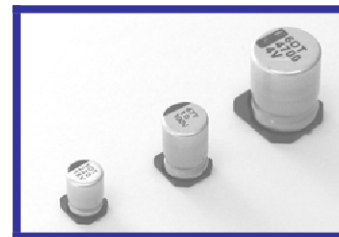




V-CHIP ALUMINUM ELECTROLYTIC CAPACITORS

HT Wide Temperature 宽温品

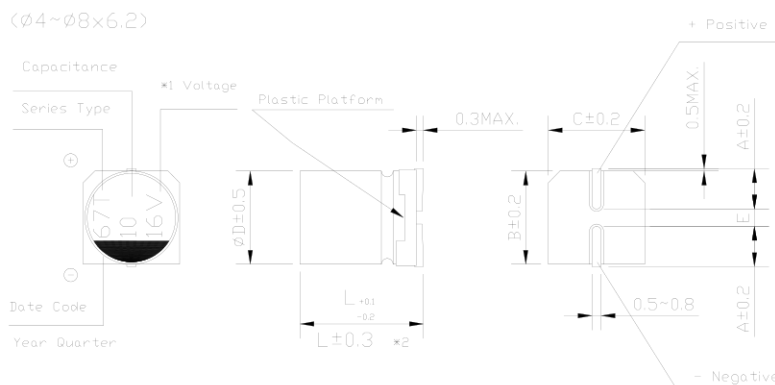
- Temperature up to +105℃ with load life of 1000~2000 hours.
- Lead-free reflow soldering is available subject to customers' request.



◆ Specifications 特性

Items 项目	Performance Characteristics 主要特性																																																												
Operating Temperature Range 使用温度范围	-55~+105℃																																																												
Voltage Range 额定工作电压范围	4~100V																																																												
Capacitance Range 静电容量范围	0.1~6800 μ F																																																												
Capacitance Tolerance 静电容量允许偏差	±20% at 120 Hz, 20℃																																																												
Leakage Current 漏电流	For Φ4~Φ10, after 2 minutes' application of rated voltage, leakage current is not more than 0.01CV or 3(μ A), whichever is greater. For Φ12.5~Φ16, after 1 minute's application of rated voltage, leakage current is not more than 0.03CV or 4(μ A), whichever is greater. Φ4~Φ10: 施加额定工作电压 2 分钟, LC≤0.01CV 或 3(μ A), 取较大值; Φ12.5~Φ16: 施加额定工作电压 1 分钟, LC≤0.03CV 或 4(μ A), 取较大值。																																																												
Tan δ 损耗角正切	Measurement frequency 测试频率: 120Hz, Temperature 温度: 20℃ <table><tr><th colspan="2">Rated voltage (V.DC) 额定工作电压</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>100</th></tr><tr><td>Tan δ</td><td>Φ4~Φ10</td><td>0.35</td><td>0.26</td><td>0.20</td><td>0.16</td><td>0.14</td><td>0.12</td><td>0.12</td><td>0.12</td><td>0.12</td></tr><tr><td>损耗角正切(max)</td><td>Φ12.5~Φ16</td><td>0.42</td><td>0.38</td><td>0.34</td><td>0.30</td><td>0.26</td><td>0.22</td><td>0.18</td><td>0.14</td><td>0.12</td></tr></table>										Rated voltage (V.DC) 额定工作电压		4	6.3	10	16	25	35	50	63	100	Tan δ	Φ4~Φ10	0.35	0.26	0.20	0.16	0.14	0.12	0.12	0.12	0.12	损耗角正切(max)	Φ12.5~Φ16	0.42	0.38	0.34	0.30	0.26	0.22	0.18	0.14	0.12																		
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Stability at Low Temperature 低温特性	Measurement frequency 测试频率: 120Hz <table><tr><th colspan="2">Rated voltage (V.DC) 额定工作电压</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>100</th></tr><tr><td rowspan="2">Impedance ratio 阻抗比</td><td rowspan="2">Φ4~Φ10</td><td>Z(-25℃)/Z(20℃)</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></tr><tr><td>Z(-55℃)/Z(20℃)</td><td>15</td><td>8</td><td>6</td><td>4</td><td>4</td><td>3</td><td>3</td><td>4</td></tr><tr><td rowspan="2">ZT/Z20 (max)</td><td rowspan="2">Φ12.5~Φ16</td><td>Z(-25℃)/Z(20℃)</td><td>7</td><td>5</td><td>4</td><td>3</td><td>2</td><td>2</td><td>2</td><td>2</td></tr><tr><td>Z(-55℃)/Z(20℃)</td><td>17</td><td>12</td><td>10</td><td>8</td><td>5</td><td>4</td><td>3</td><td>3</td></tr></table>										Rated voltage (V.DC) 额定工作电压		4	6.3	10	16	25	35	50	63	100	Impedance ratio 阻抗比	Φ4~Φ10	Z(-25℃)/Z(20℃)	7	4	3	2	2	2	2	3	Z(-55℃)/Z(20℃)	15	8	6	4	4	3	3	4	ZT/Z20 (max)	Φ12.5~Φ16	Z(-25℃)/Z(20℃)	7	5	4	3	2	2	2	2	Z(-55℃)/Z(20℃)	17	12	10	8	5	4	3	3
Rated voltage (V.DC) 额定工作电压		4	6.3	10	16	25	35	50	63	100																																																			
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ZT/Z20 (max)	Φ12.5~Φ16	Z(-25℃)/Z(20℃)	7	5	4	3	2	2	2	2																																																			
		Z(-55℃)/Z(20℃)	17	12	10	8	5	4	3	3																																																			
Load Life 高温负荷特性	After 2000 hours' (1000 hours' for Φ4~Φ6.3x5.4) application of rated voltage at 105℃, capacitors meet the characteristics requirements listed at right. 在 105℃ 环境中施加额定工作电压 2000 小时 (Φ4~Φ6.3x5.4 为 1000 小时)后, 电容器的特性符合右表的要求。 <table><tr><td>Capacitance Change 静电容量变化率</td><td>Within ±20% of the initial value for capacitors of 10V or more, and within ±30% of the initial value for capacitors of 4V & 6.3V ≥10V 的产品为初始值的±20%以内, 4V 和 6.3V 为 ±30%以内</td></tr><tr><td>Tan δ 损耗角正切</td><td>200% or less of the initial specified value 不大于规范值的 200%</td></tr><tr><td>Leakage Current 漏电流</td><td>Initial specified value or less 不大于规范值</td></tr></table>										Capacitance Change 静电容量变化率	Within ±20% of the initial value for capacitors of 10V or more, and within ±30% of the initial value for capacitors of 4V & 6.3V ≥10V 的产品为初始值的±20%以内, 4V 和 6.3V 为 ±30%以内	Tan δ 损耗角正切	200% or less of the initial specified value 不大于规范值的 200%	Leakage Current 漏电流	Initial specified value or less 不大于规范值																																													
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Leakage Current 漏电流	Initial specified value or less 不大于规范值																																																												
Shelf Life 高温储存特性	After leaving capacitors under no load at 105℃ for 1000 hours, they meet the specified value for load life characteristics listed above. 在 105℃ 环境中无负荷放置 1000 小时后, 电容器的特性符合高温负荷特性中所列的规定值。																																																												
Resistance to Soldering Heat 耐焊接热特性	After reflow soldering and restored at room temperature, they meet the characteristics requirements listed at right. 经过回流焊并冷却至室温后, 电容器的特性符合右表的要求。				Capacitance Change 静电容量变化率		Within ±10% of the initial value 初始值的±10%以内																																																						
					Tan δ 损耗角正切		Initial specified value or less 不大于规范值																																																						
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Applicable Standards 适用标准	JIS C-5141 and JIS C-5102																																																												

