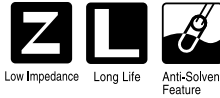
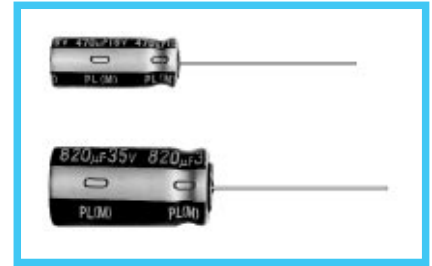


PL series Extremely Low Impedance, High Reliability



- Same case size as PF series, but extremely low impedance as little as 1/2 or PF series.
- High reliability withstanding 5000 hours load life at +105°C (3000/2000 hours for smaller case size as specified below).
- Capacitance ranges available based on the numerical values in E12 series under JIS.

This series will be discontinued in 2002, and combine with PM series.

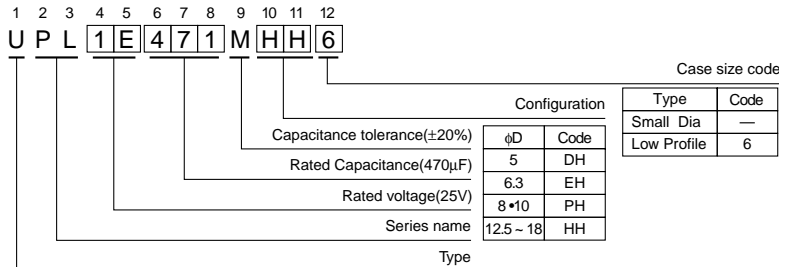
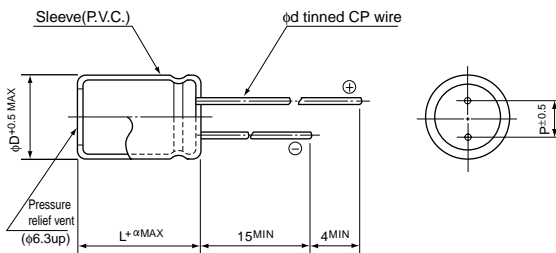


Specifications

Item	Performance Characteristics																
Category Temperature Range	-55 ~ +105°C																
Rated Voltage Range	6.3 ~ 63V																
Rated Capacitance Range	0.47 ~ 15000µF																
Capacitance Tolerance	±20% at 120Hz, 20°C																
Leakage Current	After 1 minute's application of rated voltage, leakage current is not more than 0.03CV or 4µA, whichever is greater.																
tan δ	For capacitance of more than 1000µF, add 0.02 for every increase of 1000µF. Measurement frequency : 120Hz, Temperature : 20°C																
	<table border="1"> <tr> <td>Rated voltage(V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> </tr> <tr> <td>tan δ(MAX.)</td> <td>0.22</td> <td>0.19</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.08</td> </tr> </table>	Rated voltage(V)	6.3	10	16	25	35	50	63	tan δ(MAX.)	0.22	0.19	0.16	0.14	0.12	0.10	0.08
Rated voltage(V)	6.3	10	16	25	35	50	63										
tan δ(MAX.)	0.22	0.19	0.16	0.14	0.12	0.10	0.08										
Stability at Low Temperature	Measurement frequency : 120Hz																
	<table border="1"> <tr> <td>Rated voltage(V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> </tr> <tr> <td>Impedance ratio ZT/Z20(MAX.)</td> <td>Z-55°C/Z+20°C</td> <td>4</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>2</td> <td>2</td> </tr> </table>	Rated voltage(V)	6.3	10	16	25	35	50	63	Impedance ratio ZT/Z20(MAX.)	Z-55°C/Z+20°C	4	4	3	3	3	2
Rated voltage(V)	6.3	10	16	25	35	50	63										
Impedance ratio ZT/Z20(MAX.)	Z-55°C/Z+20°C	4	4	3	3	3	2	2									
Endurance	After an application of D.C. bias voltage plus the rated ripple current for 5000 hours (2000 hours for D=5 and 6.3, 3000 hours for D=8) at 105°C the peak voltage shall not exceed the rated D.C. voltage, capacitors meet the characteristics requirements listed at right.																
	<table border="1"> <tr> <td>Capacitance change</td> <td>Within ±20% of initial value</td> </tr> <tr> <td>tan δ</td> <td>200% or less of initial specified value</td> </tr> <tr> <td>Leakage current</td> <td>Initial specified value or less</td> </tr> </table>	Capacitance change	Within ±20% of initial value	tan δ	200% or less of initial specified value	Leakage current	Initial specified value or less										
	Capacitance change	Within ±20% of initial value															
tan δ	200% or less of initial specified value																
Leakage current	Initial specified value or less																
Shelf Life	After leaving capacitors under no load at 105°C for 1000 hours, they meet the specified value for endurance characteristics listed above. The value of tan δ is, however, 150% or less of initial specified value.																
Marking	Printed with white color letter on dark brown sleeve.																

Radial Lead Type

Type numbering system (Example: 25V 470µF φ12.5 × 15)

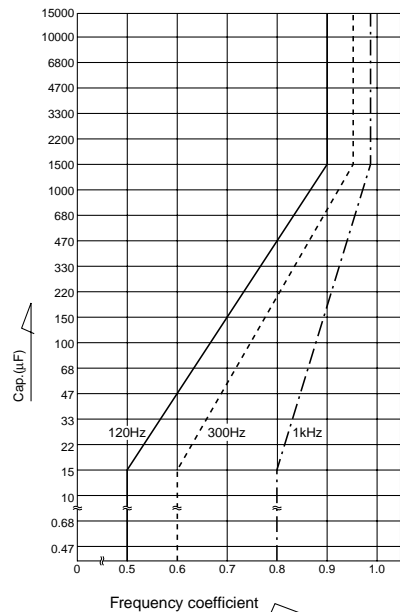


α	(L<20) 1.5
	(L≥20) 2.0

φD	5	6.3	8	10	12.5	16	18
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5
φd	0.5	0.5	0.6	0.6	0.6 ^②	0.8	0.8

* In case L>25 for φ12.5(D) case sizes, lead diameter φ0.8(d) will be applied.

