

ACC - ACS SERIES

ALUMINIUM ELECTROLYTIC CAPACITORS FOR PRINTED WIRING BOARD

Series	Capacitance range	Voltage range	Temperature range	Case Φ x H	Applications
ACC ACS	150 - 33000	25 - 500	-40°C , +85°C	30 x 40 45 x 100	Snap-in type, 2-4 pins configuration Solder pin mounting Industrial applications

MECHANICAL OUTLINES

CASE: cylindrical aluminium made

TERMINALS: to be soldered, for printed wiring board (type SNAP-IN)

SEALING: hermetic by beading on a Rubber-Bakelite cover

PRESSURE RELEASE VENT: directly on to the aluminium case

SLEEVE: self-extinguishing thermoshrinkable sleeve

MOUNTING: vertical, by soldering to printed circuit board.

SIZE: see enclosed drawings

SPECIFICATIONS	TEMPERATURE RANGE	CAPACITANCE
CECC 30300 IEC 384-4 ("long life grade") MIL C62D DIN 41240 / DIN 45910	Operating: -40 °C/ +85 °C Climatic Category : 40/85/56	Tolerance shall be within the following limits: -20% + 20% (standard tolerance) or -10% +30% (available on request)

LEAKAGE CURRENT:

After the rated voltage has been applied to the capacitor for 5 minutes the leakage current must be:

Maximum limit	at 25 °C	$I_f \leq 0,004 * C * V$
Operating limit	at 25 °C:	$I_f \leq 0,002 * C * V$

where I_f = leakage current (μ A)

C = capacitance (μ F)

V = rated voltage (V)

IMPORTANT

When using high-capacitance and high-voltage electrolytic capacitors it is important to remember that the inner part (the rolled section) is not insulated from can: between the negative pole and the aluminium can there is a variable and not defined resistance essentially due to the electrolyte used in capacitor manufacture.

SURGE VOLTAGE

Working Voltage	25	40	63	100	160	200	250	350	385	400	420	450	500
Surge Voltage	29	46	73	115	185	230	290	385	415	440	460	490	525

RIPPLE CURRENT

The allowable values of ripple current in amperes, are related to the temperature and frequency by the formula:

$$I_r = K_t * K_f * I_{r85}$$

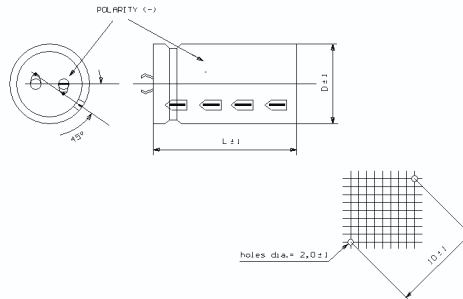
where I_{r85} is the limit given by tables, referred to a temperature of 85 °C and to a frequency of 100 Hz and K_t or K_f are values here below tabulated:

°C	40	50	65	75	85
K_t	2.3	1.9	1.7	1.4	1.0

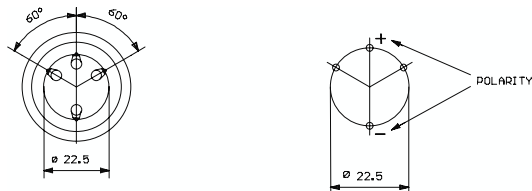
V_n	HZ	50	100	300	400	500	>1KHZ
$V \leq 50$	K_f	0.90	1.00	1.14	1.18	1.20	1.25
$50 < V \leq 100$		0.88	1.00	1.20	1.25	1.35	1.40
$V > 100$		0.88	1.00	1.20	1.25	1.35	1.40

