

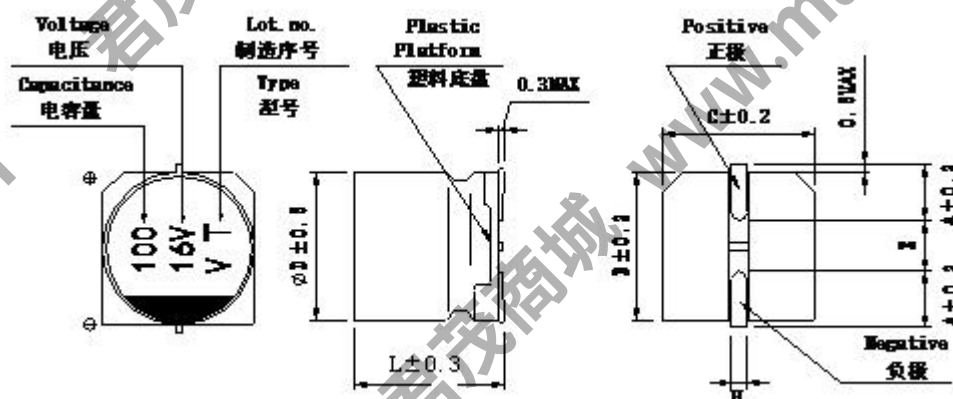
一、概述 SCOPE

本产品规格书适用于 CDVT 型片式铝电解电容器产品。

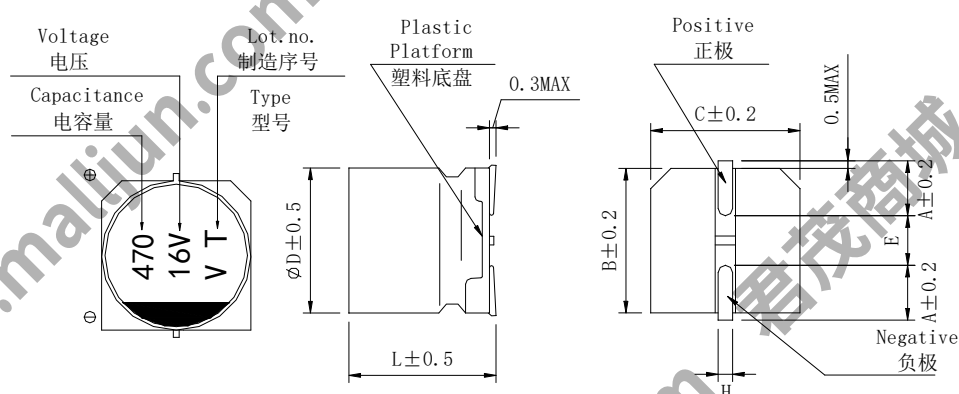
The product specification is adapted to series CDVT V-CHIP Aluminum Electrolytic Capacitors.

二、外形图及尺寸表 Case size table

1. $\phi 4 \sim \phi 6.3$



2. $\phi 8 \sim \phi 18$



单位:mm

	4 × 5.4	5 × 5.4	6.3 × 5.4	6.3 × 7.7	6.3 × 10.5	8 × 10.5	8 × 12.5	10 × 10.5	10 × 12.5	12.5 × 13.5	12.5 × 16.5	16 × 16.5	18 × 16.5	18 × 21.5
A	1.8	2.1	2.4	2.4	2.4	2.9	2.9	3.2	3.2	4.8	4.8	5.8	6.8	6.8
B	4.3	5.3	6.6	6.6	6.6	8.3	8.3	10.3	10.3	13	13	17	19	19
C	4.3	5.3	6.6	6.6	6.6	8.3	8.3	10.3	10.3	13	13	17	19	19
E	1.0	1.3	2.2	2.2	2.2	3.1	3.1	4.5	4.5	4.4	4.4	6.4	6.4	6.4
L	5.4	5.4	5.4	7.7	10.5	10.5	12.5	10.5	12.5	13.5	16.5	16.5	16.5	21.5
H	0.5~0.8					0.8 ~ 1.1					1.1~1.4			

三、 技术性能 Specifications

项目 Items	特性 Characteristics							
工作温度范围 Operating Temperature Range	-40℃ ~ 105℃							
额定电压范围 Rated Voltage Range	4V ~ 50V							
标称电容量范围 Nominal Capacitance Range	0.1 ~ 8200 μF							
标称电容量允许偏差 Nominal Capacitance Tolerance	±20% (20℃, 120Hz)							
漏电流 Leakage Current	$I \leq 0.01C_R V_R$ or $3(\mu A)$, 取较大者 (施加额定电压 2 分钟) C_R : 标称电容量 (μF) U_R : 额定电压 (V) $I \leq 0.01C_R V_R$ or $3(\mu A)$ Whichever is greater (After 2 minutes' application of rated voltage) C_R : Nominal Capacitance (μF) U_R : Rated voltages (V)							
损耗角正切 (tgδ) Dissipation Factor (Max) 20℃, 120Hz	U_R (V)	4	6.3	10	16	25	35	50
	tgδ	0.35	0.28	0.24	0.20	0.16	0.14	0.12
	容量大于 1000μF 者, 每增加 1000μF, 其损耗角正切值增加 0.02 When nominal capacitance exceeds 1000μF, add 0.02 to the value above for each 1000μF increase							