- Frequency coefficient of rated ripple current (10kHz ~ 200kHz=1)



Please refer to page 18, 19, 20 about the formed or taped product spec. Please refer to page 3 for the minimum order quantity.

Dimension table in next page.

■Dimensions

D × L (mm)

Cap.(μF)	V(Code) Size code	6.3(0J)		10(1A)		16(1C)		25(1E)		35(1V)		50(1H)		63(1J)	
		—	6	—	6	—	6	—	6	—	6	—	6	—	6
0.47	R47												5 × 11		
0.68	R68												5 × 11		
1	010												5 × 11		
1.5	1R5												5 × 11		
2.2	2R2												5 × 11		
3.3	3R3												5 × 11		
4.7	4R7												5 × 11		
6.8	6R8												5 × 11		
10	100												5 × 11	5 × 11	
12	120												5 × 11	5 × 11	
15	150												5 × 11	6.3 × 11	
18	180												5 × 11	6.3 × 11	
22	220										5 × 11		6.3 × 11	6.3 × 11	
27	270										5 × 11		6.3 × 11	6.3 × 11	
33	330								5 × 11		6.3 × 11		6.3 × 11	6.3 × 15	
39	390								5 × 11		6.3 × 11		6.3 × 11	6.3 × 15	
47	470					5 × 11		6.3 × 11		6.3 × 11			6.3 × 15	8 × 11.5	
56	560					5 × 11		6.3 × 11		6.3 × 11			6.3 × 15	8 × 15	10 × 12.5
68	680			5 × 11		6.3 × 11		6.3 × 11		6.3 × 15		8 × 11.5		8 × 15	10 × 12.5
82	820			5 × 11		6.3 × 11		6.3 × 11		6.3 × 15		8 × 15	10 × 12.5	8 × 20	10 × 15
100	101	5 × 11		6.3 × 11		6.3 × 11		6.3 × 15		8 × 11.5		8 × 20	10 × 15	10 × 20	12.5 × 15
120	121	5 × 11		6.3 × 11		6.3 × 11		6.3 × 15		8 × 15	10 × 12.5	8 × 20	10 × 15	10 × 20	12.5 × 15
150	151	6.3 × 11		6.3 × 11		6.3 × 15		8 × 11.5		8 × 15	10 × 12.5	10 × 20	12.5 × 15	10 × 25	12.5 × 15
180	181	6.3 × 11		6.3 × 11		6.3 × 15		8 × 15	10 × 12.5	8 × 20	10 × 15	10 × 20	12.5 × 15	10 × 31.5	16 × 15
220	221	6.3 × 11		6.3 × 15		8 × 11.5		8 × 15	10 × 12.5	8 × 20	10 × 15	10 × 25	12.5 × 15	12.5 × 20	16 × 15
270	271	6.3 × 15		6.3 × 15		8 × 15	10 × 12.5	8 × 20	10 × 15	10 × 20	12.5 × 15	10 × 31.5	16 × 15	12.5 × 25	18 × 15
330	331	6.3 × 15		8 × 11.5		8 × 15	10 × 12.5	8 × 20	10 × 15	10 × 20	12.5 × 15	10 × 31.5	16 × 15	12.5 × 25	18 × 15
390	391	8 × 11.5		8 × 15	10 × 12.5	8 × 20	10 × 15	10 × 20	12.5 × 15	10 × 25	12.5 × 15	12.5 × 25	16 × 15	12.5 × 31.5	16 × 20
470	471	8 × 15	10 × 12.5	8 × 15	10 × 12.5	8 × 20	10 × 15	10 × 20	12.5 × 15	10 × 31.5	16 × 15	12.5 × 25	18 × 15	12.5 × 35.5	16 × 25
560	561	8 × 15	10 × 12.5	8 × 20	10 × 15	10 × 20	12.5 × 15	10 × 25	12.5 × 15	12.5 × 20	16 × 15	12.5 × 31.5	16 × 20	12.5 × 40	18 × 20
680	681	8 × 20	10 × 15	8 × 20	10 × 15	10 × 20	12.5 × 15	10 × 31.5	16 × 15	12.5 × 25	18 × 15	12.5 × 35.5	16 × 20	16 × 31.5	18 × 25
820	821	8 × 20	10 × 15	10 × 20	12.5 × 15	10 × 25	12.5 × 15	12.5 × 20	16 × 15	12.5 × 25	18 × 15	12.5 × 40	18 × 20	16 × 35.5	18 × 31.5
1000	102	10 × 20	12.5 × 15	10 × 20	12.5 × 15	10 × 31.5	16 × 15	12.5 × 25	18 × 15	12.5 × 31.5	16 × 20	16 × 31.5	18 × 25	16 × 40	18 × 35.5
1200	122	10 × 20	12.5 × 15	10 × 25	12.5 × 15	12.5 × 20	16 × 15	12.5 × 25	18 × 15	12.5 × 35.5	16 × 25	16 × 35.5	18 × 31.5	18 × 40	
1500	152	10 × 25	12.5 × 15	10 × 31.5	16 × 15	12.5 × 25	18 × 15	12.5 × 31.5	16 × 20	12.5 × 40	18 × 20	16 × 40	18 × 31.5		
1800	182	10 × 31.5	16 × 15	12.5 × 20	16 × 15	12.5 × 31.5	16 × 20	12.5 × 35.5	16 × 25	16 × 31.5	18 × 25	18 × 35.5			
2200	222	10 × 31.5	16 × 15	12.5 × 25	18 × 15	12.5 × 31.5	16 × 20	12.5 × 40	18 × 20	16 × 35.5	18 × 31.5	18 × 40			
2700	272	12.5 × 25	18 × 15	12.5 × 31.5	16 × 20	12.5 × 35.5	16 × 25	16 × 31.5	18 × 25	16 × 40	18 × 35.5				
3300	332	12.5 × 25	18 × 15	12.5 × 35.5	16 × 20	12.5 × 40	18 × 20	16 × 35.5	18 × 31.5	18 × 40					
3900	392	12.5 × 31.5	16 × 20	12.5 × 40	18 × 20	16 × 31.5	18 × 25	16 × 40	18 × 35.5						
4700	472	12.5 × 35.5	18 × 20	16 × 31.5	18 × 25	16 × 35.5	18 × 31.5	18 × 40							
5600	562	12.5 × 40	18 × 20	16 × 35.5	18 × 25	16 × 40	18 × 35.5								
6800	682	16 × 31.5	18 × 25	16 × 35.5	18 × 31.5	18 × 35.5									
8200	822	16 × 35.5	18 × 31.5	16 × 40	18 × 35.5	18 × 40									
10000	103	16 × 40	18 × 31.5	18 × 40											
12000	123	18 × 35.5													
15000	153	18 × 40													