CAPACITORS DIMENSIONS AND DRILLING PLAN OF PRINTED WIRING BOARD

ACC SERIES



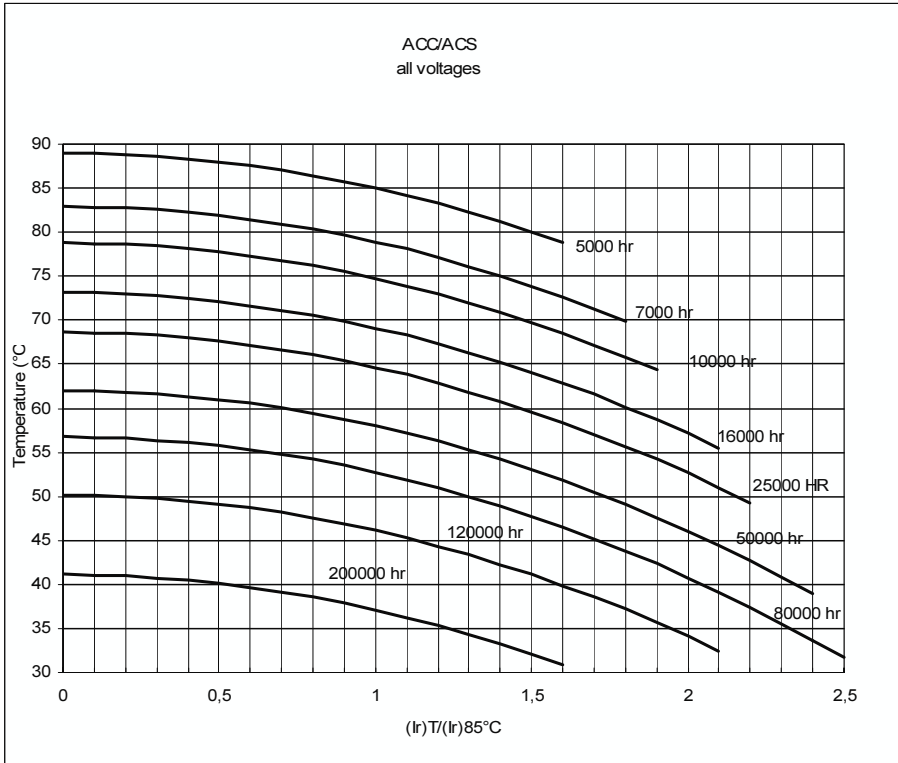
ACS SERIES (D = 35 / 40 / 45 mm)



CASE CODE	$\Phi \times l$ (mm)	CASE CODE	$\Phi \times l$ (mm)	CASE CODE	$\Phi \times l$ (mm)	CASE CODE	$\Phi \times l$ (mm)
MB	30 x 40	NN	35 x 60	PN	40 x 60	QE	45 x 75
MC	30 x 50	NE	35 x 75	PG	40 x 100	QG	45 x 100
NB	35 x 40	PB	40 x 40	QC	45 x 50		
NC	35 x 50	PC	40 x 50	QN	45 x 60		

The unconnected pins serve as mountings and must be soldered to insulated pads

EXPECTED LIFE AS A FUNCTION OF TEMPERATURE AND RIPPLE CURRENT



Expected life criteria: see introduction

CAP (μ F)	Rated Voltage (Vn)	Case Code	Φ x h (mm)	TG δ 100Hz	ESR max 100Hz (mOhm)	ESR typ 100Hz (mOhm)	Z max 10Khz (mOhm)	I ripple 55°C 100Hz (A)	I ripple 85°C 100Hz (A)	CATALOGUE NUMBER	
										2 mounting pins	4 mounting pins
10000	25	MB	30 x 40	0,28	36	27	29	10,7	5,6	ACC103M025MB1	
15000		MC	30 x 50	0,32	27	20	22	13,5	7,1	ACC153M025MC1	
15000		NB	35 x 40	0,38	32	24	26	13,4	7,1	ACC153M025NB1	ACS153M025NB1
22000		NC	35 x 50	0,48	28	21	19	14,5	7,6	ACC223M025NC1	ACS223M025NC1
33000		PC	40 x 50	0,60	23	17	18	17,2	9,0	ACC333M025PC1	ACS333M025PC1

