

## LS2 Series

### Features

- Snap-in terminal type
- 85°C, 2,000 hours assured
- Good safe characteristics which shall be failed with open mode without sparking and catching fire, when it is applied excess voltage
- RoHS compliant

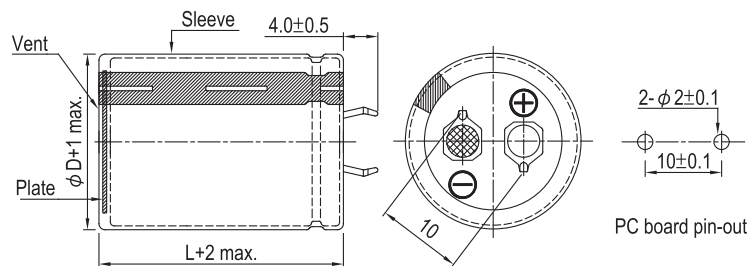


### Specifications

Items	Performance																		
	200 ~ 400V	450V																	
Category Temperature Range	-40°C ~ +85°C	-25°C ~ +85°C																	
Capacitance Tolerance	±20% (at 120 Hz, 20°C)																		
Leakage Current (at 20°C)	$I = 3\sqrt{CV}$ or 1.5 mA whichever is smaller (after 5 minutes) Where, C = rated capacitance in µF, V = rated DC Rated Voltage in V																		
Tanδ (at 120 Hz, 20°C)	<table border="1"> <thead> <tr> <th>Rated Voltage</th> <th>200</th> <th>250</th> <th>400</th> <th>450</th> </tr> </thead> <tbody> <tr> <td>Tanδ (max)</td> <td>0.15</td> <td>0.15</td> <td>0.20</td> <td>0.20</td> </tr> </tbody> </table>		Rated Voltage	200	250	400	450	Tanδ (max)	0.15	0.15	0.20	0.20							
Rated Voltage	200	250	400	450															
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Low Temperature Characteristics (at 120 Hz)	<p>Impedance ratio shall not exceed the values given in the table below.</p> <table border="1"> <thead> <tr> <th colspan="2">Rated Voltage</th> <th>200</th> <th>250</th> <th>400</th> <th>450</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Impedance Ratio</td> <td>Z(-25°C)/Z(+20°C)</td> <td>4</td> <td>4</td> <td>8</td> <td>8</td> </tr> <tr> <td>Z(-40°C)/Z(+20°C)</td> <td>8</td> <td>10</td> <td>18</td> <td>-</td> </tr> </tbody> </table>		Rated Voltage		200	250	400	450	Impedance Ratio	Z(-25°C)/Z(+20°C)	4	4	8	8	Z(-40°C)/Z(+20°C)	8	10	18	-
Rated Voltage		200	250	400	450														
Impedance Ratio	Z(-25°C)/Z(+20°C)	4	4	8	8														
	Z(-40°C)/Z(+20°C)	8	10	18	-														
Endurance	<table border="1"> <thead> <tr> <th>Test Time</th> <th>2,000 Hrs</th> </tr> </thead> <tbody> <tr> <td>Capacitance Change</td> <td>Within ±20% of initial value</td> </tr> <tr> <td>Tanδ</td> <td>Less than 200% of specified value</td> </tr> <tr> <td>Leakage Current</td> <td>Within specified value</td> </tr> </tbody> </table> <p>* The above specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied with rated ripple current for 2,000 hours at 85°C.</p>		Test Time	2,000 Hrs	Capacitance Change	Within ±20% of initial value	Tanδ	Less than 200% of specified value	Leakage Current	Within specified value									
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Shelf Life Test	<table border="1"> <thead> <tr> <th>Test Time</th> <th>1,000 Hrs</th> </tr> </thead> <tbody> <tr> <td>Capacitance Change</td> <td>Within ±20% of initial value</td> </tr> <tr> <td>Tanδ</td> <td>Less than 150% of specified value</td> </tr> <tr> <td>Leakage Current</td> <td>Within specified value</td> </tr> </tbody> </table> <p>* The above specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 85°C without voltage applied. The rated voltage shall be applied to the capacitors before the measurements (Refer to JIS C 5101-4 4.1).</p>		Test Time	1,000 Hrs	Capacitance Change	Within ±20% of initial value	Tanδ	Less than 150% of specified value	Leakage Current	Within specified value									
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Ripple Current and Frequency Multipliers	<table border="1"> <thead> <tr> <th>Frequency (Hz)</th> <th>50 / 60</th> <th>100 / 120</th> <th>300</th> <th>1k</th> <th>10k up</th> </tr> </thead> <tbody> <tr> <td>Multiplier</td> <td>0.8</td> <td>1.0</td> <td>1.1</td> <td>1.3</td> <td>1.4</td> </tr> </tbody> </table>		Frequency (Hz)	50 / 60	100 / 120	300	1k	10k up	Multiplier	0.8	1.0	1.1	1.3	1.4					
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Multiplier	0.8	1.0	1.1	1.3	1.4														
Safety Function Test Conditions	<ol style="list-style-type: none"> <li>DC reverse voltage test: The capacitor is shall be connected in reverse polarity, and applied under specified Rated Voltage.</li> <li>DC over voltage test: The voltage of 1.2 times shall be applied to the capacitor.</li> </ol>																		
Failure percentage Failure rate	When the failure percentage / failure rate is required, please contact with us for further discussion.																		

