

# ATK SERIES

## ALUMINIUM ELECTROLYTIC CAPACITORS FOR PRINTED WIRING BOARD LONG LIFE

Series	Capacitance range	Voltage range	Temperature range	Case $\Phi \times H$	Applications
ATK	100 - 2200	160 - 450	-25°C , +105°C	30 x40 40 x 100	Extended temperature range Low ESR Solder pin mounting Industrial applications

### MECHANICAL OUTLINES:

CASE: cylindrical aluminium made

TERMINALS: to be soldered, for printed wiring board

SEALING: hermetic by beading on a Rubber Bakelite covers

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 30301-805 IEC 384-4 ("long life grade") DIN 40010 DIN 41240 / DIN 41238	Operating: -25 °C/ +105 °C  Climatic Category (IEC 68): 25/105/56	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	$I_f \leq 1.3 \cdot \sqrt{C \cdot V}$
Operating limit	at 25 °C:	$I_f \leq 1.0 \cdot \sqrt{C \cdot V}$

where  $I_f$  = leakage current ( $\mu A$ )

C= capacitance ( $\mu F$ )

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	200	250	350	400	420	450
Surge Voltage	230	290	385	440	460	495

**RIPPLE CURRENT:**

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

$$I_r = K_t * K_f * I_{r105}$$

Where  $I_{r105}$  is the limit given by tables, referred to a temperature of 105°C and to a frequency of 100 Hz and  $K_t$  or  $K_f$  are values here below tabulated:

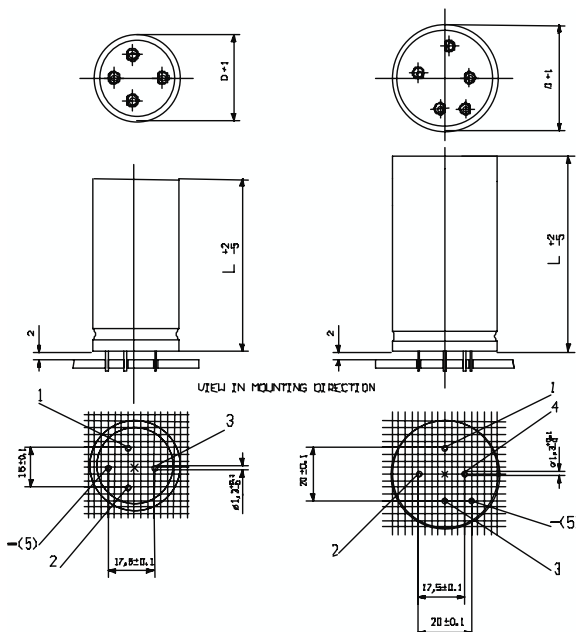
°C	50	65	75	85	95	105
$K_t$	2.4	2.4	2.1	1.8	1.3	1.0

$V_n$	Hz	50	100	300	400	500	>1KHz
V>160		0.88	1.00	1.20	1.25	1.35	1.40

**CAPACITORS DIMENSIONS AND DRILLING PLAN OF PRINTED WIRING BOARD**

D= 30 / 35 mm.