CAP (μ F)	Rated Voltage (Vn)	Case Code	Φ x h (mm)	TG δ 100Hz	ESR max 100Hz (mOhm)	ESR typ 100Hz (mOhm)	Z max 10Khz (mOhm)	I ripple 55°C 100Hz (A)	I ripple 85°C 100Hz (A)	CATALOGUE NUMBER	
										2 mounting pins	4 mounting pins
6800	40	MB	30 x 40	0,30	56	42	40	8,4	4,4	ACC682M040MB1	
10000		MC	30 x 50	0,32	41	31	28	11	5,8	ACC103M040MC1	
10000		NB	35 x 40	0,36	46	34	32	11,3	6	ACC103M040NB1	ACS103M040NB1
15000		NC	35 x 50	0,36	31	23	21	13,9	7,3	ACC153M040NC1	ACS153M040NC1
22000		PC	40 x 50	0,48	28	21	19	15,7	8,3	ACC223M040PC1	ACS223M040PC1

CAP (μ F)	Rated Voltage (Vn)	Case Code	Φ x h (mm)	TG δ 100Hz	ESR max 100Hz (mOhm)	ESR typ 100Hz (mOhm)	Z max 10Khz (mOhm)	I ripple 55°C 100Hz (A)	I ripple 85°C 100Hz (A)	CATALOGUE NUMBER	
										2 mounting pins	4 mounting pins
4700	63	MB	30 x 40	0,21	57	43	46	8,5	4,5	ACC472M063MB1	
6800		MC	30 x 50	0,21	39	30	32	11,2	5,9	ACC682M063MC1	
6800		NB	35 x 40	0,24	45	34	37	11,4	6	ACC682M063NB1	ACS682M063NB1
10000		NC	35 x 50	0,24	31	23	25	13,9	7,3	ACC103M063NC1	ACS103M063NC1
12000		PC	40 x 50	0,29	31	23	25	15	7,9	ACC123M063PC1	ACS123M063PC1
15000		PE	40 x 75	0,29	25	18	21	23,2	12,2		ACS153M063PE1
22000		PG	40 x 100	0,29	17	13	21	26	13,8		ACS223M063PG1

CAP (μ F)	Rated Voltage (Vn)	Case Code	Φ x h (mm)	TG δ 100Hz	ESR	ESR	Z	I ripple	I ripple	CATALOGUE NUMBER	
					max 100Hz (mOhm)	typ 100Hz (mOhm)	max 10Khz (mOhm)	55°C 100Hz (A)	85°C 100Hz (A)	2 mounting pins	4 mounting pins
1500	100	MB	30 x 40	0,09	76	57	66	7,1	3,7	ACC152M100MB1	
2200		MC	30 x 50	0,10	58	43	57	8,4	4,4	ACC222M100MC1	
2200		NB	35 x 40	0,11	64	48	57	9,2	4,8	ACC222M100NB1	ACS222M100NB1
3300		NC	35 x 50	0,12	46	35	38	11,3	5,9	ACC332M100NC1	ACS332M100NC1
4700		NC	35 x 50	0,12	33	24	26	13,4	7,1	ACC472M100NC1	ACS472M100NC1
5600		NC	35 x 50	0,12	27	20	32	14,7	7,7	ACC562M100NC1	ACS562M100NC1
6800		PE	40 x 75	0,12	22	17	26	24,2	12,7		ACS682M100PE1
10000		PG	40 x 100	0,12	15	11	26	25,8	13,8		ACS103M100PG1

