEI	45.0	21.0	42.0	37.5	20.3
JLL	45.0	57.0	57.5	52.5	20.3
JNL	45.0	65.0	57.5	52.5	20.3
MJL	60.0	45.0	57.5	52.5	20.3

Additional designs on request · Weitere Designs auf Anfrage

> Product Code · Bestellbezeichnung

Example: Series MKCHA · 900V · 50µF +/- 10% · T=35mm · H=50mm · L=57.5mm · 4pins Ø1.2x5.0mm



Rated DC Voltage U_N derating Voltage test between terminals U_{TT}	Nominal Capacitance C_N [µF]	Ripple Current at 70°C 1k–10kHz I_r [A RMS]	Peak Current Maximum value \hat{I} [A]	ESR [mΩ]	Thermal Resist. R_{th} [K/W]	dv/dt [V/µs]	Dimensions			Product Code	
							Case Size		Terminals		
							L x H x T [mm]	P1 [mm]	P2 [mm]		Ød [mm]
450 Vdc at 85°C 500Vdc at 70°C 300Vdc at 105°C U_{TT} 675Vdc/10s	1	2.5	50	55.0	29.0	50	32 x 18 x 9	27.5	\	0.8	MKCHA-450V105KBDGGB
	2	2.9	100	34.5	32.1	50	32 x 18 x 9	27.5	\	0.8	MKCHA-450V205KBDGGB
	3	3.9	150	23.5	26.7	50	32 x 20 x 11	27.5	\	0.8	MKCHA-450V305KCEGGB
	4	3.9	200	21.0	29.9	50	32 x 20 x 11	27.5	\	0.8	MKCHA-450V405KCEGGB
	5	4.9	250	15.5	26.2	50	32 x 20 x 11	27.5	\	0.8	MKCHA-450V505KCEGGB
		5.4	250	14.5	23.2	50	32 x 22 x 13	27.5	\	0.8	MKCHA-450V505KCEGGB
	10	7.4	500	8.5	20.5	50	32 x 28 x 14	27.5	\	0.8	MKCHA-450V106KCFGGB
		8.8	500	8.0	15.1	50	32 x 28 x 18	27.5	\	0.8	MKCHA-450V106KDFGGB
	12	9.8	600	7.0	14.0	50	32 x 33 x 18	27.5	\	0.8	MKCHA-450V126KDGGGB
	15	11.3	750	6.0	12.4	50	32 x 37 x 22	27.5	\	0.8	MKCHA-450V156KEHGGB
		9.3	450	8.5	12.8	30	42.5 x 18 x 24	37.5	\	1	MKCHA-450V156KEDIBC
	18	10.8	900	6.0	13.6	50	32 x 37 x 22	27.5	\	0.8	MKCHA-450V186KEHGGB
	20	11.8	1000	5.0	12.6	50	32 x 37 x 22	27.5	\	0.8	MKCHA-450V206KEHGGB
	22	11.8	1100	5.0	12.6	50	32 x 37 x 22	27.5	\	0.8	MKCHA-450V226KEHGGB
	25	12.3	750	5.5	11.4	30	42.5 x 37 x 22	37.5	10.2	1	MKCHA-450V256KEHIAC
	30	11.8	900	6.0	11.4	30	42.5 x 40 x 20	37.5	10.2	1	MKCHA-450V306KEIAC
		13.8	1200	5.5	9.2	30	42.5 x 37 x 28	37.5	10.2	1	MKCHA-450V406KFHIAC
	40	14.8	1200	5.0	8.4	30	42.5 x 44 x 24	37.5	10.2	1	MKCHA-450V406KEIAC
		14.9	1500	4.0	11.0	30	42.5 x 45 x 30	37.5	20.3	1.2	MKCHA-450V506KGJIAD
	55	15.4	1650	5.0	8.2	30	57.5 x 45 x 30	37.5	20.3	1.2	MKCHA-450V556KGJLAD
60	16.4	1800	4.5	8.1	30	57.5 x 45 x 30	37.5	20.3	1.2	MKCHA-450V606KGJLAD	
	16.4	1800	4.0	9.1	30	57.5 x 45 x 30	37.5	20.3	1.2	MKCHA-450V606KGJLAD	
80	15.9	1200	4.0	9.8	15	57.5 x 45 x 30	52.5	20.3	1.2	MKCHA-450V806KGJLAD	
100	18.0	1500	4.0	8.1	15	57.5 x 50 x 35	52.5	20.3	1.2	MKCHA-450V107KHKLAD	
130	22.1	1950	3.5	5.9	15	57.5 x 60 x 35	52.5	20.3	1.2	MKCHA-450V137KHMLAD	
140	24.2	2100	3.5	5.1	15	57.5 x 65 x 35	52.5	20.3	1.2	MKCHA-450V147KHNLAD	
150	26.3	2250	3.0	4.6	15	57.5 x 70 x 35	52.5	20.3	1.2	MKCHA-450V157KHOLAD	
160	28.3	2400	3.0	4.1	15	57.5 x 80 x 35	52.5	20.3	1.2	MKCHA-450V167KHQLAD	
170	30.4	2550	3.0	3.8	15	57.5 x 80 x 35	52.5	20.3	1.2	MKCHA-450V177KHQLAD	