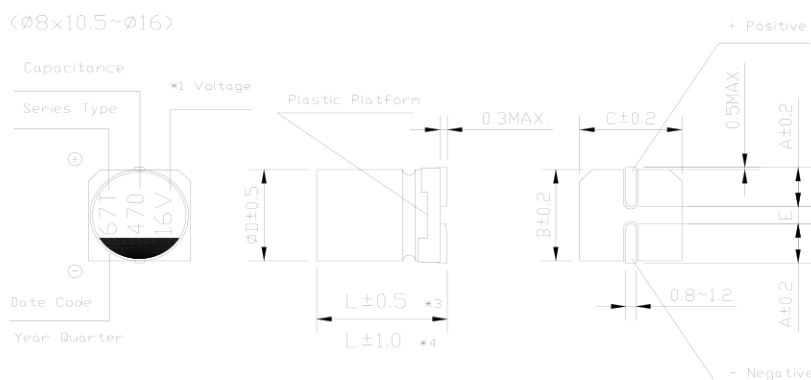
◆ Dimensions & Marking 尺寸及印字





V-CHIP ALUMINUM ELECTROLYTIC CAPACITORS

HT Series



*1 Voltage mark [6V] represents 6.3V for $\phi 4 \sim \phi 10$;

*2 [L ± 0.3] is applicable to $\phi 6.3 \times 7.7$ and $\phi 8 \times 6.2$;

*3 [L ± 0.5] is applicable to $\phi 8 \times 10.5 \sim \phi 10$;

*4 [L ± 1.0] is applicable to $\phi 12.5 \sim \phi 16$.

Re: Date code and series type — 1st digit for Year; 2nd digit for Quarter, 4 quarter codes in one year are 1, 4, 7, 0; 3rd character for Series; HT Series = T.

