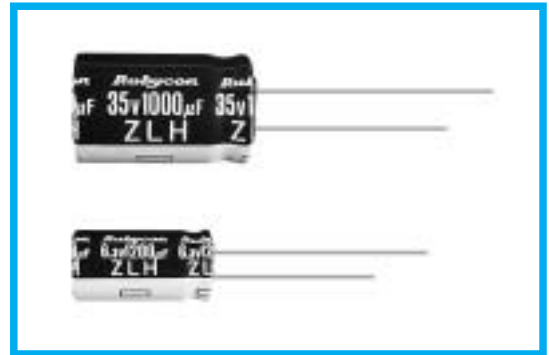


ZLH SERIES
105°C Miniaturized, Long Life, Low impedance.
◆FEATURES

- 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	6.3~50V.DC																					
Capacitance Tolerance	±20% (20°C, 120Hz)																					
Leakage Current(MAX)	I=0.01CV or 3 μA whichever is greater. (After 2 minutes) I=Leakage Current(μ A) C=Rated Capacitance(μ F) V=Rated Voltage(V)																					
Dissipation Factor(MAX) (tan δ)	<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> </tr> </thead> <tbody> <tr> <td>tan δ</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> </tr> </tbody> </table> (20°C, 120Hz) When rated capacitance is over 1000 μ F, tan δ shall be added 0.02 to the listed value with increase of every 1000 μ F.	Rated Voltage (V)	6.3	10	16	25	35	50	tan δ	0.22	0.19	0.16	0.14	0.12	0.10							
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tan δ	0.22	0.19	0.16	0.14	0.12	0.10																
Endurance	After life test with rated ripple current at conditions stated in the table below, the capacitors shall meet the following requirements. <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>φ D ≤ 6.3</td> <td>6000</td> </tr> <tr> <td>Leakage Current</td> <td>Not more than the specified value.</td> <td>φ D = 8</td> <td>8000</td> </tr> <tr> <td></td> <td></td> <td>φ D ≥ 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.	φ D ≤ 6.3	6000	Leakage Current	Not more than the specified value.	φ D = 8	8000			φ D ≥ 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> </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> </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> </tr> </tbody> </table> (120Hz)	Rated Voltage (V)	6.3	10	16	25	35	50	Z(-25°C)/Z(20°C)	2	2	2	2	2	2	Z(-40°C)/Z(20°C)	3	3	3	3	3	3
Rated Voltage (V)	6.3	10	16	25	35	50																
Z(-25°C)/Z(20°C)	2	2	2	2	2	2																
Z(-40°C)/Z(20°C)	3	3	3	3	3	3																

◆MULTIPLIER FOR RIPPLE CURRENT

Frequency coefficient

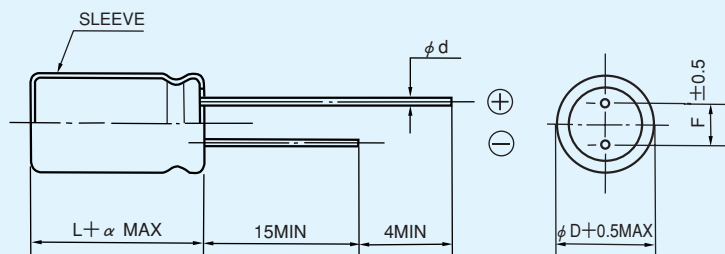
Frequency (Hz)		120	1k	10k	100k≤
Coefficient	27 μ F	0.42	0.70	0.90	1.00
	47~270 μ F	0.50	0.73	0.92	1.00
	330~680 μ F	0.55	0.77	0.94	1.00
	820~1800 μ F	0.60	0.80	0.96	1.00
	2200~8200 μ F	0.70	0.85	0.98	1.00

◆PART NUMBER

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

◆ DIMENSIONS

(mm)



ϕD	5	6.3	8	10	12.5	16
ϕd	0.5		0.6		0.8	
F	2.0	2.5	3.5	5.0		7.5
α	$L \leq 16 : \alpha = 1.5$			$L \geq 20 : \alpha = 2.0$		

◆ STANDARD SIZE

Rated voltage 6.3V(0J)				
Rated capacitance (μF)	Size $\phi D \times L$ (mm)	Rated ripple current (mA r.m.s./105°C, 100kHz)	Impedance (Ω MAX)	
			20°C, 100kHz	-10°C, 100kHz
220	5×11	345	0.22	0.80
470	6.3×11	540	0.094	0.35
820	8×11.5	945	0.056	0.19
1200	8×16	1250	0.045	0.15
1200	10×12.5	1330	0.039	0.14
1500	8×20	1500	0.029	0.11
1800	10×16	1760	0.028	0.10
2200	10×20	1960	0.020	0.060
2700	10×23	2250	0.018	0.054
3900	12.5×20	2480	0.017	0.043
4700	12.5×25	2900	0.015	0.038
5600	12.5×30	3450	0.013	0.033
6800	16×20	3250	0.015	0.038
6800	12.5×35	3570	0.012	0.031
8200	16×25	3630	0.013	0.035

