



**THE DATASHEET OF
228KXM016M**





Radial Lead Aluminum Electrolytic Capacitors

+105°C Low Impedance

FEATURES

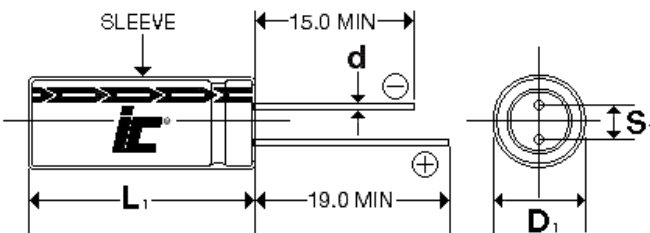
Standardized Case Sizes - High Ripple Current - Multiple Case Sizes

APPLICATIONS

Bypass - Coupling - Filtering - De-Coupling

Operating Temperature Range		-55°C to +105°C							
Capacitance Tolerance		+20% at 120 Hz, 20°C							
Surge Voltage	WVDC	6.3	10	16	25	35	50	63	100
	SVDC	7.9	13	20	32	44	63	79	125
Dissipation Factor	WVDC	6.3	10	16	25	35	50	63	100
	Tan δ	.22	.19	.16	.14	.12	.1	.1	.1
Leakage Current		Add .02 for every 1000uF above 1000uF							
Low Temperature Stability Impedance Ratio (120 Hz)		2 Minutes .01CV or 3uA, Whichever is greater							
Low Temperature Stability Impedance Ratio (120 Hz)	WVDC	6.3	10	16	25	35	50	63	100
	-25°C to +20°C	4	3	2	2	2	2	2	2
	-40°C to +20°C	8	6	4	3	3	3	3	3
Load Life		5000 hours at 105°C with rated WVDC and ripple current applied (4000 hrs. for D=10, 3000 hrs. for D=8, 2000 hrs. for D≤6.3)							
		Capacitance Change	≤25% of initial measured value						
		Dissipation Factor	≤200% of maximum specified value						
		Leakage Current	≤100% of maximum specified value						
Shelf Life		1000 hours at 105°C with no voltage applied							
		Capacitance Change	≤25% initial measured value						
		Dissipation Factor	≤200% of maximum specified value						
		Leakage Current	≤100% of maximum specified value						
Ripple Current Multipliers		Frequency (Hz)							
		Capacitance	50	120	1k	10k	100k		
		C≤180	.4	.4	.75	.9	1.0		
		220<C≤560	.5	.5	.85	.94	1.0		
		680<C≤1800	.6	.6	.87	.95	1.0		
		2200<C≤3900	.75	.75	.9	.95	1.0		
		C≥4700	.85	.85	.95	.98	1.0		

Special Order Options



D	5	6.3	8	10	12.5	16	18
S	2.0	2.5	3.5	5.0	5.0	7.5	7.5
d	0.5	0.5	0.6	0.6	0.6	0.8	0.8

