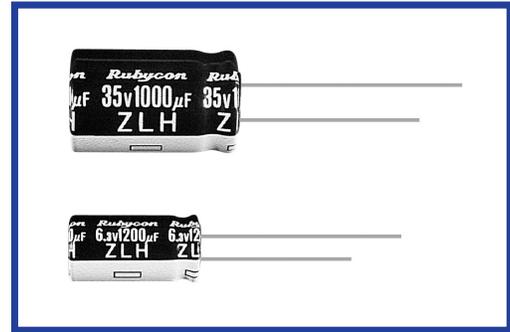


**ZLH SERIES**
**105°C Miniaturized, Long Life, Low impedance.**
**◆FEATURES**

- Achieved endurance improvement and miniaturization of ZL series, as well as high frequency impedance reduction.
- Load Life : 105°C 6000~10000hours.
- RoHS compliance.


**◆SPECIFICATIONS**

Items	Characteristics																														
Category Temperature Range	-40~+105°C																														
Rated Voltage Range	6.3~100V.DC																														
Capacitance Tolerance	±20% (20°C, 120Hz)																														
Leakage Current(MAX)	I=0.01CV or 3µA whichever is greater. (After 2 minutes) I=Leakage Current(µA)    C=Rated Capacitance(µF)    V=Rated Voltage(V)																														
(tanδ) Dissipation Factor(MAX)	<table border="1"> <thead> <tr> <th>Rated Voltage (V)</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>80</th> <th>100</th> </tr> </thead> <tbody> <tr> <td>tanδ</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>0.09</td> <td>0.08</td> <td>0.08</td> </tr> </tbody> </table> <p>(20°C, 120Hz)</p> <p>When rated capacitance is over 1000µF, tanδ shall be added 0.02 to the listed value with increase of every 1000µF.</p>	Rated Voltage (V)	6.3	10	16	25	35	50	63	80	100	tanδ	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.08										
Rated Voltage (V)	6.3	10	16	25	35	50	63	80	100																						
tanδ	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.08																						
Endurance	<p>After life test with rated ripple current at conditions stated in the table below, the capacitors shall meet the following requirements.</p> <table border="1"> <thead> <tr> <th>Capacitance Change</th> <th>Within ±25% of the initial value. (6.3v,10v : ±30%)</th> <th>Case Size</th> <th>Life Time (hrs)</th> </tr> </thead> <tbody> <tr> <td>Dissipation Factor</td> <td>Not more than 200% of the specified value.</td> <td>φD ≤ 6.3</td> <td>6000</td> </tr> <tr> <td>Leakage Current</td> <td>Not more than the specified value.</td> <td>φD = 8</td> <td>8000</td> </tr> <tr> <td></td> <td></td> <td>φD ≥ 10</td> <td>10000</td> </tr> </tbody> </table>	Capacitance Change	Within ±25% of the initial value. (6.3v,10v : ±30%)	Case Size	Life Time (hrs)	Dissipation Factor	Not more than 200% of the specified value.	φD ≤ 6.3	6000	Leakage Current	Not more than the specified value.	φD = 8	8000			φD ≥ 10	10000														
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Low Temperature Stability Impedance Ratio(MAX)	<table border="1"> <thead> <tr> <th>Rated Voltage (V)</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>80</th> <th>100</th> </tr> </thead> <tbody> <tr> <td>Z(-25°C)/Z(20°C)</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z(-40°C)/Z(20°C)</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> </tr> </tbody> </table> <p>(120Hz)</p>	Rated Voltage (V)	6.3	10	16	25	35	50	63	80	100	Z(-25°C)/Z(20°C)	2	2	2	2	2	2	2	2	2	Z(-40°C)/Z(20°C)	3	3	3	3	3	3	3	3	3
Rated Voltage (V)	6.3	10	16	25	35	50	63	80	100																						
Z(-25°C)/Z(20°C)	2	2	2	2	2	2	2	2	2																						
Z(-40°C)/Z(20°C)	3	3	3	3	3	3	3	3	3																						

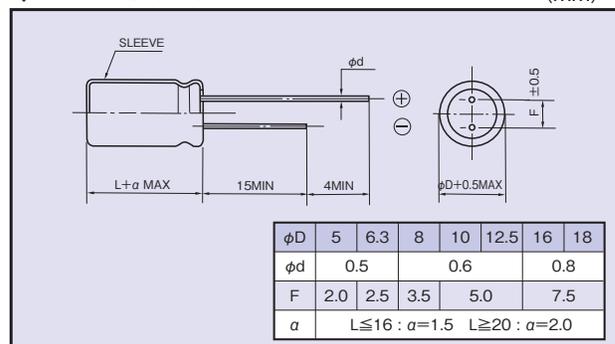
**◆MULTIPLIER FOR RIPPLE CURRENT**

Frequency coefficient

Frequency (Hz)		120	1k	10k	100k ≤
Coefficient	8.2~33µF	0.42	0.70	0.90	1.00
	47~270µF	0.50	0.73	0.92	1.00
	330~680µF	0.55	0.77	0.94	1.00
	820~1800µF	0.60	0.80	0.96	1.00
	2200~8200µF	0.70	0.85	0.98	1.00

