

LR/G Series

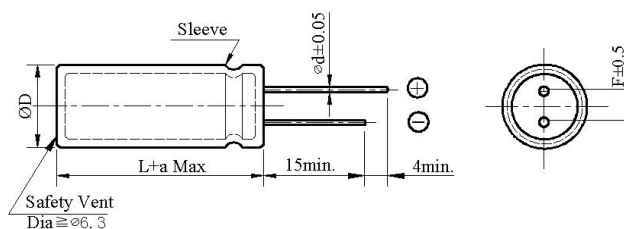
- High performance, high reliability.
- Low impedance, high ripple current, long life
- Load life 8,000~10,000 hours at 105℃
- RoHS Compliant
- Compliant to AEC-Q200



◆ SPECIFICATIONS

Item	Performance Characteristics										
Category Temperature Range	-40 ~ +105℃										
Working Voltage Range	6.3 ~ 120Vdc										
Capacitance Range	6.8 ~ 18,000μF										
Capacitance Tolerance	±20% (at 20℃ and 120Hz)										
Dissipation Factor (tanδ) (at 20℃, 120Hz)	Rated Voltage (V)	6.3	10	16	25	35	50	63	80	100	120
	tanδ(Max)	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.09	0.08	0.12
	The above values should be increased by 0.02 for every additional 1000μF										
Leakage Current	I=0.01CV or 3μA whichever is greater I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) Impress the rated voltage for 2 minutes										
Low Temperature Characteristics Impedance Ratio(MAX)	Rated voltage (V)	6.3	10	16	25	35	50	63	80	100	120
	Z(-25℃)/Z(+20℃)	5	4	4	3	2	2	2	2	2	3
	Z(-40℃)/Z(+20℃)	8	6	6	5	4	3	3	3	3	6
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied for 8,000 to 10,000 hours at 105℃.										
	Capacitance change		≒ ±25% of the initial value					Size		Life time (hours)	
	Dissipation factor(tanδ)		≒ 200% of the specified value					≤6.3 Φ		8,000	
	Leakage current		≒ specified value					≥8 Φ		10,000	
Shelf Life	The following requirements shall be satisfied when the capacitor are restored to 20℃ after the rated voltage applied for 1,000 hours at 105℃ without voltage applied.										
	Capacitance change		≒ ±25% of the initial value								
	Dissipation factor(tanδ)		≒ 200% of the specified value								
	Leakage current		≒ 200% of the specified value								

◆ DIMENSIONS (mm)



ΦD	5	6.3	8	10	12.5	16	18
ΦD	ΦD +0.5 Max						
Φd	0.5	0.5	0.5/0.6	0.6	0.6	0.8	0.8
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
a	L+2.0 Max						

◆ **PART NUMBER SYSTEM(Example : 100V 100μF)**

E	L	R	2	A	1	0	1	M	1	0	2	5	0	0	Y
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Sleeve code(Yellow)

Lead length code

Lead forming Type code

Size code(1025 : 10×25)

Capacitance tolerance code(M: $\pm 20\%$)

Capacitance code (100μF)

Voltage code(100V)

Series code(LR)

Category code(E)

LR Series

◆ Case size & Permissible rated ripple current

Nominal capacitance (μF)	6.3V				10V			
	Case size ΦD×L (mm)	Impedance (Ωmax/100KHz)		Max. Rated ripple current @105℃ 100KHz (mA rms)	Case size ΦD×L (mm)	Impedance (Ωmax/100KHz)		Max. Rated ripple current @105℃ 100KHz (mA rms)
		20℃	-10℃			20℃	-10℃	
100					5×11	0.580	2.300	215
150	5×11	0.570	2.300	210	5×11	0.580	2.300	230
220	6.3×11	0.250	0.900	320	6.3×11	0.220	0.870	340
330	6.3×11	0.210	0.870	340	6.3×11	0.220	0.870	400
470	8×12	0.150	0.580	350	8×12	0.130	0.520	660
680	8×12	0.130	0.520	660	8×16	0.086	0.350	870
820	10×12	0.080	0.320	880	10×16	0.070	0.280	1020
1000	8×16	0.085	0.350	900	10×16	0.062	0.240	1230
1200	10×16	0.062	0.240	1215	10×20	0.045	0.180	1410
1500	10×20	0.045	0.180	1410	12.5×16	0.049	0.160	1450
1800	12.5×16	0.048	0.160	1460	12.5×20	0.039	0.150	1720
2200	10×25	0.042	0.170	1650	12.5×20	0.035	0.120	1910
2700	10×30	0.030	0.120	1920	10×35	0.029	0.110	2080
3300	12.5×20	0.034	0.120	2100	12.5×25	0.026	0.089	2230
3900	12.5×25	0.026	0.088	2250	12.5×30	0.023	0.078	2660
4700	12.5×30	0.023	0.078	2650	12.5×35	0.020	0.065	2890
5600	16×20	0.026	0.077	2580	16×25	0.020	0.060	2950
6800	16×25	0.020	0.060	2940	16×30	0.016	0.050	3460
8200	16×30	0.016	0.050	3450	16×35	0.015	0.044	3610
10000	18×25	0.018	0.049	3150	18×35	0.012	0.038	4150
12000	18×30	0.014	0.040	4180	18×40	0.011	0.032	4300
15000	18×35	0.013	0.038	4230				
18000	18×40	0.012	0.032	4300				

