

## VSL series

- Longer life cycle than VS series
- High ripple current



### Specifications

Items	Characteristics	
Temperature range	-55°C ~ +105°C	
Rated voltage range	2.5Vdc ~ 25.0Vdc	
Capacitance range	6.8μF ~ 1,500μF	
Capacitance tolerance	±20% [M] (at 20°C, 120Hz)	
Tangent of loss angle	Less than or equal to the value of STANDARD RATING (at 20°C, 120Hz)	
Leakage current	Less than or equal to the value of STANDARD RATING (at 20°C, after 2 minutes)	
ESR	Less than or equal to the value of STANDARD RATING	
Characteristics of impednace	$Z_{+105^{\circ}\text{C}}/Z_{+20^{\circ}\text{C}} \leq 1.25$ , $Z_{-55^{\circ}\text{C}}/Z_{+20^{\circ}\text{C}} \leq 1.25$ at 100kHz	
Endurance	105°C, 5,000 hrs at rated voltage	
	Appearance	No significant damage
	Capacitance change	Within±20% of the initial value
	Tangent of loss angle (tanδ)	≤150% of the initial specified value
	ESR(mΩ)	≤150% of the initial specified value
Damp Heat (Steady state)	60°C, 90 to 95% RH, 1000 hrs, No-applied Voltage	
	Appearance	No significant damage
	Capacitance change	Within±20% of the initial value
	Tangent of loss angle (tanδ)	≤150% of the initial specified value
	ESR(mΩ)	≤150% of the initial specified value
Resistance to soldering heat	VPS (230°C, 75s)	
	Appearance	No significant damage
	Capacitance change	Within±10% of the initial value
	Tangent of loss angle (tanδ)	≤130% of the initial specified value
	ESR(mΩ)	≤130% of the initial specified value
	Leakage current	
	≤The initial specified value	

\* In case of some problems for measured values, measure after applying rated voltage for 120 minutes at 105°C

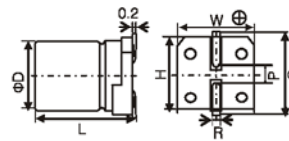
### Dimensions

(unit : mm)

RV (SV)	2.5(3.3)	4(5.2)	6.3(8.2)	10(11.5)	16(18.4)	20(23.0)	25(28.7)
6.8							6.3x5.9
10							8.0x6.9
22						6.3x5.9	
27					6.3x5.9	6.3x5.9	
33						8.0x6.9	8.0x11.9
39					6.3x5.9		
47				6.3x5.9	6.3x5.9	8.0x6.9	
56				6.3x5.9	8.0x6.9		10x12.6
82			6.3x5.9		8.0x6.9		
100		6.3x5.9	6.3x5.9		8.0x6.9	8.0x11.9	
120			6.3x5.9	8.0x6.9			
			8.0x6.9				
150		6.3x5.9	8.0x6.9	8.0x6.9		10x12.6	
180					8.0x11.9		
220	6.3x5.9		8.0x6.9				
330		8.0x6.9		8.0x11.9	10x12.6		
470	8.0x6.9		8.0x11.9		10x12.6		
560		8.0x11.9		10x12.6			
680	8.0x11.9						
820			10x12.6				
1000			10x12.6				
1200		10x12.6					
1500	10x12.6						

RV:Rated voltage [V] SV:Surge voltage [V] (at room temperature)

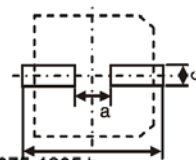
### Marking and Size list



8A41 Date & Lot. No  
VSL Series  
560 Rated capacitance [μF]  
4V Rated voltage [V]

Size	φD±0.5	L <sup>+0.1</sup> <sub>-0.4</sub>	W±0.2	H±0.2	C±0.2	R	P±0.2
6.3x5.9	6.3	5.9	6.6	6.6	7.3	0.6~0.8	2.1
8.0x6.9	8.0	6.9	8.3	8.3	9.0	0.6~0.8	3.2
8.0x11.9	8.0	11.9	8.3	8.3	9.0	0.8~1.1	3.2
10.0x12.6	10.0	12.6	10.3	10.3	11.0	0.8~1.1	4.6

