

VL series

- Super low ESR, Long Life capability
- Rated voltage : 4~50V.
- Endurance : 5,000hours at 105°C
- Applications : DC/DC Converter, Voltage Regulators, Decoupling Applications for Computer Motherboards, etc.
- RoHS compliant
- Halogen Free compliant



SPECIFICATIONS

Items	Conditions	Characteristics
Category Temperature Range	—	-55 to +105°C
Rated Voltage Range	—	4 ~ 50V
Capacitance Tolerance	at 20°C, 120Hz	±20%(M)
Surge Voltage	at 105°C	Rated voltage × 1.15V
Leakage Current	at 20°C after 2 minutes	$I \leq 0.2CV$ or $300(\mu A)$ Whichever is greater measured, after 2 minutes application of rated working voltage at +20°C. Please see the attached characteristics list
Dissipation Factor ($\tan \delta$)	at 20°C, 120Hz	Please see the attached characteristics list
Characteristics of Impedance at low, high temperature	at -55°C, 100kHz	$Z(-55^\circ C)/Z(+20^\circ C) \leq 1.25$
	at -25°C, 100kHz	$Z(-25^\circ C)/Z(+20^\circ C) \leq 1.15$
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 5,000 hours at 105°C.	Appearance NO significant damage.
		Capacitance change $\leq \pm 20\%$ of the initial value.
		DF ($\tan \delta$) $\leq 150\%$ of the initial specified value.
		ESR $\leq 150\%$ of the initial specified value.
		Leakage current $\leq$ The initial specified value.
Damp Heag (Steady State)	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjecting them to store 60°C, 90 to 95% RH for 1,000 hours, without DC applied.	Appearance NO significant damage.
		Capacitance change $\leq \pm 20\%$ of the initial value.
		DF ($\tan \delta$) $\leq 150\%$ of the initial specified value.
		ESR $\leq 150\%$ of the initial specified value.
		Leakage current $\leq$ The initial specified value.
Surge Voltage	The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltages specified at 105°C for 30 seconds through a protective resistor (R = 1 kΩ) and discharge for 5 minutes 30 seconds.	Appearance NO significant damage.
		Capacitance change $\leq \pm 20\%$ of the initial value.
		DF ($\tan \delta$) $\leq 150\%$ of the initial specified value.
		ESR $\leq 150\%$ of the initial specified value.
		Leakage current $\leq$ The initial specified value.

※ Note : If any doubt arises, measure the leakage current after following voltage treatment.

Voltage treatment : DC rated voltage are applied to the capacitors for 120 minutes at 105°C.

MARKING AND DIMENSIONS



(Unit:mm)

$\phi D \times L$	ϕD	L	W	H	P	R	P
6.3×6	6.3	6.0	6.6	6.6	7.3	0.5~0.8	2.1
6.3×7	6.3	7.0	6.6	6.6	7.3	0.5~0.8	2.1
6.3×9.5	6.3	9.5	6.6	6.6	7.3	0.5~0.8	2.1
8×7	8.0	7.0	8.3	8.3	9.0	0.5~0.8	3.2
8×9.5	8.0	9.5	8.3	8.3	9.0	0.8~1.1	3.2
8×12	8.0	12.0	8.3	8.3	9.0	0.8~1.1	3.2
10×10.5	10.0	10.5	10.3	10.3	11.0	0.8~1.1	4.6
10×12.5	10.0	12.5	10.3	10.3	11.0	0.8~1.1	4.6

VL SERIES STANDARD CHARACTERISTICS LIST

Rated Voltage (S.V.)	Cap (μF)	Size DxL	Leakage current (μA) max. ※2	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms) 100kHz / 105°C	D.F. (tanδ) max. 120Hz / 20°C
4 (4.6)	220	6.3X6	300	20	2,800	0.12
	560	6.3x9.5	448	20	3,500	0.12
	560	8x7	448	18	3,700	0.12
	820	8x9.5	656	15	4,000	0.12
	1,200	8x12	960	15	4,450	0.12
	1,500	10x10.5	1,200	13	4,500	0.12
	2,200	10x12.5	1,760	13	5,400	0.12
6.3 (7.2)	100	6.3x6	300	22	2,400	0.12
	220	6.3x6	300	22	2,600	0.12
	470	6.3x9.5	592	22	3,200	0.12
	560	6.3x9.5	705	22	3,200	0.12
	820	8x9.5	1,033	20	3,850	0.12
	1,000	8x12	1,260	20	4,250	0.12
	1,200	10x10.5	1,512	18	4,350	0.12
	1,800	10x12.5	2,268	18	5,200	0.12
10 (11.5)	68	6.3x6	300	30	2,400	0.12
	100	6.3x6	300	30	2,400	0.12
	220	6.3x7	440	30	2,500	0.12
	330	6.3x9.5	660	30	3,150	0.12
	560	8x9.5	1,120	25	3,850	0.12
	680	8x12	1,360	25	4,150	0.12
	820	10x10.5	1,640	20	4,250	0.12
	1,000	10x10.5	2,000	20	4,250	0.12
	1,200	10x12.5	2,400	20	5,100	0.12
16 (18.4)	100	6.3x6	320	30	2,200	0.12
	220	6.3x9.5	704	30	3,050	0.12
	330	8x9.5	1,056	20	3,450	0.12
	470	8x12	1,504	20	4,050	0.12
	680	10x10.5	2,176	20	4,150	0.12
	820	10x12.5	2,624	20	5,100	0.12
25 (28.8)	47	6.3x6	300	40	1,500	0.12
	100	6.3x9.5	500	35	2,800	0.12
	180	8x9.5	900	30	3,250	0.12
	220	8x12	1,100	30	3,900	0.12
	330	10x10.5	1,650	20	4,100	0.12
	470	10x12.5	2,350	25	4,500	0.12
35 (40.3)	22	6.3x6	300	70	1,450	0.12
	68	6.3x9.5	476	60	1,500	0.12
	120	8x9.5	840	50	1,800	0.12
	150	8x12	1,050	50	2,850	0.12
	220	10x10.5	1,540	40	2,950	0.12
	270	10x12.5	1,890	40	3,200	0.12
50 (57.5)	10	6.3x6	300	60	1,400	0.12
	33	6.3x9.5	330	30	1,700	0.12
	47	8x9.5	470	30	2,000	0.12
	68	8x12	680	28	2,200	0.12
	100	10x10.5	1,000	30	2,300	0.12
	100	10x12.5	1,000	26	2,650	0.12

※ 1. Capacitance tolerance : ±20% (M)

※ 2. After 2 minutes

FREQUENCY COEFFICIENT FOR RIPPLE CURRENT

Frequency	120Hz ≤ f < 1kHz	1kHz ≤ f < 10kHz	10kHz ≤ f < 100kHz	100kHz ≤ f < 500kHz
Coefficient	0.05	0.3	0.7	1