L₁=L+1.5 mm Max. (L<20mm)
L₁=L+2.0 mm Max. (L>20mm)
D₁=D+0.5 mm Max.
S₁=S+0.5 mm

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KXM

+105°C, High Voltage Low Impedance Long Life, 5000 hours

WVDC	Capacitance (µF)	IC PART NUMBER	Maximum ESR (Ω) 120 Hz, +20°C	Impedance Ω +20°C/-10°C, 100kHz	Maximum RMS Ripple Current (mA) 100 kHz, +105°C	Dims DxL (mm)
6.3	150	157KXM6R3M	2.4315	0.3/1	250	5x11
6.3	330	337KXM6R3M	1.1052	0.13/0.41	405	6.3x11
6.3	560	567KXM6R3M	0.6513	0.072/0.22	760	8x11.5
6.3	820	827KXM6R3M	0.4448	0.056/0.17	995	8x16
6.3	1000	108KXM6R3M	0.3647	0.053/0.16	1030	10x12.5
6.3	1200	128KXM6R3M	0.3039	0.041/0.13	1250	8x20
6.3	1200	128KXM6R3MLQ	0.3039	0.058/0.144	1430	10x16
6.3	1500	158KXM6R3M	0.2432	0.023/0.069	1820	10x20
6.3	2200	228KXM6R3M	0.1658	0.022/0.066	1980	10x25
6.3	3300	338KXM6R3M	0.1105	0.021/0.053	2080	12.5x20
6.3	3900	398KXM6R3M	0.0935	0.018/0.045	2470	12.5x25
6.3	4700	478KXM6R3M	0.0776	0.016/0.041	3290	12.5x30
6.3	5600	568KXM6R3M	0.0651	0.015/0.039	3400	12.5x35
6.3	6800	688KXM6R3M	0.0536	0.016/0.043	3250	16x25
6.3	10000	109KXM6R3M	0.0365	0.022/0.043	3000	16x30
6.3	15000	159KXM6R3M	0.0243	0.02/0.041	3610	18x35
10	100	107KXM010M	3.1499	0.3/1	250	5x11
10	220	227KXM010M	1.4318	0.13/0.41	405	6.3x11
10	470	477KXM010M	0.6702	0.072/0.22	760	8x11.5
10	680	687KXM010M	0.4632	0.056/0.17	995	8x16
10	680	687KXM010MLN	0.4632	0.077/0.194	760	10x12.5
10	1000	108KXM010M	0.315	0.041/0.13	1250	8x20
10	1000	108KXM010MLQ	0.315	0.063/0.158	1430	10x16
10	1200	128KXM010M	0.2901	0.023/0.069	1820	10x20
10	1500	158KXM010M	0.21	0.022/0.066	2150	10x25
10	2200	228KXM010M	0.1733	0.021/0.053	2150	12.5x20
10	3300	338KXM010M	0.0955	0.018/0.045	2770	12.5x25
10	3900	398KXM010M	0.0808	0.016/0.041	3290	12.5x30
10	4700	478KXM010M	0.067	0.015/0.039	3400	12.5x35
10	4700	478KXM010MQV	0.067	0.025/0.051	2350	16x25
10	5600	568KXM010M	0.0562	0.016/0.043	3018	16x25
10	6800	688KXM010M	0.0463	0.023/0.045	2850	16x30
10	10000	109KXM010M	0.0315	0.021/0.041	3430	18x35
10	15000	159KXM010M	0.021	0.019/0.039	3850	18x40
16	56	566KXM016M	4.7368	0.3/1	250	5x11
16	68	686KXM016M	3.9009	0.5/1.25	180	5x11
16	120	127KXM016M	2.2105	0.13/0.41	405	6.3x11
16	330	337KXM016M	0.8038	0.072/0.22	760	8x11.5
16	470	477KXM016M	0.5644	0.056/0.17	995	8x16
16	470	477KXM016MLN	0.5644	0.053/0.233	1030	10x12.5
16	680	687KXM016M	0.3901	0.041/0.13	1250	8x20
16	680	687KXM016MLQ	0.3901	0.074/0.184	880	10x16
16	1000	108KXM016M	0.2653	0.023/0.069	1820	10x20
16	1200	128KXM016M	0.221	0.022/0.066	2150	10x25
16	1500	158KXM016M	0.1768	0.021/0.053	2360	12.5x20
16	2200	228KXM016M	0.1206	0.018/0.045	2770	12.5x25
16	2700	278KXM016M	0.0982	0.016/0.041	3290	12.5x30
16	3300	338KXM016M	0.0804	0.015/0.039	3150	12.5x35
16	3300	338KXM016MQV	0.0804	0.029/0.057	2200	16x25
16	3900	398KXM016M	0.068	0.016/0.043	3460	16x25
16	4700	478KXM016M	0.0564	0.024/0.048	2670	16x30
16	6800	688KXM016M	0.039	0.022/0.043	3280	18x35
16	10000	109KXM016M	0.0265	0.019/0.039	3670	18x40
25	47	476KXM025M	4.9383	0.3/1	250	5x11
25	100	107KXM025M	2.321	0.13/0.41	410	6.3x11
25	220	227KXM025M	1.055	0.072/0.22	760	8x11.5
25	330	337KXM025M	0.7033	0.056/0.17	995	8x16
25	330	337KXM025MLN	0.7033	0.053/0.17	1030	10x12.5

