

VL series

- Super low ESR, Long Life capability
- Rated voltage :4.0~50V.
- Endurance:5,000hours at 105°C
- Applications:DC/DC Converter, Voltage Regulators, Decoupling Applications for Computer Motherboards, etc.
- ROHS compliant
- Halogen Free compliant



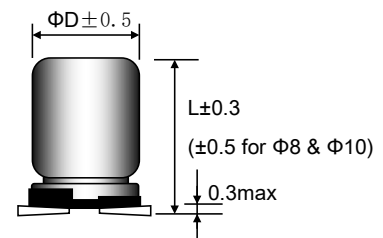
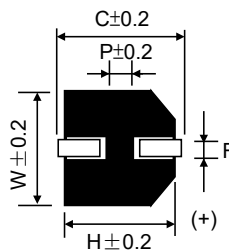
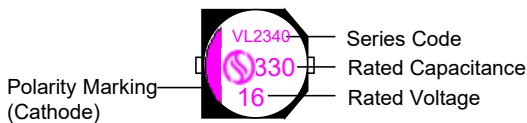
VL

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	
Low Temperature Characteristics (Max. Impedance Ratio)	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 Heat (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)

ΦDxL	ΦD	L	W	H	C	R	P
6.3×5.8	6.3	5.8	6.6	6.6	7.3	0.6~0.9	1.4
6.3×7	6.3	7.0	6.6	6.6	7.3	0.6~0.9	2.1
6.3×9.5	6.3	9.5	6.6	6.6	7.3	0.6~0.9	2.1
8×6.7	8.0	6.7	8.3	8.3	9.0	0.8~1.1	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

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STANDARD RATINGS

Rated Voltage (S.V.)	Cap (μF)	Size Code DxL	Leakage current (μA) max.	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	5x5.8	300	20	2800	0.12
	560	6.3x5.8	448	20	3500	0.12
	560	8x6.7	448	18	3700	0.12
	820	8x9.5	656	15	4000	0.12
	1200	8x12	960	15	4450	0.12
	1500	10x10.5	1200	13	4500	0.12
	2200	10x12.5	1760	13	5400	0.12
6.3 (7.2)	100	6.3x5.8	300	22	2400	0.12
	220	6.3x5.8	300	22	2600	0.12
	470	6.3x9.5	592	22	3200	0.12
	560	6.3x9.5	705	22	3200	0.12
	820	8x9.5	1033	20	3850	0.12
	1000	8x12	1260	20	4250	0.12
	1200	10x10.5	1512	18	4350	0.12
	1800	10x12.5	2268	18	5200	0.12
10 (11.5)	68	6.3x5.8	300	30	2400	0.12
	100	6.3x5.8	300	30	2400	0.12
	220	6.3x7	440	30	2500	0.12
	330	6.3x9.5	660	30	3150	0.12
	560	8x9.5	1120	25	3850	0.12
	680	8x12	1360	25	4150	0.12
	820	10x10.5	1640	20	4250	0.12
	1000	10x10.5	2000	20	4250	0.12
	1200	10x12.5	2400	20	5100	0.12
16 (18.4)	100	6.3x5.8	320	30	2200	0.12
	220	6.3x9.5	704	30	3050	0.12
	330	8x9.5	1056	20	3450	0.12
	470	8x12	1504	20	4050	0.12
	680	10x10.5	2176	20	4150	0.12
	820	10x12.5	2624	20	5100	0.12
	1000	10x12.5	2624	20	5100	0.12
25 (28.8)	47	6.3x5.8	300	40	1500	0.12
	100	6.3x9.5	500	35	2800	0.12
	180	8x9.5	900	30	3250	0.12
	220	8x12	1100	30	3900	0.12
	330	10x10.5	1650	20	4100	0.12
	470	10x12.5	2350	25	4500	0.12
35 (40.3)	22	6.3x5.8	300	70	1450	0.12
	68	6.3x9.5	476	60	1500	0.12
	120	8x9.5	840	50	1800	0.12
	150	8x12	1050	50	2850	0.12
	220	10x10.5	1540	40	2950	0.12
	270	10x12.5	1890	40	3200	0.12
50 (57.5)	10	6.3x5.8	300	60	1400	0.12
	33	6.3x9.5	330	30	1700	0.12
	47	8x9.5	470	30	2000	0.12
	68	8x12	680	28	2200	0.12
	100	10x10.5	1000	30	2300	0.12
	100	10x12.5	1000	26	2650	0.12

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	1.0

