

# K50-95

ALUMINUM ELECTROLYTIC CAPACITOR

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AZHAR.673541.023 TU



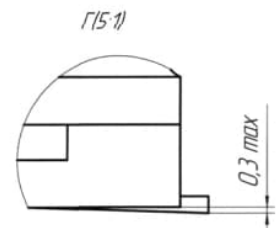
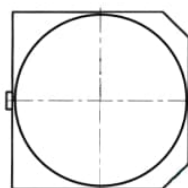
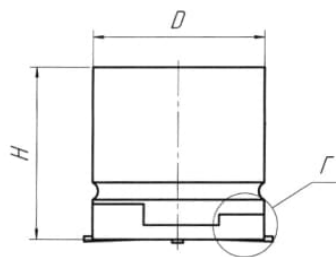
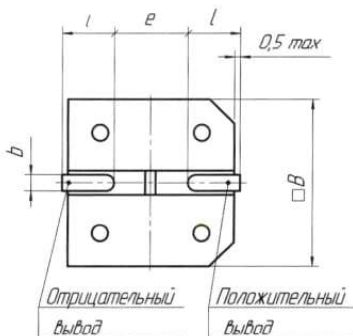
Capacitors K50-95, in comparable denominations, provide import substitution of foreign aluminum capacitors of vertical chip design for surface mounting.

Polar, sealed, non-isolated, fixed chip-capacitors. The capacitor type is produced for the internal wiring with the requirements to 98% air humidity at  $T=25^{\circ}\text{C}$ .

## MAIN PARAMETERS

Name	Value
Rated voltage, V	6.3...450
Rated capacitance, $\mu\text{F}$	3.3...10 000
Capacitance tolerance (25°C, 50 Hz), %	+50...-20; $\pm 20$
Temporary overvoltage within 10 sec., V	1.15 $U_R$ ( $U_R=6.3...315$ ) 1.1 $U_R$ ( $U_R=350, 400, 450$ )
Maximum operating temperature $T_{env}$ , °C	+100
Minimal operating temperature $T_{env}$ , °C	-60

## CAPASITOR PHYSICAL CONFIGURATION



- 1 – Negative terminal
- 2 – Positive terminal

## CAPACITOR RATINGS

$U_R, V$	6.3	10	16	25	40	63	100	160	250	315	350	400	450
$C_R, \mu F$													
3.3											✓	✓	✓
4.7										✓	✓	✓	✓
10									✓	✓	✓	✓	✓
22								✓	✓	✓	✓	✓	✓
33							✓	✓	✓	✓	✓	✓	
47							✓	✓	✓				
100						✓	✓						
220						✓	✓						
330					✓	✓	✓						
470				✓	✓	✓							
1 000		✓	✓	✓	✓								
2 200	✓	✓	✓	✓	✓								
3 300	✓	✓	✓	✓									
4 700	✓	✓	✓										
10 000	✓												

## CAPACITORS RELIABILITY

Reliability Operation modes	Minimal nonfailure operating time, $t_\lambda$ , hours	Capacitor failure rate, $\lambda$ , 1/hour, max
Maximum-permissible mode ( $U_R$ , $T_{env}=100^\circ C$ )	2 000	$1 \times 10^{-4}$
Typical operating mode ( $0.7U_R$ , $T_{env}=85^\circ C$ )	4 000	$5 \times 10^{-4}$
Typical operating mode ( $0.7U_R$ , $T_{env}=55^\circ C$ )	30 000	$5 \times 10^{-5}$
Storageability Gamma-rated time of capacitor storageability $T_{cy}$ at $y=95\%$ , years, min	20	

