

LV Series

Features

- ◆ 85°C standard, case diameter $\phi 4 \sim \phi 10 \text{mm}$
- ◆ Reflow soldering is available
- ◆ Available for high density mounting
- ◆ RoHS Compliant



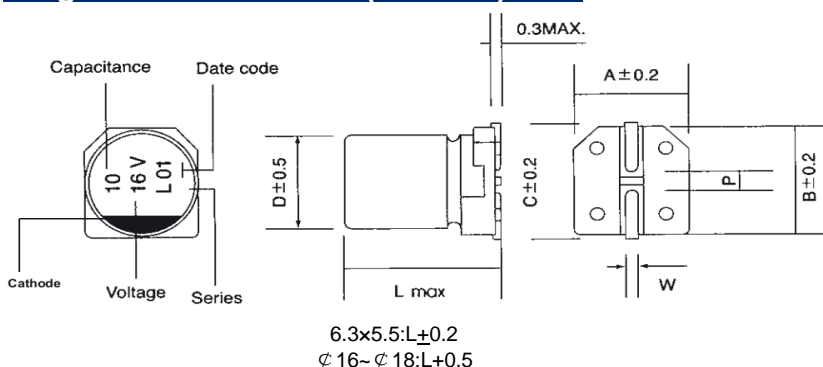
Specifications

Item	Performance Characteristics																																																																						
Operating Temperature Range	-40~ +85°C																																																																						
Rated Voltage Range	4~100VDC							160~450VDC																																																															
Capacitance Range	0.1 to 6800 μF							3.3 to 68 μF																																																															
Capacitance Tolerance	$\pm 20\%$ (120Hz, +20°C)																																																																						
Leakage Current (+20°C, max.)	$I \leq 0.01 \text{ CV}$ or 3 (μA) whichever is greater (2 minutes)							$I \leq 0.04 \text{ CV} + 100\mu\text{A}$ (1 minute)																																																															
Dissipation Factor (tan δ , at 20°C, 120Hz)	<table border="1"> <thead> <tr> <th>Rated voltage(VDC)</th> <th>4</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><th>160~250</th><th>>250</th> </tr> </thead> <tbody> <tr> <td>$\phi 4 \sim 6.3$</td> <td>42</td><td>30</td><td>22</td><td>18</td><td>16</td><td>14</td><td>14</td><td>12</td><td>10</td><td>10</td><td>-</td><td>-</td> </tr> <tr> <td>$\phi 8 \sim 10$</td> <td>45</td><td>34</td><td>26</td><td>20</td><td>16</td><td>14</td><td>14</td><td>12</td><td>10</td><td>10</td><td>15</td><td>20</td> </tr> <tr> <td>$\geq \phi 12.5$</td> <td>45</td><td>40</td><td>36</td><td>24</td><td>18</td><td>15</td><td>14</td><td>12</td><td>10</td><td>10</td><td>15</td><td>20</td> </tr> </tbody> </table>														Rated voltage(VDC)	4	6.3	10	16	25	35	50	63	80	100	160~250	>250	$\phi 4 \sim 6.3$	42	30	22	18	16	14	14	12	10	10	-	-	$\phi 8 \sim 10$	45	34	26	20	16	14	14	12	10	10	15	20	$\geq \phi 12.5$	45	40	36	24	18	15	14	12	10	10	15	20					
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Low Temperature Characteristics (at 120Hz)	<table border="1"> <thead> <tr> <th colspan="15">Impedance ratio max</th> </tr> <tr> <th>Rated voltage(VDC)</th> <th>4</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><th>160~250</th><th>400</th><th>450</th> </tr> </thead> <tbody> <tr> <td>Z-25°C / Z+20°C</td> <td>7</td><td>4</td><td>3</td><td>2</td><td>2</td><td>2</td><td>2</td><td>3</td><td>3</td><td>3</td><td>3</td><td>6</td><td>6</td> </tr> <tr> <td>Z-40°C / Z+20°C</td> <td>15</td><td>8</td><td>8</td><td>4</td><td>4</td><td>3</td><td>3</td><td>4</td><td>4</td><td>4</td><td>6</td><td>10</td><td>15</td> </tr> </tbody> </table>														Impedance ratio max															Rated voltage(VDC)	4	6.3	10	16	25	35	50	63	80	100	160~250	400	450	Z-25°C / Z+20°C	7	4	3	2	2	2	2	3	3	3	3	6	6	Z-40°C / Z+20°C	15	8	8	4	4	3	3	4	4	4	6	10	15
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Z-25°C / Z+20°C	7	4	3	2	2	2	2	3	3	3	3	6	6																																																										
Z-40°C / Z+20°C	15	8	8	4	4	3	3	4	4	4	6	10	15																																																										
Endurance	Test conditions Duration time : 2000 Hrs Ambient temperature : +85°C Applied voltage : Rated DC working voltage After test requirement at +20°C: Capacitance change : Within $\pm 25\%$ of the initial value Dissipation factor : Not more than 200% of specified value Leakage current : Not more than the specified value																																																																						
	Shelf Life	Test conditions Duration time : 1000 Hrs Ambient temperature : +85°C Applied voltage : None After test requirement at +20°C : Same limits as Endurance. Pre-treatment for measurements shall be conducted after application of DC working voltage for 30 minutes.																																																																					
		Resistance to soldering heat	The capacitors shall be kept on the hot plate maintained at 250°C for 30 seconds. After removing from the hot plate and restored at room temperature, they meet the characteristic requirements listed under.																																																																				
			Leakage		Less than specified value																																																																		
			Capacitance		Within $\pm 10\%$ of initial value																																																																		
			tan δ		Less than specified value																																																																		