(mm)											
D $\times$ L	$\phi 4 \times 5.4$	$\phi 5 \times 5.4$	$\phi 6.3 \times 5.4$	$\phi 6.3 \times 7.7$	$\phi 8 \times 6.2$	$\phi 8 \times 10.5$	$\phi 10 \times 10.5$	$\phi 10 \times 13.5$	$\phi 12.5 \times 13.5$	$\phi 12.5 \times 16$	$\phi 16 \times 16.5$
A	1.8	2.1	2.4	2.4	3.3	2.9	3.2	3.2	4.7	4.7	5.5
B	4.3	5.3	6.6	6.6	8.3	8.3	10.3	10.3	13.0	13.0	17.0
C	4.3	5.3	6.6	6.6	8.3	8.3	10.3	10.3	13.0	13.0	17.0
E ± 0.2	1.0	1.3	2.2	2.2	2.2	3.1	4.4	4.4	4.4	4.4	6.7
L	5.4	5.4	5.4	7.7	6.2	10.5	10.5	13.5	13.5	16.0	16.5

◆ Standard size & Maximum permissible ripple current 规格壳号及最大允许纹波电流

WV 电压 容量 Cap. (μ F)		4		6.3		10		16		25	
		0G		0J		1A		1C		1E	
4.7	4R7									4 $\times$ 5.4	13
10	100							4 $\times$ 5.4	18	5 $\times$ 5.4 (4 $\times$ 5.4)	20 (14)
22	220			4 $\times$ 5.4	22	5 $\times$ 5.4 (4 $\times$ 5.4)	25 (20)	5 $\times$ 5.4 (4 $\times$ 5.4)	27 (20)	6.3 $\times$ 5.4 (5 $\times$ 5.4)	36 (25)
33	330	5 $\times$ 5.4 (4 $\times$ 5.4)	30 (18)	5 $\times$ 5.4 (4 $\times$ 5.4)	27 (22)	5 $\times$ 5.4 (4 $\times$ 5.4)	30 (22)	6.3 $\times$ 5.4 (5 $\times$ 5.4)	40 (28)	6.3 $\times$ 5.4 (5 $\times$ 5.4)	44 (29)
47	470	5 $\times$ 5.4 (4 $\times$ 5.4)	36 (24)	5 $\times$ 5.4 (4 $\times$ 5.4)	33 (25)	6.3 $\times$ 5.4 (5 $\times$ 5.4)	41 (30)	6.3 $\times$ 5.4 (5 $\times$ 5.4)	48 (31)	6.3 $\times$ 5.4 (8 $\times$ 6.2)	48 (91)
100	101	6.3 $\times$ 5.4 (5 $\times$ 5.4)	60 (43)	6.3 $\times$ 5.4 (5 $\times$ 5.4)	50 (39)	6.3 $\times$ 5.4 (8 $\times$ 6.2)	53 (110)	6.3 $\times$ 5.4 (8 $\times$ 6.2)	60 (120)	6.3 $\times$ 7.7	91
150	151	6.3 $\times$ 5.4	52	6.3 $\times$ 5.4	55	6.3 $\times$ 5.4	62	6.3 $\times$ 7.7	95	8 $\times$ 10.5 (6.3 $\times$ 7.7)	140 (100)
220	221	6.3 $\times$ 5.4	57	6.3 $\times$ 7.7 (6.3 $\times$ 5.4)	105 (67)	6.3 $\times$ 7.7 (8 $\times$ 6.2)	105 (105)	8 $\times$ 10.5 (6.3 $\times$ 7.7) (8 $\times$ 6.2)	150 (105) (85)	8 $\times$ 10.5	175
330	331	6.3 $\times$ 7.7	100	6.3 $\times$ 7.7	105	8 $\times$ 10.5	196	8 $\times$ 10.5	195	10 $\times$ 10.5 (8 $\times$ 10.5)	240 (220)
470	471	6.3 $\times$ 7.7	105	8 $\times$ 10.5 (6.3 $\times$ 7.7)	210 (120)	10 $\times$ 10.5 (8 $\times$ 10.5)	260 (210)	10 $\times$ 10.5 (8 $\times$ 10.5)	295 (230)	10 $\times$ 10.5	280
680	681	8 $\times$ 10.5	210	8 $\times$ 10.5	210	10 $\times$ 10.5	270	10 $\times$ 10.5	315	10 $\times$ 13.5	400
1000	102	8 $\times$ 10.5	230	10 $\times$ 10.5 (8 $\times$ 10.5)	300 (230)	10 $\times$ 10.5	315	12.5 $\times$ 13.5 (10 $\times$ 13.5) (10 $\times$ 10.5)	500 (390) (340)	12.5 $\times$ 13.5	580
1500	152	10 $\times$ 10.5	315	10 $\times$ 13.5 (10 $\times$ 10.5)	450 (315)	10 $\times$ 13.5	460	12.5 $\times$ 13.5	550	12.5 $\times$ 16	850
2200	222	10 $\times$ 13.5 (10 $\times$ 10.5)	440 (340)	12.5 $\times$ 13.5 (10 $\times$ 13.5)	620 (500)	12.5 $\times$ 13.5	680	16 $\times$ 16.5 (12.5 $\times$ 16)	950 (750)	16 $\times$ 16.5	1050
3300	332	10 $\times$ 13.5	490	12.5 $\times$ 16 (12.5 $\times$ 13.5)	700 (660)	16 $\times$ 16.5	1000	16 $\times$ 16.5	1000		
4700	472	12.5 $\times$ 13.5	600	16 $\times$ 16.5	1000						
6800	682	16 $\times$ 16.5 (12.5 $\times$ 16)	950 (650)							Case Size	Ripple Current

