

KLZ Series

SMD Aluminium Electrolytic Capacitors (V-chip)



Features

- Low Impedance
- 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 µF	ENDURANCE 105°C 2000 h
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Specifications

Category temp. range	-55°C to +105°C		
Capacitance tolerance	±20% (120 Hz / +20 °C)		
Leakage current	I ≤ 0.01 CV or 3 μA whichever is greater (after 2 minutes)		
Tan δ	See the characteristics list		
Endurance	After applying rated working voltage for 2000 hours at +105 °C ± 2 °C, and then being stabilized at +20 °C , capacitors shall meet the following limits.		
	Capacitance change	Within ±25% of the initial value	
	Dissipation factor (tan δ)	Less than 250% 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	After reflow soldering and then being stabilized at +20 °C, capacitors shall meet the following limits.		
	Capacitance change	Within ±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	4	3	3	2	2	2	2	2
Z(-55 °C)/Z(+20 °C)	10	7	5	5	4	4	3	4	4

Impedance ratio at 120 Hz

Ripple current frequency correction factor

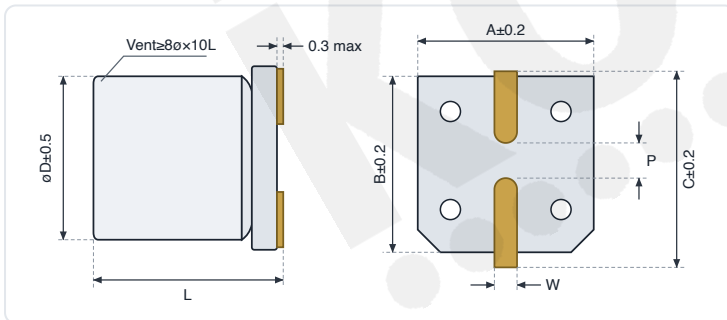
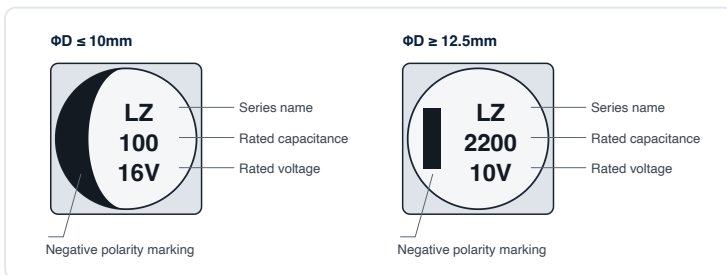
Frequency	50Hz	120Hz	1kHz	10kHz≤
Correction Factor	0.6	0.7	0.85	1.0