WVDC	Capacitance (µF)	IC PART NUMBER	Maximum ESR (Ω) 120 Hz, +20°C	Impedance Ω +20°C/-10°C, 100kHz	Maximum RMS Ripple Current (mA) 100 kHz, +105°C	Dims DxL (mm)
25	470	477KXM025M	0.4938	0.041/0.13	1250	8x20
25	470	477KXM025MLQ	0.4938	0.038/0.221	1430	10x16
25	680	687KXM025M	0.3413	0.023/0.069	1820	10x20
25	820	827KXM025M	0.283	0.022/0.066	2150	10x25
25	1000	108KXM025M	0.2321	0.021/0.053	2360	12.5x20
25	1200	128KXM025M	0.1934	0.05/0.124	1730	12.5x20
25	1500	158KXM025M	0.1547	0.018/0.045	2770	12.5x25
25	1800	188KXM025M	0.1289	0.016/0.041	3290	12.5x30
25	2200	228KXM025M	0.1055	0.015/0.039	3400	12.5x35
25	2200	228KXM025MQV	0.1055	0.032/0.065	2390	16x25
25	2700	278KXM025M	0.086	0.016/0.043	3000	16x25
25	3300	338KXM025M	0.0703	0.027/0.054	3020	16x30
25	4700	478KXM025M	0.0494	0.023/0.046	3700	18x35
35	33	336KXM035M	6.0286	0.3/1	250	5x11
35	56	566KXM035M	3.5526	0.25/0.41	350	6.3x11
35	68	686KXM035M	2.9256	0.397/0.991	280	6.3x11
35	150	157KXM035M	1.3263	0.072/0.22	760	8x11.5
35	220	227KXM035M	0.9043	0.065/0.17	980	8x16
35	220	227KXM035MLN	0.9043	0.06/0.319	1050	10x12.5
35	270	277KXM035M	0.7368	0.041/0.13	1250	8x20
35	330	337KXM035M	0.6029	0.038/0.12	1430	10x16
35	470	477KXM035M	0.4233	0.023/0.069	1820	10x20
35	560	567KXM035M	0.3553	0.022/0.066	2150	10x25
35	680	687KXM035M	0.2926	0.021/0.053	2150	12.5x20
35	1000	108KXM035M	0.1989	0.018/0.045	2770	12.5x25
35	1200	128KXM035M	0.1658	0.016/0.041	3290	12.5x30
35	1500	158KXM035M	0.1326	0.015/0.039	3400	12.5x35
35	1500	158KXM035MQV	0.1326	0.04/0.079	2700	16x25
35	1800	188KXM035M	0.1105	0.016/0.043	3460	16x25
35	2200	228KXM035M	0.0904	0.031/0.077	2880	16x30
35	3300	338KXM035M	0.0603	0.026/0.064	3650	18x35
50	4.7	475KXM050M	35.2737	1.699/5.096	80	5x11
50	10	106KXM050M	16.579	0.55/3.992	240	5x11
50	22	226KXM050M	7.5357	0.34/1.18	238	5x11
50	33	336KXM050M	5.0238	0.564/1.411	230	6.3x11
50	47	476KXM050M	3.5274	0.24/1.132	320	6.3x11
50	56	566KXM050M	2.9605	0.14/0.5	385	6.3x11
50	68	686KXM050M	2.438	0.352/0.88	380	8x11.5
50	100	107KXM050M	1.6579	0.1/0.24	610	8x11.5
50	120	127KXM050M	1.3816	0.061/0.18	950	8x15
50	150	157KXM050M	1.1052	0.061/0.18	979	10x12.5
50	180	187KXM050M	0.921	0.046/0.14	1190	8x20
50	220	227KXM050M	0.7536	0.06/0.12	1136	10x16
50	270	277KXM050M	0.614	0.03/0.09	1580	10x20
50	330	337KXM050M	0.5024	0.028/0.085	1870	10x25
50	470	477KXM050M	0.3527	0.035/0.068	1900	12.5x20
50	560	567KXM050M	0.296	0.023/0.059	2410	12.5x25
50	680	687KXM050M	0.2438	0.021/0.052	2860	12.5x30
50	820	827KXM050M	0.2022	0.019/0.023	3960	12.5x35
50	1000	108KXM050M	0.1658	0.021/0.056	2850	16x25
50	1200	128KXM050M	0.1382	0.042/0.083	2710	16x30
50	1500	158KXM050M	0.1326	0.035/0.071	3010	16x35
50	2200	228KXM050M	0.1055	0.027/0.055	3690	18x35
50	3300	338KXM050M	0.0804	0.023/0.046	4350	18x40
63	10	106KXM063M	16.579	1.08/2.16	137	5x11
63	12	126KXM063M	11.0524	0.95/1.9	148	5x11
63	15	156KXM063M	8.842	0.75/1.5	185	6.3x11
63	18	186KXM063M	7.3683	0.64/1.28	198	6.3x11

