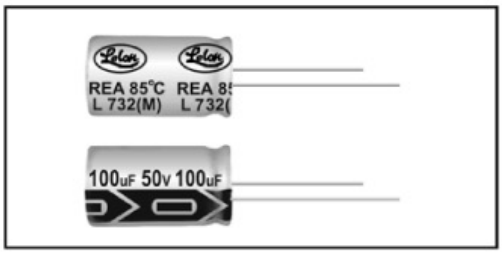
Features
- 85℃, 2,000 ~ 3,000 hours assured
- Standard series for general purpose
- RoHS Compliance



SPECIFICATIONS

Items	Performance
Operating Temperature Range	-40℃ ~ +85℃
Capacitance Tolerance	±20% (at 120Hz, 20℃)

Leakage Current (at 20℃)

Rated voltage	≦100V	>100V	
Time	after 2 minutes	after 5 minutes	
Leakage Current	I = 0.01CV or 3 (μA) whichever is greater	CV ≦ 1,000 I = 0.03CV+15(μA)	CV > 1,000 I = 0.02CV+25(μA)

Where, C = rated capacitance in μF V = rated DC working voltage in V

Dissipation Factor (Tan δ at 120 Hz, 20℃)

Rated Voltage	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450
Tan δ (max)	0.23	0.20	0.16	0.14	0.12	0.10	0.09	0.08	0.12	0.14	0.17	0.20	0.25	0.25

When the capacitance exceeds 1,000 μF, 0.02 shall be added every 1,000 μF increase.

Low Temperature Characteristics (at 120Hz)

Impedance ratio shall not exceed the values given in the table below.

Rated Voltage			6.3	10	16	25	35	50	63	100	160	200	250	350	400	450
Impedance Ratio	Z(-25℃) /Z(+20℃)	φD<16	6	4	3	3	2	2	2	2	3	6	8	12	14	16
		φD≧16	8	6	4	4	3	3	3	3						
	Z(-40℃) /Z(+20℃)	φD<16	10	8	6	6	4	3	3	3	4	8	10	16	18	20
		φD≧16	18	16	12	10	8	8	6	6						

Load Life Test

Test Time	2,000 hrs (3,000 hrs for φD≧10mm)
Capacitance Change	With in ±20% of initial value
Dissipation Factor	Less than 200% of specified value
Leakage Current	Within specified value

* The above specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage applied with rated ripple current for 2,000/3,000 hrs at 85℃.

Shelf Life Test

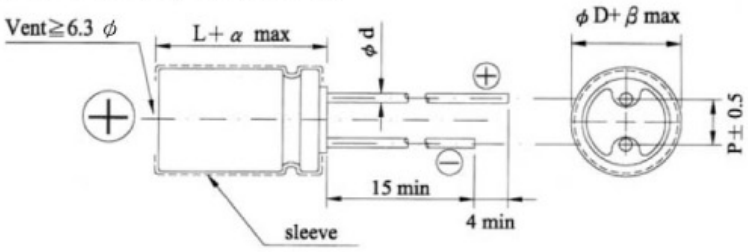
Test Time	1,000 hrs
Capacitance Change	With in ±20% of initial value
Dissipation Factor	Less than 200% of specified value
Leakage Current	Within specified value

* The above specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hrs at 85℃ without voltage applied. The rated voltage shall be applied to the capacitors before the measurements for 160 ~ 450V(Refer to JIS C 5101-4 4.1).

Ripple Current & Frequency Multipliers

Freq. (Hz) / Cap. (μF)	60 (50)	120	500	1K	10K up
Under 100	0.70	1.00	1.30	1.40	1.50
100<C≦1000	0.75	1.00	1.20	1.30	1.35
1000 up above	0.80	1.00	1.10	1.12	1.15

DIAGRAM OF DIMENSIONS



LEAD SPACING AND DIAMETER Unit: mm

φD	5	6.3	8	10	12.5	16	18	22	25
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10	12.5
φd	0.5		0.6			0.8		1.0	
α	1.0			1.5				2.0	
β	0.5								