Standard ratings

$\mu\text{F} \setminus \text{V}$	6.3	10	16	25	35	50	63	80	100
1						4×5.7			
2.2						4×5.7			
3.3						4×5.7			
4.7				4×5.7	4×5.7	4×5.7 5×5.7	5×5.7		5×5.7 6.3×5.7
10			4×5.7	4×5.7 5×5.7	4×5.7 5×5.7	5×5.7 6.3×5.7	6.3×5.7	6.3×7.7	6.3×7.7 8×6.5
22	4×5.7	4×5.7	4×5.7 5×5.7	5×5.7 6.3×5.7	5×5.7 6.3×5.7	6.3×5.7 6.3×7.7 8×6.5	6.3×7.7	8×10.5	8×10.5 10×10.5
33	4×5.7	4×5.7	5×5.7 6.3×5.7	5×5.7 6.3×5.7	6.3×5.7 8×6.5	6.3×7.7 8×10.5	8×10.5	10×10.5	10×10.5 10×13
47	5×5.7	5×5.7 6.3×5.7	5×5.7 6.3×5.7	6.3×5.7	6.3×5.7 6.3×7.7 8×6.5 8×10.5	6.3×7.7 8×6.5 8×10.5	8×10.5 10×7.7 10×10.5	8×10.5 10×10.5 10×13	10×10.5 10×13 12.5×13.5
68			8×6.5						
100	5×5.7 6.3×5.7	5×5.7 6.3×5.7	6.3×5.7 6.3×7.7 8×6.5	6.3×7.7 8×10.5	6.3×7.7 8×6.5 8×10.5	8×10.5 10×7.7 10×10.5	10×10.5 10×13 12.5×13.5	10×10.5 10×13 12.5×13.5	12.5×13.5
150		6.3×5.7	6.3×7.7 8×10.5	8×10.5	8×10.5 10×7.7	10×10.5		12.5×13.5	
220	6.3×5.7 6.3×7.7	6.3×5.7 6.3×7.7 8×10.5	6.3×7.7 8×6.5 8×10.5	8×10.5 10×7.7 10×10.5	8×10.5 10×10.5	10×10.5 10×13	12.5×13.5		
330	6.3×7.7 8×10.5	8×10.5	8×10.5 10×7.7	8×10.5 10×10.5	10×10.5	12.5×13.5			
470	6.3×7.7 8×10.5	8×10.5	8×10.5 10×10.5	10×10.5	10×13				
680	8×10.5 10×10.5		10×10.5	10×13	12.5×13.5				
1000	10×10.5	10×10.5	10×10.5 10×13	12.5×13.5					
1500	10×10.5		12.5×13.5						
2200	12.5×13.5	12.5×13.5							

Case size $\Phi\text{D} \times \text{L}$ (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

KLZ Series name KLZ series	1C Rated voltage 16V	221 Capacitance 220 μF	M Capacitance tolerance $\pm 20\%$	0607 Case Size 6.3 Φ ×7.7L
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Example: KLZ1C221M0607