**◆DIMENSIONS**

(mm)


**◆PART NUMBER**

□□□	ZLH	□□□□□	□	□□□	□□	DxL
Rated Voltage	Series	Rated Capacitance	Capacitance Tolerance	Option	Lead Forming	Case Size

**◆STANDARD SIZE**

Rated Voltage (V·DC)	Rated capacitance (μF)	Size φD×L(mm)	Rated ripple current (mA r.m.s./105°C, 100kHz)	(Ω MAX) Impedance		Rated Voltage (V·DC)	Rated capacitance (μF)	Size φD×L(mm)	Rated ripple current (mA r.m.s./105°C, 100kHz)	インピーダンス(Ω MAX) Impedance	
				20°C, 100kHz	-10°C, 100kHz					20°C, 100kHz	-10°C, 100kHz
6.3 (0J)	220	5×11	345	0.22	0.80	25 (1E)	68	5×11	345	0.22	0.80
	470	6.3×11	540	0.094	0.35		150	6.3×11	540	0.094	0.35
	820	8×11.5	945	0.056	0.19		330	8×11.5	945	0.056	0.19
	1200	8×16	1250	0.045	0.15		390	8×16	1250	0.045	0.15
	1200	10×12.5	1330	0.039	0.14		470	10×12.5	1330	0.039	0.14
	1500	8×20	1500	0.029	0.11		560	8×20	1500	0.029	0.11
	1800	10×16	1760	0.028	0.10		680	10×16	1760	0.028	0.10
	2200	10×20	1960	0.020	0.060		820	10×20	1960	0.020	0.060
	2700	10×23	2250	0.018	0.054		1000	10×23	2250	0.018	0.054
	3900	12.5×20	2480	0.017	0.043		1500	12.5×20	2480	0.017	0.043
	4700	12.5×25	2900	0.015	0.038		1800	12.5×25	2900	0.015	0.038
	5600	12.5×30	3450	0.013	0.033		2200	12.5×30	3450	0.013	0.033
	6800	16×20	3250	0.015	0.038		2200	16×20	3250	0.015	0.038
	6800	12.5×35	3570	0.012	0.031		2700	12.5×35	3570	0.012	0.031
	8200	16×25	3630	0.013	0.035		3300	16×25	3630	0.013	0.035
10 (1A)	150	5×11	345	0.22	0.80	35 (1V)	47	5×11	345	0.22	0.80
	330	6.3×11	540	0.094	0.35		100	6.3×11	540	0.094	0.35
	680	8×11.5	945	0.056	0.19		220	8×11.5	945	0.056	0.19
	1000	8×16	1250	0.045	0.15		270	8×16	1250	0.045	0.15
	1000	10×12.5	1330	0.039	0.14		330	10×12.5	1330	0.039	0.14
	1500	8×20	1500	0.029	0.11		390	8×20	1500	0.029	0.11
	1500	10×16	1760	0.028	0.10		470	10×16	1760	0.028	0.10
	1800	10×20	1960	0.020	0.060		560	10×20	1960	0.020	0.060
	2200	10×23	2250	0.018	0.054		680	10×23	2250	0.018	0.054
	3300	12.5×20	2480	0.017	0.043		1000	12.5×20	2480	0.017	0.043
	3900	12.5×25	2900	0.015	0.038		1200	12.5×25	2900	0.015	0.038
	4700	12.5×30	3450	0.013	0.033		1500	12.5×30	3450	0.013	0.033
	4700	16×20	3250	0.015	0.038		1500	16×20	3250	0.015	0.038
	5600	12.5×35	3570	0.012	0.031		1800	12.5×35	3570	0.012	0.031
	6800	16×25	3630	0.013	0.035		2200	16×25	3630	0.013	0.035
16 (1C)	100	5×11	345	0.22	0.80	50 (1H)	27	5×11	238	0.34	1.18
	220	6.3×11	540	0.094	0.35		56	6.3×11	385	0.14	0.50
	470	8×11.5	945	0.056	0.19		100	8×11.5	724	0.074	0.22
	680	8×16	1250	0.045	0.15		120	8×16	950	0.061	0.18
	680	10×12.5	1330	0.039	0.14		150	10×12.5	979	0.061	0.18
	1000	8×20	1500	0.029	0.11		180	8×20	1190	0.046	0.14
	1000	10×16	1760	0.028	0.10		220	10×16	1370	0.042	0.12
	1500	10×20	1960	0.020	0.060		270	10×20	1580	0.030	0.090
	1800	10×23	2250	0.018	0.054		330	10×23	1870	0.028	0.085
	2200	12.5×20	2480	0.017	0.043		470	12.5×20	2050	0.027	0.068
	2700	12.5×25	2900	0.015	0.038		560	12.5×25	2410	0.023	0.059
	3300	12.5×30	3450	0.013	0.033		680	12.5×30	2860	0.021	0.052
	3300	16×20	3250	0.015	0.038		820	12.5×35	2960	0.019	0.051
	3900	12.5×35	3570	0.012	0.031		820	16×20	2730	0.023	0.059
	4700	16×25	3630	0.013	0.035		1000	16×25	3010	0.021	0.056

