K53-65

TANTALUM SOLID-ELECTROLYTE CAPACITORS

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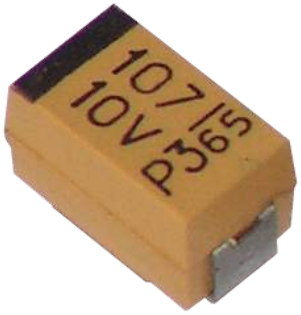
AZHYAR.673546.004 TU



Moulded capacitors in plastic case have protected structure, low impedance and leakage current.

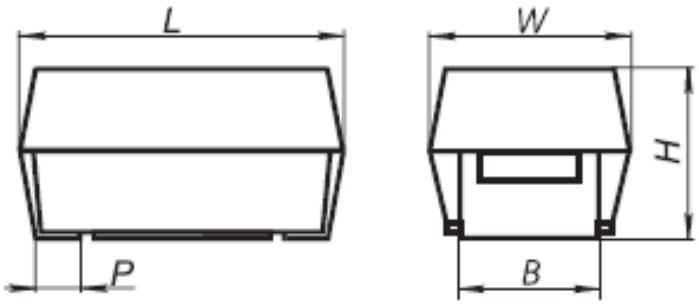
Capacitors are used in special-purpose and civilian equipment with demanding requirements to weight and dimensional characteristics.

Capacitors are suitable for application in direct current, ripple current and pulse current circuits. Capacitors are available in all-climate version.

MAIN PARAMETERS

Name	Value
Rated voltage, V	4...50
Rated capacitance, μF	0.1...470
Capacitance tolerance (20°C, 50 Hz), %	±10; ±20
Maximum operating temperature Tenv, °C	+125
Minimal operating temperature Tenv, °C	-60

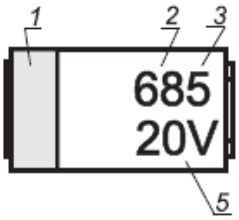
CAPASITOR PHYSICAL CONFIGURATION



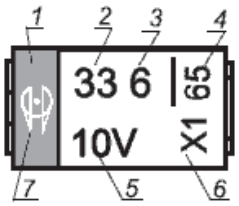
CAPACITORS OVERALL DIMENSIONS AND MASS

Case code	L, mm	W, mm	H, mm	P, mm	B, mm	Mass, g, max
A	3.2±0.2	1.6±0.2	1.6±0.2	0.8±0.3	1.2±0.1	0.05
B	3.5±0.2	2.8±0.2	1.9±0.2	0.8±0.3	2.2±0.1	0.06
C	6.0±0.3	3.2±0.3	2.5±0.3	1.3±0.3	2.2±0.1	0.3
D	7.3±0.3	4.3±0.3	2.9±0.3	1.3±0.3	2.4±0.1	0.5
E	7.3±0.3	4.3±0.3	4.1±0.3	1.3±0.3	2.4±0.1	0.6

"B" case size marking



"C","D","E" case sizes marking



1 – Positive terminal
2 – Rated capacitance, pF
3 – Capacitance multiplier code
4 – Product code (stripe unavailability is acceptable)
5 – Rated voltage, V
6 – Production date code

There is only polarity marking on **"A" case size** capacitors

MARKING CODES DESIGNATION

Code	Year
K	2018
L	2019
M	2020
N	2021
P	2022
R	2023
S	2024
T	2025
U	2026
V	2027
W	2028
X	2029

Code	Month	Code	Month
1	January	7	July
2	February	8	August
3	March	9	September
4	April	O	October
5	May	N	November
6	June	D	December

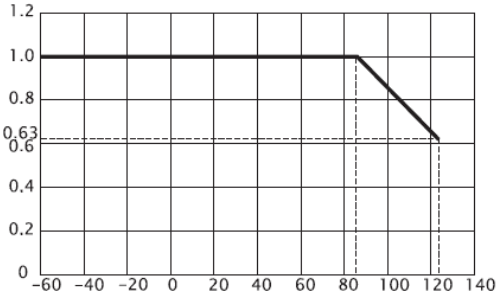
Capaci-tance multi-plier code	Capaci-tance multi-plier
4	10^4
5	10^5
6	10^6
7	10^7
8	10^8

