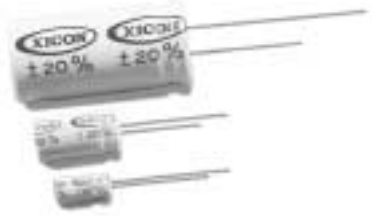
Low Leakage Electrolytic Capacitors — LLRL Series

FEATURES

- Excellent low leakage current performance
- High ripple current
- Especially useful for time constant circuits
- Satisfies characteristic W of JIS-C-5141 standard



CHARACTERISTICS

Item	Characteristics								
Operating Temperature Range	-40°C ~ +85°C								
Capacitance Tolerance	±20% at 20°C, 120Hz								
Leakage Current	I = 0.002CWV or 0.4μA whichever is greater after 2 minutes of applied rated DC working voltage at 20°C Where: C = rated capacitance in μF; WV = rated DC working voltage								
Dissipation Factor (Tan δ, at 20°C 120Hz)	Working voltage (WV)		6.3	10	16	25	35	50	63	100
	Tan δ		.24	.21	.16	.14	.12	.10	.09	.08
	For capacitors whose capacitance exceeds 1,000μF, the specification of tan δ is increased by 0.02 for every addition of 1,000μF								
Surge Voltage	Working voltage (WV)		6.3	10	16	25	35	50	63	100
	Surge voltage (SV)		8	13	20	32	44	63	79	125
Low Temperature Characteristics	Working voltage (WV)		6.3	10	16	25	35	50	63	100
	Imp. ratio	Z-25°C/Z+20°C	5	4	2	2	2	2	2	2
	@ 120Hz	Z-40°C/Z+20°C	10	8	6	4	4	3	3	3
Life Test	When returned to +20°C after 1,000 hours application of working voltage at +85°C, the capacitor will meet the following limits: Capacitance change is ≤ ±20% of initial value for 6.3WV ~ 25WV and is ≤ ±15% of initial value for 35WV ~ 100WV; tan δ is < 200% of initial specified value; leakage current is initial specified value								
Shelf Life Test	When returned to +20°C after 1,000 hours at +85°C with no voltage applied, the capacitor will meet the following limits: Capacitance change is ≤ ±20% of initial value; tan δ is < 200% of initial specified value; leakage current is initial specified value								

PART NUMBERING SYSTEM

L	L	R	L		5	0	V		1	0	0
Series					Voltage Actual Value				Capacitance (μF) Actual Value		

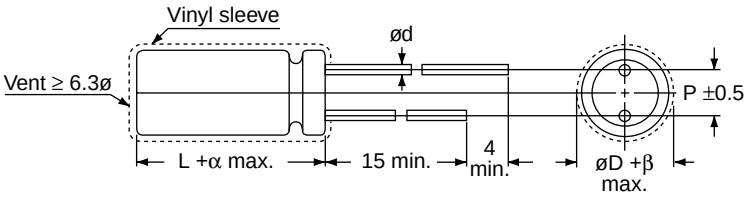
RIPPLE CURRENT AND FREQUENCY MULTIPLIERS

Capacitance (μF)	Frequency (Hz)				
	60 (50)	120	500	1K	≥10K
<100	0.70	1.0	1.35	1.55	2.00
100 ~ 1000	0.83	1.0	1.23	1.32	1.50
>1000	0.90	1.0	1.12	1.10	1.15

RIPPLE CURRENT AND TEMPERATURE MULTIPLIERS

Temperature (°C)	70	85
Multiplier	1.58	1.0

DIMENSIONS AND PERMISSIBLE RIPPLE CURRENT



Lead Spacing and Diameter (mm)

øD	5	6.3	8	10	13	16	18
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5
ød	0.5	0.5	0.6	0.6	0.6	0.8	0.8
β	0.5	0.5	0.5	0.5	0.5	0.5	0.5
α	1.0			1.5			

Value (µF)	Working Voltage; Dimensions: øD x L (mm); Ripple Current: mA/RMS @ 120Hz, 105°C															
	6.3		10		16		25		35		50		63		100	
	øD x L	mA	øD x L	mA	øD x L	mA	øD x L	mA	øD x L	mA	øD x L	mA	øD x L	mA	øD x L	mA
0.1											5 x 11	1.3			5 x 11	2.6
0.22											5 x 11	2.9			5 x 11	5.8
0.33											5 x 11	4.4			5 x 11	8.8
0.47											5 x 11	7			5 x 11	12
1											5 x 11	13			5 x 11	22
2.2											5 x 11	29			5 x 11	33
3.3											5 x 11	35			5 x 11	40
4.7							5 x 11	31	5 x 11	40	5 x 11	42	5 x 11	45	5 x 11	48
10					5 x 11	44	5 x 11	54	5 x 11	58	5 x 11	65	5 x 11	70	6.3 x 11	80
22			5 x 11	59	5 x 11	75	5 x 11	80	5 x 11	87	5 x 11	95	6.3 x 11	115	8 x 11.5	135
33	5 x 11	55	5 x 11	84	5 x 11	90	5 x 11	97	5 x 11	105	6.3 x 11	125	6.3 x 11	140	10 x 12.5	195
47	5 x 11	79	5 x 11	100	5 x 11	110	5 x 11	115	6.3 x 11	145	6.3 x 11	150	8 x 11.5	190	10 x 16	255
100	5 x 11	130	5 x 11	145	6.3 x 11	180	6.3 x 11	190	8 x 11.5	240	8 x 11.5	255	10 x 12.5	320	13 x 20	450
220	6.3 x 11	230	6.3 x 11	250	8 x 11.5	300	8 x 11.5	320	10 x 12.5	420	10 x 16	490	10 x 20	565	16 x 25	810
330	6.3 x 11	280	8 x 11.5	350	8 x 11.5	370	10 x 12.5	470	10 x 16	570	10 x 20	650	13 x 20	765	16 x 25	990
470	8 x 11.5	380	8 x 11.5	415	10 x 12.5	520	10 x 16	620	10 x 20	740	13 x 20	860	13 x 25	990	16 x 31.5	1250
1000	10 x 12.5	650	10 x 16	790	10 x 20	910	13 x 20	1090	13 x 25	1300	16 x 25	1530	16 x 31.5	1700		
2200	13 x 20	1150	13 x 20	1240	13 x 25	1420	16 x 25	1660	16 x 31.5	1890	18 x 35.5	2160				
3300	13 x 20	1380	13 x 25	1590	16 x 25	1840	16 x 31.5	2070	18 x 35.5	2340						
4700	16 x 25	1880	16 x 25	1980	16 x 35	2260	18 x 35.5	2520	18 x 40	2690						