Characteristics list

Rated voltage (V)	Capacitance (±20%) (μF)	Case size ΦD (mm)	Case size L (mm)	Rated ripple current① (mA rms)	Imp.② (Ω)	tan δ③	Part Number④	Taping&Reel MPQ (pcs/reel)
6.3	22	4	5.7	60	3.00	0.26	KLZ0J220M0406	2000
6.3	33	4	5.7	60	3.00	0.26	KLZ0J330M0406	2000
6.3	47	5	5.7	95	1.80	0.26	KLZ0J470M0506	1000
6.3	100	5	5.7	100	1.80	0.26	KLZ0J101M0506	1000
6.3	100	6.3	5.7	140	1.00	0.26	KLZ0J101M0606	1000
6.3	220	6.3	5.7	140	1.00	0.26	KLZ0J221M0606	1000
6.3	220	6.3	7.7	230	0.60	0.26	KLZ0J221M0607	1000
6.3	330	6.3	7.7	230	0.60	0.26	KLZ0J331M0607	1000
6.3	330	8	10.5	450	0.45	0.26	KLZ0J331M0810	500
6.3	470	6.3	7.7	230	0.60	0.26	KLZ0J471M0607	1000
6.3	470	8	10.5	450	0.45	0.26	KLZ0J471M0810	500
6.3	680	8	10.5	450	0.40	0.26	KLZ0J681M0810	500
6.3	680	10	10.5	670	0.25	0.26	KLZ0J681M1010	500
6.3	1000	10	10.5	670	0.25	0.28	KLZ0J102M1010	500
6.3	1500	10	10.5	670	0.25	0.28	KLZ0J152M1010	500
6.3	2200	12.5	13.5	820	0.12	0.34	KLZ0J222M1313	200
10	22	4	5.7	60	3.00	0.20	KLZ1A220M0406	2000
10	33	4	5.7	60	3.00	0.20	KLZ1A330M0406	2000
10	47	5	5.7	95	1.80	0.20	KLZ1A470M0506	1000
10	47	6.3	5.7	140	1.00	0.20	KLZ1A470M0606	1000
10	100	5	5.7	100	1.80	0.20	KLZ1A101M0506	1000
10	100	6.3	5.7	140	1.00	0.20	KLZ1A101M0606	1000
10	150	6.3	5.7	140	1.00	0.20	KLZ1A151M0606	1000
10	220	6.3	5.7	140	1.00	0.20	KLZ1A221M0606	1000
10	220	6.3	7.7	230	0.60	0.20	KLZ1A221M0607	1000
10	220	8	10.5	450	0.45	0.20	KLZ1A221M0810	500
10	330	8	10.5	450	0.45	0.20	KLZ1A331M0810	500
10	470	8	10.5	450	0.45	0.20	KLZ1A471M0810	500
10	1000	10	10.5	670	0.25	0.22	KLZ1A102M1010	500
10	2200	12.5	13.5	820	0.12	0.28	KLZ1A222M1313	200
16	10	4	5.7	60	3.00	0.18	KLZ1C100M0406	2000
16	22	4	5.7	60	3.00	0.18	KLZ1C220M0406	2000
16	22	5	5.7	95	1.80	0.18	KLZ1C220M0506	1000
16	33	5	5.7	95	1.80	0.18	KLZ1C330M0506	1000
16	33	6.3	5.7	140	1.00	0.18	KLZ1C330M0606	1000
16	47	5	5.7	95	1.80	0.18	KLZ1C470M0506	1000
16	47	6.3	5.7	140	1.00	0.18	KLZ1C470M0606	1000
16	68	8	6.5	230	0.60	0.18	KLZ1C680M0806	1000
16	100	6.3	5.7	140	1.00	0.18	KLZ1C101M0606	1000
16	100	6.3	7.7	230	0.60	0.18	KLZ1C101M0607	1000
16	100	8	6.5	230	0.60	0.18	KLZ1C101M0806	1000
16	150	6.3	7.7	230	0.60	0.18	KLZ1C151M0607	1000
16	150	8	10.5	450	0.45	0.18	KLZ1C151M0810	500
16	220	6.3	7.7	230	0.60	0.18	KLZ1C221M0607	1000
16	220	8	6.5	230	0.60	0.18	KLZ1C221M0806	1000
16	220	8	10.5	450	0.45	0.18	KLZ1C221M0810	500
16	330	8	10.5	450	0.45	0.18	KLZ1C331M0810	500
16	330	10	7.7	450	0.45	0.18	KLZ1C331M1007	500
16	470	8	10.5	450	0.45	0.18	KLZ1C471M0810	500
16	470	10	10.5	670	0.25	0.18	KLZ1C471M1010	500
16	680	10	10.5	670	0.25	0.18	KLZ1C681M1010	500
16	1000	10	10.5	670	0.25	0.20	KLZ1C102M1010	500
16	1000	10	13	750	0.15	0.20	KLZ1C102M1013	400
16	1500	12.5	13.5	820	0.12	0.22	KLZ1C152M1313	200
25	4.7	4	5.7	60	3.00	0.16	KLZ1E4R7M0406	2000
25	10	4	5.7	60	3.00	0.16	KLZ1E100M0406	2000
25	10	5	5.7	95	1.80	0.16	KLZ1E100M0506	1000
25	22	5	5.7	95	1.80	0.16	KLZ1E220M0506	1000
25	22	6.3	5.7	140	1.00	0.16	KLZ1E220M0606	1000
25	33	5	5.7	95	1.80	0.16	KLZ1E330M0506	1000