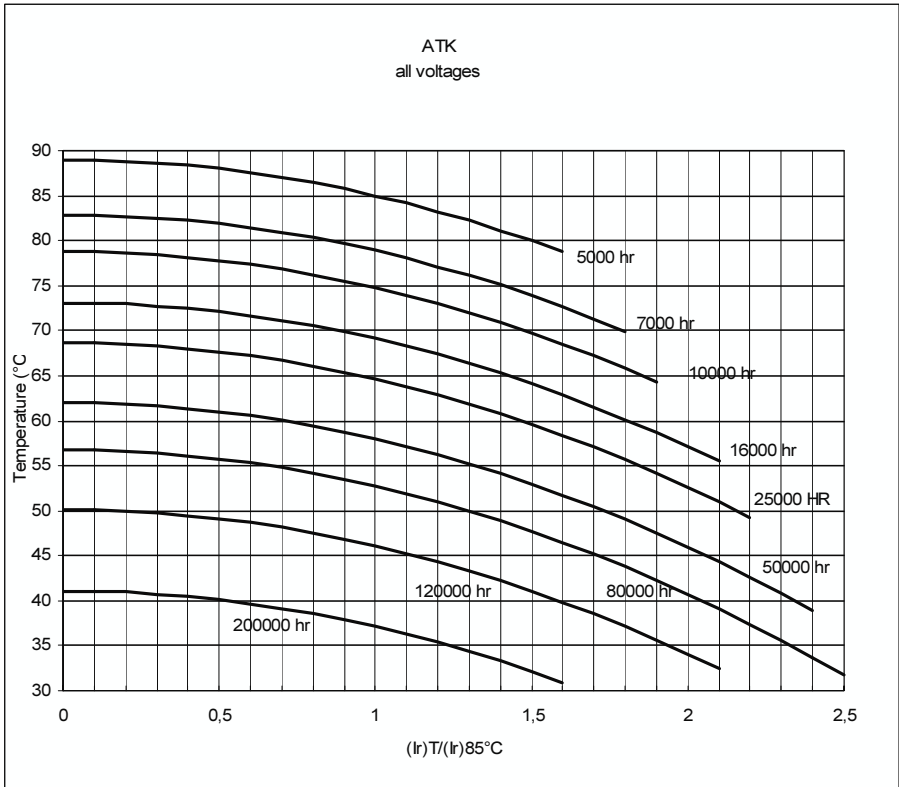
D= 40 mm.



CASE	Φ X L	CASE	Φ X L	CASE	Φ X L	CASE	Φ X L
MB	30 x 40	NC	35 x 50	PB	40 x 40	PE	40 x 75
NB	35 x 40	NE	35 x 75	PC	40 x 50	PG	40 x 100

- positive pole marked with << 1 >>
- The terminals marked with "2", "3", "4" are to be considered only as mechanical connections and must be soldered to insulated pads.

EXPECTED LIFE AS A FUNCTION OF TEMPERATURE AND RIPPLE CURRENT



Expected life criteria: see introduction

CAP ( $\mu\text{F}$ )	Rated Voltage (Vn)	Case Code	$\Phi \times h$ (mm)	TG $\delta$ 100Hz	ESR max 100Hz (mOhm)	ESR Typ 100Hz (mOhm)	Z max 10KHz (mOhm)	I ripple 75°C 100Hz (A)	I ripple 105°C 100Hz (A)	CATALOGUE NUMBER
220	200	MB	30 x 40	0,10	543	407	355	2,0	0,9	ATK221M200MB1
330		NB	35 x 40	0,10	362	271	270	2,6	1,3	ATK331M200NB1
470		NC	35 x 50	0,10	254	191	166	3,4	1,6	ATK471M200NC1
680		PC	40 x 50	0,10	176	132	115	4,3	2,0	ATK681M200PC1
1000		PE	40 x 75	0,10	119	90	78	6,2	3,0	ATK102M200PE1
1500		PG	40 x 100	0,10	80	60	52	8,8	4,2	ATK152M200PG1

CAP ( $\mu\text{F}$ )	Rated Voltage (Vn)	Case Code	$\Phi \times h$ (mm)	TG $\delta$ 100Hz	ESR max 100Hz (mOhm)	ESR Typ 100Hz (mOhm)	Z max 10KHz (mOhm)	I ripple 75°C 100Hz (A)	I ripple 105°C 100Hz (A)	CATALOGUE NUMBER
220	250	MB	30 x 40	0,08	434	326	514	2,2	1,1	ATK221M250MB1
220		NB	35 x 40	0,08	434	326	354	2,4	1,2	ATK221M250NB1
330		NC	35 x 50	0,08	290	217	237	3,5	1,7	ATK331M250NC1
680		PC	40 x 50	0,08	141	105	166	4,8	2,3	ATK681M250PC1
1800		PE	40 x 75	0,08	53	40	114	9,3	4,4	ATK182M250PE1
2200		PG	40 x 100	0,08	43	33	78	12,0	5,7	ATK222M250PG1