Rated DC Voltage U_N derating Voltage test between terminals U_{TT}	Nominal Capacitance C_N [μ F]	Ripple Current at 70°C 1k–10kHz I_r [A RMS]	Peak Current Maximum value \hat{I} [A]	ESR ESR [m Ω]	Thermal Resist. R_{th} [K/W]	dv/dt [V/ μ s]	Dimensions			Product Code	
							Case Size		Terminals		
							L x H x T [mm]	P1 [mm]	P2 [mm]		$\varnothing d$ [mm]
550 Vdc at 85°C 720 Vdc at 70 °C 360 Vdc at 105 °C U_{TT} 825 Vdc/10s	3	3.9	150	28.5	21.9	50	32 x 20 x 11	27.5	\	0.8	MKCHA-550V305KCEGGB
	5	5.9	250	14.5	19.4	50	32 x 22 x 13	27.5	\	0.8	MKCHA-550V505KCEGGB
	8	8.3	400	12.5	10.9	50	32 x 28 x 14	27.5	\	0.8	MKCHA-550V805KCFGGB
	10	9.8	500	8.0	12.3	50	32 x 33 x 18	27.5	\	0.8	MKCHA-550V106KDGGGB
	15	11.8	750	6.5	10.5	50	32 x 37 x 22	27.5	\	0.8	MKCHA-550V156KEHGGB
		12.8	750	5.5	10.6	50	32 x 37 x 22	27.5	10.2	0.8	MKCHA-550V156KEHGAB
	20	12.3	600	6.5	9.6	30	42.5 x 40 x 20	37.5	10.2	1	MKCHA-550V206KEIAC
	22	13.3	660	6.5	8.3	30	42.5 x 40 x 20	37.5	10.2	1	MKCHA-550V226KEIAC
	25	14.3	750	6.5	7.2	30	42.5 x 40 x 20	37.5	10.2	1	MKCHA-550V256KEIAC
	30	15.8	900	6.0	6.4	30	42.5 x 44 x 24	37.5	10.2	1	MKCHA-550V306KEIAC
	35	17.8	1050	6.0	5.0	30	42.5 x 45 x 30	37.5	20.3	1.2	MKCHA-550V356KGJIAD
	40	17.8	1200	5.5	5.5	30	42.5 x 45 x 30	37.5	20.3	1.2	MKCHA-550V406KGJIAD
	50	19.8	1500	5.0	5.0	30	42.5 x 50 x 35	37.5	20.3	1.2	MKCHA-550V506KHKIAD
	60	17.9	900	5.0	6.3	15	57.5 x 45 x 30	37.5	20.3	1.2	MKCHA-550V606KGJLAD
	75	19.9	1125	5.0	5.0	15	57.5 x 50 x 35	52.5	20.3	1.2	MKCHA-550V756KHKLAD
	100	24.0	1500	4.5	3.9	15	57.5 x 55 x 45	52.5	20.3	1.2	MKCHA-550V107KJLLAD
	110	26.1	1650	4.0	3.7	15	57.5 x 53 x 50	52.5	20.3	1.2	MKCHA-550V117KKKLAD
130	23.1	1950	3.5	5.6	15	57.5 x 60 x 35	52.5	20.3	1.2	MKCHA-550V137KHMLAD	
140	25.2	2100	3.0	4.8	15	57.5 x 65 x 35	52.5	20.3	1.2	MKCHA-550V147KHNLAD	
150	27.3	2250	3.0	4.4	15	57.5 x 70 x 35	52.5	20.3	1.2	MKCHA-550V157KHOLAD	
160	29.3	2400	3.0	4.0	15	57.5 x 80 x 35	52.5	20.3	1.2	MKCHA-550V167KHQLAD	
170	32.4	2550	2.5	3.5	15	57.5 x 80 x 35	52.5	20.3	1.2	MKCHA-550V177KHQLAD	
600 Vdc at 85°C 780 Vdc at 70 °C 390 Vdc at 105 °C U_{TT} 900 Vdc/10s	3	3.9	150	28.5	21.9	50	32 x 20 x 11	27.5	\	0.8	MKCHA-600V305KCEGGB
	4	4.9	200	26.5	15.1	50	32 x 20 x 11	27.5	\	0.8	MKCHA-600V405KCEGGB
	5	5.9	250	14.5	18.9	50	32 x 28 x 14	27.5	\	0.8	MKCHA-600V505KCFGGB
	8	7.4	400	12.0	14.6	50	32 x 28 x 14	27.5	\	0.8	MKCHA-600V805KCFGGB
	10	8.4	500	7.5	18.2	50	32 x 33 x 18	27.5	\	0.8	MKCHA-600V106KDGGGB
	12	9.4	600	7.5	14.6	50	32 x 33 x 18	27.5	\	0.8	MKCHA-600V126KDGGGB
		7.9	360	9.5	16.2	30	42.5 x 18 x 24	37.5	\	1	MKCHA-600V126KEDIBC
	15	10.4	750	7.5	11.9	50	32 x 37 x 22	27.5	\	0.8	MKCHA-600V156KEHGGB
		11.9	750	6.0	11.5	50	42.5 x 18 x 24	37.5	\	1	MKCHA-600V156KEDIBC
	20	10.9	600	6.0	13.7	30	42.5 x 40 x 20	37.5	10.2	1	MKCHA-600V206KEIAC
	30	13.0	900	5.5	10.7	30	42.5 x 37 x 28	37.5	10.2	1	MKCHA-600V306KFHAC
	35	16.6	1050	5.0	7.3	30	42.5 x 44 x 24	37.5	10.2	1	MKCHA-600V356KEIAC
	40	17.8	1200	4.0	7.7	30	42.5 x 45 x 30	37.5	20.3	1.2	MKCHA-600V406KGJIAD
	50	13.9	750	6.5	7.8	15	57.5 x 50 x 35	52.5	20.3	1.2	MKCHA-600V506KHKLAD
	60	15.9	900	5.0	7.9	15	57.5 x 50 x 35	52.5	20.3	1.2	MKCHA-600V606KHKLAD
	70	17.9	1050	5.0	6.3	15	57.5 x 50 x 35	52.5	20.3	1.2	MKCHA-600V706KHKLAD
	80	19.9	1200	4.0	6.4	15	57.5 x 55 x 45	52.5	20.3	1.2	MKCHA-600V806KJLLAD
	90	24.0	1350	4.0	4.4	15	57.5 x 55 x 45	52.5	20.3	1.2	MKCHA-600V906KJLLAD
	100	26.0	1500	4.0	3.8	15	57.5 x 53 x 50	52.5	20.3	1.2	MKCHA-600V107KKKLAD
110	28.1	1650	3.5	3.7	15	57.5 x 53 x 50	52.5	20.3	1.2	MKCHA-600V117KKKLAD	
120	30.1	1800	3.5	3.4	15	57.5 x 60 x 35	52.5	20.3	1.2	MKCHA-600V127KHMLAD	
130	32.2	1950	3.0	3.1	15	57.5 x 65 x 35	52.5	20.3	1.2	MKCHA-600V137KHNLAD	
140	34.3	2100	3.0	2.8	15	57.5 x 70 x 35	52.5	20.3	1.2	MKCHA-600V147KHOLAD	
	34.3	2100	3.0	2.8	15	57.5 x 65 x 45	52.5	20.3	1.2	MKCHA-600V147KJNLAD	
150	36.4	2250	3.0	2.7	15	57.5 x 80 x 35	52.5	20.3	1.2	MKCHA-600V157KHQLAD	

Rated DC Voltage U_N derating Voltage test between terminals U_{TT}	Nominal Capacitance C_N [μ F]	Ripple Current at 70 °C 1 k–10 kHz I_r [A RMS]	Peak Current Maximum value \hat{I} [A]	ESR ESR [m Ω]	Thermal Resist. R_{th} [K/W]	dv/dt [V/ μ s]	Dimensions			Product Code	
							Case Size		Terminals		
							L x H x T [mm]	P1 [mm]	P2 [mm]		$\varnothing d$ [mm]
700 Vdc at 85 °C 910 Vdc at 70 °C 460 Vdc at 105 °C U_{TT} 1050 Vdc/10s	1	2.5	75	55.0	29.0	75	32 x 18 x 9	27.5	\	0.8	MKCHA-700V105KBDGGB
	2	2.9	150	35.5	31.1	75	32 x 18 x 9	27.5	\	0.8	MKCHA-700V205KBDGGB
	3	4.4	150	28.5	17.3	50	32 x 20 x 11	27.5	\	0.8	MKCHA-700V305KCEGGB
	3,3	5.4	165	26.5	12.5	50	32 x 28 x 14	27.5	\	0.8	MKCHA-700V335KCFGGB
	5	5.9	250	14.5	19.4	50	32 x 28 x 14	27.5	\	0.8	MKCHA-700V505KCFGGB
	6	5.9	450	14.5	19.4	75	32 x 28 x 18	27.5	\	0.8	MKCHA-700V605KDFGGB
	8	8.8	400	10.0	12.1	50	32 x 33 x 18	27.5	\	0.8	MKCHA-700V805KDGGGB
	10	9.8	500	7.0	14.0	50	32 x 33 x 18	27.5	\	0.8	MKCHA-700V106KDGGGB
		11.8	500	6.5	10.5	50	32 x 37 x 22	27.5	\	0.8	MKCHA-700V106KEHGGB
	12	11.3	300	7.5	9.9	30	42.5 x 18 x 24	37.5	\	1	MKCHA-700V106KEDIBC
		11.8	600	6.0	10.5	50	32 x 37 x 22	27.5	\	0.8	MKCHA-700V126KEHGGB
	15	11.8	360	7.0	9.7	30	42.5 x 18 x 24	37.5	\	1	MKCHA-700V126KEDIBC
		8.8	450	9.0	13.5	30	42.5 x 33.5 x 22	37.5	\	1	MKCHA-700V156KEGIBC
	20	9.8	450	8.0	12.3	30	42.5 x 33.5 x 22	37.5	10.2	1	MKCHA-700V156KEGIAC
		9.8	450	8.0	12.3	30	42.5 x 40 x 20	37.5	10.2	1	MKCHA-700V156KEIIAC
	22	11.8	600	7.5	9.2	30	42.5 x 37 x 28	37.5	10.2	1	MKCHA-700V206KFHIAC
	25	13.8	660	6.5	7.7	30	42.5 x 44 x 24	37.5	10.2	1	MKCHA-700V226KEIIAC
	30	15.8	750	6.0	6.4	30	42.5 x 44 x 24	37.5	10.2	1	MKCHA-700V256KEIIAC
	35	15.8	900	6.0	6.6	30	42.5 x 45 x 30	37.5	20.3	1.2	MKCHA-700V306KGJIAD
	40	19.7	1050	5.5	4.4	30	42.5 x 50 x 35	37.5	20.3	1.2	MKCHA-700V356KHKIAD
	45	13.8	600	5.0	10.1	15	57.5 x 45 x 30	52.5	20.3	1.2	MKCHA-700V406KGJLAD
	50	15.3	675	5.0	8.2	15	57.5 x 45 x 30	52.5	20.3	1.2	MKCHA-700V456KGJLAD
	55	14.9	750	5.0	9.2	15	57.5 x 50 x 35	52.5	20.3	1.2	MKCHA-700V506KHKLAD
	60	15.9	825	4.5	8.6	15	57.5 x 50 x 35	52.5	20.3	1.2	MKCHA-700V556KHKLAD
	65	17.9	900	4.0	7.6	15	57.5 x 50 x 35	52.5	20.3	1.2	MKCHA-700V606KHKLAD
	70	19.9	975	4.0	6.3	15	57.5 x 55 x 45	52.5	20.3	1.2	MKCHA-700V656KJLLAD
	75	19.9	1050	4.0	6.6	15	57.5 x 55 x 45	52.5	20.3	1.2	MKCHA-700V706KJLLAD
	80	19.9	1125	4.0	6.6	15	57.5 x 55 x 45	52.5	20.3	1.2	MKCHA-700V756KJLLAD
		21.9	1200	3.5	5.9	15	57.5 x 53 x 50	52.5	20.3	1.2	MKCHA-700V806KKKLAD
	90	22.9	1200	3.5	5.6	15	57.5 x 60 x 35	52.5	20.3	1.2	MKCHA-700V806KHMLAD
24.0		1350	3.5	5.0	15	57.5 x 53 x 50	52.5	20.3	1.2	MKCHA-700V906KKKLAD	
100	24.0	1350	3.5	5.0	15	57.5 x 60 x 35	52.5	20.3	1.2	MKCHA-700V906KHMLAD	
	26.0	1500	3.5	4.2	15	57.5 x 53 x 50	52.5	20.3	1.2	MKCHA-700V107KKKLAD	
110	26.0	1500	3.5	4.2	15	57.5 x 65 x 35	52.5	20.3	1.2	MKCHA-700V107KHNLAD	
	28.1	1650	3.5	3.8	15	57.5 x 70 x 35	52.5	20.3	1.2	MKCHA-700V117KHOLAD	
120	30.1	1800	3.0	3.7	15	57.5 x 80 x 35	52.5	20.3	1.2	MKCHA-700V127KHQLAD	
130	32.2	1950	3.0	3.5	15	57.5 x 65 x 45	52.5	20.3	1.2	MKCHA-700V137KJNLAD	
800 Vdc at 85 °C 1040 Vdc at 70 °C 520 Vdc at 105 °C U_{TT} 1200 Vdc/10s	1	2.0	75	63.0	39.5	75	32 x 18 x 9	27.5	\	0.8	MKCHA-800V105KBDGGB
	2	3.4	150	31.5	25.8	75	32 x 20 x 11	27.5	\	0.8	MKCHA-800V205KCEGGB
	3	4.4	225	21.5	23.1	75	32 x 22 x 13	27.5	\	0.8	MKCHA-800V305KCEGGB
	3,3	3.9	165	25.5	24.5	50	32 x 28 x 14	27.5	\	0.8	MKCHA-800V335KCFGGB
	5	5.9	250	12.0	22.7	50	32 x 28 x 14	27.5	\	0.8	MKCHA-800V505KCFGGB
	6	7.4	450	10.5	16.6	75	32 x 28 x 18	27.5	\	0.8	MKCHA-800V605KDFGGB
	8	9.3	176	9.5	11.5	22	32 x 33 x 18	27.5	\	0.8	MKCHA-800V805KDGGGB
	9	9.8	198	8.5	11.6	22	32 x 33 x 18	27.5	\	0.8	MKCHA-800V905KDGGGB
	10	11.3	220	9.5	7.9	22	32 x 37 x 22	27.5	\	0.8	MKCHA-800V106KEHGGB
		7.9	300	12.5	12.3	30	42.5 x 32 x 19	37.5	\	1	MKCHA-800V106KDGIBC
15	9.9	450	8.0	12.3	30	42.5 x 40 x 20	37.5	10.2	1	MKCHA-800V156KEIIAC	
20	11.8	600	7.0	9.8	30	42.5 x 37 x 28	37.5	10.2	1	MKCHA-800V206KFHIAC	

