

Surface mount type series: Series VD

High temperature lead-free reflow soldering products



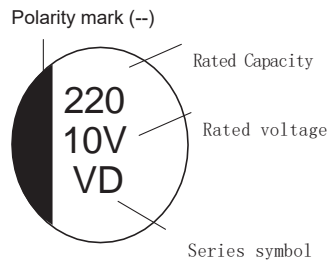
- Low impedance, long life
- Suitable for high-density surface assembly
- Wide operating temperature range
- Has responded to the RoHS directive

Items	Characteristics									
Operating Temperature Range	-55°C ~+105°C									
Rated Voltage Range	6.3V ~ 100V									
Nominal Capacitance Range	1 ~ 8200 μF									
Nominal Capacitance Tolerance	±20% (20°C, 120Hz)									
Leakage Current	$I \leq 0.01C_R V_R$ or 3 (μA), Whichever is greater (2 minutes) C_R : Nominal capacitance (μ F) U_R : Rated voltage (V) (V) $I \leq 0.01C_R V_R$ or 3 (μA) Whichever is greater(at 20°C, after 2 minutes) C_R : Nominal Capacitance (μF) U_R : Rated voltages (V)									
Loss tangent (tgδ) Dissipation Factor (Max) 20°C, 120Hz	U_R (V)	6.3	10	16	25	35	50	63	80	100
	tgδ	0.30	0.26	0.22	0.16	0.13	0.10	0.08	0.08	0.07
If the amount is greater than 1000uF, the loss tangent value will increase by 0.02 for each increase of 1000uF. Note: () is a product above Φ 8. When nominal capacitance exceeds 1000uF, add 0.02 to the value above for each 1000uF increase										
Load Life	When the rated voltage is applied at +105°C, the capacitor should meet the following requirements: Φ D=4, 5 and 6.3 are 2000 hours; Φ D=8, 10 is 5000 hours; Φ D=12.5, 16 and 18 are 8000 hours Φ D=4,5 and 6.3:2000H; Φ D=8,10:5000H; Φ D=12.5,16 and 18:8000H; application of rated voltage at 105°C, the capacitor shall meet the following requirement:									
	Capacitance Change	Within ±30% of the initial value								
	Dissipation Factor	Not more than 300% of the initial specified value								
Leakage Current	Not more than the initial specified value									
Shelf Life	After storage for 1000 hours at +105°C, the capacitors shall meet the requirement of load life above									
Low Temperature Stability	U_R (V)	6.3	10	16	25	35	50	63	80	100
	Z(-25°C)/Z(+20°C)	3	2	2	2	2	2	2	2	2
Impedance Ratio (120Hz)	Z(-55°C)/Z(+20°C)	5	4	4	3	3	3	3	3	3
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 following requirement.									
	Capacitance Change	Within ±10% of the initial value								
	Dissipation Factor	Not more than the initial specified value								
Leakage Current	Not more than the initial specified value									
AEC-Q200										

Please understand that our company may change the design and specifications without prior notice. Please be sure to ask for relevant technical specifications from our company before purchasing and using our products. If you have any doubts about the safety of the product, please contact our company as soon as possible.