CAPACITORS CASE CODE

C_R, µF	U_R, V								
	4	6.3	10	16	20	25	32	40	50
0.1									A
0.15									A
0.22								A	B
0.33							A	B	B
0.47						A	B	B	C
0.68					A	A	B	B	C
1				A	A	B	B	C	C
1.5			A	A	A	B	C	C	D
2.2		A	A	A	A,B	C	C	C	D
3.3	A	A	A,B	A,B	B	C	C	D	D
4.7	A	B	B	B	B	C	D	E	E
6.8	A,B	B	B	B,C	C	C,D	D	E	E
10	B	C	B,C	C	C	D	D		
15	B	C	C	C	C,D	D	E		
22	B,C	C	C	D	D	E	E		
33	C	C	C,D	D	D	E			
47	C	D	D	D	E				
68	C	D	D	E	E				
100	C	D	D,E	E	E				
150	D	D,E	D,E	E					
220	D,E	E	E						
330	D,E	E							
470	E	E							

VOLTAGE VERSUS TEMPERATURE

$\frac{U_T}{U_R}$



CAPACITORS RELIABILITY

Reliability Operation modes	Minimal nonfailure operating time, t_λ, hours	Capacitor failure rate, λ, 1/hour, max
Maximum-permissible mode (0.63U_R, Tenv=125°C)	30 000	$5x10^{-7}$
Maximum-permissible mode (U_R, Tenv=85°C)		
Light mode (0.2-0.6U_R, Tenv=55°C)	200 000	$5x10^{-8}$
Storageability Gamma-rated time of capacitor storageability Tcy at y=97%, years, min	25	

CAPACITOR ELECTRIC PARAMETERS

U_R, V	C_R, µF	tg δ, %, 20°C, 100 Hz, max	I_{LEAK}, µA, 20°C, after 60 sec., max	ESR, Ohm, 20°C, 100 kHz, max	Z, Ohm, 20°C, 100 kHz, max
4	3.3	8	0.5	•	•
4	4.7	8	0.5	•	•
4	6.8	8	0.5	•	•
4	6.8	8	0.5	•	•
4	10	8	0.5	3.9	4
4	15	8	0.6	3.43	3.5
4	22	8	0.9	2.9	3
4	22	8	0.9	2.45	2.5
4	33	8	1.3	2.15	2.2
4	47	8	1.9	1.96	2
4	68	10	2.7	1.56	1.6
4	100	10	4	1.27	1.3
4	150	10	6	0.88	0.9
4	220	10	8.8	0.88	0.9
4	220	10	8.8	0.88	0.9
4	330	12	13.2	0.88	0.9
4	330	12	13.2	0.88	0.9
4	470	12	18.8	0.88	0.9
6.3	2.2	8	0.5	•	•
6.3	3.3	8	0.5	•	•
6.3	4.7	8	0.5	•	5.5
6.3	6.8	8	0.5	4.4	4.5

U_R, V	C_R, µF	tg δ, %, 20°C, 100 Hz, max	I_{LEAK}, µA, 20°C, after 60 sec., max	ESR, Ohm, 20°C, 100 kHz, max	Z, Ohm, 20°C, 100 kHz, max
6.3	10	8	0.6	2.94	3
6.3	15	8	0.9	2.94	3
6.3	22	8	1.4	2.15	2.2
6.3	33	8	2	1.76	1.8
6.3	47	10	2.9	1.07	1.1
6.3	68	10	4.1	0.88	0.9
6.3	100	10	6	0.88	0.9
6.3	150	10	9	0.88	0.9
6.3	150	10	9	0.88	0.9
6.3	220	12	13.2	0.88	0.9
6.3	330	12	19.8	0.88	0.9
6.3	470	12	28.2	0.78	0.9
10	1.5	8	0.5	•	•
10	2.2	8	0.5	•	•
10	3.3	8	0.5	5.4	5.5
10	3.3	8	0.5	5.4	5.5
10	4.7	8	0.5	4.4	4.5
10	6.8	8	0.7	3.43	3.5
10	10	8	1	2.45	2.5
10	10	8	1	2.45	2.5
10	15	8	1.5	2.45	2.5
10	22	8	2.2	0.98	1
10	33	10	3.3	1.56	1.6
10	33	10	3.3	1.07	1.1
10	47	10	4.7	0.88	0.9
10	68	10	6.8	0.88	0.9
10	100	10	10	0.88	0.9
10	100	10	10	0.88	0.9
10	150	12	15	0.88	0.9
10	150	12	15	0.88	0.9
10	220	12	22	0.88	0.9
16	1	8	0.5	•	•
16	1.5	8	0.5	•	•
16	2.2	8	0.5	5.4	5.5
16	3.3	8	0.5	4.9	5