Rated DC Voltage U_N derating Voltage test between terminals U_T	Nominal Capacitance C_N [μ F]	Ripple Current at 70°C 1k–10kHz I_r [A RMS]	Peak Current Maximum value \hat{I} [A]	ESR ESR [m Ω]	Thermal Resist. R_{th} [K/W]	dv/dt [V/ μ s]	Dimensions			Product Code	
							Case Size L x H x T [mm]		Terminals		
							P1 [mm]	P2 [mm]	$\varnothing d$ [mm]		
800 Vdc at 85°C 1040 Vdc at 70 °C 520 Vdc at 105 °C U_T 1200Vdc/10s	20	13.3	600	6.5	8.3	30	42.5 x 44 x 24	37.5	10.2	1	MKCHA-800V206KEIAC
	22	13.8	660	6.0	8.4	30	42.5 x 44 x 24	37.5	10.2	1	MKCHA-800V226KEIAC
	25	13.8	425	5.5	9.2	17	42.5 x 45 x 30	37.5	20.3	1.2	MKCHA-800V256KGJIAD
	30	15.8	900	4.5	8.6	30	42.5 x 45 x 30	37.5	20.3	1.2	MKCHA-800V306KGJIAD
	35	14.1	420	6.5	7.5	12	57.5 x 45 x 30	52.5	20.3	1.2	MKCHA-800V356KGJLAD
	40	13.9	600	6.0	8.4	15	57.5 x 45 x 30	52.5	20.3	1.2	MKCHA-800V406KGJLAD
	45	15.4	675	5.5	7.6	15	57.5 x 45 x 30	52.5	20.3	1.2	MKCHA-800V456KGJLAD
	47	17.4	564	5.0	6.5	12	57.5 x 50 x 35	52.5	20.3	1.2	MKCHA-800V476KHKLAD
	50	15.9	600	5.0	7.8	12	57.5 x 50 x 35	52.5	20.3	1.2	MKCHA-800V506KHKLAD
	55	17.0	660	4.5	7.5	12	57.5 x 50 x 35	52.5	20.3	1.2	MKCHA-800V556KHKLAD
	65	19.0	780	4.0	6.9	12	57.5 x 60 x 35	52.5	20.3	1.2	MKCHA-800V656KHMLAD
		20.0	975	4.0	6.3	15	57.5 x 55 x 45	52.5	20.3	1.2	MKCHA-800V656KJLLAD
	70	20.1	1050	3.5	6.6	15	57.5 x 55 x 45	52.5	20.3	1.2	MKCHA-800V706KJLLAD
		20.1	1050	3.5	6.6	15	57.5 x 60 x 35	52.5	20.3	1.2	MKCHA-800V706KHMLAD
	75	22.1	1125	3.5	5.4	15	57.5 x 55 x 45	52.5	20.3	1.2	MKCHA-800V756KJLLAD
		22.1	1125	3.5	5.4	15	57.5 x 65 x 35	52.5	20.3	1.2	MKCHA-800V756KHNLAD
	80	23.2	1200	3.5	5.4	15	57.5 x 53 x 50	52.5	20.3	1.2	MKCHA-800V806KKKLAD
		23.2	1200	3.5	5.4	15	57.5 x 70 x 35	52.5	20.3	1.2	MKCHA-800V806KHOLAD
	90	25.3	1350	3.0	4.8	15	57.5 x 53 x 50	52.5	20.3	1.2	MKCHA-800V906KKKLAD
		25.3	1350	3.0	4.8	15	57.5 x 80 x 35	52.5	20.3	1.2	MKCHA-800V906KHQLAD
100	28.4	1500	3.0	4.1	15	57.5 x 65 x 45	52.5	20.3	1.2	MKCHA-800V107KJNLAD	
900 Vdc at 85°C 1170 Vdc at 70 °C 590 Vdc at 105 °C U_T 1350Vdc/10s	1	2.0	60	64.0	38.9	60	32 x 18 x 9	27.5	\	0.8	MKCHA-900V105KBDGGB
	2	2.9	120	25.5	43.5	60	32 x 20 x 11	27.5	\	0.8	MKCHA-900V205KCEGGB
	3	4.9	180	19.0	21.2	60	32 x 22 x 13	27.5	\	0.8	MKCHA-900V305KCEGGB
	3,3	4.9	198	19.0	21.2	60	32 x 24.5 x 15	27.5	\	0.8	MKCHA-900V335KDEGGB
	5	6.9	300	12.5	16.0	60	32 x 28 x 18	27.5	\	0.8	MKCHA-900V505KDFGGB
	6	7.9	360	11.0	13.9	60	32 x 33 x 18	27.5	\	0.8	MKCHA-900V605KDGGB
	8	10.3	480	10.0	8.9	60	32 x 37 x 22	27.5	\	0.8	MKCHA-900V805KEHGGB
		11.8	600	10.0	6.8	60	32 x 37 x 22	27.5	\	0.8	MKCHA-900V106KEHGGB
	10	8.4	350	12.0	11.3	35	42.5 x 40 x 20	37.5	\	1	MKCHA-900V106KEIIBC
		9.3	350	11.5	9.4	35	42.5 x 40 x 20	37.5	10.2	1	MKCHA-900V106KEIAC
	15	10.3	525	8.0	11.1	35	42.5 x 44 x 24	37.5	\	1	MKCHA-900V156KEIIBC
	18	10.4	630	8.0	11.1	35	42.5 x 44 x 24	37.5	\	1	MKCHA-900V186KEIIBC
		11.8	630	7.5	9.2	35	42.5 x 44 x 24	37.5	10.2	1	MKCHA-900V186KEIAC
	20	13.8	700	6.0	8.4	35	42.5 x 45 x 30	37.5	\	1	MKCHA-900V206KGJIBC
		14.8	700	5.5	8.0	35	42.5 x 45 x 30	37.5	20.3	1.2	MKCHA-900V206KGJIAD
	25	16.8	875	5.5	6.2	35	42.5 x 45 x 30	37.5	20.3	1.2	MKCHA-900V256KGJIAD
	30	18.8	1050	5.0	5.4	35	42.5 x 50 x 35	37.5	20.3	1.2	MKCHA-900V306KHKIAD
		14.9	450	5.5	8.0	15	57.5 x 45 x 30	52.5	20.3	1.2	MKCHA-900V306KGJLAD
	35	15.4	525	5.5	7.5	15	57.5 x 50 x 35	52.5	20.3	1.2	MKCHA-900V356KHKLAD
	40	15.9	600	6.5	6.0	15	57.5 x 50 x 35	52.5	20.3	1.2	MKCHA-900V406KHKLAD
	50	17.9	750	3.5	8.6	15	57.5 x 50 x 35	52.5	20.3	1.2	MKCHA-900V506KHKLAD
	55	19.0	825	3.5	7.9	15	57.5 x 60 x 35	52.5	20.3	1.2	MKCHA-900V556KHMLAD
		20.0	825	3.5	7.4	15	57.5 x 55 x 45	52.5	20.3	1.2	MKCHA-900V556KJLLAD
	60	20.0	900	3.5	7.4	15	57.5 x 55 x 45	52.5	20.3	1.2	MKCHA-900V606KJLLAD
		20.0	900	3.5	7.4	15	57.5 x 65 x 35	52.5	20.3	1.2	MKCHA-900V606KHNLAD
	65	22.0	975	3.0	6.3	15	57.5 x 70 x 35	52.5	20.3	1.2	MKCHA-900V656KHOLAD
	70	24.1	1050	3.0	5.4	15	57.5 x 53 x 50	52.5	20.3	1.2	MKCHA-900V706KKKLAD
		24.1	1050	3.0	5.4	15	57.5 x 80 x 35	52.5	20.3	1.2	MKCHA-900V706KHQLAD
80	25.2	1200	3.0	5.0	15	57.5 x 65 x 45	52.5	20.3	1.2	MKCHA-900V806KJNLAD	