※ In case of low profile type, [6] will be put at 12th digit of type numbering system.

Standard ratings

Cap.(μF)		V(Code) Size code Item Code		6.3(0J)									
				—				6					
				Case size φD × L (mm)	Impedance(ΩMAX)		Rated ripple(mA rms)		Case size φD × L (mm)	Impedance(ΩMAX)		Rated ripple(mA rms)	
20°C/100kHz	—10°C/100kHz	105°C/10kHz ~ 200kHz	105°C/120Hz		20°C/100kHz	—10°C/100kHz	105°C/10kHz ~ 200kHz	105°C/120Hz					
100	101	5 × 11	0.85	1.70	150	99							
120	121	5 × 11	0.65	1.30	175	115							
150	151	6.3 × 11	0.49	0.98	225	155							
180	181	6.3 × 11	0.39	0.78	250	175							
220	221	6.3 × 11	0.30	0.60	285	205							
270	271	6.3 × 15	0.24	0.48	370	275							
330	331	6.3 × 15	0.20	0.40	405	310							
390	391	8 × 11.5	0.17	0.34	445	345							
470	471	8 × 15	0.14	0.28	550	435	10 × 12.5	0.14	0.28	575	455		
560	561	8 × 15	0.12	0.24	595	480	10 × 12.5	0.13	0.26	600	485		
680	681	8 × 20	0.10	0.20	730	605	10 × 15	0.11	0.22	700	580		
820	821	8 × 20	0.085	0.17	795	670	10 × 15	0.095	0.19	750	635		
1000	102	10 × 20	0.075	0.15	950	820	12.5 × 15	0.085	0.17	890	765		
1200	122	10 × 20	0.065	0.13	1020	895	12.5 × 15	0.075	0.15	950	835		
1500	152	10 × 25	0.055	0.11	1220	1090	12.5 × 15	0.065	0.13	1020	915		
1800	182	10 × 31.5	0.050	0.10	1370	1230	16 × 15	0.055	0.11	1270	1140		
2200	222	10 × 31.5	0.043	0.086	1470	1320	16 × 15	0.049	0.098	1340	1200		
2700	272	12.5 × 25	0.038	0.076	1590	1430	18 × 15	0.044	0.088	1500	1350		
3300	332	12.5 × 25	0.034	0.068	1710	1530	18 × 15	0.039	0.078	1600	1440		
3900	392	12.5 × 31.5	0.031	0.062	1910	1710	16 × 20	0.036	0.072	1720	1540		
4700	472	12.5 × 35.5	0.028	0.056	2100	1890	18 × 20	0.032	0.064	1920	1720		
5600	562	12.5 × 40	0.026	0.052	2270	2040	18 × 20	0.030	0.060	1980	1780		
6800	682	16 × 31.5	0.024	0.048	2370	2130	18 × 25	0.027	0.054	2210	1980		
8200	822	16 × 35.5	0.022	0.044	2550	2290	18 × 31.5	0.025	0.050	2390	2150		
10000	103	16 × 40	0.020	0.040	2750	2470	18 × 31.5	0.023	0.046	2490	2240		
12000	123	18 × 35.5	0.019	0.038	2820	2530							
15000	153	18 × 40	0.018	0.036	2960	2660							