Nominal capacitance (μF)	16V				25V			
	Case size ΦD×L (mm)	Impedance (Ωmax/100KHz)		Max. Rated ripple current @105℃ 100KHz (mA rms)	Case size ΦD×L (mm)	Impedance (Ωmax/100KHz)		Max. Rated ripple current @105℃ 100KHz (mA rms)
		20℃	-10℃			20℃	-10℃	
10	5×11	1.100	3.020	96	5×11	1.100	3.020	100
22	5×11	0.750	2800	120	5×11	0.700	2.800	140
47	5×11	0.600	2.600	180	5×11	0.570	2.300	205
56	5×11	0.570	2.300	220	5×11	0.570	2.300	245
100	6.3×11	0.210	0.870	310	6.3×11	0.210	0.870	350
120	6.3×11	0.200	0.860	340	8×12	0.180	0.750	420
220	6.3×11	0.190	0.850	650	8×12	0.120	0.520	680
330	8×12	0.120	0.520	760	8×16	0.087	0.350	880
470	8×16	0.086	0.350	840	8×20	0.075	0.290	1050
680	8×20	0.069	0.270	1060	10×20	0.046	0.190	1410
820	10×20	0.052	0.220	1310	10×25	0.041	0.170	1660
1000	10×20	0.045	0.180	1410	10×30	0.038	0.150	1920
1200	10×25	0.043	0.170	1650	12.5×20	0.030	0.100	2100
1500	12.5×20	0.035	0.120	1910	12.5×25	0.026	0.089	2240
1800	12.5×25	0.028	0.095	2140	12.5×30	0.024	0.078	2660
2200	12.5×25	0.026	0.089	2240	12.5×35	0.020	0.065	2890
2700	12.5×30	0.023	0.077	2650	16×25	0.021	0.060	2940
3300	12.5×35	0.020	0.066	2890	16×30	0.016	0.050	3460
3900	16×25	0.021	0.060	2930	16×35	0.014	0.043	3620
4700	16×30	0.016	0.050	3450	16×40	0.012	0.038	4100
5600	16×35	0.015	0.044	3620	18×40	0.011	0.032	4300
6800	16×40	0.012	0.038	4080				
8200	18×35	0.014	0.038	4230				
18000	18×40	0.011	0.032	4300				

LR Series

◆ Case size & Permissible rated ripple current

Nominal capacitance (μF)	35V				50V			
	Case size ΦD×L (mm)	Impedance (Ω _{max} /100KHz)		Max. Rated ripple current @105℃ 100KHz (mA rms)	Case size ΦD×L (mm)	Impedance (Ω _{max} /100KHz)		Max. Rated ripple current @105℃ 100KHz (mA rms)
		20℃	-10℃			20℃	-10℃	
10					5×11	1.300	2.800	140
22					5×11	0.700	2.500	190
33	5×11	0.560	2.300	220	6.3×11	0.600	1.900	205
47	6.3×11	0.350	1.400	280	6.3×11	0.380	1.500	220
56	6.3×11	0.210	0.860	350	8×12	0.300	1.200	300
100	8×12	0.150	0.560	510	8×12	0.200	0.710	560
150	8×12	0.130	0.520	660	8×16	0.180	0.550	760
220	8×16	0.086	0.350	860	10×16	0.150	0.500	1050
330	10×16	0.070	0.300	1230	10×25	0.130	0.460	1450
470	10×20	0.065	0.250	1410	12.5×20	0.108	0.430	1680
560	10×25	0.056	0.180	1650	12.5×25	0.085	0.360	1950
680	10×30	0.042	0.155	1920	12.5×30	0.075	0.320	2320
820	12.5×25	0.038	0.100	2050	12.5×35	0.058	0.280	2520
1000	12.5×25	0.035	0.095	2230	16×25	0.045	0.220	2560
1200	12.5×30	0.025	0.088	2660	16×30	0.036	0.190	3020
1500	12.5×35	0.022	0.070	2880	18×35	0.032	0.150	3150
2200	16×30	0.018	0.062	3350	18×35	0.029	0.120	3690
2700	18×35	0.016	0.050	3620	18×40	0.025	0.100	3810
3300	16×40	0.014	0.045	4100				
3900	18×40	0.013	0.038	4300				