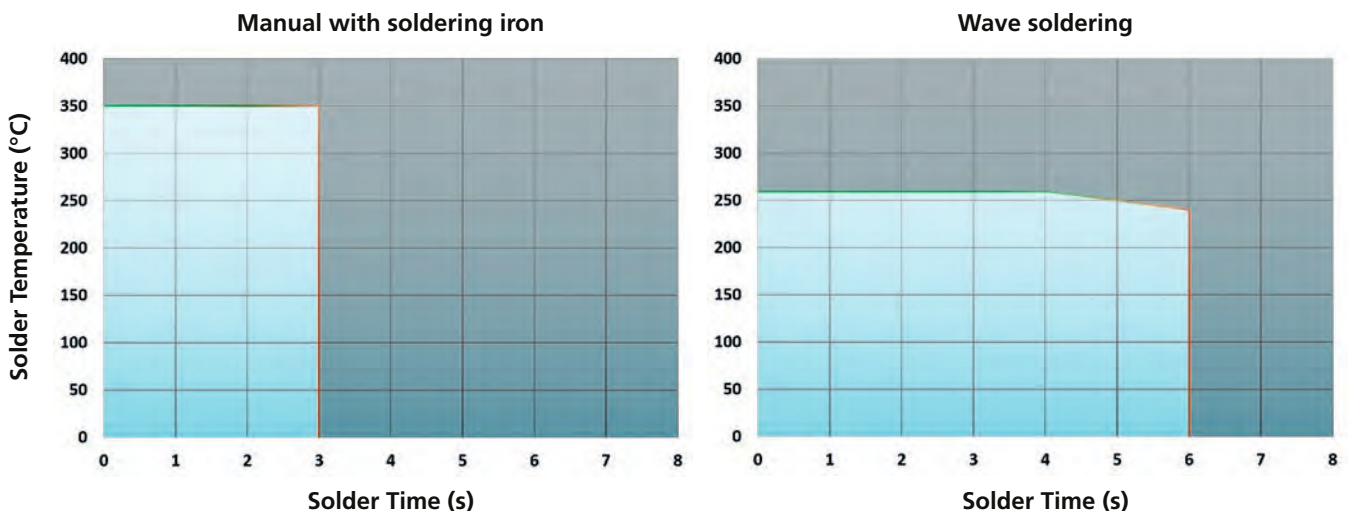
Rated DC Voltage U_N derating Voltage test between terminals U_{TT}	Nominal Capacitance C_N [μ F]	Ripple Current at 70°C 1k–10kHz I_r [A RMS]	Peak Current Maximum value \uparrow [A]	ESR ESR [m Ω]	Thermal Resist. R_{th} [K/W]	dv/dt [V/ μ s]	Dimensions			Product Code		
							Case Size		Terminals			
							L x H x T [mm]	P1 [mm]	P2 [mm]		$\varnothing d$ [mm]	
1000 Vdc at 85°C 1300 Vdc at 70 °C 650 Vdc at 105 °C U_{TT} 1500 Vdc/10s	1	2.5	70	46.0	34.9	70	32 x 20 x 11	27.5	\	0.8	MKCHA-1000V105KCEGGB	
	2	3.4	120	30.5	26.7	60	32 x 22 x 13	27.5	\	0.8	MKCHA-1000V205KCEGGB	
	3	4.9	180	25.5	15.7	60	32 x 24.5 x 15	27.5	\	0.8	MKCHA-1000V305KDEGGB	
	5	7.9	300	14.0	11.0	60	32 x 33 x 18	27.5	\	0.8	MKCHA-1000V505KDGGB	
	8	9.8	480	12.0	8.2	60	32 x 37 x 22	27.5	\	0.8	MKCHA-1000V805KEHGGB	
	10	8.4	350	12.0	11.3	35	42.5 x 40 x 20	37.5	\	1	MKCHA-1000V106KEIIBC	
		9.3	350	11.5	9.5	35	42.5 x 40 x 20	37.5	10.2	1	MKCHA-1000V106KEIIAC	
	12	10.3	420	9.0	10.0	35	42.5 x 44 x 24	37.5	10.2	1	MKCHA-1000V126KEIIAC	
		10.4	525	8.0	11.2	35	42.5 x 44 x 24	37.5	\	1	MKCHA-1000V156KEIIBC	
	15	11.8	525	7.5	9.2	35	42.5 x 44 x 24	37.5	10.2	1	MKCHA-1000V156KEIIAC	
		13.8	525	7.5	6.7	35	42.5 x 45 x 30	37.5	20.3	1.2	MKCHA-1000V156KGJIAD	
	20	14.8	700	6.5	6.7	35	42.5 x 45 x 30	37.5	20.3	1.2	MKCHA-1000V206KGJIAD	
	25	17.8	875	5.5	5.6	35	42.5 x 50 x 35	37.5	20.3	1.2	MKCHA-1000V256KHKIAD	
	30	14.9	450	5.5	8.1	15	57.5 x 45 x 30	52.5	20.3	1.2	MKCHA-1000V306KJLAD	
	35	15.9	525	5.5	7.1	15	57.5 x 50 x 35	52.5	20.3	1.2	MKCHA-1000V356KHKLAD	
	40	15.9	600	5.0	7.8	15	57.5 x 50 x 35	52.5	20.3	1.2	MKCHA-1000V406KHKLAD	
		16.9	600	5.0	6.9	15	57.5 x 60 x 35	52.5	20.3	1.2	MKCHA-1000V406KHMLAD	
	50	19.0	750	4.5	6.2	15	57.5 x 55 x 45	52.5	20.3	1.2	MKCHA-1000V506KJLLAD	
		19.0	750	4.5	6.2	15	57.5 x 65 x 35	52.5	20.3	1.2	MKCHA-1000V506KHNLAD	
	55	20.0	825	4.0	5.7	15	57.5 x 70 x 35	52.5	20.3	1.2	MKCHA-1000V556KHOLAD	
22.1		900	4.0	5.3	15	57.5 x 53 x 50	52.5	20.3	1.2	MKCHA-1000V606KKKLAD		
60	22.1	900	4.0	5.3	15	57.5 x 80 x 35	52.5	20.3	1.2	MKCHA-1000V606KHLAD		
	22.1	900	4.0	5.3	15	57.5 x 65 x 45	52.5	20.3	1.2	MKCHA-1000V606KJNLAD		
1100 Vdc at 85°C 1430 Vdc at 70 °C 720 Vdc at 105 °C U_{TT} 1650 Vdc/10s	1	2.5	70	46.0	34.9	70	32 x 20 x 11	27.5	\	0.8	MKCHA-1100V105KCEGGB	
	1,5	3.4	105	30.5	26.7	70	32 x 22 x 13	27.5	\	0.8	MKCHA-1100V155KCEGGB	
	2	3.9	140	25.5	24.5	70	32 x 24.5 x 15	27.5	\	0.8	MKCHA-1100V205KDEGGB	
	2,2	4.9	154	17.0	23.8	70	32 x 28 x 14	27.5	\	0.8	MKCHA-1100V225KCFGGB	
	3,3	6.4	231	11.5	20.2	70	32 x 28 x 18	27.5	\	0.8	MKCHA-1100V335KDFGGB	
	4	7.9	280	10.5	14.6	70	32 x 33 x 18	27.5	\	0.8	MKCHA-1100V405KDGGB	
	5	8.4	350	9.5	14.4	70	32 x 37 x 22	27.5	\	0.8	MKCHA-1100V505KEHGGB	
	6,8	11.8	272	13.5	5.0	40	42.5 x 33.5 x 22	37.5	10.2	1	MKCHA-1100V685KEGIAC	
		10.3	320	14.0	6.4	40	42.5 x 40 x 20	37.5	\	1	MKCHA-1100V805KEIIBC	
	8	12.3	320	12.5	5.0	40	42.5 x 40 x 20	37.5	10.2	1	MKCHA-1100V805KEIIAC	
		12.3	320	12.5	5.0	40	42.5 x 37 x 22	37.5	10.2	1	MKCHA-1100V805KEHIAC	
	9	12.6	360	12.5	4.9	40	42.5 x 37 x 22	37.5	10.2	1	MKCHA-1100V905KEHIAC	
	10	13.8	400	9.0	5.6	40	42.5 x 44 x 24	37.5	\	1	MKCHA-1100V106KEIIBC	
		14.8	400	8.5	5.1	40	42.5 x 44 x 24	37.5	10.2	1	MKCHA-1100V106KEIIAC	
	12	15.3	480	7.5	5.4	40	42.5 x 45 x 30	37.5	20.3	1.2	MKCHA-1100V126KGJIAD	
	15	15.8	600	7.0	5.5	40	42.5 x 45 x 30	37.5	20.3	1.2	MKCHA-1100V156KGJIAD	
	18	15.4	720	7.5	5.5	40	42.5 x 50 x 35	37.5	20.3	1.2	MKCHA-1100V186KHKIAD	
	20	16.4	400	7.0	5.1	20	42.5 x 50 x 35	37.5	20.3	1.2	MKCHA-1100V206KHKIAD	
		11.9	400	8.5	8.1	20	57.5 x 45 x 30	52.5	20.3	1.2	MKCHA-1100V206KJLAD	
	25	13.0	500	8.0	7.2	20	57.5 x 50 x 35	52.5	20.3	1.2	MKCHA-1100V256KHKLAD	
	30	15.0	600	5.0	8.9	20	57.5 x 50 x 35	52.5	20.3	1.2	MKCHA-1100V306KHKLAD	
	35	16.1	700	5.0	8.0	20	57.5 x 60 x 35	52.5	20.3	1.2	MKCHA-1100V356KHMLAD	
	40	17.1	800	5.5	6.3	20	57.5 x 65 x 35	52.5	20.3	1.2	MKCHA-1100V406KHNLAD	
		17.1	800	5.5	6.3	20	57.5 x 55 x 45	52.5	20.3	1.2	MKCHA-1100V406KJLLAD	
	45	18.2	900	5.5	5.8	20	57.5 x 70 x 35	52.5	20.3	1.2	MKCHA-1100V456KHOLAD	
	50	19.8	1000	5.0	5.2	20	57.5 x 65 x 45	52.5	20.3	1.2	MKCHA-1100V506KJNLAD	
20.3		1000	4.5	5.7	20	57.5 x 53 x 50	52.5	20.3	1.2	MKCHA-1100V506KKKLAD		