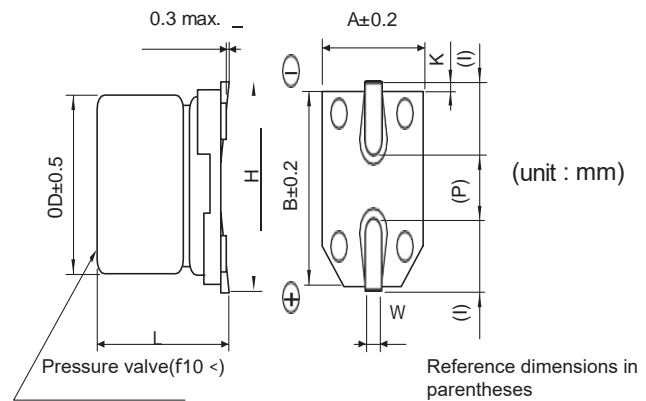
Mark

Example: 10V.DC 220uF VD series



Marking color: black

Physical dimension



D	L	A, B	H.	I	W	P	K
4	5.4±0.3	4.3	5.5	1.8	0.5~0.8	1.0	0.35 ^{+0.15} -0.20
5	5.4±0.3	5.3	6.5	2.1	0.5~0.8	1.3	
6.3	5.4±0.3	6.6	7.8	2.4	0.5~0.8	2.2	
6.3	7.7±0.3	6.6	7.8	2.4	0.5~0.8	2.2	
8	10.5±0.5	8.3	10	3.4	0.8~1.1	3.1	0.70±0.20
8	12.5±0.5	8.3	10	3.4	0.8~1.1	3.1	0.70±0.20
10	10.5±0.5	10.3	12	3.5	0.8~1.1	4.5	0.70±0.20
10	12.5±0.5	10.3	12	3.5	0.8~1.1	4.5	0.70±0.20
12.5	13.5±0.5	13.5	15	4.7	1.1~1.4	4.4	0.70±0.20
12.5	16.5±0.5	13.5	15	4.7	1.1~1.4	4.4	0.70±0.20
16	16.5±0.5	17	19	5.5	1.1~1.4	6.4	0.70±0.20
16	21.5±0.5	17	19	5.5	1.1~1.4	6.4	0.70±0.20
18	16.5±0.5	19	21	6.7	1.1~1.4	6.4	0.70±0.20
18	21.5±0.5	19	21	6.7	1.1~1.4	6.4	0.70±0.20

■ Features list

Rated voltage (V.DC)	Electrostatic capacity (±20%) (uF)	Product Size(mm)		Electrical characteristics			Part No	Packaging (PCS)
		φ D	L	Rated ripple current (100KHZ) (+105°C) (mA r.m.s)	tanδ (120HZ) (+20°C)	Impedance (100Khz) (+20°C) (Ω)		
6.3	27	4	5.4	80	0.30	1.8		2000
	33	5	5.4	150	0.30	0.76		1000
	47	5	5.4	150	0.30	0.76		1000
	56	5	5.4	150	0.30	0.76		1000
	68	6.3	5.4	230	0.30	0.44		1000
	100	6.3	5.4	230	0.30	0.44		1000
	150	6.3	5.4	230	0.30	0.44		1000
	220	6.3	5.4	230	0.30	0.44		1000
	330	6.3	7.7	280	0.30	0.34		1000
	330	8	6.5	280	0.30	0.36		1000
	470	8	10.5	450	0.30	0.17		500
	680	8	10.5	450	0.30	0.17		500
	1000	8	10.5	450	0.30	0.17		500
	1500	10	10.5	670	0.30	0.09		500
	2200	12.5	13.5	820	0.30	0.07		200
	3300	12.5	16.5	950	0.30	0.06		200