DIMENSION & PERMISSIBLE RIPPLE CURRENT

Dimension: φD × L(mm)
Ripple Current: mA/rms at 120 Hz, 85°C

V. DC / μF	Contents	6.3V (0J)				10V (1A)				16V (1C)				25V (1E)			
		φD×L	mA	*φD×L	mA	φD×L	mA	*φD×L	mA	φD×L	mA	*φD×L	mA	φD×L	mA	*φD×L	mA
4.7	4R7													5×11	31		
10	100									5×11	49			5×11	54		
22	220					5×11	70			5×11	75			5×11	80		
33	330	5×11	72			5×11	84			5×11	90			5×11	97		
47	470	5×11	90			5×11	100			5×11	110			5×11	115		
100	101	5×11	130			5×11	145			6.3×11	180	5×11	160	6.3×11	190		
220	221	6.3×11	230	5×11	200	6.3×11	250	5×11	220	8×11.5	300	6.3×11	260	8×11.5	320		
330	331	8×11.5	290	6.3×11	270	8×11.5	350	6.3×11	290	8×11.5	370	6.3×11	290	10×12.5	470	8×11.5	440
470	471	8×11.5	380	6.3×11	320	8×11.5	415	6.3×11	350	10×12.5	520	8×11.5	440	10×16	620	10×12.5	545
1,000	102	8×11.5	540			10×12.5	650	8×11.5	550	10×16	785	10×12.5	635	12.5×20	1,090	10×20	955
2,200	222	10×20	1,000	10×16	845	12.5×20	1,240	10×20	1,070	12.5×20	1,295			16×25	1,660	12.5×25	1,540
3,300	332	12.5×20	1,380	10×20	1,185	12.5×20	1,420			12.5×25	1,655	12.5×20	1,370	16×31.5	2,070	16×25	1,975
4,700	472	16×25	1,880	12.5×20	1,545	16×25	1,980	12.5×25	1,780	16×31.5	2,260	16×25	2,090	16×31.5	2,420	16×25	1,825
6,800	682	16×25	2,120	12.5×25	1,880	16×25	2,220			16×31.5	2,520	16×25	2,130	18×35.5	2,880	18×31.5	2,550
10,000	103	16×25	2,330	16×20	2,000	16×35.5	2,670	16×31.5	2,370	18×31.5	2,590	16×35.5	2,450	22×40	3,440	18×40	3,080
22,000	223	18×40	3,320	18×31.5	2,780	22×40	3,790	18×40	3,370	22×40	3,900						

V. DC / μF	Contents	35V (1V)				50V (1H)				63V (1J)				100V (2A)			
		φD×L	mA	*φD×L	mA	φD×L	mA	*φD×L	mA	φD×L	mA	*φD×L	mA	φD×L	mA	*φD×L	mA
0.1	0R1					5×11	1.5			5×11	3			5×11	3		
0.22	R22					5×11	3.5			5×11	4.5			5×11	5.8		
0.33	R33					5×11	5			5×11	7.5			5×11	8.8		
0.47	R47					5×11	7			5×11	9.5			5×11	12		
1	010					5×11	15			5×11	17			5×11	22		
2.2	2R2					5×11	29			5×11	28			5×11	33		
3.3	3R3					5×11	35			5×11	34			5×11	40		
4.7	4R7	5×11	40			5×11	42			5×11	45			5×11	48		
10	100	5×11	58			5×11	65			5×11	70			6.3×11	80	5×11	59
22	220	5×11	87			5×11	95			6.3×11	115			8×11.5	135	6.3×11	115
33	330	6.3×11	115	5×11	108	6.3×11	136	5×11	125	8×11.5	150	6.3×11	140	10×16	195	8×11.5	145
47	470	6.3×11	145	5×11	130	6.3×11	165			8×11.5	190	6.3×11	170	10×16	255	10×12.5	235
100	101	8×11.5	240	6.3×11	210	8×11.5	260			10×12.5	320	8×11.5	245	10×20	370	10×16	325
220	221	10×12.5	420	8×11.5	385	10×16	490	10×12.5	455	10×20	565	10×16	490	12.5×25	675	12.5×20	640
330	331	10×16	570	10×12.5	490	12.5×20	635	10×16	585	12.5×20	765	10×20	710	16×25	825	16×20	695
470	471	10×16	740			12.5×20	860	10×20	755	16×25	1,050	12.5×20	900	16×31.5	1,070	16×25	910
1,000	102	12.5×20	1,145			16×25	1,530	12.5×25	1,340	16×25	1,560	16×20	1,260	22×40	2,600	18×40	2,410
2,200	222	16×31.5	1,890	16×25	1,785	18×40	2,231	16×35.5	2,075	18×40	2,385	18×31.5	1,955				
3,300	332	16×35.5	2,275	16×31.5	2,070	22×40	2,785	18×35.5	2,500	22×40	3,000	18×40	2,660				
4,700	472	18×35.5	2,700	18×31.5	2,360	25×40	3,300	22×40	3,155	25×40	3,560	22×40	2,890				

Case size in mark of "*" is downsize.