Cap.(μF)		V(Code) Size code Item Code		10(1A)									
				—				6					
				Case size φD × L (mm)	Impedance(ΩMAX)		Rated ripple(mA rms)		Case size φD × L (mm)	Impedance(ΩMAX)		Rated ripple(mA rms)	
20°C/100kHz	—10°C/100kHz	105°C/10kHz ~ 200kHz	105°C/120Hz		20°C/100kHz	—10°C/100kHz	105°C/10kHz ~ 200kHz	105°C/120Hz					
68	680	5 × 11	0.80	1.60	155	97							
82	820	5 × 11	0.65	1.30	175	110							
100	101	6.3 × 11	0.55	1.10	210	135							
120	121	6.3 × 11	0.44	0.88	235	160							
150	151	6.3 × 11	0.35	0.70	265	185							
180	181	6.3 × 11	0.29	0.58	290	205							
220	221	6.3 × 15	0.24	0.48	370	270							
270	271	6.3 × 15	0.20	0.40	405	300							
330	331	8 × 11.5	0.16	0.32	460	350							
390	391	8 × 15	0.14	0.28	550	430	10 × 12.5	0.15	0.30	555	430		
470	471	8 × 15	0.12	0.24	595	475	10 × 12.5	0.13	0.26	600	475		
560	561	8 × 20	0.10	0.20	730	590	10 × 15	0.11	0.22	700	565		
680	681	8 × 20	0.085	0.17	795	660	10 × 15	0.090	0.18	770	635		
820	821	10 × 20	0.070	0.14	985	835	12.5 × 15	0.080	0.16	920	780		
1000	102	10 × 20	0.060	0.12	1060	915	12.5 × 15	0.065	0.13	1040	895		
1200	122	10 × 25	0.050	0.10	1280	1120	12.5 × 15	0.060	0.12	1060	930		
1500	152	10 × 31.5	0.045	0.090	1440	1290	16 × 15	0.050	0.10	1330	1190		
1800	182	12.5 × 20	0.039	0.078	1470	1320	16 × 15	0.044	0.088	1420	1270		
2200	222	12.5 × 25	0.034	0.068	1710	1530	18 × 15	0.039	0.078	1600	1440		
2700	272	12.5 × 31.5	0.030	0.060	1940	1740	16 × 20	0.035	0.070	1740	1560		
3300	332	12.5 × 35.5	0.026	0.052	2180	1960	16 × 20	0.031	0.062	1850	1660		
3900	392	12.5 × 40	0.024	0.048	2360	2120	18 × 20	0.028	0.056	2050	1840		
4700	472	16 × 31.5	0.023	0.046	2420	2170	18 × 25	0.026	0.052	2250	2020		
5600	562	16 × 35.5	0.021	0.042	2610	2340	18 × 25	0.024	0.048	2340	2100		
6800	682	16 × 35.5	0.020	0.040	2680	2410	18 × 31.5	0.022	0.044	2540	2280		
8200	822	16 × 40	0.019	0.038	2820	2530	18 × 35.5	0.021	0.042	2690	2420		
10000	103	18 × 40	0.017	0.034	3040	2730							

※ In case of low profile type, [6] will be put at 12th digit of type numbering system.

Standard ratings

Cap. (μF)		V(Code) Size Code Item Code		16(1C)									
				—		6							
				Case size φD × L (mm)	Impedance(ΩMAX)		Rated ripple(mA rms)		Case size φD × L (mm)	Impedance(ΩMAX)		Rated ripple(mA rms)	
20°C/100kHz	—10°C/100kHz	105°C/100kHz	105°C/120Hz		20°C/100kHz	—10°C/100kHz	105°C/100kHz	105°C/120Hz					
47	470	5 × 11	0.80	1.60	155	92							
56	560	5 × 11	0.65	1.30	175	105							
68	680	6.3 × 11	0.50	1.00	220	135							
82	820	6.3 × 11	0.42	0.84	240	155							
100	101	6.3 × 11	0.35	0.70	265	175							
120	121	6.3 × 11	0.29	0.58	290	195							
150	151	6.3 × 15	0.23	0.46	375	260							
180	181	6.3 × 15	0.20	0.40	405	285							
220	221	8 × 11.5	0.16	0.32	460	335							
270	271	8 × 15	0.14	0.28	550	410	10 × 12.5	0.14	0.28	575	430		
330	331	8 × 15	0.12	0.24	595	455	10 × 12.5	0.12	0.24	625	480		
390	391	8 × 20	0.10	0.20	730	570	10 × 15	0.10	0.20	730	570		
470	471	8 × 20	0.090	0.18	770	615	10 × 15	0.090	0.18	770	615		
560	561	10 × 20	0.075	0.15	950	770	12.5 × 15	0.080	0.16	920	745		
680	681	10 × 20	0.065	0.13	1020	845	12.5 × 15	0.070	0.14	985	815		
820	821	10 × 25	0.055	0.11	1220	1030	12.5 × 15	0.060	0.12	1060	895		
1000	102	10 × 31.5	0.047	0.094	1410	1210	16 × 15	0.055	0.11	1270	1090		
1200	122	12.5 × 20	0.041	0.082	1430	1250	16 × 15	0.046	0.092	1390	1220		
1500	152	12.5 × 25	0.036	0.072	1660	1490	18 × 15	0.041	0.082	1560	1400		
1800	182	12.5 × 31.5	0.032	0.064	1880	1690	16 × 20	0.037	0.074	1700	1530		
2200	222	12.5 × 31.5	0.028	0.056	2010	1800	16 × 20	0.033	0.066	1800	1620		
2700	272	12.5 × 35.5	0.025	0.050	2220	1990	16 × 25	0.030	0.060	2010	1800		
3300	332	12.5 × 40	0.023	0.046	2410	2160	18 × 20	0.027	0.054	2090	1880		
3900	392	16 × 31.5	0.022	0.044	2470	2220	18 × 25	0.025	0.050	2290	2060		
4700	472	16 × 35.5	0.020	0.040	2680	2410	18 × 31.5	0.023	0.046	2490	2240		
5600	562	16 × 40	0.019	0.038	2820	2530	18 × 35.5	0.022	0.044	2620	2350		
6800	682	18 × 35.5	0.018	0.036	2900	2610							
8200	822	18 × 40	0.017	0.034	3040	2730							