### Diagram of Dimensions

Unit: mm



Snap-in



## Dimension and Permissible Ripple Current

Rated Voltage V <sub>DC</sub>	Capacitance 120 Hz, 20°C μF	φ D×L mm	Ripple Current 120 Hz, 85°C A/rms	Tan δ at 120 Hz, 20°C	ESR 120 Hz, 20°C Ω	LC 5 minutes mA	Part Number
200	560	35 × 20	2.08	0.15	0.355	1.00	LS2561M2D--A3520
	680	35 × 20	2.23	0.15	0.293	1.11	LS2681M2D--A3520
	680	35 × 25	2.30	0.15	0.293	1.11	LS2681M2D--A3525
	820	35 × 25	2.53	0.15	0.243	1.21	LS2821M2D--A3525
	1,000	35 × 30	2.96	0.15	0.199	1.34	LS2102M2D--A3530
	1,200	35 × 35	3.40	0.15	0.166	1.47	LS2122M2D--A3535
	1,500	35 × 40	3.87	0.15	0.133	1.50	LS2152M2D--A3540
	1,800	35 × 45	4.37	0.15	0.111	1.50	LS2182M2D--A3545
250	390	35 × 20	1.68	0.15	0.510	0.94	LS2391M2E--A3520
	470	35 × 20	1.85	0.15	0.423	1.03	LS2471M2E--A3520
	470	35 × 25	2.01	0.15	0.423	1.03	LS2471M2E--A3525
	560	35 × 25	2.21	0.15	0.355	1.12	LS2561M2E--A3525
	680	35 × 30	2.54	0.15	0.293	1.24	LS2681M2E--A3530
	820	35 × 35	2.90	0.15	0.243	1.36	LS2821M2E--A3535
	1,000	35 × 35	3.21	0.15	0.199	1.50	LS2102M2E--A3535
	1,200	35 × 40	3.56	0.15	0.166	1.50	LS2122M2E--A3540
	1,500	35 × 50	4.26	0.15	0.133	1.50	LS2152M2E--A3550
400	220	35 × 25	1.60	0.20	1.206	0.89	LS2221M2G--A3525
	270	35 × 30	1.75	0.20	0.983	0.99	LS2271M2G--A3530
	330	35 × 30	1.95	0.20	0.804	1.09	LS2331M2G--A3530
	390	35 × 35	2.17	0.20	0.680	1.18	LS2391M2G--A3535
	470	35 × 40	2.42	0.20	0.565	1.30	LS2471M2G--A3540
	560	35 × 45	2.71	0.20	0.474	1.42	LS2561M2G--A3545
450	120	35 × 20	1.11	0.20	2.212	0.70	LS2121M2W--A3520
	150	35 × 20	1.24	0.20	1.769	0.78	LS2151M2W--A3520
	150	35 × 25	1.35	0.20	1.769	0.78	LS2151M2W--A3525
	180	35 × 25	1.39	0.20	1.474	0.85	LS2181M2W--A3525
	220	35 × 30	1.61	0.20	1.206	0.94	LS2221M2W--A3530
	270	35 × 35	1.86	0.20	0.983	1.05	LS2271M2W--A3535
	330	35 × 35	2.06	0.20	0.804	1.16	LS2331M2W--A3535
	390	35 × 45	2.34	0.20	0.680	1.26	LS2391M2W--A3545
	470	35 × 50	2.63	0.20	0.565	1.38	LS2471M2W--A3550

