

KFZ Series

SMD Aluminium Electrolytic Capacitors (V-chip)



Features

- Extra Low Impedance (40% ~ 60% lower than LZ Series)
- Designed for reflow soldering
- Designed for surface mounting on high-density PCB
- RoHS 2.0 compliant
- 219 SVHC & REACH compliant

TEMPERATURE RANGE
-55°C ... +105°C

RATED VOLTAGE
6.3 – 100 V

CAPACITANCE
1 – 2200 μ F

ENDURANCE
105°C 2000~5000 h

Specifications

Category temp. range	-55°C to +105°C								
Capacitance tolerance	±20% (120 Hz / +20 °C)								
Leakage current	$I \leq 0.01 \text{ CV}$ or $3 \mu\text{A}$ whichever is greater (after 2 minutes)								
Tan δ	See the characteristics list								
Endurance	<p>After applying rated working voltage for 2000/3000/5000 hours at +105 °C ± 2 °C, and then being stabilized at +20 °C , capacitors shall meet the following limits.</p> <table> <tr> <td>Test Time</td><td>$\Phi D \times L \leq 6.3 \times 5.7 \text{Lmm}$: 2000H, $6.3 \Phi \times 7.7 \text{L}$, $8 \Phi \times 6.5 \text{L}$, $10 \Phi \times 7.7 \text{L}$: 3000H , $\Phi D \geq 8 \text{mm}$: 5000H</td></tr> <tr> <td>Capacitance change</td><td>Within $\pm 30\%$ of the initial value</td></tr> <tr> <td>Dissipation factor (tan δ)</td><td>Less than 300% of the initial value</td></tr> <tr> <td>Leakage current</td><td>Within the initial limit</td></tr> </table>	Test Time	$\Phi D \times L \leq 6.3 \times 5.7 \text{Lmm}$: 2000H, $6.3 \Phi \times 7.7 \text{L}$, $8 \Phi \times 6.5 \text{L}$, $10 \Phi \times 7.7 \text{L}$: 3000H , $\Phi D \geq 8 \text{mm}$: 5000H	Capacitance change	Within $\pm 30\%$ of the initial value	Dissipation factor (tan δ)	Less than 300% of the initial value	Leakage current	Within the initial limit
Test Time	$\Phi D \times L \leq 6.3 \times 5.7 \text{Lmm}$: 2000H, $6.3 \Phi \times 7.7 \text{L}$, $8 \Phi \times 6.5 \text{L}$, $10 \Phi \times 7.7 \text{L}$: 3000H , $\Phi D \geq 8 \text{mm}$: 5000H								
Capacitance change	Within $\pm 30\%$ of the initial value								
Dissipation factor (tan δ)	Less than 300% of the initial value								
Leakage current	Within the initial limit								
Shelf life	After storage for 1000 h at +105 °C ± 2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in endurance.								
Resistance to soldering heat	<p>After reflow soldering and then being stabilized at +20 °C, capacitors shall meet the following limits.</p> <table> <tr> <td>Capacitance change</td><td>Within $\pm 10\%$ of the initial value</td></tr> <tr> <td>Dissipation factor (tan δ)</td><td>Within the initial limit</td></tr> <tr> <td>Leakage current</td><td>Within the initial limit</td></tr> </table>	Capacitance change	Within $\pm 10\%$ of the initial value	Dissipation factor (tan δ)	Within the initial limit	Leakage current	Within the initial limit		
Capacitance change	Within $\pm 10\%$ of the initial value								
Dissipation factor (tan δ)	Within the initial limit								
Leakage current	Within the initial limit								

Low-temperature characteristics

Rated voltage (V)	6.3	10	16	25	35	50	63	80	100
Z(-25°C)/Z(+20°C)	4	3	2	2	2	2	2	2	2
Z(-55°C)/Z(+20°C)	8	5	4	3	3	3	3	3	3

Impedance ratio at 120 Hz

Ripple current frequency correction factor

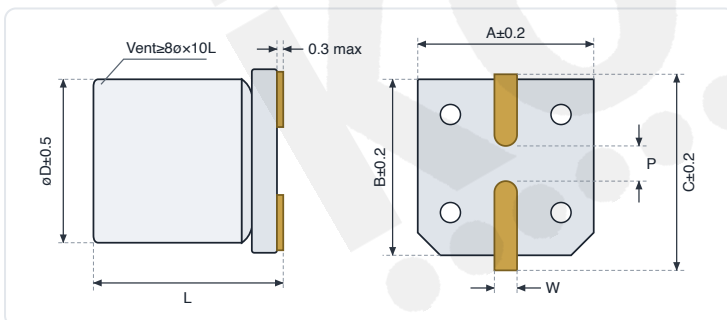
Frequency	50Hz	120Hz	1kHz	10kHz $\leq$
Correction Factor	0.6	0.7	0.85	1.0