Rated voltage 10V(1A)				
Rated capacitance (μ F)	Size ϕ D \times L(mm)	Rated ripple current (mA r.m.s./105°C, 100kHz)	Impedance (Ω MAX)	
			20°C, 100kHz	-10°C, 100kHz
150	5 \times 11	345	0.22	0.80
330	6.3 \times 11	540	0.094	0.35
680	8 \times 11.5	945	0.056	0.19
1000	8 \times 16	1250	0.045	0.15
1000	10 \times 12.5	1330	0.039	0.14
1500	8 \times 20	1500	0.029	0.11
1500	10 \times 16	1760	0.028	0.10
1800	10 \times 20	1960	0.020	0.060
2200	10 \times 23	2250	0.018	0.054
3300	12.5 \times 20	2480	0.017	0.043
3900	12.5 \times 25	2900	0.015	0.038
4700	12.5 \times 30	3450	0.013	0.033
4700	16 \times 20	3250	0.015	0.038
5600	12.5 \times 35	3570	0.012	0.031
6800	16 \times 25	3630	0.013	0.035

Rated voltage 16V(1C)				
Rated capacitance (μ F)	Size ϕ D \times L(mm)	Rated ripple current (mA r.m.s./105°C, 100kHz)	Impedance (Ω MAX)	
			20°C, 100kHz	-10°C, 100kHz
100	5 \times 11	345	0.22	0.80
220	6.3 \times 11	540	0.094	0.35
470	8 \times 11.5	945	0.056	0.19
680	8 \times 16	1250	0.045	0.15
680	10 \times 12.5	1330	0.039	0.14
1000	8 \times 20	1500	0.029	0.11
1000	10 \times 16	1760	0.028	0.10
1500	10 \times 20	1960	0.020	0.060
1800	10 \times 23	2250	0.018	0.054
2200	12.5 \times 20	2480	0.017	0.043
2700	12.5 \times 25	2900	0.015	0.038
3300	12.5 \times 30	3450	0.013	0.033
3300	16 \times 20	3250	0.015	0.038
3900	12.5 \times 35	3570	0.012	0.031
4700	16 \times 25	3630	0.013	0.035

Rated voltage 25V(1E)				
Rated capacitance (μ F)	Size ϕ D \times L(mm)	Rated ripple current (mA r.m.s./105°C, 100kHz)	Impedance (Ω MAX)	
			20°C, 100kHz	-10°C, 100kHz
68	5 \times 11	345	0.22	0.80
150	6.3 \times 11	540	0.094	0.35
330	8 \times 11.5	945	0.056	0.19
390	8 \times 16	1250	0.045	0.15
470	10 \times 12.5	1330	0.039	0.14
560	8 \times 20	1500	0.029	0.11
680	10 \times 16	1760	0.028	0.10
820	10 \times 20	1960	0.020	0.060
1000	10 \times 23	2250	0.018	0.054
1500	12.5 \times 20	2480	0.017	0.043
1800	12.5 \times 25	2900	0.015	0.038
2200	12.5 \times 30	3450	0.013	0.033
2200	16 \times 20	3250	0.015	0.038
2700	12.5 \times 35	3570	0.012	0.031
3300	16 \times 25	3630	0.013	0.035

Rated voltage 35V(1V)				
Rated capacitance (μ F)	Size ϕ D×L(mm)	Rated ripple current (mA r.m.s./105°C, 100kHz)	Impedance (Ω MAX)	
			20°C, 100kHz	-10°C, 100kHz
47	5×11	345	0.22	0.80
100	6.3×11	540	0.094	0.35
220	8×11.5	945	0.056	0.19
270	8×16	1250	0.045	0.15
330	10×12.5	1330	0.039	0.14
390	8×20	1500	0.029	0.11
470	10×16	1760	0.028	0.10
560	10×20	1960	0.020	0.060
680	10×23	2250	0.018	0.054
1000	12.5×20	2480	0.017	0.043
1200	12.5×25	2900	0.015	0.038
1500	12.5×30	3450	0.013	0.033
1500	16×20	3250	0.015	0.038
1800	12.5×35	3570	0.012	0.031
2200	16×25	3630	0.013	0.035

Rated voltage 50V(1H)				
Rated capacitance (μ F)	Size ϕ D×L(mm)	Rated ripple current (mA r.m.s./105°C, 100kHz)	Impedance (Ω MAX)	
			20°C, 100kHz	-10°C, 100kHz
27	5×11	238	0.34	1.18
56	6.3×11	385	0.14	0.50
100	8×11.5	724	0.074	0.22
120	8×16	950	0.061	0.18
150	10×12.5	979	0.061	0.18
180	8×20	1190	0.046	0.14
220	10×16	1370	0.042	0.12
270	10×20	1580	0.030	0.090
330	10×23	1870	0.028	0.085
470	12.5×20	2050	0.027	0.068
560	12.5×25	2410	0.023	0.059
680	12.5×30	2860	0.021	0.052
820	12.5×35	2960	0.019	0.051
820	16×20	2730	0.023	0.059
1000	16×25	3010	0.021	0.056