Rated DC Voltage U_N derating Voltage test between terminals U_{TT}	Nominal Capacitance C_N [μ F]	Ripple Current at 70°C 1 k–10 kHz I_r [A RMS]	Peak Current Maximum value \hat{I} [A]	ESR ESR [m Ω]	Thermal Resist. R_{th} [K/W]	dv/dt [V/ μ s]	Dimensions			Product Code		
							Case Size L x H x T [mm]		Terminals			
							P1 [mm]	P2 [mm]	$\varnothing d$ [mm]			
1200 Vdc at 85°C 1560 Vdc at 70 °C 780 Vdc at 105 °C U_{TT} 1800 Vdc/10s	1	4.4	80	33.0	14.9	80	32 x 20 x 11	27.5	\	0.8	MKCHA-1200V105KCEGBB	
	2	4.9	160	33.0	12.1	80	32 x 24.5 x 15	27.5	\	0.8	MKCHA-1200V205KDEGBB	
	2,2	5.4	176	17.5	19.0	80	32 x 28 x 18	27.5	\	0.8	MKCHA-1200V225KDFGBB	
	3	6.9	240	16.5	12.6	80	32 x 28 x 18	27.5	\	0.8	MKCHA-1200V305KDFGBB	
	3,3	7.9	264	13.5	11.4	80	32 x 33 x 18	27.5	\	0.8	MKCHA-1200V335KDGGBB	
	5	9.8	400	12.0	8.2	80	32 x 37 x 22	27.5	\	0.8	MKCHA-1200V505KEHGGB	
		7.4	225	15.5	11.3	45	42.5 x 33.5 x 22	37.5	\	1	MKCHA-1200V505KEGIBC	
	6	7.4	270	15.5	11.3	45	42.5 x 40 x 20	37.5	\	1	MKCHA-1200V605KEIIBC	
	7	7.9	315	15.5	10.1	45	42.5 x 37 x 22	37.5	10.2	1	MKCHA-1200V705KEHIAC	
	8	8.9	360	12.5	9.8	45	42.5 x 44 x 24	37.5	10.2	1	MKCHA-1200V805KEIIAC	
	10	9.9	450	10.5	9.4	45	42.5 x 44 x 24	37.5	10.2	1	MKCHA-1200V106KEIIAC	
		11.8	450	8.0	8.6	45	42.5 x 45 x 30	37.5	20.3	1.2	MKCHA-1200V106KGJIAD	
	15	14.9	675	6.5	6.7	45	42.5 x 50 x 35	37.5	20.3	1.2	MKCHA-1200V156KHKIAD	
		12.9	500	8.5	7.0	25	57.5 x 45 x 30	52.5	20.3	1.2	MKCHA-1200V206KGLAD	
	25	15.0	625	6.5	6.8	25	57.5 x 50 x 35	52.5	20.3	1.2	MKCHA-1200V256KHLAD	
		17.0	750	5.5	6.3	25	57.5 x 55 x 45	52.5	20.3	1.2	MKCHA-1200V306KJLLAD	
	30	17.0	750	5.5	6.3	25	57.5 x 60 x 35	52.5	20.3	1.2	MKCHA-1200V306KHMLAD	
		18.1	875	5.0	6.2	25	57.5 x 55 x 45	52.5	20.3	1.2	MKCHA-1200V356KJLLAD	
	35	18.1	875	5.0	6.2	25	57.5 x 70 x 35	52.5	20.3	1.2	MKCHA-1200V356KHOLAD	
		20.1	1000	4.5	5.6	25	57.5 x 53 x 50	52.5	20.3	1.2	MKCHA-1200V406KKKLAD	
45	22.2	1125	4.0	4.8	25	57.5 x 65 x 45	52.5	20.3	1.2	MKCHA-1200V456KJNLAD		
1500 Vdc at 85°C 1950 Vdc at 70 °C 980 Vdc at 105 °C U_{TT} 2250 Vdc/10s	6,5	11.8	293	10.5	6.5	45	42 x 42 x 28	37.5	10.3	1	MKCHA-1500V655KFIAC	
	11	19.6	71	6.5	3.7	30	42 x 50 x 35	37.5	20.3	1.2	MKCHA-1500V116KHKIAD	