Standard ratings

$\mu F \setminus V$	6.3	10	16	25	35	50	63	80	100
1						4x5.7			
2.2						4x5.7			
3.3						4x5.7		5x5.7	
4.7					4x5.7	4x5.7 5x5.7	5x5.7	6.3x5.7	
10			4x5.7	4x5.7	4x5.7 5x5.7	6.3x5.7	6.3x5.7	6.3x7.7 8x6.5	
22	4x5.7	4x5.7	5x5.7	5x5.7	5x5.7 6.3x5.7	6.3x5.7	6.3x7.7 8x6.5	8x10.5	8x10.5
33	4x5.7 5x5.7	5x5.7	5x5.7 6.3x5.7	5x5.7 6.3x5.7	6.3x5.7	6.3x7.7	8x10.5	8x10.5	10x10.5
47	5x5.7	6.3x5.7	6.3x5.7	6.3x5.7	6.3x5.7	6.3x7.7 8x6.5 8x10.5	8x10.5	10x10.5	10x10.5 10x13 12.5x13.5
68			6.3x5.7	6.3x5.7	6.3x7.7 8x6.5	8x10.5	8x10.5	10x13 12.5x13.5	12.5x13.5
100	5x5.7 6.3x5.7	6.3x5.7	6.3x5.7 8x6.5	6.3x7.7 8x6.5	6.3x7.7 8x10.5	8x10.5 10x10.5	10x10.5 12.5x13.5	10x13 12.5x13.5	12.5x13.5
150	6.3x5.7	6.3x5.7	6.3x7.7 8x6.5	8x10.5	8x10.5 10x7.7	10x10.5	12.5x13.5	12.5x13.5	
220	6.3x5.7 6.3x7.7	6.3x7.7 8x6.5	6.3x7.7	8x10.5 10x7.7	8x10.5 10x10.5	10x10.5 12.5x13.5	12.5x13.5		
330	6.3x7.7 8x6.5 8x10.5	8x10.5 10x7.7	8x10.5 10x7.7	8x10.5	10x10.5 12.5x13.5	12.5x13.5			
470	6.3x7.7 8x10.5 10x7.7	8x10.5 10x7.7	8x10.5 10x10.5	10x10.5	10x13 12.5x13.5				
680	8x10.5 10x7.7	10x10.5	10x10.5	10x13 12.5x13.5					
1000	8x10.5	10x10.5	10x13 12.5x13.5	12.5x13.5					
1500	10x10.5 10x13	10x13 12.5x13.5							
2200	12.5x13.5	12.5x13.5							

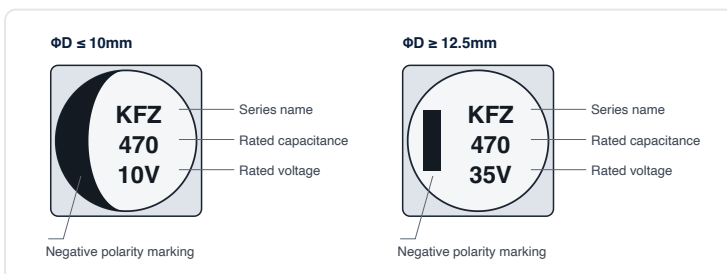
Case size $\Phi D \times L$ (mm). Full ratings in the characteristics list.

Dimensions and marking



ΦD	L	A	B	C	W	P ± 0.2
4	5.7 ± 0.3	4.3	4.3	5.1	0.5~0.8	1.0
5	5.7 ± 0.3	5.3	5.3	6.1	0.5~0.8	1.3
6.3	5.7 ± 0.3	6.6	6.6	7.3	0.5~0.8	2.2
6.3	7.7 ± 0.3	6.6	6.6	7.3	0.5~0.8	2.2
8	6.5 ± 0.5	8.3	8.3	9.2	0.7~1.2	3.1
8	10.5 ± 0.5	8.3	8.3	9.2	0.7~1.2	3.1
10	7.7 ± 0.3	10.3	10.3	11.2	0.7~1.2	4.4
10	10.5 ± 0.5	10.3	10.3	11.2	0.7~1.2	4.4
10	13 ± 0.5	10.3	10.3	11.2	0.7~1.2	4.4
12.5	13.5 ± 0.5	13.0	13.0	14.0	1.0~1.4	4.4
12.5	16 ± 0.5	13.0	13.0	14.0	1.0~1.4	4.4