## CAPACITOR ELECTRIC PARAMETERS VALUE WHEN DELIVERED

U <sub>R</sub> , V	C <sub>R</sub> , μF	tg δ, %	I <sub>LEAK</sub>	Z*, Ohm, 25°C	ESR, Ohm, 25°C, 100Hz	I <sub>R</sub> , mA, 120°C, 50 Hz
6.3	2 200	45	139	1.10	1.20	384
6.3	3 300	45	208	0.96	0.98	385
6.3	4 700	45	297	0.93	0.94	400
6.3	10 000	45	630	0.88	0.90	546
10	1 000	35	100	1.40	1.50	298
10	2 200	35	220	1.10	1.20	385
10	3 300	35	330	0.98	1.00	535
10	4 700	35	470	0.87	0.90	630
16	1 000	25	160	1.50	1.60	315
16	2 200	25	352	1.10	1.30	500
16	3 300	25	528	0.98	1.10	630
16	4 700	25	752	0.80	0.98	721
25	470	20	118	1.90	2.00	298
25	1 000	20	250	1.75	1.80	385
25	2 200	20	550	1.44	1.50	630
25	3 300	20	825	0.90	1.10	721
40	330	15	132	5.30	5.50	298
40	470	15	188	4.80	5.00	385
40	1 000	15	400	4.70	4.80	735
40	2 200	15	880	3.80	4.50	432
63	100	15	63	5.40	5.60	140
63	220	15	139	5.30	5.50	280
63	330	15	208	4.95	5.00	346
63	470	15	296	4.77	4.80	494
100	33	15	33	14.00	15.00	70
100	47	15	47	11.80	12.50	135
100	100	15	300	10.40	11.00	179
100	220	15	220	9.80	10.80	250
100	330	15	330	8.80	10.50	321
160	22	20	95	18.50	20.00	59
160	33	20	131	17.00	18.00	72
160	47	20	301	14.00	16.00	86
250	10	25	75	23.00	25.00	34
250	22	25	135	22.50	23.00	59

U <sub>R</sub> , V	C <sub>R</sub> , μF	tg δ, %	I <sub>LEAK</sub>	Z*, Ohm, 25°C	ESR, Ohm, 25°C, 100Hz	I <sub>R</sub> , mA, 120°C, 50 Hz
250	33	25	330	20.80	22.00	74
250	47	25	260	18.70	20.00	95
315	4.7	15	60	48.00	50.00	23
315	10	15	126	35.00	38.00	31
315	22	15	278	34.00	36.00	42
315	33	15	416	31.00	35.00	68
350	3.3	15	47	68.00	70.00	21
350	4.7	15	66	63.00	65.00	22
350	10	15	140	59.00	61.00	30
350	22	15	308	57.00	58.80	43
350	33	15	462	50.00	54.40	71
400	3.3	25	51	84.00	90.00	19
400	4.7	25	63	79.00	85.00	20
400	10	25	105	68.00	70.00	30
400	22	25	201	48.80	50.00	60
400	33	25	528	46.00	48.80	75
450	3.3	25	59	100.00	120.00	22
450	4.7	25	85	90.00	110.00	23
450	10	25	180	80.00	88.00	30
450	22	25	396	30.00	55.00	56

\* Capacitor impedance Z is measured at frequency 100 kHz for capacitors C<sub>R</sub> ≤ 1 000 μF, and at frequency 10 kHz for capacitors C<sub>R</sub> > 1 000 μF