CAP (μ F)	Rated Voltage (Vn)	Case Code	Φ x h (mm)	TG δ 100Hz	ESR	ESR	Z	I ripple	I ripple	CATALOGUE NUMBER	
					max 100Hz (mOhm)	typ 100Hz (mOhm)	max 10Khz (mOhm)	55°C 100Hz (A)	85°C 100Hz (A)	2 mounting pins	4 mounting pins
470	200	MB	30 x 40	0,08	217	163	176	4,7	2,5	ACC471M200MB1	
680		MB	30 x 40	0,08	150	112	122	5,7	3	ACC681M200MB1	
1000		MC	30 x 50	0,08	102	76	82	7,6	4	ACC102M200MC1	
1000		NB	35 x 40	0,08	102	76	82	8,3	4,4	ACC102M200NB1	ACS102M200NB1
1200		NB	35 x 40	0,08	85	64	80	9,1	4,8	ACC122M200NB1	ACS122M200NB1
1500		NC	35 x 50	0,08	68	51	56	10,1	5,3	ACC152M200NC1	ACS152M200NC1
1800		NC	35 x 50	0,08	57	42	56	11,1	5,8	ACC182M200NC1	ACS182M200NC1
2200		PG	40 x 100	0,08	46	35	38	14,8	7,8	ACC222M200PG1	ACS222M200PG1
3300		PG	40 x 100	0,08	31	23	38	22,5	11,8		ACS332M200PG1
2200		QC	45 x 50	0,08	46	35	38	14,2	7,5		ACS222M200QC1
3300		QE	45 x 75	0,08	31	23	38	20,7	10,9		ACS332M200QE1
4700		QG	45 x 100	0,08	22	16	38	28,6	15,1		ACS472M200QG1

CAP (μ F)	Rated Voltage (Vn)	Case Code	Φ x h (mm)	TG δ 100Hz	ESR	ESR	Z	I ripple	I ripple	CATALOGUE NUMBER	
					max 100Hz (mOhm)	typ 100Hz (mOhm)	max 10Khz (mOhm)	55°C 100Hz (A)	85°C 100Hz (A)	2 mounting pins	4 mounting pins
470	250	MB	30 x 40	0,08	217	163	190	4,7	2,5	ACC471M250MB1	
680		MC	30 x 50	0,08	150	112	131	6,3	3,3	ACC681M250MC1	
680		NB	35 x 40	0,08	150	112	131	6,8	3,6	ACC681M250NB1	ACS681M250NB1
1000		NB	35 x 40	0,08	102	76	120	8,3	4,4	ACC102M250NB1	ACS102M250NB1
1000		NC	35 x 50	0,08	102	76	89	8,3	4,4	ACC102M250NC1	ACS102M250NC1
2200		NE	35 x 75	0,08	46	35	89	14,7	7,7	ACC222M250NE1	ACS222M250NE1
1500		PC	40 x 50	0,08	68	51	59	11	5,8	ACC152M250PC1	ACS152M250PC1
2200		PG	40 x 100	0,08	46	35	38	18,4	9,7		ACS222M250PG1

CAP (μ F)	Rated Voltage (Vn)	Case Code	Φ x h (mm)	TG δ 100Hz	ESR max 100Hz (mOhm)	ESR typ 100Hz (mOhm)	Z max 10Khz (mOhm)	I ripple 55°C 100Hz (A)	I ripple 85°C 100Hz (A)	CATALOGUE NUMBER	
										2 mounting pins	4 mounting pins
220	385	MB	30 x 40	0,08	463	347	406	3,2	1,7	ACC221M400MB1	
330		MB	30 x 40	0,08	309	232	270	4	2,1	ACC331M400MB1	
330		MC	30 x 50	0,08	309	232	270	4,4	2,3	ACC331M400MC1	
470		MC	30 x 50	0,08	217	163	190	5,2	2,7	ACC471M400MC1	
470		NB	35 x 40	0,08	217	163	190	5,7	2,8	ACC471M400NB1	ACS471M400NB1
470		NC	35 x 50	0,08	217	163	170	5,7	3	ACC471M400NC1	ACS471M400NC1
560		NC	35 x 50	0,08	182	136	143	6,2	3,3	ACC561M400NC1	ACS561M400NC1
680		NC	35 x 50	0,08	150	112	120	6,8	3,6	ACC681M400NC1	ACS681M400NC1
1000		NN	35 x 60	0,08	102	76	118	9	4,7	ACC102M400NN1	ACS102M400NN1
1200		NE	35 x 75	0,08	85	64	98	10,8	5,7	ACC122M400NE1	ACS122M400NE1
470		PB	40 x 40	0,08	217	163	82	5,6	3,3	ACC471M400PB1	ACS471M400PB1
680		PC	40 x 50	0,08	150	112	63	7,4	3,9	ACC681M400PC1	ACS681M400PC1
1000		PE	40 x 75	0,08	100	75	63	10,6	5,6		ACS102M400PE1
1500		PG	40 x 100	0,08	90	68	63	15,2	8		ACS152M400PG1
1000		QC	45 x 50	0,08	85	64	63	9,6	5		ACS102M400QC1
1500		QE	45 x 75	0,08	85	64	63	13,9	7,3		ACS152M400QE1
2200		QG	45 x 100	0,08	85	64	63	19,6	10,3		ACS222M400QG1