### Recommended land pattern dimension of PCB



Size	a	b	c
6.3x5.9	2.1	9.1	1.6
8.0x6.9	2.8	11.1	1.9
8.0x11.9	2.8	11.1	1.9
10.0x12.6	4.3	13.1	1.9

## Standard ratings

Rated Voltage [Vdc]	Rated Capacitance [μF]	Size ΦD x L [mm]	ESR (20°C, 100kHz) [mΩ][max.]	Rated Ripple Current (105°C, 100kHz) [mA rms, max.]	Tangent of Loss Angle [max.]	Leakage Current [μA, max.]	Part Number
2.5	220	6.3x5.9	23	2390	0.10	110	2VSL220MC6
	470	8.0x6.9	23	3300	0.10	235	2VSL470MD7
	680	8.0x11.9	13	4520	0.10	340	2VSL680MD12
	1500	10x12.6	12	5440	0.10	750	2VSL1500ME12
4	100	6.3x5.9	45	1810	0.10	80	4VSL100MC6
	150	6.3x5.9	40	1810	0.10	120	4VSL150MC6
	330	8.0x6.9	35	2560	0.10	264	4VSL330MD7
	560	8.0x11.9	13	4520	0.10	448	4VSL560MD12
	1200	10x12.6	12	5440	0.10	960	4VSL1200ME12
6.3	82	6.3x5.9	45	1700	0.10	103	6VSL82MC6
	100	6.3x5.9	40	1810	0.10	126	6VSL100MC6
	120	6.3x5.9	40	1810	0.10	151	6VSL120MC6
	120	8.0x6.9	50	2560	0.10	151	6VSL120MD7
	150	8.0x6.9	40	2560	0.10	189	6VSL150MD7
	220	8.0x6.9	35	2560	0.10	277	6VSL220MD7
	470	8.0x11.9	15	4210	0.10	592	6VSL470MD12
	820	10x12.6	12	5440	0.10	1033	6VSL820ME12
1000	10x12.6	12	5440	0.10	1260	6VSL1000ME12	
10	47	6.3x5.9	50	1620	0.10	94	10VSL47MC6
	56	6.3x5.9	45	1700	0.10	112	10VSL56MC6
	120	8.0x6.9	35	2560	0.10	240	10VSL120MD7
	150	8.0x6.9	35	2560	0.10	300	10VSL150MD7
	330	8.0x11.9	17	3950	0.10	660	10VSL330MD12
	560	10x12.6	13	5230	0.10	1120	10VSL560ME12
16	27	6.3x5.9	50	1620	0.10	86	16VSL27MC6
	39	6.3x5.9	50	1620	0.10	125	16VSL39MC6
	47	6.3x5.9	50	1620	0.10	150	16VSL47MC6
	56	8.0x6.9	45	1890	0.10	179	16VSL56MD7
	82	8.0x6.9	40	2120	0.10	262	16VSL82MD7
	100	8.0x6.9	40	2120	0.10	320	16VSL100MD7
	180	8.0x11.9	20	3640	0.10	576	16VSL180MD12
	330	10x12.6	16	4720	0.10	1056	16VSL330ME12
	470	10x12.6	16	4720	0.10	1504	16VSL470ME12
20	22	6.3x5.9	60	1450	0.10	88	20VSL22MC6
	27	6.3x5.9	60	1450	0.10	108	20VSL27MC6
	33	8.0x6.9	45	1890	0.10	132	20VSL33MD7
	47	8.0x6.9	45	1890	0.10	188	20VSL47MD7
	100	8.0x11.9	24	3320	0.10	400	20VSL100MD12
	150	10x12.6	20	4320	0.10	600	20VSL150ME12
25	6.8	6.3x5.9	80	1200	0.10	85	25VSL6R8MC6
	10	8.0x6.9	60	1500	0.10	125	25VSL10MD7
	33	8.0x11.9	30	2980	0.10	413	25VSL33MD12
	56	10x12.6	28	3800	0.10	700	25VSL56ME12