



V-CHIP ALUMINUM ELECTROLYTIC CAPACITORS

HT Wide Temperature 宽温品

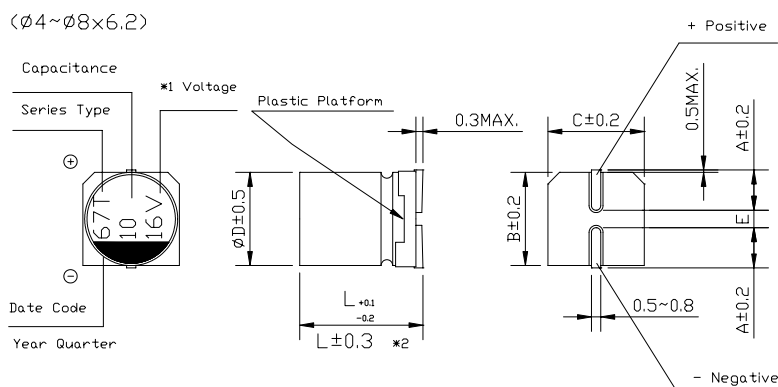
- Temperature up to +105℃ with load life of 1000~2000 hours.
- Lead-free reflow soldering is available subject to customers' request.



◆ 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><td colspan="2">Rated voltage (V.DC) 额定工作电压</td><td>4</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>100</td></tr><tr><td>Tan δ 损耗角正切(max)</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></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 损耗角正切(max)	Φ4~Φ10	0.35	0.26	0.20	0.16	0.14	0.12	0.12	0.12	0.12		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><td colspan="2">Rated voltage (V.DC) 额定工作电压</td><td>4</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>100</td></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
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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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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。				<table><tr><td>Capacitance Change 静电容量变化率</td><td>Within ±10% of the initial value 初始值的±10%以内</td></tr><tr><td>Tan δ 损耗角正切</td><td>Initial specified value or less 不大于规范值</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 ±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	Leakage Current 漏电流	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																																																												

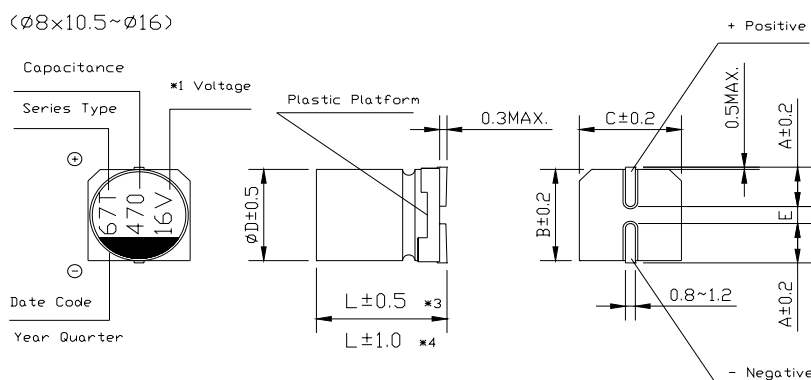
◆ Dimensions & Marking 尺寸及印字





V-CHIP ALUMINUM ELECTROLYTIC CAPACITORS

HT Series



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

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

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

*4 $[L \pm 1.0]$ 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×L	Φ4×5.4	Φ5×5.4	Φ6.3×5.4	Φ6.3×7.7	Φ8×6.2	Φ8×10.5	Φ10×10.5	Φ10×13.5	Φ12.5×13.5	Φ12.5×16	Φ16×16.5
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. (μF)		4		6.3		10		16		25	
		0G		0J		1A		1C		1E	
4.7	4R7									4×5.4	13
10	100							4×5.4	18	5×5.4 (4×5.4)	20 (14)
22	220			4×5.4	22	5×5.4 (4×5.4)	25 (20)	5×5.4 (4×5.4)	27 (20)	6.3×5.4 (5×5.4)	36 (25)
33	330	5×5.4 (4×5.4)	30 (18)	5×5.4 (4×5.4)	27 (22)	5×5.4 (4×5.4)	30 (22)	6.3×5.4 (5×5.4)	40 (28)	6.3×5.4 (5×5.4)	44 (29)
47	470	5×5.4 (4×5.4)	36 (24)	5×5.4 (4×5.4)	33 (25)	6.3×5.4 (5×5.4)	41 (30)	6.3×5.4 (5×5.4)	48 (31)	6.3×5.4 (8×6.2)	48 (91)
100	101	6.3×5.4 (5×5.4)	60 (43)	6.3×5.4 (5×5.4)	50 (39)	6.3×5.4 (8×6.2)	53 (110)	6.3×5.4 (8×6.2)	60 (120)	6.3×7.7	91
150	151	6.3×5.4	52	6.3×5.4	55	6.3×5.4	62	6.3×7.7	95	8×10.5 (6.3×7.7)	140 (100)
220	221	6.3×5.4	57	6.3×7.7 (6.3×5.4)	105 (67)	6.3×7.7 (8×6.2)	105 (105)	8×10.5 (6.3×7.7) (8×6.2)	150 (105) (85)	8×10.5	175
330	331	6.3×7.7	100	6.3×7.7	105	8×10.5	196	8×10.5	195	10×10.5 (8×10.5)	240 (220)
470	471	6.3×7.7	105	8×10.5 (6.3×7.7)	210 (120)	10×10.5 (8×10.5)	260 (210)	10×10.5 (8×10.5)	295 (230)	10×10.5	280
680	681	8×10.5	210	8×10.5	210	10×10.5	270	10×10.5	315	10×13.5	400
1000	102	8×10.5	230	10×10.5 (8×10.5)	300 (230)	10×10.5	315	12.5×13.5 (10×13.5) (10×10.5)	500 (390) (340)	12.5×13.5	580
1500	152	10×10.5	315	10×13.5 (10×10.5)	450 (315)	10×13.5	460	12.5×13.5	550	12.5×16	850
2200	222	10×13.5 (10×10.5)	440 (340)	12.5×13.5 (10×13.5)	620 (500)	12.5×13.5	680	16×16.5 (12.5×16)	950 (750)	16×16.5	1050
3300	332	10×13.5	490	12.5×16 (12.5×13.5)	700 (660)	16×16.5	1000	16×16.5	1000		
4700	472	12.5×13.5	600	16×16.5	1000						
6800	682	16×16.5 (12.5×16)	950 (650)							Case Size	Ripple Current

Ripple Current (mA rms) at 105℃ 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

容量 WV 电压 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