Unit: mm



Marking: black

Part number system

KFZ Series name KFZ series	1C Rated voltage 16V	221 Capacitance 220 μF	M Capacitance tolerance $\pm 20 \%$	0607 Case Size 6.3 Φ X7.7L
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Example: KFZ1C221M0607

Characteristics list

Rated voltage (V)	Capacitance (±20%) (μF)	ΦD (mm)	L (mm)	Rated ripple current① (mA rms)	Imp.② (Ω)	tan δ③	Part Number④	MPQ (pcs/reel)
6.3	22	4	5.7	80	1.45	0.26	KFZ0J220M0406	2000
6.3	33	4	5.7	80	1.45	0.26	KFZ0J330M0406	2000
6.3	33	5	5.7	150	0.80	0.26	KFZ0J330M0506	1000
6.3	47	5	5.7	150	0.80	0.26	KFZ0J470M0506	1000
6.3	100	5	5.7	150	0.80	0.26	KFZ0J101M0506	1000
6.3	100	6.3	5.7	230	0.44	0.26	KFZ0J101M0606	1000
6.3	150	6.3	5.7	230	0.44	0.26	KFZ0J151M0606	1000
6.3	220	6.3	5.7	230	0.44	0.26	KFZ0J221M0606	1000
6.3	220	6.3	7.7	280	0.36	0.26	KFZ0J221M0607	1000
6.3	330	6.3	7.7	280	0.36	0.26	KFZ0J331M0607	1000
6.3	330	8	6.5	280	0.36	0.26	KFZ0J331M0806	1000
6.3	330	8	10.5	450	0.17	0.26	KFZ0J331M0810	500
6.3	470	6.3	7.7	280	0.36	0.26	KFZ0J471M0607	1000
6.3	470	8	10.5	450	0.17	0.26	KFZ0J471M0810	500
6.3	470	10	7.7	450	0.17	0.26	KFZ0J471M1007	500
6.3	680	8	10.5	450	0.17	0.26	KFZ0J681M0810	500
6.3	680	10	7.7	450	0.17	0.26	KFZ0J681M1007	500
6.3	1000	8	10.5	450	0.17	0.28	KFZ0J102M0810	500
6.3	1500	10	10.5	670	0.09	0.28	KFZ0J152M1010	500
6.3	1500	10	13	720	0.08	0.28	KFZ0J152M1013	400
6.3	2200	12.5	13.5	820	0.07	0.34	KFZ0J222M1313	200
10	22	4	5.7	80	1.45	0.22	KFZ1A220M0406	2000
10	33	5	5.7	150	0.80	0.22	KFZ1A330M0506	1000
10	47	6.3	5.7	230	0.44	0.22	KFZ1A470M0606	1000
10	100	6.3	5.7	230	0.44	0.22	KFZ1A101M0606	1000
10	150	6.3	5.7	230	0.44	0.22	KFZ1A151M0606	1000
10	220	6.3	7.7	280	0.36	0.22	KFZ1A221M0607	1000
10	220	8	6.5	280	0.36	0.22	KFZ1A221M0806	1000
10	330	8	10.5	450	0.17	0.22	KFZ1A331M0810	500
10	330	10	7.7	450	0.17	0.22	KFZ1A331M1007	500
10	470	8	10.5	450	0.17	0.22	KFZ1A471M0810	500
10	470	10	7.7	450	0.17	0.22	KFZ1A471M1007	500
10	680	10	10.5	670	0.09	0.22	KFZ1A681M1010	500
10	1000	10	10.5	670	0.09	0.24	KFZ1A102M1010	500
10	1500	10	13	720	0.08	0.24	KFZ1A152M1013	400
10	1500	12.5	13.5	820	0.07	0.27	KFZ1A152M1313	200
10	2200	12.5	13.5	820	0.07	0.29	KFZ1A222M1313	200
16	10	4	5.7	80	1.45	0.18	KFZ1C100M0406	2000
16	22	5	5.7	150	0.80	0.18	KFZ1C220M0506	1000
16	33	5	5.7	150	0.80	0.18	KFZ1C330M0506	1000
16	33	6.3	5.7	230	0.44	0.18	KFZ1C330M0606	1000
16	47	6.3	5.7	230	0.44	0.18	KFZ1C470M0606	1000
16	68	6.3	5.7	230	0.44	0.18	KFZ1C680M0606	1000
16	100	6.3	5.7	230	0.44	0.18	KFZ1C101M0606	1000
16	100	8	6.5	280	0.36	0.18	KFZ1C101M0806	1000
16	150	6.3	7.7	280	0.36	0.18	KFZ1C151M0607	1000
16	150	8	6.5	280	0.36	0.18	KFZ1C151M0806	1000
16	220	6.3	7.7	280	0.36	0.18	KFZ1C221M0607	1000
16	330	8	10.5	450	0.17	0.18	KFZ1C331M0810	500
16	330	10	7.7	450	0.17	0.18	KFZ1C331M1007	500
16	470	8	10.5	450	0.17	0.18	KFZ1C471M0810	500
16	470	10	10.5	670	0.09	0.18	KFZ1C471M1010	500
16	680	10	10.5	670	0.09	0.18	KFZ1C681M1010	500
16	1000	10	13	720	0.08	0.20	KFZ1C102M1013	500
16	1000	12.5	13.5	820	0.07	0.22	KFZ1C102M1313	200
25	10	4	5.7	80	1.45	0.16	KFZ1E100M0406	2000
25	22	5	5.7	150	0.80	0.16	KFZ1E220M0506	1000
25	33	5	5.7	150	0.80	0.16	KFZ1E330M0506	1000
25	33	6.3	5.7	230	0.44	0.16	KFZ1E330M0606	1000
25	47	6.3	5.7	230	0.44	0.16	KFZ1E470M0606	1000