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Rated voltage (V.DC)	Electrostatic capacity (±20%) (uF)	Product Size(mm)		Electrical characteristics			Part No	Packaging (PCS)
		D	L	Rated ripple current (100KHZ) (+105°C) (mA r.m.s)	tanδ (120HZ) (+20°C)	Impedance (100KHZ) (+20°C) (Ω)		
6.3	4700	16	16.5	1260	0.30	0.054		125
	6800	18	16.5	1500	0.30	0.048		125
	8200	18	21.5	1750	0.30	0.038		125
10	22	4	5.4	80	0.26	1.8		2000
	27	5	5.4	150	0.26	0.76		1000
	33	5	5.4	150	0.26	0.76		1000
	47	6.3	5.4	230	0.26	0.44		1000
	56	6.3	5.4	230	0.26	0.44		1000
	68	6.3	5.4	230	0.26	0.44		1000
	100	6.3	5.4	230	0.26	0.44		1000
	150	6.3	5.4	230	0.26	0.44		1000
	220	6.3	7.7	280	0.26	0.34		1000
	220	8	6.5	280	0.26	0.34		1000
	330	8	10.5	450	0.26	0.17		500
	470	8	10.5	450	0.26	0.17		500
	680	10	10.5	670	0.26	0.09		500
	1000	10	10.5	670	0.26	0.09		500
	1500	12.5	13.5	820	0.26	0.07		200
	2200	12.5	16.5	950	0.26	0.06		200
	3300	16	16.5	1260	0.26	0.054		125
	4700	16	16.5	1260	0.26	0.054		125
6800	18	16.5	1500	0.26	0.048		125	
8200	18	21.5	1750	0.26	0.038		125	
16	15	4	5.4	80	0.22	1.8		2000
	22	5	5.4	80	0.22	0.76		1000
	27	5	5.4	150	0.22	0.76		1000
	33	6.3	5.4	230	0.22	0.44		1000
	47	6.3	5.4	230	0.22	0.44		1000
	56	6.3	5.4	230	0.22	0.44		1000
	68	6.3	5.4	230	0.22	0.44		1000
	100	6.3	5.4	230	0.22	0.44		1000
	150	8	6.5	280	0.22	0.36		1000
	150	8	10.5	280	0.22	0.34		500
	220	6.3	7.7	280	0.22	0.34		1000
	330	8	10.5	450	0.22	0.17		500
	470	8	10.5	450	0.22	0.17		500
	680	10	10.5	670	0.22	0.09		500
	1000	10	10.5	670	0.22	0.09		500
	1500	12.5	13.5	820	0.22	0.07		200
	2200	12.5	16.5	1260	0.22	0.06		200
	3300	16	16.5	1260	0.22	0.054		125
4700	18	16.5	1260	0.22	0.048		125	

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		D	L	Rated ripple current (100KHZ) (+105°C) (mA r.m.s)	tanδ (120HZ) (+20°C)	Impedance (100KHZ) (+20°C) (Ω)		
25	10	4	5.4	80	0.16	1.8		2000
	15	5	5.4	150	0.16	0.76		1000
	22	5	5.4	80	0.16	0.76		1000
	27	6.3	5.4	230	0.16	0.44		1000
	33	6.3	5.4	230	0.16	0.44		1000
	47	6.3	5.4	230	0.16	0.44		1000
	56	6.3	5.4	230	0.16	0.44		1000
	68	6.3	5.4	230	0.16	0.44		1000
	100	6.3	7.7	280	0.16	0.34		1000
	100	8	6.5	280	0.16	0.36		1000
	150	6.3	7.7	450	0.16	0.17		1000
	220	8	10.5	450	0.16	0.17		500
	330	8	10.5	450	0.16	0.17		500
	470	10	10.5	670	0.16	0.09		500
	680	10	10.5	670	0.16	0.09		500
	1000	12.5	13.5	820	0.16	0.07		200
	1500	12.5	16.5	950	0.16	0.06		200
	2200	16	16.5	1260	0.16	0.054		125
3300	18	21.5	1260	0.16	0.038		125	
35	4.7	4	5.4	80	0.13	1.8		2000
	10	5	5.4	150	0.13	0.76		1000
	15	5	5.4	150	0.13	0.76		1000
	22	5	5.4	80	0.13	0.76		1000
	27	6.3	5.4	230	0.13	0.44		1000
	33	6.3	5.4	230	0.13	0.44		1000
	47	6.3	5.4	230	0.13	0.44		1000
	56	6.3	7.7	280	0.13	0.34		1000
	68	6.3	7.7	280	0.13	0.34		1000
	68	8	6.5	280	0.13	0.36		1000
	100	8	10.5	300	0.13	0.17		500
	150	8	10.5	300	0.13	0.17		500
	220	8	10.5	450	0.13	0.17		500
	330	10	10.5	670	0.13	0.09		500
	470	10	10.5	670	0.13	0.09		500
	680	12.5	13.5	820	0.13	0.07		200
	1000	16	16.5	1260	0.13	0.054		125
	1500	18	16.5	1500	0.13	0.048		125
2200	18	21.5	1750	0.13	0.038		125	
50	1	4	5.4	30	0.10	5.0		2000
	2.2	4	5.4	30	0.10	5.0		2000
	3.3	4	5.4	30	0.10	5.0		2000
	4.7	5	5.4	85	0.10	1.52		1000
	10	6.3	5.4	165	0.10	0.88		1000
	15	6.3	5.4	165	0.10	0.88		1000
	22	6.3	5.4	165	0.10	0.88		1000
	27	6.3	7.7	185	0.10	0.68		1000
	33	6.3	7.7	185	0.10	0.68		1000