Additional designs on request · Weitere Designs auf Anfrage

> Soldering Parameters · Lötparameter

- Manual with soldering iron · LötKolben: **Max. 350°C/3s**
- Wave soldering · Wellenlöten: **Max. 260°C/4s or 250°C/6s**



> Life Time Table · Brauchbarkeitsdauer – Tabelle

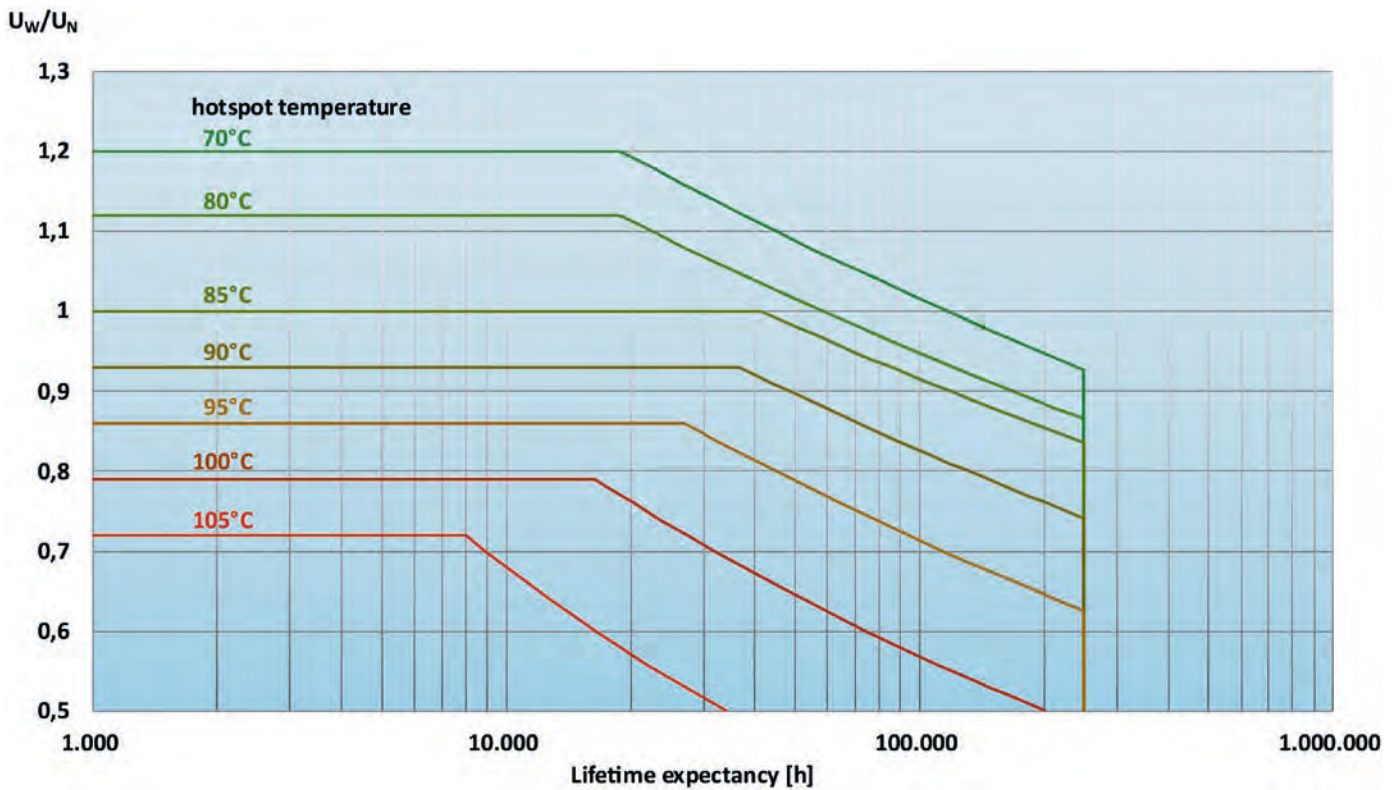
Lifetime as function of ratio between the effective working voltage U_w and the rated DC voltage U_N													
$T_{HOTSPOT}$	x 0.5	x 0.6	x 0.7	x 0.75	x 0.8	x 0.85	x 0.9	x 0.95	x 1.0	x 1.05	x 1.1	x 1.15	x 1.20
50 °C	250	250	250	250	250	250	250	250	250	250	181	116	76
60 °C	250	250	250	250	250	250	250	250	234	144	91	58	38
70 °C	250	250	250	250	250	250	250	196	117	72	45	29	19
75 °C	250	250	250	250	250	250	238	138	83	51	32	21	
80 °C	250	250	250	250	250	250	168	98	59	36	23		
85 °C	250	250	250	250	250	210	119	69	42				
90 °C	250	250	250	228	132	79	48	30					
95 °C	250	250	114	70	45	30							
100 °C	200	75	32	22	16								
105 °C	34	17	9										

khrs value limited to 250 000 hours.

> Life Time Graph · Brauchbarkeitsdauer – Diagramm

Lifetime expectancy depending on hotspot temperature $T_{HOTSPOT}$ versus ratio between the effective working voltage U_w and the rated DC voltage U_N

Lebenserwartung in Abhängigkeit von der hotspot Temperatur $T_{HOTSPOT}$ und dem Verhältnis der tatsächlich anliegenden Spannung zur DC Nennspannung U_N



$$T_{HOTSPOT} = T_a + I^2 \times ESR \times R_{th}$$

Rated capacitance C_N

Capacitance value rated at 20°C / rated frequency.

Rated Voltage U_N

The maximum or peak voltage of either polarity of a reversing or non-reversing type wave form for which the capacitor has been designed and rated (unlike other standards for AC capacitors, the rated voltage is not the rms value).

Non repetitive peak (surge) voltage U_s

Voltages beyond the rated voltage induced by switching or faults of the system or any part of it. Maximum count 1000 times with a duration of not more than 50 ms each.

Ripple voltage U_r

The peak-to-peak alternating component of the unidirectional voltage.

Voltage test between terminals U_{TT}

Routine test of all capacitors conducted at room temperature, prior to delivery. A further test with 80 % of the test voltage stated in the data sheet may be carried out once at the user's location.

Voltage test between terminals and case U_{TC}

Routine test of all capacitors between shortcircuited terminals and case, conducted at room temperature. May be repeated at the user's location.

Rated current I_r

rms value of permissible ripple current in continuous operation and frequencies between 1 kHz and 10 kHz when U_N is applied at the rated temperature.

Maximum current I_{max}

Maximum rms value of permissible current in continuous operation. The values given in the data sheets are related to either the specified maximum power dissipation or to the terminals current limits.

Peak current \hat{I}

Maximum permitted repetitive current amplitude during continuous operation.

Non-repetitive peak current (surge) I_s

Maximum current that may occur non-repetitively and briefly in the event of a fault. Maximum count 1000 times with a duration of not more than 50 ms each.

Nennkapazität C_N

Nennkapazitätswert bei 20°C / Nennfrequenz.

Nennspannung U_N

Die Höchst- oder Spitzenspannung jeder Polarität einer umkehrbaren oder nicht umkehrbaren Wellenform, für die der Kondensator ausgelegt und bemessen wurde (im Gegensatz zu anderen Normen für Wechselstrom-kondensatoren ist die Nennspannung nicht die rms Spannung).

Nicht repetitive Überspannungsspitze U_s

durch Schaltvorgänge oder Fehler des Systems verursachte Spannungen oberhalb der Nennspannung. Maximal 1000-mal mit einer Dauer von jeweils bis zu 50 ms.

Ripple Spannung U_r

Die Spitze-zu-Spitze-Wechselkomponente der uni-direktionalen Spannung.

Spannungsprüfung zwischen den Anschlüssen U_{TT}

Routineprüfung aller Kondensatoren bei Raumtemperatur vor der Auslieferung. Eine weitere Prüfung mit 80 % der im Datenblatt angegebenen Prüfspannung kann einmalig beim Anwender durchgeführt werden.

Spannungstest zwischen Anschlüssen und Gehäuse U_{TC}

Routineprüfung bei Raumtemperatur aller Kondensatoren zwischen kurzgeschlossenen Anschlüssen und Gehäuse, Kann beim Anwender vor Ort wiederholt werden.