Rated voltage (V)	Capacitance (±20%) (μF)	ΦD (mm)	L (mm)	Rated ripple current① (mA rms)	Imp.② (Ω)	tan δ③	Part Number④	MPQ (pcs/reel)
25	68	6.3	5.7	230	0.44	0.16	KFZ1E680M0606	1000
25	100	6.3	7.7	280	0.36	0.16	KFZ1E101M0607	1000
25	100	8	6.5	280	0.36	0.16	KFZ1E101M0806	1000
25	150	8	10.5	450	0.17	0.16	KFZ1E151M0810	500
25	220	8	10.5	450	0.17	0.16	KFZ1E221M0810	500
25	220	10	7.7	450	0.17	0.16	KFZ1E221M1007	500
25	330	8	10.5	450	0.17	0.16	KFZ1E331M0810	500
25	470	10	10.5	670	0.09	0.16	KFZ1E471M1010	500
25	680	10	13	720	0.08	0.16	KFZ1E681M1013	400
25	680	12.5	13.5	820	0.07	0.18	KFZ1E681M1313	200
25	1000	12.5	13.5	820	0.07	0.20	KFZ1E102M1313	200
35	4.7	4	5.7	80	1.45	0.14	KFZ1V4R7M0406	2000
35	10	4	5.7	80	1.45	0.14	KFZ1V100M0406	2000
35	10	5	5.7	150	0.80	0.14	KFZ1V100M0506	1000
35	22	5	5.7	150	0.80	0.14	KFZ1V220M0506	1000
35	22	6.3	5.7	230	0.44	0.14	KFZ1V220M0606	1000
35	33	6.3	5.7	230	0.44	0.14	KFZ1V330M0606	1000
35	47	6.3	5.7	230	0.44	0.14	KFZ1V470M0606	1000
35	68	6.3	7.7	280	0.36	0.14	KFZ1V680M0607	1000
35	68	8	6.5	280	0.36	0.14	KFZ1V680M0806	1000
35	100	6.3	7.7	280	0.36	0.14	KFZ1V101M0607	1000
35	100	8	10.5	450	0.17	0.14	KFZ1V101M0810	500
35	150	8	10.5	450	0.17	0.14	KFZ1V151M0810	500
35	150	10	7.7	450	0.17	0.14	KFZ1V151M1007	500
35	220	8	10.5	450	0.17	0.14	KFZ1V221M0810	500
35	220	10	10.5	670	0.09	0.14	KFZ1V221M1010	500
35	330	10	10.5	850	0.09	0.14	KFZ1V331M1010	500
35	330	12.5	13.5	820	0.07	0.16	KFZ1V331M1313	200
35	470	10	13	720	0.08	0.14	KFZ1V471M1013	400
35	470	12.5	13.5	820	0.07	0.16	KFZ1V471M1313	200
50	1	4	5.7	60	2.9	0.12	KFZ1H010M0406	2000
50	2.2	4	5.7	60	2.9	0.12	KFZ1H2R2M0406	2000
50	3.3	4	5.7	60	2.9	0.12	KFZ1H3R3M0406	2000
50	4.7	4	5.7	60	2.9	0.12	KFZ1H4R7M0406	2000
50	4.7	5	5.7	85	1.52	0.12	KFZ1H4R7M0506	1000
50	10	6.3	5.7	165	0.88	0.12	KFZ1H100M0606	1000
50	22	6.3	5.7	165	0.88	0.12	KFZ1H220M0606	1000
50	33	6.3	7.7	185	0.68	0.12	KFZ1H330M0607	1000
50	47	6.3	7.7	185	0.68	0.12	KFZ1H470M0607	1000
50	47	8	6.5	185	0.68	0.12	KFZ1H470M0806	1000
50	47	8	10.5	360	0.34	0.12	KFZ1H470M0810	500
50	68	8	10.5	360	0.34	0.12	KFZ1H680M0810	500
50	100	8	10.5	360	0.34	0.12	KFZ1H101M0810	500
50	100	10	10.5	560	0.18	0.12	KFZ1H101M1010	500
50	150	10	10.5	560	0.18	0.12	KFZ1H151M1010	500
50	220	10	10.5	560	0.18	0.12	KFZ1H221M1010	500
50	220	12.5	13.5	650	0.12	0.12	KFZ1H221M1313	200
50	330	12.5	13.5	650	0.12	0.12	KFZ1H331M1313	200
63	4.7	5	5.7	60	2.9	0.12	KFZ1J4R7M0506	1000
63	10	6.3	5.7	80	1.5	0.12	KFZ1J100M0606	1000
63	22	6.3	7.7	120	1.2	0.12	KFZ1J220M0607	1000
63	22	8	6.5	120	1.2	0.12	KFZ1J220M0806	1000
63	33	8	10.5	250	0.65	0.12	KFZ1J330M0810	500
63	47	8	10.5	250	0.65	0.12	KFZ1J470M0810	500
63	68	8	10.5	250	0.65	0.12	KFZ1J680M0810	500
63	100	10	10.5	400	0.35	0.12	KFZ1J101M1010	500
63	100	12.5	13.5	800	0.16	0.14	KFZ1J101M1313	200
63	150	12.5	13.5	800	0.16	0.14	KFZ1J151M1313	200
63	220	12.5	13.5	800	0.16	0.14	KFZ1J221M1313	200
80	3.3	5	5.7	25	5.0	0.12	KFZ1K3R3M0506	1000
80	4.7	6.3	5.7	40	3.0	0.12	KFZ1K4R7M0606	1000
80	10	6.3	7.7	60	2.4	0.12	KFZ1K100M0607	1000