**◆STANDARD SIZE**

Rated Voltage (V·DC)	Rated capacitance (μF)	Size φD×L(mm)	Rated ripple current (mA r.m.s./105°C, 100kHz)	(Ω MAX) Impedance	
				20°C, 100kHz	-10°C, 100kHz
63 (1J)	18	5×11	173	0.88	3.5
	47	6.3×11	278	0.35	1.4
	82	8×11.5	525	0.22	0.88
	100	8×16	688	0.16	0.64
	120	10×12.5	725	0.15	0.60
	150	8×20	861	0.12	0.48
	180	10×16	998	0.11	0.44
	270	10×20	1200	0.078	0.31
	270	12.5×16	1200	0.082	0.27
	330	10×23	1410	0.069	0.28
	390	12.5×20	1570	0.060	0.19
	470	12.5×25	1990	0.043	0.14
	560	12.5×30	2410	0.035	0.13
	560	16×20	2100	0.043	0.14
	680	12.5×35	2620	0.033	0.11
	820	12.5×40	2940	0.027	0.090
	820	16×25	2730	0.032	0.096
	820	18×20	2500	0.038	0.10
	1200	16×31.5	2990	0.024	0.068
	1200	18×25	2800	0.031	0.084
	1500	16×35.5	3040	0.021	0.057
	1500	18×31.5	3300	0.025	0.068
1800	16×40	3570	0.019	0.057	
1800	18×35.5	3570	0.020	0.054	
2200	18×40	3670	0.018	0.049	
80 (1K)	12	5×11	163	1.4	5.6
	33	6.3×11	267	0.57	2.3
	56	8×11.5	462	0.36	1.4
	68	8×16	585	0.25	1.0
	82	10×12.5	624	0.23	0.96
	100	8×20	735	0.19	0.76
	120	10×16	780	0.17	0.72
	180	10×20	1040	0.12	0.52
	180	12.5×16	975	0.13	0.43
	220	10×23	1170	0.11	0.47
	270	12.5×20	1430	0.085	0.31
	330	12.5×25	1620	0.060	0.23
	390	12.5×30	1950	0.051	0.21
	390	16×20	1750	0.058	0.21
	470	12.5×35	2140	0.043	0.17
	560	12.5×40	2340	0.036	0.15
	560	16×25	2210	0.044	0.16
	560	18×20	1950	0.054	0.18
	680	16×31.5	2400	0.033	0.12
	820	16×35.5	2600	0.029	0.10
	820	18×25	2270	0.038	0.13
	1000	16×40	2860	0.027	0.090
1000	18×31.5	2470	0.031	0.11	
1200	18×35.5	2860	0.027	0.084	
1500	18×40	3510	0.026	0.076	

Rated Voltage (V·DC)	Rated capacitance (μF)	Size φD×L(mm)	Rated ripple current (mA r.m.s./105°C, 100kHz)	(Ω MAX) Impedance	
				20°C, 100kHz	-10°C, 100kHz
100 (2A)	8.2	5×11	163	1.4	5.6
	18	6.3×11	267	0.57	2.3
	33	8×11.5	462	0.36	1.4
	47	8×16	585	0.25	1.0
	56	10×12.5	624	0.23	0.96
	68	8×20	735	0.19	0.76
	82	10×16	780	0.17	0.72
	100	10×20	1040	0.12	0.52
	100	12.5×16	975	0.13	0.43
	120	10×23	1170	0.11	0.47
	150	12.5×20	1430	0.085	0.31
	220	12.5×25	1620	0.060	0.23
	270	12.5×30	1950	0.051	0.21
	270	16×20	1750	0.058	0.21
	330	12.5×35	2140	0.043	0.17
	390	12.5×40	2340	0.036	0.15
	390	16×25	2210	0.044	0.16
	390	18×20	1950	0.054	0.18
	470	16×31.5	2400	0.033	0.12
	470	18×25	2270	0.038	0.13
	560	16×35.5	2600	0.029	0.10
	560	18×31.5	2470	0.031	0.11
680	16×40	2860	0.027	0.090	
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820	18×40	3510	0.026	0.076	