Cap. (μF)		V(Code) Size Code Item Code		25(1E)									
				—		6							
				Case size φD × L (mm)	Impedance(ΩMAX)		Rated ripple(mA rms)		Case size φD × L (mm)	Impedance(ΩMAX)		Rated ripple(mA rms)	
20°C/100kHz	—10°C/100kHz	105°C/200kHz	105°C/120Hz		20°C/100kHz	—10°C/100kHz	105°C/200kHz	105°C/120Hz					
33	330	5 × 11	0.80	1.60	155	88							
39	390	5 × 11	0.65	1.30	175	100							
47	470	6.3 × 11	0.55	1.10	210	125							
56	560	6.3 × 11	0.44	0.88	235	140							
68	680	6.3 × 11	0.36	0.72	260	160							
82	820	6.3 × 11	0.30	0.60	285	180							
100	101	6.3 × 15	0.24	0.48	370	245							
120	121	6.3 × 15	0.20	0.40	405	275							
150	151	8 × 11.5	0.16	0.32	460	320							
180	181	8 × 15	0.14	0.28	550	390	10 × 12.5	0.15	0.30	555	395		
220	221	8 × 15	0.11	0.22	625	455	10 × 12.5	0.13	0.26	600	435		
270	271	8 × 20	0.095	0.19	750	560	10 × 15	0.11	0.22	700	525		
330	331	8 × 20	0.085	0.17	795	610	10 × 15	0.095	0.19	750	575		
390	391	10 × 20	0.070	0.14	985	770	12.5 × 15	0.080	0.16	920	720		
470	471	10 × 20	0.065	0.13	1020	810	12.5 × 15	0.070	0.14	985	785		
560	561	10 × 25	0.055	0.11	1220	990	12.5 × 15	0.060	0.12	1060	860		
680	681	10 × 31.5	0.046	0.092	1420	1180	16 × 15	0.055	0.11	1270	1050		
820	821	12.5 × 20	0.041	0.082	1430	1210	16 × 15	0.049	0.098	1340	1130		
1000	102	12.5 × 25	0.036	0.072	1660	1430	18 × 15	0.043	0.086	1520	1310		
1200	122	12.5 × 25	0.032	0.064	1760	1550	18 × 15	0.039	0.078	1600	1400		
1500	152	12.5 × 31.5	0.029	0.058	1980	1780	16 × 20	0.034	0.068	1770	1590		
1800	182	12.5 × 35.5	0.026	0.052	2180	1960	16 × 25	0.031	0.062	1980	1780		
2200	222	12.5 × 40	0.024	0.048	2360	2120	18 × 20	0.028	0.056	2050	1840		
2700	272	16 × 31.5	0.022	0.044	2470	2220	18 × 25	0.025	0.050	2290	2060		
3300	332	16 × 35.5	0.020	0.040	2680	2410	18 × 31.5	0.023	0.046	2490	2240		
3900	392	16 × 40	0.019	0.038	2820	2530	18 × 35.5	0.021	0.042	2690	2420		
4700	472	18 × 40	0.018	0.036	2960	2660							

* In case of low profile type, [6] will be put at 12th digit of type numbering system.



Standard ratings

Cap. (μF)		V(Code) Size code Item Code		35(1V)									
				—				6					
				Case size φD × L (mm)	Impedance(Ω MAX.)		Rated ripple(mA rms)		Case size φD × L (mm)	Impedance(Ω MAX.)		Rated ripple(mA rms)	
20°C/100kHz	—10°C/100kHz	105°C/10kHz ~ 200kHz	105°C/120Hz		20°C/100kHz	—10°C/100kHz	105°C/10kHz ~ 200kHz	105°C/120Hz					
22	220	5 × 11	0.75	1.50	160	85							
27	270	5 × 11	0.60	1.20	180	99							
33	330	6.3 × 11	0.49	0.98	225	125							
39	390	6.3 × 11	0.41	0.82	245	140							
47	470	6.3 × 11	0.34	0.68	270	160							
56	560	6.3 × 11	0.28	0.56	295	180							
68	680	6.3 × 15	0.24	0.48	370	230							
82	820	6.3 × 15	0.19	0.38	415	265							
100	101	8 × 11.5	0.16	0.32	460	305							
120	121	8 × 15	0.14	0.28	550	370	10 × 12.5	0.15	0.30	555	375		
150	151	8 × 15	0.12	0.24	595	415	10 × 12.5	0.12	0.24	625	435		
180	181	8 × 20	0.10	0.20	730	520	10 × 15	0.11	0.22	700	500		
220	221	8 × 20	0.085	0.17	795	580	10 × 15	0.090	0.18	770	560		
270	271	10 × 20	0.070	0.14	985	735	12.5 × 15	0.080	0.16	920	690		
330	331	10 × 20	0.060	0.12	1060	810	12.5 × 15	0.065	0.13	1020	780		
390	391	10 × 25	0.055	0.11	1220	955	12.5 × 15	0.060	0.12	1060	825		
470	471	10 × 31.5	0.046	0.092	1420	1130	16 × 15	0.055	0.11	1270	1010		
560	561	12.5 × 20	0.041	0.082	1430	1160	16 × 15	0.048	0.096	1360	1100		
680	681	12.5 × 25	0.036	0.072	1660	1370	18 × 15	0.042	0.084	1540	1270		
820	821	12.5 × 25	0.032	0.064	1760	1490	18 × 15	0.038	0.076	1620	1370		
1000	102	12.5 × 31.5	0.029	0.058	1980	1710	16 × 20	0.034	0.068	1770	1530		
1200	122	12.5 × 35.5	0.026	0.052	2180	1920	16 × 25	0.031	0.062	1980	1740		
1500	152	12.5 × 40	0.024	0.048	2360	2120	18 × 20	0.028	0.056	2050	1840		
1800	182	16 × 31.5	0.022	0.044	2470	2220	18 × 25	0.025	0.050	2290	2060		
2200	222	16 × 35.5	0.020	0.040	2680	2410	18 × 31.5	0.023	0.046	2490	2240		
2700	272	16 × 40	0.018	0.036	2900	2610	18 × 35.5	0.021	0.042	2690	2420		
3300	332	18 × 40	0.017	0.034	3040	2730							