CAP ( $\mu\text{F}$ )	Rated Voltage (Vn)	Case Code	$\Phi \times h$ (mm)	TG $\delta$ 100Hz	ESR max 100Hz (mOhm)	ESR Typ 100Hz (mOhm)	Z max 10KHz (mOhm)	I ripple 75°C 100Hz (A)	I ripple 105°C 100Hz (A)	CATALOGUE NUMBER
100	400	MB	30 x 40	0,08	0	0	0	1,5	0,7	
150		NB	35 x 40	0,08	637	478	495	2,0	1,0	ATK151M400NB1
220		NC	35 x 50	0,08	434	326	337	2,6	1,3	ATK221M400NC1
330		NC	35 x 50	0,08	290	217	225	3,2	1,5	ATK331M400NC1
330		PC	40 x 50	0,08	290	217	225	3,3	1,6	ATK331M400PC1
470		NC	35 x 50	0,08	203	152	158	3,8	1,8	ATK471M400NC1
470		PC	40 x 50	0,08	203	152	158	4,0	1,9	ATK471M400PC1
680		NE	35 x 75	0,08	141	105	109	5,3	2,5	ATK681M400NE1
680		PE	40 x 75	0,08	141	105	109	5,7	2,7	ATK681M400PE1
1000		PE	40 x 75	0,08	96	72	74	6,9	3,3	ATK102M400PE1
1000		PG	40 x 100	0,08	96	72	74	8,1	3,8	ATK102M400PG1
1500		PG	40 x 100	0,08	64	48	62	11,2	5,6	ATK152M400PG1

CAP ( $\mu$ F)	Rated Voltage (Vn)	Case Code	$\Phi \times h$ (mm)	TG $\delta$ 100Hz	ESR max 100Hz (mOhm)	ESR Typ 100Hz (mOhm)	Z max 10Khz (mOhm)	I ripple 75°C 100Hz (A)	I ripple 105°C 100Hz (A)	CATALOGUE NUMBER
100	420	MB	30 x 40	0,09	1075	806	0	1,4	0,7	ATK101M420MB1
150		NB	35 x 40	0,09	717	537	760	1,9	0,9	ATK151M420NB1
220		NC	35 x 50	0,09	489	366	507	2,5	1,2	ATK221M420NC1
330		NC	35 x 50	0,09	326	244	345	3,0	1,4	ATK331M420NC1
330		PC	40 x 50	0,09	326	244	230	3,2	1,5	ATK331M420PC1
470		NC	35 x 50	0,09	229	172	230	3,6	1,7	ATK471M420NC1
470		PC	40 x 50	0,09	229	172	162	3,8	1,8	ATK471M420PC1
680		NE	35 x 75	0,09	158	119	162	5,0	2,4	ATK681M420NE1
680		PE	40 x 75	0,09	158	119	122	5,4	2,6	ATK681M420PE1
1000		PE	40 x 75	0,09	107	81	111	6,5	3,1	ATK102M420PE1
1000		PG	40 x 100	0,09	107	81	95	7,6	3,6	ATK102M420PG1
1500		PG	40 x 100	0,10	80	60	83	11,0	5,3	ATK152M420PG1

CAP ( $\mu$ F)	Rated Voltage (Vn)	Case Code	$\Phi \times h$ (mm)	TG $\delta$ 100Hz	ESR max 100Hz (mOhm)	ESR Typ 100Hz (mOhm)	Z max 10Khz (mOhm)	I ripple 75°C 100Hz (A)	I ripple 105°C 100Hz (A)	CATALOGUE NUMBER
220	450	MB	30 x 40	0,09	489	366	378	1,8	1,0	ATK221M450MB1
330		MC	30 x 50	0,09	326	244	252	2,4	1,3	ATK331M450MC1
330		NB	35 x 40	0,09	326	244	252	2,4	1,3	ATK331M450NB1
470		NC	35 x 50	0,09	229	172	175	3,1	1,7	ATK471M450NC1
470		PB	40 x 40	0,09	229	172	175	3,1	1,7	ATK471M450PB1
560		PC	40 x 50	0,09	103	77	147	3,7	2,0	ATK561M450PC1
680		NE	35 x 75	0,09	158	119	123	4,3	2,4	ATK681M450NE1
820		PE	40 x 75	0,09	131	98	102	5,1	2,8	ATK821M450PE1
1000		PG	40 x 100	0,10	119	90	83	6,5	3,6	ATK102M450PG1
1200		PG	40 x 100	0,10	100	75	69	7,1	4,0	ATK122M450PG1