Nominal capacitance (μF)	63V				80V			
	Case size ΦD×L (mm)	Impedance (Ω _{max} /100KHz)		Max. Rated ripple current @105℃ 100KHz (mA rms)	Case size ΦD×L (mm)	Impedance (Ω _{max} /100KHz)		Max. Rated ripple current @105℃ 100KHz (mA rms)
		20℃	-10℃			20℃	-10℃	
12								
15	5×11	2.200	9.200	156	6.3×11	1.600	7.200	135
33	6.3×11	1.200	5.000	265	8×12	0.800	3.600	220
47	8×12	0.680	3.100	300	8×16	0.600	2.900	288
68	8×12	0.600	2.900	420	8×16	0.420	2.000	400
100	10×16	0.350	1.800	550	10×20	0.280	1.600	520
120	10×16	0.300	1.500	610	10×25	0.200	0.940	580
180	10×20	0.200	0.940	670	12.5×20	0.160	0.760	700
220	10×25	0.180	0.880	1020	12.5×25	0.130	0.640	1050
330	12.5×25	0.120	0.450	1460	12.5×30	0.100	0.380	1500
470	12.5×30	0.100	0.420	1950	16×25	0.085	0.350	1860
560	12.5×35	0.082	0.350	2060	16×30	0.075	0.300	2020
680	12.5×40	0.070	0.300	2200	18×30	0.060	0.250	2310
820	16×30	0.053	0.250	2310	18×35	0.046	0.190	2400
1000	18×35	0.040	0.190	2900	18×40	0.039	0.160	2860
1200	16×40	0.035	0.180	3300				
1500	18×40	0.033	0.140	3500				

LR Series

◆ Case size & Permissible rated ripple current

Nominal capacitance (μF)	100V				120V			
	Case size ΦD×L (mm)	Impedance (Ω _{max} /100KHz)		Max. Rated ripple current @105℃ 100KHz (mA rms)	Case size ΦD×L (mm)	Impedance (Ω _{max} /100KHz)		Max. Rated ripple current @105℃ 100KHz (mA rms)
		20℃	-10℃			20℃	-10℃	
6.8	5×11	2.200	9.200	125				
15	6.3×11	1.200	5.000	150	6.3×11	3.800	15.80	125
33	8×16	0.580	2.800	280	8×20	0.850	3.800	160
47	10×12	0.430	1.800	480	10×16	0.680	3.000	260
68	10×16	0.300	1.500	550	10×16	0.500	2.300	330
100	10×25	0.200	0.840	600	10×25	0.400	1.700	510
120	10×30	0.150	0.710	750	12.5×20	0.350	1.550	720
180	12.5×25	0.120	0.450	960	12.5×30	0.280	1.300	890
220	12.5×30	0.100	0.420	1250	16×25	0.250	1.200	1150
330	12.5×40	0.090	0.360	1580	16×30	0.180	0.820	1360
470	18×30	0.075	0.220	1720	18×35	0.150	0.710	1660
560	16×40	0.065	0.180	1910	18×40	0.120	0.450	1880
680	18×35	0.052	0.160	2060				
820	18×40	0.045	0.140	2240				

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

Vdc	Cap(μF)	Frequency (Hz)			
		120	1K	10K	100K
6.3 ~ 120	6.8~180	0.40	0.75	0.90	1.00
	220~560	0.50	0.85	0.94	1.00
	680~1800	0.60	0.87	0.95	1.00
	2200~3900	0.75	0.90	0.95	1.00
	≥4700	0.85	0.95	0.98	1.00