Cap. (μF)		V(Code) Size code Item Code		50(1H)									
				—				6					
				Case size φD × L (mm)	Impedance(Ω MAX.)		Rated ripple(mA rms)		Case size φD × L (mm)	Impedance(Ω MAX.)		Rated ripple(mA rms)	
20°C/100kHz	—10°C/100kHz	105°C/10kHz ~ 200kHz	105°C/120Hz		20°C/100kHz	—10°C/100kHz	105°C/10kHz ~ 200kHz	105°C/120Hz					
0.47	R47	5 × 11	23.0	46.0	22	11							
0.68	R68	5 × 11	16.0	32.0	28	14							
1	010	5 × 11	11.0	22.0	36	18							
1.5	1R5	5 × 11	7.50	15.0	45	22							
2.2	2R2	5 × 11	5.00	10.0	54	27							
3.3	3R3	5 × 11	3.30	6.60	66	33							
4.7	4R7	5 × 11	2.20	4.40	81	40							
6.8	6R8	5 × 11	1.80	3.60	91	45							
10	100	5 × 11	1.40	2.80	115	57							
12	120	5 × 11	1.20	2.40	125	62							
15	150	5 × 11	0.93	1.86	145	72							
18	180	5 × 11	0.80	1.60	155	79							
22	220	6.3 × 11	0.65	1.30	195	100							
27	270	6.3 × 11	0.53	1.06	215	115							
33	330	6.3 × 11	0.43	0.86	240	135							
39	390	6.3 × 11	0.36	0.72	260	150							
47	470	6.3 × 15	0.30	0.60	330	195							
56	560	6.3 × 15	0.25	0.50	360	220							
68	680	8 × 11.5	0.20	0.40	410	255							
82	820	8 × 15	0.17	0.34	500	320	10 × 12.5	0.18	0.36	510	330		
100	101	8 × 20	0.14	0.28	620	410	10 × 15	0.16	0.32	580	385		
120	121	8 × 20	0.12	0.24	670	455	10 × 15	0.13	0.26	640	435		
150	151	10 × 20	0.10	0.20	820	570	12.5 × 15	0.11	0.22	785	545		
180	181	10 × 20	0.085	0.17	890	635	12.5 × 15	0.095	0.19	845	605		
220	221	10 × 25	0.075	0.15	1040	760	12.5 × 15	0.080	0.16	920	670		
270	271	10 × 31.5	0.065	0.13	1200	900	16 × 15	0.070	0.14	1120	840		
330	331	10 × 31.5	0.055	0.11	1300	995	16 × 15	0.060	0.12	1210	925		
390	391	12.5 × 25	0.048	0.096	1440	1120	16 × 15	0.055	0.11	1270	990		
470	471	12.5 × 25	0.044	0.088	1500	1190	18 × 15	0.046	0.092	1470	1170		
560	561	12.5 × 31.5	0.040	0.080	1680	1360	16 × 20	0.044	0.088	1550	1260		
680	681	12.5 × 35.5	0.036	0.072	1850	1530	16 × 20	0.040	0.080	1630	1350		
820	821	12.5 × 40	0.033	0.066	2010	1700	18 × 20	0.036	0.072	1810	1530		
1000	102	16 × 31.5	0.030	0.060	2120	1830	18 × 25	0.033	0.066	2000	1730		
1200	122	16 × 35.5	0.028	0.056	2260	1990	18 × 31.5	0.031	0.062	2140	1880		
1500	152	16 × 40	0.026	0.052	2410	2170	18 × 31.5	0.029	0.058	2220	1990		
1800	182	18 × 35.5	0.025	0.050	2460	2210							
2200	222	18 × 40	0.024	0.048	2560	2300							

※ In case of low profile type, [6] will be put at 12th digit of type numbering system.

Standard ratings

Cap.(μ F)	Code	Item	63(1J)									
			—				6					
			Case size ϕ D \times L (mm)	Impedance(Ω MAX.)		Rated ripple(mA rms)		Case size ϕ D \times L (mm)	Impedance(Ω MAX.)		Rated ripple(mA rms)	
				20°C/100kHz	-10°C/100kHz	105°C/10kHz ~ 200kHz	105°C/120Hz		20°C/100kHz	-10°C/100kHz	105°C/10kHz ~ 200kHz	105°C/120Hz
10	100	5×11	1.06	2.12	135	67						
12	120	5×11	0.93	1.86	145	72						
15	150	6.3×11	0.73	1.46	185	92						
18	180	6.3×11	0.63	1.26	195	100						
22	220	6.3×11	0.52	1.04	215	110						
27	270	6.3×11	0.43	0.86	240	130						
33	330	6.3×15	0.35	0.70	305	170						
39	390	6.3×15	0.30	0.60	330	190						
47	470	8×11.5	0.25	0.50	365	215						
56	560	8×15	0.21	0.42	450	275	10×12.5	0.23	0.46	450	275	
68	680	8×15	0.17	0.34	500	315	10×12.5	0.19	0.38	495	310	
82	820	8×20	0.15	0.30	600	385	10×15	0.16	0.32	580	375	
100	101	10×20	0.12	0.24	750	495	12.5×15	0.14	0.28	695	460	
120	121	10×20	0.10	0.20	820	555	12.5×15	0.12	0.24	750	510	
150	151	10×25	0.090	0.18	950	665	12.5×15	0.095	0.19	845	590	
180	181	10×31.5	0.075	0.15	1110	790	16×15	0.080	0.16	1050	750	
220	221	12.5×20	0.065	0.13	1140	835	16×15	0.070	0.14	1120	820	
270	271	12.5×25	0.055	0.11	1340	1000	18×15	0.060	0.12	1290	965	
330	331	12.5×25	0.049	0.098	1420	1090	18×15	0.050	0.10	1410	1080	
390	391	12.5×31.5	0.043	0.086	1620	1260	16×20	0.047	0.094	1500	1170	
470	471	12.5×35.5	0.039	0.078	1780	1420	16×25	0.042	0.084	1700	1350	
560	561	12.5×40	0.035	0.070	1950	1580	18×20	0.039	0.078	1730	1400	
680	681	16×31.5	0.032	0.064	2050	1700	18×25	0.035	0.070	1940	1610	
820	821	16×35.5	0.029	0.058	2220	1880	18×31.5	0.032	0.064	2110	1780	
1000	102	16×40	0.027	0.054	2370	2050	18×35.5	0.029	0.058	2280	1970	
1200	122	18×40	0.025	0.050	2510	2210						