U_R, V	C_R, µF	tg δ, %, 20°C, 100 Hz, max	I_{LEAK}, µA, 20°C, after 60 sec., max	ESR, Ohm, 20°C, 100 kHz, max	Z, Ohm, 20°C, 100 kHz, max
16	3.3	8	0.5	4.9	5
16	4.7	8	0.8	3.92	4
16	6.8	8	1.1	2.45	2.5
16	6.8	8	1.1	2.45	2.5
16	10	8	1.6	2.45	2.5
16	15	8	2.4	1.76	1.8
16	22	10	3.6	1.07	1.1
16	33	10	5.3	0.88	0.9
16	47	10	7.5	0.88	0.9
16	68	10	10.9	0.88	0.9
16	100	12	16	0.88	0.9
16	150	12	24	0.88	0.9
20	0.68	8	0.5	•	•
20	1	8	0.5	•	•
20	1.5	8	0.5	•	•
20	2.2	8	0.5	6.4	6.5
20	2.2	8	0.5	4.9	5
20	3.3	8	0.7	3.92	4
20	4.7	8	1	2.94	3
20	6.8	8	1.4	2.35	2.4
20	10	8	2	1.86	1.9
20	15	10	3	1.66	1.7
20	15	10	3	1.07	1.1
20	22	10	4.4	1.57	1.6
20	33	10	6.6	0.88	0.9
20	47	10	9.4	0.88	0.9
20	68	12	13.6	0.88	0.9
20	100	12	20	0.88	0.9
25	0.47	8	0.5	•	•
25	0.68	8	0.5	•	•
25	1	8	0.5	•	•
25	1.5	8	0.5	6.37	6.5
25	2.2	8	0.6	3.43	3.5
25	3.3	8	0.9	3.43	3.5
25	4.7	8	1.2	2.45	2.5

U_R, V	C_R, µF	tg δ, %, 20°C, 100 Hz, max	I_{LEAK}, µA, 20°C, after 60 sec., max	ESR, Ohm, 20°C, 100 kHz, max	Z, Ohm, 20°C, 100 kHz, max
25	6.8	8	1.7	1.96	2
25	6.8	8	1.7	1.37	1.4
25	10	10	2.5	1.17	1.2
25	15	10	3.8	0.98	1
25	22	12	5.5	0.88	0.9
25	33	12	8.3	0.88	0.9
32	0.33	8	0.5	•	•
32	0.47	8	0.5	•	•
32	0.68	8	0.5	•	•
32	1	8	0.5	6.37	6.5
32	1.5	8	0.5	4.4	4.5
32	2.2	8	0.8	3.43	3.5
32	3.3	8	1.2	2.45	2.5
32	4.7	8	1.7	1.47	1.5
32	6.8	10	2.4	1.27	1.3
32	10	10	3.5	0.98	1
32	15	12	5.3	0.88	0.9
32	22	12	7.7	0.88	0.9
40	0.22	8	0.5	•	•
40	0.33	8	0.5	•	•
40	0.47	8	0.5	•	•
40	0.68	8	0.5	•	•
40	1	8	0.5	6.17	6.3
40	1.5	8	0.5	4.21	4.3
40	2.2	8	0.8	3.43	3.5
40	3.3	8	1.5	2.25	2.3
40	4.7	12	2	1.17	1.2
40	6.8	12	3	0.88	0.9
50	0.1	8	0.5	•	•
50	0.15	8	0.5	•	•
50	0.22	8	0.5	•	•
50	0.33	8	0.5	•	•
50	0.47	8	0.5	7.8	8
50	0.68	8	0.5	6.86	7
50	1	8	0.5	5.9	6

U_R, V	C_R, µF	tg δ, %, 20°C, 100 Hz, max	I_{LEAK}, µA, 20°C, after 60 sec., max	ESR, Ohm, 20°C, 100 kHz, max	Z, Ohm, 20°C, 100 kHz, max
50	1.5	10	0.8	3.9	4
50	2.2	10	1.1	2.45	2.5
50	3.3	10	1.7	1.96	2
50	4.7	12	2.4	1.47	1.5
50	6.8	12	3.5	0.88	0.9

- Value is not normalized

EXAMPLE OF REFERENCE DESIGNATION FOR ORDERING

CAPACITOR K53-65 “C” – 16V – 15µF ±10% AZHYAR.673546.004 TU