Multiplier for Ripple Current vs. Frequency

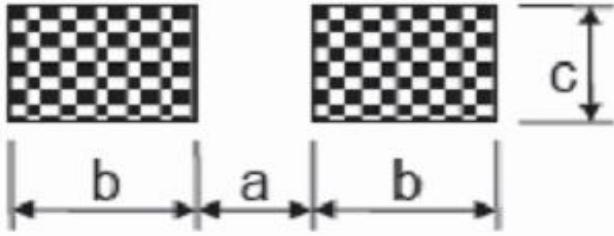
CAP(μF) \ Frequency(Hz)	60(50)	120	500	1K	$\geq 10\text{K}$
$0.1 \leq \text{CAP} \leq 100\mu\text{F}$	0.8	1.0	1.20	1.30	1.50
$100 < \text{CAP}$	0.8	1.0	1.10	1.15	1.20

Diagram of Dimensions:(unit:mm)



ϕD	L	A	B	C	W	P
4	5.5	4.3	4.3	4.9	0.5~0.8	1.0
5	5.5	5.3	5.3	5.9	0.5~0.8	1.4
6.3	5.5	6.6	6.6	7.2	0.5~0.8	2.2
6.3	6.1	6.6	6.6	7.2	0.5~0.8	2.2
6.3	7.7	6.6	6.6	7.2	0.5~0.8	2.2
8	6.5	8.3	8.3	9.0	0.5~0.8	2.3
8	10.5	8.3	8.3	9.0	0.7~1.1	3.1
10	10.5	10.3	10.3	11.0	0.7~1.1	4.5
12.5	14	13	13	13.9	1.0~1.4	4.5
16	17	17.1	17.1	18.0	1.0~1.4	7.0
16	21.5	17.1	17.1	18.0	1.0~1.4	7.0
18	16.5	19.1	19.1	20.0	1.0~1.4	7.5
18	21.5	19.1	19.1	20.0	1.0~1.4	7.5

Recommended land pattern:(unit:mm)