※ In case of low profile type, [6] will be put at 12th digit of type numbering system.

※Trimmed (Cut) or Formed Leads

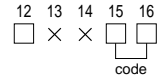
● Radial lead type

In order to identify correct part number for the processed lead product, cut/formed lead code must be added to bulk part number.

● If the bulk part number is up to 11th digit, processed lead coding shall be as follows:



● In case 12th digit is alphabet, it shall be:



● In case 12th digit is numeral, it shall be:



Configurations	Cut / Formed lead code		Dimensions (mm)				Lead configurations				
	Code	Case length	φD	F	L	ℓ					
Forming and cutting	[B][A]	5mmL,7mmL	4	5	5.0	—					
		Other length	6.3			—					
	[B][B]	5mmL,7mmL	4			5		3.5	—		
		Other length	6.3						—		
	Cutting	[C][A]	All length	3	1.0				5.0	—	<p>※ φ 8 × 5 = F: 2.5 ※ Please contact us for the φ 16 to φ 25 × 12.5L products.</p>
				4	1.5					—	
				5	2.0	—					
				6.3	2.5	—					
8				※ 3.5	—						
10				5	—						
12.5				—	—						
16				7.5	—						
18				—	—						
20				10	—						
22		—	—								
25		12.5	—								
[C][P]		All length	Same as above.	4.5	—						
[C][C]		All length	Same as above.	4.0	—						
[C][V]	All length	Same as above.	3.5	—							
[C][T]	All length	Same as above.	3.2	—							
[C][M]	All length	Same as above.	3.0	—							
Snap-in	[A][E]	5mmL,7mmL	4	5	4.5	1.1					
		Other length	6.3			—					
	[A][A]	All length	8			—		1.3			
			10			5		4.5	1.3		
			12.5	—							
			16	7.5	5.0	1.8					
			18	—							
			20	10							
	25	12.5									

● Conductive polymer aluminum solid electrolytic capacitors : Cutting configurations only

*Lead diameter (φd) and lead pitch (P) are subject to capacitor specifications.

※End seal Configuration

Configuration	※2		※1		
φ	3	5 · 6.3	4 · 8 · 10	12.5 · 16 · 18	20 · 22 · 25

Exception : φ5, φ6.3 case size of MA, MR, MF, MP, MT, MW, SA, SF, SP, SR, ST, SW, HC (7mmL), PW (7mmL), TT (7mmL), TS (7mmL) series : configuration ※ 1
φ6.3 × 6mmL, φ6.3 × 9mmL, φ8 × 7mmL, φ8 × 9mmL, φ10 × 8mmL, φ10 × 10mmL size of LF※, LE※, LG※, LS※ series, MV, SV, PV series : configuration ※ 2

※ Conductive polymer aluminum solid electrolytic capacitors

※Taped Leads for Automatic Insertion Systems

● Radial lead type (Applicable standard JIS C0806-2)

(mm)

In order to identify correct part number for the taped product, taping code must be added.

● If the bulk part number is up to 11th digit, taping code shall be as follows:



● In case 12th digit is numeral, it shall be



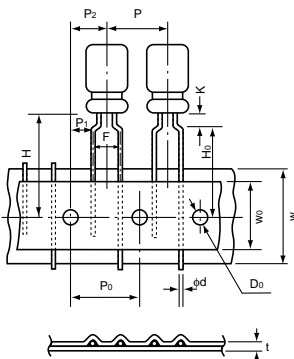
Packaging	Specifications				Capacitor diameter (φ)	Taping code	
	Lead style	Leader	F	P ₀		Code	Applicable size
Ammo-pack	Formed lead	—	See Table 1	12.7	3 to 8	T[E] T[P] T[A]	φ4 to 8 Case length (5mmL, 7mmL) (φ3×5, φ4×11) (φ5×9 to φ8×9, φ4×11 to φ8×20)
		—	See Table 2	12.7		T[P] T[D]	φ4 to 8 Case length (5mmL), φ6.3×6 ※ φ4 to 6.3 Case length (7mmL), φ4 φ5×9 or more, φ6.3×9 or more, φ8×7 or more, φ10×8 to 25)
	—	See Table 2	15.0	12.5	T[O]	(φ12.5×12.5 to 25)	
	—	See Table 2	15.0	16, 18	T[IN]	(φ16×15 to 25, φ18×15 to 25)	

Notes:
※ Conductive polymer aluminum solid electrolytic capacitors

Table 1

(mm)

(Formed lead type)