DIMENSION & PERMISSIBLE RIPPLE CURRENT

Dimension: φD × L(mm)
Ripple Current: mA/rms at 120 Hz, 85°C

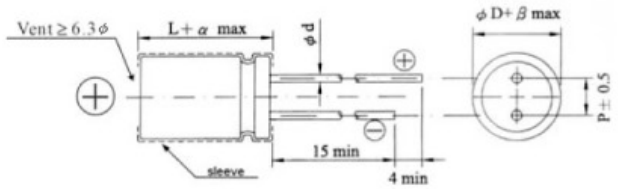
μF \ V. DC	Contents	160V (2C)				200V (2D)				250V (2E)				350V (2V)			
		φD×L	mA	*φD×L	mA	φD×L	mA	*φD×L	mA	φD×L	mA	*φD×L	mA	φD×L	mA	*φD×L	mA
0.47	R47	6.3×11	15	5×11	13	6.3×11	16	5×11	14	8×11.5	21	5×11	14	8×11.5	21	6.3×11	18
1	010	6.3×11	24	5×11	20	6.3×11	25	5×11	21	8×11.5	32	5×11	21	8×11.5	32	6.3×11	27
2.2	2R2	6.3×11	34	5×11	29	6.3×11	37	5×11	29	8×11.5	49	6.3×11	42	8×11.5	49	6.3×11	42
3.3	3R3	8×11.5	50	6.3×11	43	8×11.5	54	6.3×11	46	8×11.5	60	6.3×11	46	10×12.5	70	8×11.5	60
4.7	4R7	8×11.5	60	6.3×11	51	8×11.5	64	6.3×11	50	10×16	93	8×11.5	72	10×16	93	10×12.5	80
10	100	10×12.5	104	8×11.5	75	10×12.5	112	8×11.5	81	10×16	138	10×12.5	112	10×20	150	10×16	138
22	220	10×20	189	10×16	150	10×20	204	10×16	155	12.5×20	255	10×20	220	12.5×25	282	12.5×20	255
33	330	12.5×20	270	10×20	228	12.5×20	288	10×20	210	12.5×25	348	12.5×20	310	16×25	390	12.5×25	348
47	470	12.5×25	354	12.5×20	318	12.5×25	378	12.5×20	300	16×25	468	12.5×25	420	16×31.5	474	16×20	385
100	101	16×25	582	12.5×25	510	16×35.5	678	16×25	582	16×35.5	732	16×31.5	645	18×40	685	16×31.5	645
220	221	18×35.5	900	16×31.5	792	18×35.5	1,002	18×31.5	885	22×40	1,134	18×40	985				
330	331	18×40	1,010	18×35.5	984			18×40	1,200								

μF \ V. DC	Contents	400V (2G)				450V (2W)			
		φD×L	mA	*φD×L	mA	φD×L	mA	*φD×L	mA
0.47	R47	8×11.5	21	5×11	15	8×11.5	21	6.3×11	18
1	010	8×11.5	32	5×11	22	8×11.5	32	6.3×11	25
2.2	2R2	10×12.5	57	6.3×11	33	10×12.5	57	8×11.5	45
3.3	3R3	10×16	78	8×11.5	40	10×16	78	10×12.5	65
4.7	4R7	10×20	103	10×12.5	80	10×20	103	10×12.5	75
10	100	12.5×20	174	10×20	140	12.5×20	174	10×20	140
22	220	12.5×25	280	12.5×20	240	16×25	354	12.5×25	300
33	330	16×25	390	16×20	340	16×31.5	435	16×20	350
47	470	16×31.5	474	16×25	445	16×35.5	510	16×31.5	460
100	101	22×40	710	18×35.5	600	22×45	750	18×40	630

Case size in mark of "*" is downsize. 500 WV specifications are available upon request.

※ Low-Profile Size

DIAGRAM OF DIMENSIONS



Unit: mm

LEAD SPACING AND DIAMETER

φD	12.5	16	18
P	5.0	7.5	7.5
φd	0.6	0.8	
α	1.5		
β	0.5		

DIMENSION & PERMISSIBLE RIPPLE CURRENT

Dimension: φD × L(mm)
Ripple Current: mA/rms at 120 Hz, 85°C

μF \ V. DC	Contents	6.3V (0J)		10V (1A)		16V (1C)		25V (1E)		35V (1V)		50V (1H)	
		φD×L	mA	φD×L	mA	φD×L	mA	φD×L	mA	φD×L	mA	φD×L	mA
470	471											12.5×16 16×16	610 745
1,000	102							12.5×16	830	16×16	1,010	16×20	1,160
2,200	222			12.5×16	970	16×16 12.5×16	1,160 930	16×20 16×16	1,360 1,150	18×20 16×20	1,560 1,390		
3,300	332	12.5×16	960	16×16	1,310	16×20 16×16	1,460 1,240	18×20 16×20	1,720 1,490	18×25	1,970		
4,700	472	16×16	1,410	16×20 16×16	1,560 1420	18×20 16×20	1,770 1,600	18×25	2,070				
6,800	682	16×20	1,660	18×20 16×20	1,870 1,700	18×25 18×20	2,170 1,850						
10,000	103	18×20	2,020	18×25 16×20	2,370 2,050								

μF \ V. DC	Contents	160V (2C)		200V (2D)		250V (2E)		400V (2G)	
		φD×L	mA	φD×L	mA	φD×L	mA	φD×L	mA
10	101							12.5×16	150
22	220					12.5×16	280	16×16	280
33	330	12.5×16	305	12.5×16 16×16	280 350	16×16	350	16×20	355
47	470	12.5×16 16×16	360 420	16×16 16×20	390 420	16×20	420	18×20	435
68	680	16×16 16×20	440 490	16×16 18×20	470 490	18×20	490		
100	101	16×20 18×20	560 590	16×20 18×25	520 590				
150	151	18×20 18×25	640 710						