Nennstrom I_r

RMS Effektivwert des zulässigen Ripple Stroms im Dauerbetrieb und für den Frequenzbereich 1 kHz bis 10 kHz wenn die Nennspannung ansteht und bei Nenntemperatur.

Maximaler Strom I_{max}

Maximaler RMS Effektivwert des zulässigen Stroms im Dauerbetrieb. Die in den Datenblättern angegebenen Werte beziehen sich entweder auf die angegebene maximale Verlustleistung oder auf das Limit der Anschlussklemmen.

Spitzenstrom \hat{I}

Maximal zulässige wiederholbare Stromamplitude im Dauerbetrieb.

Nicht repetitiver Spitzenstrom (Surge) I_s

Maximaler Strom, der im Fehlerfall nicht wiederkehrend und kurzzeitig auftreten darf. Maximal 1000-mal mit einer Dauer von jeweils bis zu 50 ms.

Dielectric dissipation factor $\tan\delta_0$

Constant dissipation factor of the dielectric material for all capacitors in their rated frequency.

Thermal resistance R_{th}

The thermal resistance indicates by how many degrees the capacitor temperature at the hotspot rises in relation to the dissipation losses.

Maximum power dissipation P_{max}

Maximum permitted power dissipation for the capacitor's operation at a certain ambient temperature.

Ambient temperature T_a

Temperature of the surrounding air, measured 10 cm away and at 2/3 of the case height of the capacitor.

Lower category temperature T_{min}

Lowest permissible ambient temperature at which a capacitor may be used.

Upper category temperature T_{max}

Highest permissible capacitor temperature during operation, i.e. temperature at the hottest point of the case.

Hotspot temperature $T_{HOTSPOT}$

Temperature at the hottest spot inside the capacitor.

Rated energy contents E_N

Energy stored in the capacitor when charged at rated voltage.

Clearance in air L

The shortest distance between conducting parts of the terminals or between terminals and case.

Creepage distance K

The shortest distance along an insulated surface between conducting parts of the terminals or between terminals and case

Resonant frequency f_{res}

The capacitance and self-inductance of any capacitor form a series resonant circuit. Above the resonant frequency, the inductive part of this LC-circuit prevails. The capacitor would then behave as an inductor.

Dielektrischer Verlustfaktor $\tan\delta_0$

Konstanter Verlustfaktor des dielektrischen Materials für alle Kondensatoren bei ihrer Nennfrequenz.

Thermischer Widerstand R_{th}

Der Wärmewiderstand gibt an, um wie viel Grad die Temperatur des Kondensators im Hotspot im Verhältnis zu den Verlusten ansteigt.

Maximale Verlustleistung P_{max}

Maximal zulässige Verlustleistung für den Betrieb des Kondensators bei einer bestimmten Umgebungstemperatur.

Umgebungstemperatur T_a

Temperatur der Umgebungsluft, gemessen in 10 cm Entfernung und auf 2/3 der Gehäusehöhe des Kondensators.

Untere Betriebstemperatur T_{min}

Niedrigste zulässige Umgebungstemperatur für den Betrieb des Kondensators.

Obere Betriebstemperatur T_{max}

Höchste zulässige Kondensatortemperatur während des Betriebs, d. h. Temperatur an der heißesten Stelle des Gehäuses.

Hotspot-Temperatur $T_{HOTSPOT}$

Temperatur an der heißesten Stelle im Inneren des Kondensators.

Nenn-Energiewert E_N

Im Kondensator gespeicherte Energie bei Aufladung mit Nennspannung.

Sicherheitsabstand L

Der kürzeste Abstand zwischen den leitenden Teilen der Anschlüsse oder zwischen Anschlüssen und Gehäuse.

Kriechstrecke K

Der kürzeste Abstand entlang einer isolierten Fläche zwischen leitenden Teilen der Anschlüsse oder zwischen Anschlüssen und Gehäuse

Resonanzfrequenz f_{res}

Die Kapazität und die Selbstinduktivität eines jeden Kondensators bilden einen Reihenschwingkreis. Oberhalb der Resonanzfrequenz überwiegt der induktive Teil dieses LC-Kreises. Der Kondensator würde sich dann wie eine Induktivität verhalten.

Compliance statement

Compliance Erklärung

As a well-established European supplier of electronic components, we are aware of our responsibilities and obligations in regards to the laws and regulations concerning the safety, health and welfare at work of every single person working along our supply chain as well as of the people who come into contact with our components.

This leads AIC Europe to exclusively work with manufacturers who share our respect for human rights, ethics and the protection of the environment and in particular to take due diligence, that their parts entirely complies with the applicable regulations.

Products and accessories from this catalog comply among other with the following regulations and directives at the beginning of 2023:

Als langjähriger europäischer Lieferant von elektronischen Bauteilen sind wir uns unserer Verantwortung und Verpflichtung gegenüber den Gesetzen und Vorschriften in Bezug auf die Sicherheit, die Gesundheit und das Wohlergehen jedes einzelnen Mitarbeiters in unserer Lieferkette sowie der Menschen, die mit unseren Bauteilen in Berührung kommen, bewusst.

Dies veranlasst AIC Europe, ausschließlich mit Herstellern zusammenzuarbeiten, die unsere Achtung der Menschenrechte, der Ethik und des Umweltschutzes teilen und insbesondere darauf zu achten, dass ihre Erzeugnisse den geltenden Vorschriften vollständig entsprechen.

Produkte und Zubehör aus diesem Katalog erfüllen zu Beginn 2023 unter anderen folgende Vorschriften:

- Restriction of Hazardous Substances Directive **RoHS** 2011/65/EU & amendment (EU)2015/863
- Regulation (EC) No 1907/2006 **REACH**
Registration, Evaluation, Authorisation and Restriction of Chemicals based on the SVHC candidate list updated by 2023, January 17th
- OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas by providing for all our products
 - a Conflict Minerals Reporting Template (**CMRT**) in accordance with the Dodd-Frank Wall Street Reform and Consumer Protection Act, Section 1502 on conflict minerals
 - an Extended Minerals Reporting Template (**EMRT**) for further conflict minerals
- Regulation/Verordnung (EU) 2019/1021 on persistent organic pollutants – **POP** amended by delegated Regulation (EU) 2021/277
- Safe Drinking Water and Toxic Enforcement Act of 1986 (California's Proposition **CP65**)
Chemicals known to the State to cause cancer or reproductive toxicity (as of Dec 8, 2020)
- Toxic Substances Control Act 1976 EPA **TSCA** 6 (h)



AIC EUROPE

AIC EUROPE remain committed to

- continuously collect relevant information with our reasonably best available effort from our suppliers and provide our best available information to our customers
- provide updated information timely to the customers when we receive modified or added information from our suppliers
- strive to spread this approach along our supply chains to ensure that, in the end, our customers too comply with the relevant regulations

AIC EUROPE verpflichten sich weiterhin

- kontinuierlich und nach bestem Wissen und Gewissen relevante Informationen von ihren Lieferanten zu sammeln und ihren Kunden die besten verfügbaren Informationen zur Verfügung zu stellen.
- ihren Kunden rechtzeitig aktualisierte Informationen zur Verfügung zu stellen, wenn wir geänderte oder zusätzliche Informationen von unseren Lieferanten erhalten
- sich zu bemühen, diesen Ansatz entlang unserer Lieferketten zu verbreiten, um sicherzustellen, dass am Ende auch unsere Kunden die relevanten Vorschriften einhalten.

Handling Cautions

NOTES TO USERS OF PP FILM CAPACITORS

Before using the products, please read the notes for proper use.

1. Operating environment

- Water, salt water, oil, and other electro conductive liquid adhered to the capacitors may cause capacitor failure.
- Capacitors wetted with liquid must never not be operated.
- Capacitors must never be stored or operated in corrosive atmospheres, particularly not where chlorides, sulfides, acids, alkalis, salts, organic solvents or similar substances are present.
- Capacitors must not be operated in ozone or where ultra violet radiation or radioactive rays are irradiating.
- In dust and dirt-prone environments, regular checks and maintenance (particularly of the terminals and insulators) are absolutely necessary to prevent creation of creepage distances between live parts and/or the protective conductor/ground. Dust and dirt shall be cleaned with paper or towel wetted with ethanol, not detergent.
- Excessive vibration and/or shock may cause capacitor failure.