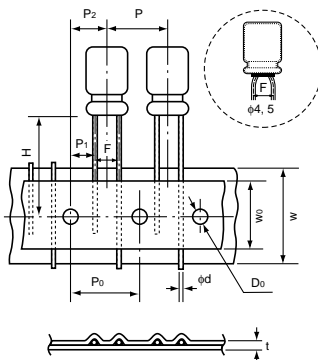


Item	Case Size Taping Code	Tolerance	Formed Lead Type						Case dia (φ) × Length (L)		
			φ3×5	φ4×11	φ4×5	φ5×5	φ6.3×5	φ8×5	φ4×11	φ6.3×9	φ8×9
			TP	TP	φ4×7	φ5×7	φ6.3×7	φ8×7	φ5×11	φ6.3×15	φ8×11.5
φd	Lead-wire diameter	±0.05	0.40	0.45	0.45 (φ8×7:0.5)			0.5 (φ4×11:0.45)			0.6
P	Pitch of component	±1.0	12.7	12.7	12.7			12.7			12.7
P ₀	Feed hole pitch	±0.2	12.7	12.7	12.7			12.7			12.7
P ₁	Hole center to lead	±0.5	5.1	5.1	3.85			3.85			3.85
P ₂	Feed hole center to component center	±1.0	6.35	6.35	6.35			6.35			6.35
F	Lead-to-lead distance	+0.8 -0.2	2.5	2.5	5.0			5.0			5.0
K	Clinch height	MAX	1.5	2.5	1.5			2.5			4.0
H	Height of component from tape center	+0.75 -0.5	18.5	18.5	17.5			18.5			20.0
H ₀	Lead-wire clinch height	±0.5	16.0 ※3	16.0	16.0			16.0			16.0
W	Tape Width	±0.5	18.0	18.0	18.0			18.0			18.0
W ₀	Hold down tape width	MIN	7.0	7.0	7.0			7.0			7.0
φD ₀	Feed hole diameter	±0.2	4.0	4.0	4.0			4.0			4.0
t	Total tape thickness	±0.2	0.6	0.6	0.6			0.6			0.6

Table 2

(mm)

(Straight lead type)



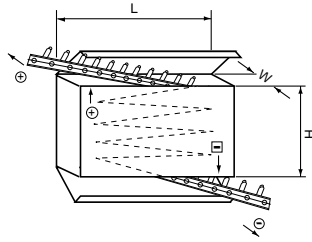
Item	Case Size Taping Code	Tolerance	Straight Lead Type				Case dia (φ) × Length (L)				
			φ4×5 φ4×7	φ5	φ6.3	φ8×5	φ8×7	φ8	φ10	φ12.5	φ16 φ18
			TP	TP, TD	TP, TD	TP	TD	TD	TD	TO	TN
φd	Lead-wire diameter	±0.05	0.45	0.45 0.5, 0.6	0.45 0.5, 0.6	0.45	0.5	0.6	0.6	0.6	0.8
P	Pitch of component	±1.0	12.7	12.7	12.7	12.7	12.7	12.7	12.7	15.0	30.0
P ₀	Feed hole pitch	±0.2	12.7	12.7	12.7	12.7	12.7	12.7	12.7	15.0	15.0
P ₁	Hole center to lead	±0.5	5.1 (※1 5.35)	5.1 (※1 5.35)	5.1	5.1	4.6	4.6	3.85	5.0	3.75
P ₂	Feed hole center to component center	±1.0	6.35	6.35	6.35	6.35	6.35	6.35	6.35	7.5	7.5
F	Lead-to-lead distance	+0.8 -0.2	2.5 ※1	2.5 ※1	2.5	2.5	3.5	3.5	5.0	5.0	7.5 ※2
H	Height of component from tape center	+0.75 -0.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5
W	Tape Width	±0.5	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0
W ₀	Hold down tape width	MIN	7.0	7.0	7.0	7.0	7.0	7.0	7.0	12.5	12.5
φD ₀	Feed hole diameter	±0.2	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
t	Total tape thickness	±0.2	0.6	0.6	0.6 0.7 ※4	0.6	0.6	0.6 0.7 ※4	0.6 0.7 ※4	0.6	0.6

Notes:
 ※ 1 F = 2.0mm is also available, provided that capacitor case length is less than 9mm. Taping code to be [T[C].
 ※ 2 Tolerance on F for φ16 and φ18 units shall be ±0.8mm.
 ※ 3 Tolerance on H₀ for φ3 units shall be 16.0 MIN.
 ※ 4 Conductive polymer aluminum solid electrolytic capacitors

- Special taping specifications on H, F, and K dimensions other than the above figures are available upon request.
- Conductive polymer aluminum solid electrolytic capacitors : Straight lead type only
- Only the above mentioned dimensions are specified.

Packaging

- Ammo-pack (Flat box type)



(mm)

L	H	W	Case Size ($\phi D \times L$)	Q'ty / Box
340	150	50	3 × 5	2,000
340	200	50	4 × 5, 4 × 7	2,000
340	250	50	5 × 5, 5 × 7	2,000
			8 × 5, 8 × 7, 8 × 8	1,000
340	300	50	6.3 × 5, 6.3 × 6, 6.3 × 7	2,000
340	260	54	4 × 11, 5 × 9, 5 × 11	2,000
			8 × 9, 8 × 10, 8 × 11.5, 8 × 12, 8 × 15	1,000
340	200	54	10 × 8, 10 × 9, 10 × 10, 10 × 12.5, 10 × 13, 10 × 15, 10 × 16	500
340	300	54	6.3 × 9, 6.3 × 10.5, 6.3 × 11, 6.3 × 15	2,000
340	260	62	8 × 20	1,000
340	200	62	10 × 20	500
340	200	65	10 × 25	500
330	290	65	12.5 × 12.5, 12.5 × 15, 12.5 × 20	500
			12.5 × 25	
			18 × 15, 18 × 20, 18 × 25	250
320	230	65	16 × 15, 16 × 20, 16 × 25	250