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Rated voltage (V.DC)	Electrostatic capacity (±20%) (uF)	Product Size(mm)		Electrical characteristics			Part No	Packaging (PCS)
		D	L	Rated ripple current (100KHZ) (+105°C) (mA r.m.s)	tanδ (120HZ) (+20°C)	Impedance (100KHZ) (+20°C) (Ω)		
50	47	6.3	7.7	185	0.10	0.68		1000
	47	8	6.5	185	0.10	0.68		1000
	56	8	10.5	300	0.10	0.34		500
	68	8	10.5	300	0.10	0.34		500
	100	8	10.5	300	0.10	0.34		500
	150	10	10.5	550	0.10	0.18		500
	220	10	10.5	550	0.10	0.18		500
	330	10	12.5	550	0.10	0.18		500
	470	12.	13.5	650	0.10	0.12		200
	680	16	16.5	1000	0.10	0.073		125
	1000	18	16.5	1500	0.10	0.066		125
1500	18	21.5	1620	0.10	0.05		125	
63	4.7	5	5.4	70	0.08	1.9		1000
	10	6.3	5.4	130	0.08	1.2		1000
	22	6.3	7.7	150	0.08	0.9		1000
	33	8	10.5	280	0.08	0.5		500
	47	8	10.5	280	0.08	0.5		500
	100	10	10.5	450	0.08	0.25		500
	150	12.5	13.5	700	0.08	0.15		200
	220	12.5	13.5	700	0.08	0.15		200
	330	16	16.5	900	0.08	0.082		125
	470	16	16.5	900	0.08	0.082		125
	680	16	21.5	1150	0.08	0.080		125
	680	18	16.5	1150	0.08	0.080		125
1000	18	21.5	1250	0.08	0.06		125	
80	22	8	10.5	130	0.08	1.3		500
	33	8	10.5	130	0.08	1.3		500
	47	10	10.5	200	0.08	0.7		500
	100	10	10.5	200	0.08	0.7		500
	150	12.5	13.5	450	0.08	0.32		200
	220	12.5	16.5	550	0.08	0.26		200
	330	16	16.5	650	0.08	0.17		125
	470	16	21.5	900	0.08	0.15		125
	680	18	21.5	950	0.08	0.15		125
100	22	8	10.5	130	0.07	1.3		500
	33	10	10.5	200	0.07	0.7		500
	47	10	10.5	200	0.07	0.7		500
	100	12.5	13.5	450	0.07	0.32		200
	150	12.5	16.5	550	0.07	0.26		200
	220	16	16.5	650	0.07	0.17		125
	220	18	21.5	950	0.07	0.15		125
	330	16	21.5	900	0.07	0.15		125
	330	18	16.5	850	0.07	0.15		125
	470	18	21.5	950	0.07	0.15		125

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■ Frequency coefficient of ripple current

Frequency	50,60Hz	120Hz	1KHz	10K~100KHz
Coefficient	0.64	0.80	0.93	1.0