2. Operating conditions

2.1. Operating temperature, ripple current

- Capacitors must be operated according to the specification in catalog and/or data sheets.
- Overvoltage or thermal overload may cause rupture, ignition, and internal faults. When the highest temperature in capacitor is higher than 70°C, voltage derating has to be applied. For MLC and MLC2 series, permissible ripple current can be calculated from ambient temperature, operating voltage and information in data sheet or catalog.
 - Even if operating current is lower than permissible value, the current over permissible terminal current may cause excessive terminal heat generation.
- Ambient temperature is measured at point a point approximately 0.1 m away from the capacitor housing and at two-third of
 - the height from its base.
- It has to be noted that capacitors themselves generate heat.
- Permissible current decrease with the increase of ambient temperature. Therefore, it should be considered that capacitors must be selected by considering the operation at maximum ambient temperature.
- Frequency may affect electric load. Capacitors have to be selected by considering the effect of frequency.
- It should be noted that resonance by inductance of external circuit may affect capacitor's performance.
- It should be noted that parallel connection may cause current unbalance because of the difference of circuit impedance.
- Harmonics current may cause excessive heat generation because of dielectric loss at low frequency, or skin effect at high frequency. When harmonics current includes frequencies under 50Hz and/or over 10kHz components, the inner temperature of capacitors must be verified.
 - We recommend to check the following characteristics before proceeding evaluation. Please consult us for individual support if any of the following conditions apply.
 - Total current harmonic distortion based on the data computed exceed 200 %
 - Ratio between total current power losses and total dielectric power losses exceed 150 %
 - Capacitors with thermos sensor are not for endurance test, just for testing inner temperature rise. After the test, please scrap them.
 - The internal temperature should be measured after the inner temperature reached saturation (approx. five hours).

2.2. Applied voltage and other operating conditions

- Dielectric breakdown may cause severe internal fault such as short circuit, ignition and rupture. Capacitors must be operated inside the specified range specified in catalog and/or data sheets. For overvoltage within short period may not shorten service life time of capacitors.
- Capacitors must be operated under rated voltage. Surge voltage specified in data sheet is just for capacitor evaluation, and does not guarantee the continuous operation of capacitors.
- Inrush current may cause internal faults.
- Film capacitors have finite service life.
- DC capacitors must not be operated under AC condition. When ripple voltage over 20 % of rated voltage is applied to DC capacitors, it may cause capacitor failure. In this case, please contact us.

2.3. Cooling

- Give at least 40mm for cylindrical series or 20 mm for the others of clearance between the capacitors for natural or forced ventilation for effective heat dissipation of capacitors.

3. Before installation

3.1. Discharge

- AIC Europe GmbH and AIC tech Inc. does not accept responsibility for whatever damage may arise out of a non-observance, or caused by capacitors without agreement on detail of use condition, evaluation condition etc.
- In any event, the poles of the capacitors must be discharged with 1 kOhm or larger resistance before being touched.
- Note that capacitors with nominal voltages above 750Vac or 2,000Vdc in particular may regenerate new voltage at their terminals after having been short-circuited just for short periods. This condition will be avoided by storing them permanently short circuited.

3.2. Earthing

- Capacitors with a metal case must be earthed at the metal part or by means of a separate metal strap or clamp.

4. Mounting Location

4.1. Precaution

- Mechanically or electrically damaged, leaky or otherwise damaged capacitors may not be used or continue to be used.
- Do not place the capacitors directly above or nest to heat sources such as detuning or tuning reactors, bus bars, etc.
- Enough creepage distances and air clearance have to be kept when connecting capacitors, bus bars and housings.

4.2. Mounting

- Keep the torque described in catalog or data sheet. Toothed washer has to be used for fixing stud bolt.
- Three terminal type capacitors are equipped with Torx (T20). Use of improper screwdrivers may damage the screws and impair reliable fixation.
- Improper connection may cause local heat generation, and rupture and ignite. Don't apply excessive stress to terminals and stud bolt.
- The useful life of a capacitor may be reduced dramatically if exposed at excessive heat.
- The permitted max temperature of the capacitor must not be exceeded even under the most critical ambient circumstances.
- The inner temperature of capacitors must be verified not to exceed the maximum operating temperature specified in the data sheet at the worst operating condition.

Capacitors with thermos couple (PT100) are available depending of requests. Under force cooled condition, current over value specified in data sheet could be applied to capacitor. Please contact us when bus bars have high temperature and/or capacitors are placed with narrow space between them. They may cause increase in temperature of capacitors.

- It should be noted that the internal heat balance of large capacitors is only reached after a couple of hours when verifying inner temperature rise of capacitors.
- Capacitors with liquid or viscous filling shall be installed upright with terminals facing upwards. Capacitors with gas or solid resin filling can be mounted in any position without restriction.

4.3. Vibration / Shock

- Vibration and shock mainly affect fixing materials and terminals. It is important to measure the degree of vibration and shock at mounting location.
- The capacitors comply with test standard (IEC60068-2-6) as follows.

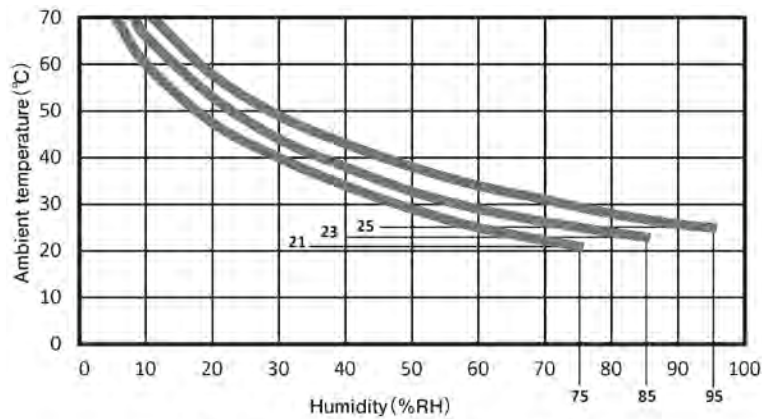
series	capacitor weight	test duration	frequency range	max. acceleration	max. displacement amplitude
MKCHA	< 3 kg	10 cycles per each axis	10 to 55Hz	50m/s ²	± 0.35 mm

Handling Cautions

5 Storage

5.1. Storage environment

- Ambient temperature: -40°C to +35°C
- Humidity : max. RH75 % annual means
max. RH95 % 30 days/year
- Capacitors may not be stored or operated outside the specified humidity ranges. Condensation is not permitted



5.2. Storage limitation

- 2 years without any verifications
- When storage term is over two years, please confirm before usage that electric characteristics are within specifications, capacitor case is not covered with stains, and terminals are not covered with oxide layer.

6 Safety of self-healing type film capacitors

- In the event of a voltage breakdown the metal layers around the breakdown channel are evaporated by the temperature of the electric arc that forms between the electrodes. An insulation area is formed which is reliably resistive and voltage proof for all operating requirements of the capacitor. The capacitor remains fully functional during and after the breakdown.
- Surge voltages and surge currents within rated values induced by switching or faults of the system or any part of it are also permitted.

7 Mind hazards of explosion and fire

- Capacitors consist mainly of polypropylene, i.e. their energy content is relatively high. They may rupture and ignite as a result of internal faults or external overload (e.g. temperature, overvoltage, harmonic distortion).
- It must therefore be ensured, by appropriate measures, that they do not form any hazard to their environment in the event of failure or malfunction of the safety device.

8 Fumigation treatment

- Fumigation treatment may be performed during transportation for insect proofing.
- Halide such as methyl bromide may cause corrosion inside capacitors, and lead to failure. Insecticide also may cause capacitor failure.

9 Disposal

- We recommend disposing of the capacitors through professional recycling centers for electric/electronic waste.
- After incineration of capacitors, metal parts such as terminal, aluminum case, lid and internal wirings will be remained.
- Please consider that disposed capacitors should not put on the market.

10 Others

- In case of fire, dried powder, carbon dioxide or foam fire extinguishing agent has to be used.
- Please comply with transportation and exporting regulation in each nation.
- Capacitors usually have design life of approx. 15 to 20 years under proper operating condition. In order to maintain the reliability of equipment, it is recommended to replace the capacitors after ten years operation.

The logo for AIC Europe features the word "AIC" in a bold, red, sans-serif font, followed by "EUROPE" in a larger, grey, sans-serif font. The background of the top half of the page is dark blue with a red-to-white gradient triangle in the top right corner. A large, white-outlined diamond shape with a red-to-white gradient is positioned on the right side of the page, partially overlapping the white background.

AIC EUROPE

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