Rated voltage (V)	Capacitance (±20%) (μF)	ΦD (mm)	L (mm)	Rated ripple current① (mA rms)	Imp.② (Ω)	tan δ③	Part Number④	MPQ (pcs/reel)
80	10	8	6.5	60	2.4	0.12	KFZ1K100M0806	1000
80	22	8	10.5	130	1.3	0.12	KFZ1K220M0810	500
80	33	8	10.5	130	1.3	0.12	KFZ1K330M0810	500
80	47	10	10.5	200	0.70	0.12	KFZ1K470M1010	500
80	68	10	13	400	0.40	0.12	KFZ1K680M1013	400
80	68	12.5	13.5	500	0.32	0.14	KFZ1K680M1313	200
80	100	10	13	400	0.40	0.12	KFZ1K101M1013	400
80	100	12.5	13.5	500	0.32	0.14	KFZ1K101M1313	200
80	150	12.5	13.5	500	0.32	0.14	KFZ1K151M1313	200
100	22	8	10.5	130	1.3	0.12	KFZ2A220M0810	500
100	33	10	10.5	200	0.70	0.12	KFZ2A330M1010	500
100	47	10	10.5	200	0.70	0.12	KFZ2A470M1010	500
100	47	10	13	400	0.40	0.12	KFZ2A470M1013	400
100	47	12.5	13.5	500	0.32	0.14	KFZ2A470M1313	200
100	68	12.5	13.5	500	0.32	0.14	KFZ2A680M1313	200
100	100	12.5	13.5	500	0.32	0.14	KFZ2A101M1313	200

① Rated ripple current (100kHz / +105°C)

② Impedance (100kHz / +20°C)

③ tan δ (120Hz / +20°C)

④ For plastic reel packaging , the Part Number is appended with "PR" at the end.