Ripple Current (mA rms) at 105 $^{\circ}$ C 120Hz



V-CHIP ALUMINUM ELECTROLYTIC CAPACITORS

HT Series

◆ Standard size & Maximum permissible ripple current 规格壳号及最大允许纹波电流

WV 电压 容量 Cap.(μF)		35		50		63		100	
		1V		1H		1J		2A	
0.1	0R1			4×5.4	0.7	4×5.4	0.7		
0.22	R22			4×5.4	1.6	4×5.4	1.6		
0.33	R33			4×5.4	2.5	4×5.4	2.5		
0.47	R47			4×5.4	3.5	4×5.4	3.5		
1	010			4×5.4	7	4×5.4	7	4×5.4	7
2.2	2R2			4×5.4	11	4×5.4	11	6.3×5.4	14
3.3	3R3	4×5.4	13	4×5.4	13	5×5.4	13	6.3×7.7 (6.3×5.4) (8×6.2)	32 (20) (30)
4.7	4R7	4×5.4	14	5×5.4 (4×5.4)	16 (13)	5×5.4	16	6.3×7.7 (6.3×5.4)	35 (21)
10	100	5×5.4 (4×5.4)	21 (14)	6.3×5.4	24	6.3×7.7 (6.3×5.4) (8×6.2)	39 (24) (25)	8×10.5 (6.3×7.7)	77 (35)
22	220	6.3×5.4	38	6.3×7.7 (6.3×5.4) (8×6.2)	51 (42) (70)	8×10.5 (6.3×7.7)	98 (49)	10×10.5 (8×10.5)	126 (84)
33	330	6.3×5.4 (8×6.2)	42 (84)	6.3×7.7	60	8×10.5	112	10×10.5	133
47	470	6.3×7.7 (6.3×5.4)	70 (50)	8×10.5 (6.3×7.7)	120 (63)	10×10.5 (8×10.5)	160 (119)	12.5×13.5 (10×13.5) (10×10.5)	250 (160) (140)
68	680							12.5×13.5 (10×13.5)	300 (180)
100	101	8×10.5 (6.3×7.7)	120 (84)	10×10.5 (8×10.5)	170 (140)	12.5×13.5 (10×13.5) (10×10.5)	270 (210) (196)	16×16.5 (12.5×13.5)	450 (380)
150	151	8×10.5	155	10×10.5	170	10×13.5	225		
220	221	10×10.5 (8×10.5)	220 (190)	10×13.5 (10×10.5)	280 (220)	16×16.5 (12.5×13.5) (10×13.5)	560 (470) (235)	16×16.5	550
330	331	10×10.5	245	16×16.5 (12.5×13.5) (10×13.5)	600 (420) (295)	16×16.5 (12.5×16)	700 (510)		
470	471	12.5×13.5 (10×13.5) (10×10.5)	520 (375) (280)	16×16.5 (12.5×16)	700 (520)	16×16.5	750		
680	681	12.5×13.5 (10×13.5)	530 (395)	16×16.5	750				
1000	102	16×16.5 (12.5×16)	750 (600)					Case Size	Ripple Current

Ripple Current (mA rms) at 105℃ 120Hz

◆ Frequency Correction Factor of Rated Ripple Current 纹波电流频率补偿系数

Frequency Capacitance (μF)		50Hz	120Hz	300Hz	1kHz	10kHz~
Φ4~Φ10	0.1~68	0.70	1.00	1.17	1.36	1.50
	100~3300	0.85	1.00	1.08	1.20	1.30
Φ12.5~Φ16	~68	0.75	1.00	1.35	1.57	2.00
	100~680	0.80	1.00	1.23	1.34	1.50
	1000~6800	0.85	1.00	1.10	1.13	1.15