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KXM

**+105°C, High Voltage Low
Impedance Long Life, 5000
hours**

WVDC	Capacitance (µF)	IC PART NUMBER	Maximum ESR (Ω) 120 Hz, +20°C	Impedance Ω +20°C/-10°C, 100kHz	Maximum RMS Ripple Current (mA) 100 kHz, +105°C	Dims DxDL (mm)
63	22	226KXM063M	7.5357	0.5/1.06	250	6.3x11
63	27	276KXM063M	6.1402	0.43/0.86	240	6.3x11
63	33	336KXM063M	5.0238	0.36/0.72	308	6.3x15
63	39	396KXM063M	4.2509	0.31/0.62	325	6.3x15
63	47	476KXM063M	3.5274	0.22/0.81	480	8x11.5
63	56	566KXM063MJP	2.9605	0.22/0.44	460	8x16
63	56	566KXM063M	2.9605	0.24/0.48	445	10x12.5
63	68	686KXM063MJP	2.438	0.18/0.36	510	8x16
63	68	686KXM063M	2.438	0.2/0.4	500	10x12.5
63	82	826KXM063MJU	2.0218	0.17/0.34	600	8x20
63	82	826KXM063M	2.0218	0.16/0.32	580	10x15
63	100	107KXM063M	1.6579	0.13/0.26	748	10x20
63	100	107KXM063MNP	1.6579	0.15/0.3	700	12.5x15
63	120	127KXM063M	1.3816	0.11/0.22	820	10x20
63	120	127KXM063MNP	1.3816	0.125/0.15	755	12.5x15
63	150	157KXM063M	1.1052	0.092/0.184	940	10x25
63	150	157KXM063MNP	1.1052	0.095/0.19	847	12.5x15
63	180	187KXM063M	0.921	0.077/0.154	1100	10x30
63	180	187KXM063MQP	0.921	0.082/0.164	1025	16x15
63	220	227KXM063M	0.6029	0.067/0.134	1145	12.5x20
63	220	227KXM063MQP	0.6029	0.072/0.144	1125	16x15
63	270	277KXM063M	0.614	0.056/0.112	1350	12.5x25
63	270	277KXM063MRP	0.614	0.06/0.12	1300	18x15
63	330	337KXM063M	0.5024	0.05/0.1	1425	12.5x25
63	330	337KXM063MRP	0.5024	0.051/0.102	1400	18x15
63	390	397KXM063M	0.4251	0.044/0.088	1625	12.5x30
63	390	397KXM063MQU	0.4251	0.047/0.094	1500	16x20
63	470	477KXM063M	0.3527	0.04/0.08	1785	12.5x35
63	470	477KXM063MQV	0.3527	0.042/0.084	1700	16x25
63	560	567KXM063M	0.296	0.036/0.072	1950	12.5x40
63	560	567KXM063MRU	0.296	0.04/0.08	1725	18x20
63	680	687KXM063M	0.195	0.033/0.066	2050	16x30
63	680	687KXM063MRV	0.195	0.036/0.072	1950	18x25
63	820	827KXM063M	0.2022	0.03/0.06	2225	16x35
63	820	827KXM063MRW	0.2022	0.032/0.064	2100	18x30
63	1000	108KXM063M	0.1658	0.028/0.056	2375	16x40
63	1000	108KXM063MRX	0.1658	0.03/0.06	2280	18x35
63	1200	128KXM063M	0.1243	0.026/0.052	2500	18x40
100	1	105KXM100M	132.629	17/46	26	5x11
100	1.5	155KXM100M	88.419	10/27	33	5x11
100	2.2	225KXM100M	75.3575	6.8/18.36	45	5x11
100	3.3	335KXM100M	40.191	4.15/11.205	55	5x11