## CAPACITORS OVERALL DIMENSIONS AND MASS

U <sub>R</sub> , V	C <sub>R</sub> , μF	Dimensions, mm												Mass, g, max
		D		H		L=W		l		b		e		
		Nom.	Limit dev.	Nom.	Limit dev.	Nom.	Limit dev.	Nom.	Limit dev.	Nom.	Limit dev.	Nom.	Limit dev.	
6.3	2 200	12.5	±0.5	13.5	±0.5	13.6	±0.2	5.0	±0.3	1.2	±0.2	4.0	±0.5	11.24
6.3	3 300	12.5	±0.5	13.5	±0.5	13.6	±0.2	5.0	±0.3	1.2	±0.2	4.0	±0.5	11.24
6.3	4 700	16.0	±0.5	16.5	±0.5	17.1	±0.2	5.6	±0.3	1.2	±0.2	6.3	±0.5	13.56
6.3	10 000	18.0	±0.5	16.5	±0.5	19.1	±0.2	6.6	±0.3	1.2	±0.2	6.3	±0.5	14.47
10	1 000	10.0	±0.5	10.0	±0.5	10.3	±0.2	3.4	±0.3	0.8	+0.3 -0.1	4.0	±0.5	10.46
10	2 200	12.5	±0.5	13.5	±0.5	13.6	±0.2	5.0	±0.3	1.2	±0.2	4.0	±0.5	11.24
10	3 300	16.0	±0.5	16.5	±0.5	17.1	±0.2	5.6	±0.3	1.2	±0.2	6.3	±0.5	13.56
10	4 700	16.0	±0.5	16.5	±0.5	17.1	±0.2	5.6	±0.3	1.2	±0.2	6.3	±0.5	13.56
16	1 000	12.5	±0.5	13.5	±0.5	13.6	±0.2	5.0	±0.3	1.2	±0.2	4.0	±0.5	11.24
16	2 200	16.0	±0.5	16.5	±0.5	17.1	±0.2	5.6	±0.3	1.2	±0.2	6.3	±0.5	13.56
16	3 300	16.0	±0.5	16.5	±0.5	17.1	±0.2	5.6	±0.3	1.2	±0.2	6.3	±0.5	13.56
16	4 700	18.0	±0.5	16.5	±0.5	19.1	±0.2	6.6	±0.3	1.2	±0.2	6.3	±0.5	14.47
25	470	10.0	±0.5	10.0	±0.5	10.3	±0.2	3.4	±0.3	0.8	+0.3 -0.1	4.0	±0.5	10.46
25	1 000	12.5	±0.5	13.5	±0.5	13.6	±0.2	5.0	±0.3	1.2	±0.2	4.0	±0.5	11.24
25	2 200	16.0	±0.5	16.5	±0.5	17.1	±0.2	5.6	±0.3	1.2	±0.2	6.3	±0.5	13.56
25	3 300	18.0	±0.5	16.5	±0.5	19.1	±0.2	6.6	±0.3	1.2	±0.2	6.3	±0.5	14.47
40	330	10.0	±0.5	10.0	±0.5	10.3	±0.2	3.4	±0.3	0.8	+0.3 -0.1	4.0	±0.5	10.46
40	470	12.5	±0.5	13.5	±0.5	13.6	±0.2	5.0	±0.3	1.2	±0.2	4.0	±0.5	11.24
40	1 000	16.0	±0.5	16.5	±0.5	17.1	±0.2	5.6	±0.3	1.2	±0.2	6.3	±0.5	13.56
40	2 200	18.0	±0.5	16.5	±0.5	19.1	±0.2	6.6	±0.3	1.2	±0.2	6.3	±0.5	14.47
63	100	10.0	±0.5	10.0	±0.5	10.3	±0.2	3.4	±0.3	0.8	+0.3 -0.1	4.0	±0.5	10.46
63	220	12.5	±0.5	13.5	±0.5	13.6	±0.2	5.0	±0.3	1.2	±0.2	4.0	±0.5	11.24
63	330	12.5	±0.5	16.0	±0.5	13.6	±0.2	5.0	±0.3	1.2	±0.2	4.0	±0.5	11.98
63	470	16.0	±0.5	16.5	±0.5	17.1	±0.2	5.6	±0.3	1.2	±0.2	6.3	±0.5	13.56
100	33	10.0	±0.5	10.0	±0.5	10.3	±0.2	3.4	±0.3	0.8	+0.3 -0.1	4.0	±0.5	10.46
100	47	10.0	±0.5	10.0	±0.5	10.3	±0.2	3.4	±0.3	0.8	+0.3 -0.1	4.0	±0.5	10.46
100	100	12.5	±0.5	13.5	±0.5	13.6	±0.2	5.0	±0.3	1.2	±0.2	4.0	±0.5	11.24