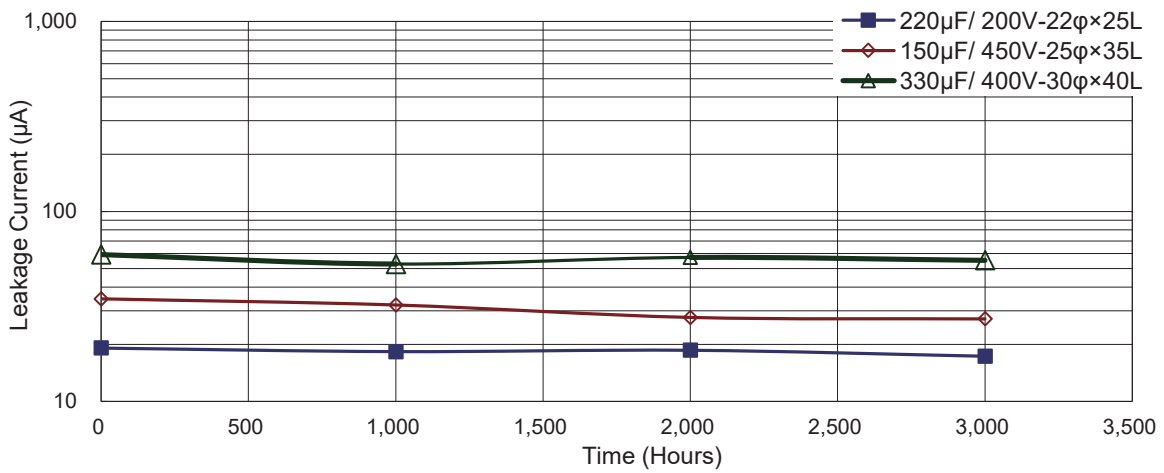
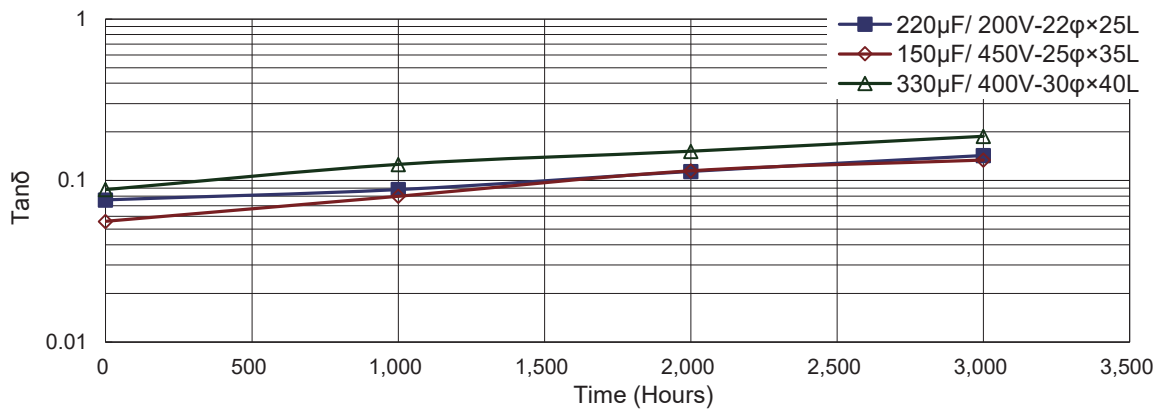
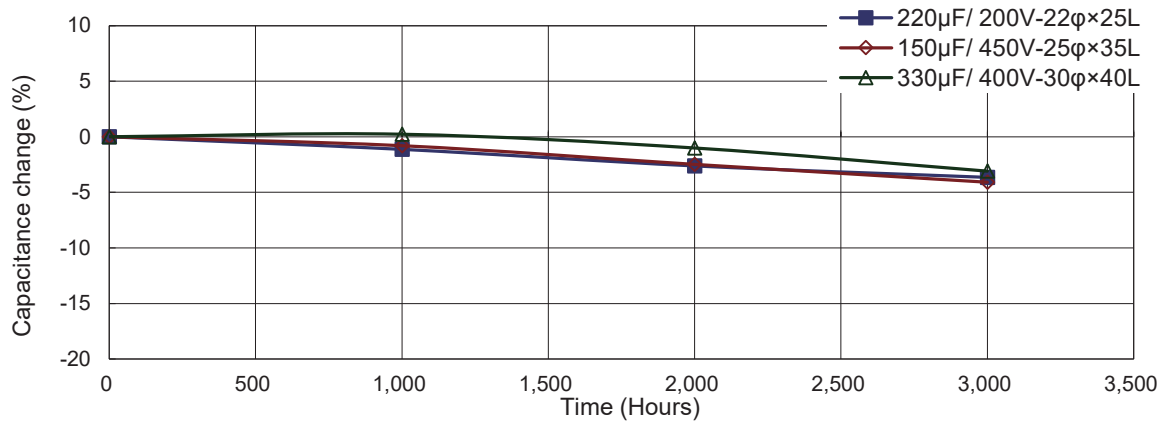
## Part Numbering System