$\Phi D \times L$	a	b	c
4 x all	1	2.6	1.6
5 x all	1.4	3	1.6
6.3 x all	2.1	3.5	1.6
8 x 6.5(height ≤ 6.5)	2.1	4.5	1.6
8 x 6.5(height > 6.5)	2.8	4.2	1.9
10 x all	4.3	4.4	1.9
12.5 x all	4.3	5.8	2.5
16 x all	6	6.5	3.5
18 x all	6	7.5	3.5

Case Size

WV (Vdc)	Cap (uF)	Size mm	Rated Ripple current (mAmps/85°C /120Hz)	WV (Vdc)	Cap (uF)	Size mm	Rated Ripple current (mAmps/85°C /120Hz)
4	47	4x5.5	28	16	220	6.3x7.7	185
4	100	5x5.5	34	16	220	8x10.5	290
4	150	6.3x6.1	50	16	330	8x10.5	330
4	220	6.3x5.5	61	16	470	8x10.5	430
4	330	6.3x7.7	135	16	470	10x10.5	460
4	330	8x6.5	145	16	560	10x10.5	500
4	470	8x6.5	180	16	680	10x10.5	550
4	470	8x10.5	220	16	1000	12.5x14	600
4	560	8x10.5	242	16	1200	12.5x14	660
4	680	8x10.5	285	16	1500	12.5x14	710
4	1000	10x10.5	370	16	3300	16x17	1200
4	1200	10x10.5	410	25	4.7	4x5.5	18
4	1500	10x10.5	470	25	10	4x5.5	27
6.3	22	4x5.5	29	25	22	5x5.5	40
6.3	33	4x5.5	33	25	22	6.3x5.5	46
6.3	33	5x5.5	37	25	33	5x5.5	46
6.3	47	4x5.5	40	25	33	6.3x5.5	54
6.3	47	5x5.5	46	25	47	6.3x5.5	60
6.3	100	5x5.5	70	25	47	6.3x6.1	68
6.3	100	6.3x6.1	85	25	100	6.3x7.7	150
6.3	150	6.3x6.1	100	25	100	8x6.5	160
6.3	220	6.3x6.1	130	25	150	8x10.5	200
6.3	220	6.3x7.7	141	25	220	8x10.5	300
6.3	220	8x6.5	150	25	330	8x10.5	390
6.3	330	6.3x7.7	197	25	330	10x10.5	450
6.3	330	8x6.5	210	25	470	10x10.5	480
6.3	470	8x10.5	380	25	560	12.5x14	520
6.3	560	8x10.5	410	25	680	12.5x14	580
6.3	680	8x10.5	460	25	1000	12.5x14	660
6.3	1000	8x10.5	480	25	2200	16x17	1150
6.3	1000	10x10.5	500	35	4.7	4x5.5	18
6.3	1200	10x10.5	510	35	10	4x5.5	29
6.3	1500	10x10.5	530	35	22	5x5.5	45
6.3	3300	12.5x14	750	35	22	6.3x5.5	48
6.3	6800	16x17	1330	35	33	6.3x5.5	58
10	10	4x5.5	21	35	47	6.3x5.5	65
10	22	4x5.5	33	35	47	6.3x6.1	70
10	22	5x5.5	37	35	47	8x6.5	115
10	33	4x5.5	41	35	100	6.3x7.7	250
10	33	5x5.5	43	35	100	8x10.5	280
10	47	5x5.5	52	35	150	8x10.5	300
10	100	6.3x5.5	76	35	220	8x10.5	350
10	150	6.3x6.1	88	35	220	10x10.5	400
10	220	6.3x7.7	170	35	330	10x10.5	460
10	220	8x6.5	190	35	470	12.5x14	590
10	330	8x10.5	330	35	560	12.5x14	600
10	470	8x10.5	420	35	680	12.5x14	610
10	560	10x10.5	450	35	1500	16x17	1060
10	680	10x10.5	480	50	0.1	4x5.5	1
10	1000	10x10.5	510	50	0.22	4x5.5	2
10	2200	12.5x14	730	50	0.33	4x5.5	2.8
10	4700	16x17	1200	50	0.47	4x5.5	4
16	10	4x5.5	23	50	1	4x5.5	8.4
16	22	4x5.5	37	50	2.2	4x5.5	14
16	33	5x5.5	45	50	3.3	4x5.5	17
16	47	5x5.5	50	50	4.7	4x5.5	22
16	47	6.3x5.5	60	50	10	5x5.5	30
16	100	6.3x5.5	100	50	10	6.3x5.5	35
16	100	6.3x6.1	108	50	22	6.3x6.1	60
16	150	6.3x7.7	135	50	22	6.3x7.7	75