WVDC	Capacitance (µF)	IC PART NUMBER	Maximum ESR (Ω) 120 Hz, +20°C	Impedance Ω +20°C/-10°C, 100kHz	Maximum RMS Ripple Current (mA) 100 kHz, +105°C	Dims DxDL (mm)
100	4.7	475KXM100M	35.2737	3/8.1	70	6.3x11
100	6.8	685KXM100M	24.38	2/5.4	85	6.3x11
100	10	106KXM100M	16.579	1/3.375	150	6.3x11
100	12	126KXM100M	11.0524	1/2.7	115	6.3x11
100	15	156KXM100M	8.842	0.82/2.214	132	6.3x15
100	18	186KXM100M	7.3683	0.39/1.863	155	6.3x15
100	22	226KXM100M	7.5357	0.8/1.54	370	8x11.5
100	27	276KXM100MJP	6.1402	0.48/1.3	280	8x16
100	27	276KXM100M	6.1402	0.05/1.4	270	10x12.5
100	33	336KXM100MJP	5.0238	0.4/1.08	300	8x16
100	33	336KXM100M	5.0238	0.44/1.19	295	10x12.5
100	39	396KXM100MJU	4.2509	0.34/0.92	350	8x20
100	39	396KXM100M	4.2509	0.38/1.03	340	10x15
100	47	476KXM100M	3.5274	0.3/0.81	420	10x20
100	47	476KXM100MNP	3.5274	0.33/0.89	400	12.5x15
100	56	566KXM100M	2.9605	0.25/0.675	455	10x20
100	56	566KXM100MNP	2.9605	0.29/0.78	430	12.5x15
100	68	686KXM100M	2.438	0.22/0.594	530	10x25
100	68	686KXM100MNP	2.438	0.25/0.675	465	12.5x15
100	82	826KXM100M	2.0218	0.2/0.54	610	10x30
100	82	826KXM100MQP	2.0218	0.21/0.567	680	16x15
100	100	107KXM100M	1.6579	0.16/0.432	660	10x30
100	100	107KXM100MQP	1.6579	0.18/0.486	715	16x15
100	120	127KXM100M	1.3816	0.135/0.351	770	12.5x25
100	120	127KXM100MQP	1.3816	0.15/0.405	795	16x15
100	150	157KXM100M	1.1052	0.12/0.324	800	12.5x25
100	150	157KXM100MRP	1.1052	0.13/0.351	915	18x15
100	180	187KXM100M	0.921	0.1/0.27	900	12.5x30
100	180	187KXM100MQU	0.921	0.11/0.3	995	16x20
100	220	227KXM100M	0.6029	0.088/0.238	1000	12.5x35
100	220	227KXM100MQV	0.6029	0.094/0.254	1150	16x25
100	270	277KXM100M	0.614	0.074/0.2	1110	12.5x40
100	270	277KXM100MRU	0.614	0.082/0.221	1225	18x20
100	330	337KXM100M	0.5024	0.065/0.176	1520	16x30
100	330	337KXM100MRV	0.5024	0.072/0.194	1425	18x25
100	390	397KXM100M	0.4251	0.055/0.149	1725	16x35
100	390	397KXM100MRW	0.4251	0.063/0.17	1600	18x30
100	470	477KXM100M	0.3527	0.049/0.132	1920	16x40
100	470	477KXM100MRX	0.3527	0.056/0.157	1775	18x35
100	560	567KXM100M	0.296	0.043/0.116	2050	18x35
100	680	687KXM100M	0.195	0.038/0.103	2300	18x40

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