Rated voltage (V)	Capacitance (±20%) (μF)	Case size ΦD (mm)	Case size L (mm)	Rated ripple current① (mA rms)	Imp.② (Ω)	tan δ③	Part Number④	Taping&Reel MPQ (pcs/reel)
25	33	6.3	5.7	140	1.00	0.16	KLZ1E330M0606	1000
25	47	6.3	5.7	140	1.00	0.16	KLZ1E470M0606	1000
25	100	6.3	7.7	230	0.60	0.16	KLZ1E101M0607	1000
25	100	8	10.5	450	0.45	0.16	KLZ1E101M0810	500
25	150	8	10.5	450	0.45	0.16	KLZ1E151M0810	500
25	220	8	10.5	450	0.45	0.16	KLZ1E221M0810	500
25	220	10	7.7	450	0.45	0.16	KLZ1E221M1007	500
25	220	10	10.5	670	0.25	0.16	KLZ1E221M1010	500
25	330	8	10.5	450	0.40	0.16	KLZ1E331M0810	500
25	330	10	10.5	670	0.25	0.16	KLZ1E331M1010	500
25	470	10	10.5	670	0.25	0.16	KLZ1E471M1010	500
25	680	10	13	750	0.15	0.16	KLZ1E681M1013	400
25	1000	12.5	13.5	820	0.11	0.20	KLZ1E102M1313	200
35	4.7	4	5.7	60	3.00	0.14	KLZ1V4R7M0406	2000
35	10	4	5.7	60	3.00	0.14	KLZ1V100M0406	2000
35	10	5	5.7	95	1.80	0.14	KLZ1V100M0506	1000
35	22	5	5.7	95	1.80	0.14	KLZ1V220M0506	1000
35	22	6.3	5.7	140	1.00	0.14	KLZ1V220M0606	1000
35	33	6.3	5.7	140	1.00	0.14	KLZ1V330M0606	1000
35	33	8	6.5	230	0.60	0.14	KLZ1V330M0806	1000
35	47	6.3	5.7	140	1.00	0.14	KLZ1V470M0606	1000
35	47	6.3	7.7	230	0.60	0.14	KLZ1V470M0607	1000
35	47	8	6.5	230	0.60	0.14	KLZ1V470M0806	1000
35	47	8	10.5	450	0.45	0.14	KLZ1V470M0810	500
35	100	6.3	7.7	230	0.60	0.14	KLZ1V101M0607	1000
35	100	8	6.5	230	0.60	0.14	KLZ1V101M0806	1000
35	100	8	10.5	450	0.45	0.14	KLZ1V101M0810	500
35	150	8	10.5	450	0.45	0.14	KLZ1V151M0810	500
35	150	10	7.7	450	0.45	0.14	KLZ1V151M1007	500
35	220	8	10.5	450	0.40	0.14	KLZ1V221M0810	500
35	220	10	10.5	670	0.25	0.14	KLZ1V221M1010	500
35	330	10	10.5	670	0.25	0.14	KLZ1V331M1010	500
35	470	10	13	750	0.15	0.14	KLZ1V471M1013	400
35	680	12.5	13.5	820	0.12	0.16	KLZ1V681M1313	200
50	1	4	5.7	30	5.00	0.12	KLZ1H010M0406	2000
50	2.2	4	5.7	30	5.00	0.12	KLZ1H2R2M0406	2000
50	3.3	4	5.7	30	5.00	0.12	KLZ1H3R3M0406	2000
50	4.7	4	5.7	30	5.00	0.12	KLZ1H4R7M0406	2000
50	4.7	5	5.7	50	3.00	0.12	KLZ1H4R7M0506	1000
50	10	5	5.7	50	3.00	0.12	KLZ1H100M0506	1000
50	10	6.3	5.7	70	2.00	0.12	KLZ1H100M0606	1000
50	22	6.3	5.7	70	2.00	0.12	KLZ1H220M0606	1000
50	22	6.3	7.7	120	1.00	0.12	KLZ1H220M0607	1000
50	22	8	6.5	120	1.00	0.12	KLZ1H220M0806	1000
50	33	6.3	7.7	120	1.00	0.12	KLZ1H330M0607	1000
50	33	8	10.5	280	0.80	0.12	KLZ1H330M0810	500
50	47	6.3	7.7	120	1.00	0.12	KLZ1H470M0607	1000
50	47	8	6.5	120	1.00	0.12	KLZ1H470M0806	1000
50	47	8	10.5	300	0.80	0.12	KLZ1H470M0810	500
50	100	8	10.5	300	0.80	0.12	KLZ1H101M0810	500
50	100	10	7.7	300	0.80	0.12	KLZ1H101M1007	500
50	100	10	10.5	450	0.45	0.12	KLZ1H101M1010	500
50	150	10	10.5	450	0.45	0.12	KLZ1H151M1010	500
50	220	10	10.5	500	0.45	0.12	KLZ1H221M1010	500
50	220	10	13	550	0.35	0.12	KLZ1H221M1013	400
50	330	12.5	13.5	650	0.25	0.14	KLZ1H331M1313	200
63	4.7	5	5.7	50	5.00	0.12	KLZ1J4R7M0506	1000
63	10	6.3	5.7	80	3.00	0.12	KLZ1J100M0606	1000
63	22	6.3	7.7	100	2.50	0.12	KLZ1J220M0607	1000
63	33	8	10.5	250	2.00	0.12	KLZ1J330M0810	500
63	47	8	10.5	250	2.00	0.12	KLZ1J470M0810	500
63	47	10	7.7	250	2.00	0.12	KLZ1J470M1007	500