LS2 Series	220μF	±20%	400V	--	4.0±0.5mm	35 φ ×25L	General Purpose																												
<b>LS2</b>	<b>221</b>	<b>M</b>	<b>2G</b>	--	<b>A</b>	<b>3525</b>																													
Series Name	Capacitance	Capacitance tolerance	Rated voltage	Terminal type	Terminal length	Case size	Application																												
Example:	Example:	M = ±20% K = ±10%	Example:	Example:	Example:	Example:																													
<table border="1"> <tr><th>Cap.</th><th>Symbol</th></tr> <tr><td>56</td><td>560</td></tr> <tr><td>220</td><td>221</td></tr> <tr><td>470</td><td>471</td></tr> </table>	Cap.	Symbol	56	560	220	221	470	471	<table border="1"> <tr><th>Voltage</th><th>Symbol</th></tr> <tr><td>400</td><td>2G</td></tr> <tr><td>450</td><td>2W</td></tr> </table>	Voltage	Symbol	400	2G	450	2W		<table border="1"> <tr><th>Type</th><th>Symbol</th></tr> <tr><td>2 pins</td><td>--</td></tr> <tr><td>5 pins</td><td>L5</td></tr> </table>	Type	Symbol	2 pins	--	5 pins	L5	<table border="1"> <tr><th>φ D×L</th><th>Code</th></tr> <tr><td>22×30</td><td>2230</td></tr> <tr><td>25×25</td><td>2525</td></tr> <tr><td>30×40</td><td>3040</td></tr> </table>	φ D×L	Code	22×30	2230	25×25	2525	30×40	3040			
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Note: For more details, please refer to "Part Numbering System - Snap-in Type" on page 188.

Snap-in

### Typical Endurance Curves



### Useful Life Chart