CAP (μ F)	Rated Voltage (Vn)	Case Code	Φ x h (mm)	TG δ 100Hz	ESR max 100Hz (mOhm)	ESR typ 100Hz (mOhm)	Z max 10Khz (mOhm)	I ripple 55°C 100Hz (A)	I ripple 85°C 100Hz (A)	CATALOGUE NUMBER	
										2 mounting pins	4 mounting pins
220	400	MB	30 x 40	0,08	463	347	406	3,2	1,7	ACC221M400MB1	
330		MB	30 x 40	0,08	309	232	270	4	2,1	ACC331M400MB1	
330		MC	30 x 50	0,08	309	232	270	4,4	2,3	ACC331M400MC1	
470		MC	30 x 50	0,08	217	163	190	5,2	2,7	ACC471M400MC1	
470		NB	35 x 40	0,08	217	163	190	5,7	2,8	ACC471M400NB1	ACS471M400NB1
470		NC	35 x 50	0,08	217	163	170	5,7	3	ACC471M400NC1	ACS471M400NC1
560		NC	35 x 50	0,08	182	136	143	6,2	3,3	ACC561M400NC1	ACS561M400NC1
680		NC	35 x 50	0,08	150	112	120	6,8	3,6	ACC681M400NC1	ACS681M400NC1
1000		NN	35 x 60	0,08	136	76	118	9	4,7	ACC102M400NN1	ACS102M400NN1
1200		NE	35 x 75	0,08	85	64	98	10,8	5,7	ACC122M400NE1	ACS122M400NE1
470		PB	40 x 40	0,08	217	163	82	5,6	3,3	ACC471M400PB1	ACS471M400PB1
680		PC	40 x 50	0,08	150	112	63	7,4	3,9	ACC681M400PC1	ACS681M400PC1
1000		PE	40 x 75	0,08	100	75	63	10,6	5,6		ACS102M400PE1
1500		PG	40 x 100	0,08	90	68	63	15,2	8		ACS152M400PG1
1000		QC	45 x 50	0,08	85	64	63	9,6	5		ACS102M400QC1
1500		QE	45 x 75	0,08	85	64	63	13,9	7,3		ACS152M400QE1
2200		QG	45 x 100	0,08	85	64	63	19,6	10,3		ACS222M400QG1