Case Size

WV (Vdc)	Cap (uF)	Size mm	Rated Ripple current (mArms/85°C /120Hz)	WV (Vdc)	Cap (uF)	Size mm	Rated Ripple current (mArms/85°C /120Hz)
50	22	8x6.5	80	160	33	12.5x14	250
50	33	6.3x7.7	188	160	39	12.5x14	270
50	33	8x6.5	200	160	47	16x17	400
50	47	6.3x7.7	225	160	68	16x17	500
50	47	8x6.5	240	200	10	10x10.5	100
50	100	8x10.5	300	200	10	12.5x14	130
50	150	10x10.5	320	200	22	12.5x14	235
50	220	10x10.5	450	200	27	12.5x14	250
50	330	12.5x14	520	200	33	12.5x14	270
50	470	16x17	925	200	39	16x17	370
50	1000	16x17	940	200	47	16x17	420
63	0.1	4x5.5	1	200	68	16x17	520
63	0.22	4x5.5	2	250	4.7	8x10.5	70
63	0.33	4x5.5	3	250	6.8	10x10.5	95
63	0.47	4x5.5	4	250	10	10x10.5	115
63	1	4x5.5	8	250	15	12.5x14	180
63	2.2	4x5.5	14	250	22	16x17	280
63	3.3	5x5.5	18	250	27	16x17	305
63	4.7	5x5.5	23	250	33	16x17	340
63	4.7	6.3x5.5	27	250	39	16x17	370
63	10	6.3x5.5	35	250	47	16x17	430
63	22	6.3x7.7	75	400	3.3	10x10.5	50
63	22	8x6.5	75	400	4.7	10x10.5	90
63	33	8x10.5	160	400	4.7	12.5x14	115
63	47	8x10.5	170	400	6.8	12.5x14	130
63	100	10x10.5	270	400	8.2	12.5x14	140
63	100	12.5x14	340	400	10	12.5x14	145
63	150	12.5x14	380	400	10	16x17	160
63	220	12.5x14	460	400	12	16x17	175
63	330	16x17	560	400	15	16x17	170
63	470	16x17	700	400	18	16x17	195
80	1	4x5.5	8	400	22	16x17	235
80	2.2	5x5.5	16	450	4.7	12.5x14	115
80	3.3	6.3x5.5	25	450	6.8	12.5x14	130
80	4.7	6.3x5.5	30	450	8.2	12.5x14	140
80	10	6.3x7.7	40	450	10	12.5x14	145
80	22	6.3x7.7	70	450	10	16x17	160
80	33	8x10.5	160	450	12	16x17	175
80	47	10x10.5	195	450	15	16x17	170
80	100	12.5x14	380	450	18	16x17	195
80	150	12.5x14	450	450	22	16x17	235
80	220	16x17	550				
100	1	4x5.5	8				
100	2.2	6.3x5.5	18				
100	2.2	6.3x6.1	20				
100	3.3	6.3x5.5	25				
100	3.3	6.3x6.1	28				
100	4.7	6.3x7.7	38				
100	4.7	8x6.5	38				
100	10	6.3x7.7	50				
100	22	8x10.5	120				
100	33	10x10.5	190				
100	47	12.5x14	330				
100	100	12.5x14	380				
100	150	16x17	560				
160	10	8x10.5	70				
160	12	8x10.5	80				
160	18	10x10.5	100				
160	22	10x10.5	150				
160	27	12.5x14	235				