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100	330	18.0	±0.5	16.5	±0.5	19.1	±0.2	6.6	±0.3	1.2	±0.2	6.3	±0.5	14.47
160	22	12.5	±0.5	13.5	±0.5	13.6	±0.2	5.0	±0.3	1.2	±0.2	4.0	±0.5	11.24
160	33	12.5	±0.5	13.5	±0.5	13.6	±0.2	5.0	±0.3	1.2	±0.2	4.0	±0.5	11.24
160	47	12.5	±0.5	16.0	±0.5	13.6	±0.2	5.0	±0.3	1.2	±0.2	4.0	±0.5	11.98
250	10	10.0	±0.5	10.0	±0.5	10.3	±0.2	3.4	±0.3	0.8	+0.3 -0.1	4.0	±0.5	10.46
250	22	12.5	±0.5	13.5	±0.5	13.6	±0.2	5.0	±0.3	1.2	±0.2	4.0	±0.5	11.24
250	33	12.5	±0.5	16.0	±0.5	13.6	±0.2	5.0	±0.3	1.2	±0.2	4.0	±0.5	11.98
250	47	16.0	±0.5	16.5	±0.5	17.1	±0.2	5.6	±0.3	1.2	±0.2	6.3	±0.5	13.56
315	4.7	10.0	±0.5	10.0	±0.5	10.3	±0.2	3.4	±0.3	0.8		4.0	±0.5	10.46
315	10	12.5	±0.5	13.5	±0.5	13.6	±0.2	5.0	±0.3	1.2	±0.2	4.0	±0.5	11.24
315	22	12.5	±0.5	16.0	±0.5	13.6	±0.2	5.0	±0.3	1.2	±0.2	4.0	±0.5	11.98
315	33	16.0	±0.5	16.5	±0.5	17.1	±0.2	5.6	±0.3	1.2	±0.2	6.3	±0.5	13.56
350	3.3	10.0	±0.5	10.0	±0.5	10.3	±0.2	3.4	±0.3	0.8	+0.3 -0.1	4.0	±0.5	10.46
350	4.7	10.0	±0.5	10.0	±0.5	10.3	±0.2	3.4	±0.3	0.8	+0.3 -0.1	4.0	±0.5	10.46
350	10	12.5	±0.5	13.5	±0.5	13.6	±0.2	5.0	±0.3	1.2	±0.2	4.0	±0.5	11.24
350	22	12.5	±0.5	16.0	±0.5	13.6	±0.2	5.0	±0.3	1.2	±0.2	4.0	±0.5	11.98
350	33	16.0	±0.5	16.5	±0.5	17.1	±0.2	5.6	±0.3	1.2	±0.2	6.3	±0.5	13.56
400	3.3	10.0	±0.5	10.0	±0.5	10.3	±0.2	3.4	±0.3	0.8	+0.3 -0.1	4.0	±0.5	10.46
400	4.7	10.0	±0.5	10.0	±0.5	10.3	±0.2	3.4	±0.3	0.8	+0.3 -0.1	4.0	±0.5	10.46
400	10	12.5	±0.5	13.5	±0.5	13.6	±0.2	5.0	±0.3	1.2	±0.2	4.0	±0.5	11.24
400	22	16.0	±0.5	16.5	±0.5	17.1	±0.2	5.6	±0.3	1.2	±0.2	6.3	±0.5	13.56
400	33	16.0	±0.5	16.5	±0.5	17.1	±0.2	5.6	±0.3	1.2	±0.2	6.3	±0.5	13.56
450	3.3	12.5	±0.5	13.5	±0.5	13.6	±0.2	5.0	±0.3	1.2	±0.2	4.0	±0.5	11.24
450	4.7	12.5	±0.5	13.5	±0.5	13.6	±0.2	5.0	±0.3	1.2	±0.2	4.0	±0.5	11.24
450	10	12.5	±0.5	16.0	±0.5	13.6	±0.2	5.0	±0.3	1.2	±0.2	4.0	±0.5	11.98
450	22	16.0	±0.5	16.5	±0.5	17.1	±0.2	5.6	±0.3	1.2	±0.2	6.3	±0.5	13.56

Ripple current effective value

versus temperature and frequency can be found from the formula  $I_{RO} = I_R \times K_T \times K_F$ , where

$I_R$  – allowable ripple current at 85 °C, 50 Hz (See Table “Capacitor electric parameters”)

## **$K_T$ - $I_R$ CORRECTION FACTOR VERSUS TEMPERATURE**

Tenv, °C	25	40	50	60	70	85	100
K <sub>T</sub>	2.1	2.04	1.98	1.9	1.73	1.5	1.0

#### K<sub>F</sub> - I<sub>R</sub> CORRECTION FACTOR VERSUS FREQUENCY

F, Hz	50	100	300	600	1 000	10 000	≥50 000
K <sub>F</sub>	1.0	1.25	1.5	1.63	1.69	1.88	2.0

#### EXAMPLE OF REFERENCE DESIGNATION FOR ORDERING

CAPACITOR K50-95 – 40V – 330μF (+50 -20)% AZHYAR.673541.023 TU

CAPACITOR K50-95 – 40V – 330μF ±20% AZHYAR.673541.023 TU