CAP (μF)	Rated Voltage (Vn)	Case Code	$\Phi \times h$ (mm)	TG δ 100Hz	ESR	ESR	Z	I ripple	I ripple	CATALOGUE NUMBER	
					max 100Hz (mOhm)	typ 100Hz (mOhm)	max 10Khz (mOhm)	55°C 100Hz (A)	85°C 100Hz (A)	2 mounting pins	4 mounting pins
150	420	MB	30 x 40	0,08	679	510	190	1,8	1,8	ACC151M420MB1	
220		NB	35 x 40	0,08	463	347	190	3,2	1,7	ACC221M420NB1	
330		MC	30 x 50	0,08	309	232	190	4,4	2,3	ACC331M420MC1	
470		NC	35 x 50	0,08	217	163	170	5,7	3	ACC471M420NC1	ACS471M420NC1
1000		NE	35 x 75	0,08	102	76	130	9	4,7	ACC102M420NE1	ACS102M420NE1
680		PC	40 x 50	0,08	150	112	190	7,4	3,9	ACC681M420PC1	ACS681M420PC1
1000		PE	40 x 75	0,08	102	76	130	10,6	5,6		ACS102M420PE1
1000		PG	40 x 100	0,08	102	76	89	10,8	5,8		ACS102M420PG1
1500		PG	40 x 100	0,08	68	51	89	15,2	8		ACS152M420PG1

CAP (μF)	Rated Voltage (Vn)	Case Code	$\Phi \times h$ (mm)	TG δ 100Hz	ESR	ESR	Z	I ripple	I ripple	CATALOGUE NUMBER	
					max 100Hz (mOhm)	typ 100Hz (mOhm)	max 10Khz (mOhm)	55°C 100Hz (A)	85°C 100Hz (A)	2 mounting pins	4 mounting pins
150	450	MB	30 x 40	0,08	679	510	631	2,4	1,3	ACC151M450MB1	
220		MB	30 x 40	0,08	463	347	430	3	1,6	ACC221M450MB1	
330		MC	30 x 50	0,08	309	232	286	4	2,1	ACC331M450MC1	
330		NB	35 x 40	0,08	309	232	286	4,3	2,3	ACC331M450NB1	ACS331M450NB1
470		NC	35 x 50	0,08	217	163	185	6,3	3,3	ACC471M450NC1	ACS471M450NC1
680		NN	35 x 50	0,08	150	112	155	7,4	3,9	ACC681M450NN1	ACS681M450NN1
820		NE	35 x 75	0,08	124	93	128	8,5	4,5	ACC821M450NE1	ACS821M450NE1
680		PC	40 x 50	0,08	150	112	128	7	3,7	ACC681M450PC1	ACS681M450PC1
1000		PE	40 x 75	0,08	102	76	128	9,7	5,1	ACC102M450PE1	ACS102M450PE1
1500		PG	40 x 100	0,08	68	51	128	13,8	7,3		ACS152M450PG1
820		QC	45 x 50	0,08	124	93	128	7,9	4,2		ACS821M450QC1
1200		QE	45 x 75	0,08	85	64	128	11,4	6		ACS122M450QE1
1800		QG	45 x 100	0,08	57	42	128	16,2	8,5		ACS182M450QG1
2200		QG	45 x 100	0,08	46	35	128	18,2	10,5		ACS222M450QG1

CAP (μF)	Rated Voltage (Vn)	Case Code	$\Phi \times h$ (mm)	TG δ 100Hz	ESR	ESR	Z	I ripple	I ripple	CATALOGUE NUMBER	
					max 100Hz (mOhm)	typ 100Hz (mOhm)	max 10Khz (mOhm)	55°C 100Hz (A)	85°C 100Hz (A)	2 mounting pins	4 mounting pins
150	500	MB	30 x 40	0,15	1274	955	790	1,5	0,8	ACC151M500MB1	
220		MC	30 x 50	0,15	869	651	538	2	1,1	ACC221M500MC1	
220		NB	35 x 40	0,15	869	651	538	2	1,1	ACC221M500NB1	ACS221M500NB1
330		NC	35 x 50	0,15	579	434	359	2,7	1,5	ACC331M500NC1	ACS331M500NC1
470		PC	40 x 50	0,15	407	305	252	3,6	2	ACC471M500PC1	ACS471M500PC1
680		PG	40 x 100	0,15	281	211	192	6,9	3,7		ACS681M500PG1