Rated voltage (V)	Capacitance (±20%) (μF)	Case size ΦD (mm)	Case size L (mm)	Rated ripple current ^① (mA rms)	Imp. ^② (Ω)	tan δ ^③	Part Number ^④	Taping&Reel MPQ (pcs/reel)
63	47	10	10.5	300	1.50	0.12	KLZ1J470M1010	500
63	100	10	10.5	300	1.50	0.12	KLZ1J101M1010	500
63	100	10	13	400	1.00	0.12	KLZ1J101M1013	400
63	100	12.5	13.5	500	0.85	0.14	KLZ1J101M1313	200
63	220	12.5	13.5	550	0.65	0.14	KLZ1J221M1313	200
80	10	6.3	7.7	60	3.00	0.12	KLZ1K100M0607	1000
80	22	8	10.5	130	2.00	0.12	KLZ1K220M0810	500
80	33	10	10.5	180	1.50	0.12	KLZ1K330M1010	500
80	47	8	10.5	130	2.00	0.12	KLZ1K470M0810	500
80	47	10	10.5	180	1.50	0.12	KLZ1K470M1010	500
80	47	10	13	240	1.20	0.12	KLZ1K470M1013	400
80	100	10	10.5	180	1.50	0.12	KLZ1K101M1010	500
80	100	10	13	240	1.20	0.12	KLZ1K101M1013	400
80	100	12.5	13.5	500	0.85	0.14	KLZ1K101M1313	200
80	150	12.5	13.5	500	0.85	0.14	KLZ1K151M1313	200
100	4.7	5	5.7	25	5.00	0.12	KLZ2A4R7M0506	1000
100	4.7	6.3	5.7	40	5.00	0.12	KLZ2A4R7M0606	1000
100	10	6.3	7.7	60	3.00	0.12	KLZ2A100M0607	1000
100	10	8	6.5	60	3.00	0.12	KLZ2A100M0806	1000
100	22	8	10.5	130	2.00	0.12	KLZ2A220M0810	500
100	22	10	10.5	180	1.50	0.12	KLZ2A220M1010	500
100	33	10	10.5	180	1.50	0.12	KLZ2A330M1010	500
100	33	10	13	210	1.20	0.12	KLZ2A330M1013	400
100	47	10	10.5	180	1.50	0.12	KLZ2A470M1010	500
100	47	10	13	240	1.20	0.12	KLZ2A470M1013	400
100	47	12.5	13.5	500	0.85	0.14	KLZ2A470M1313	200
100	100	12.5	13.5	500	0.85	0.14	KLZ2A101M1313	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.