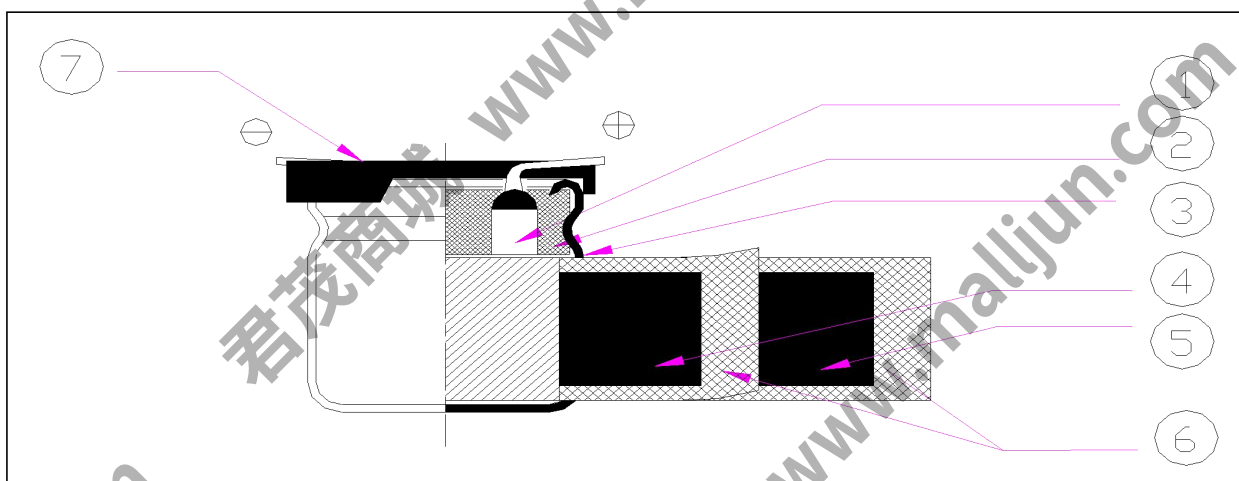
四、称电容量、额定电压、额定纹波电流与外形尺寸对应表

Nominal capacitance, rated voltage, rated ripple current and case size table

μF	4		6.3		10		16		25		35		50	
	D×L mm	I~ mA	D×L mm	I~ mA	D×L mm	I~ mA	D×L mm	I~ mA	D×L mm	I~ mA	D×L mm	I~ mA	D×L mm	I~ mA
0.1													4×5.4	2.3
0.22													4×5.4	3.4
0.33													4×5.4	4.1
0.47													4×5.4	5
1.0													4×5.4	10
2.2													4×5.4	16
3.3											4×5.4	13	4×5.4	16
4.7									4×5.4	22	4×5.4	22	4×5.4	16
													5×5.4	23
10							4×5.4	28	4×5.4	22	4×5.4	22	5×5.4	25
									5×5.4	28	5×5.4	30	6.3×5.4	32
22			4×5.4	29	4×5.4	28	4×5.4	28	5×5.4	32	6.3×5.4	60	6.3×5.4	35
					5×5.4	30	5×5.4	39	6.3×5.4	55			6.3×7.7	51
33	4×5.4	31	4×5.4	30	4×5.4	29	5×5.4	35	6.3×5.4	65	6.3×5.4	60	6.3×7.7	70
			5×5.4	34	5×5.4	34								
47	4×5.4	31	4×5.4	32	4×5.4	30	5×5.4	45	6.3×5.4	70	6.3×5.4	65	6.3×7.7	80
			5×5.4	46	5×5.4	45	6.3×5.4	70			6.3×7.7	80		
			5×5.4	52	5×5.4	50	6.3×5.4	70			6.3×7.7	90		
100	5×5.4	55	6.3×5.4	71	6.3×5.4	69	6.3×7.7	120	6.3×7.7	100	8×10.5	296	8×10.5	230
150	6.3×5.4	95	6.3×5.4	90	6.3×5.4	70	6.3×7.7	120	8×10.5	280	8×10.5	300	10×10.5	300
			6.3×5.4	95	6.3×5.4	95	6.3×7.7	120	8×10.5	320	8×10.5	320	10×10.5	375
220	6.3×5.4	100	6.3×7.7	120	6.3×7.7	120	8×10.5	280			10×10.5	435		
			6.3×7.7	130	6.3×7.7	130								
330	6.3×7.7	140	8×10.5	290	8×10.5	305	8×10.5	305	10×10.5	450	10×10.5	450	10×10.5	400
			6.3×7.7	140	6.3×7.7	140								
470	6.3×7.7	150	8×10.5	330	8×10.5	340	8×10.5	340	10×10.5	490	10×10.5	480	12.5×13.5	490
680	8×10.5	340	8×10.5	335	10×10.5	380	10×10.5	450	10×10.5	500	12.5×13.5	600	16×16.5	750
1000	8×10.5	350	8×10.5	340	10×10.5	410	10×10.5	550	12.5×13.5	550	16×16.5	800	18×16.5	990
1500	10×10.5	500	10×10.5	475	12.5×13.5	600	12.5×13.5	650	12.5×16.5	650	16×16.5	900		
2200			12.5×13.5	680	12.5×13.5	680	16×16.5	900	16×16.5	900	18×16.5	1050		
3300			12.5×16	850	16×16.5	950	16×16.5	950	18×16.5	1150				
4700			16×16.5	1000	16×16.5	1000	18×16.5	1225	18×21.5	1300				
6800			18×16.5	1290	18×16.5	1290								
8200			18×21.5	1450	18×21.5	1450								

I=Rated ripple current (mA) (105℃, 120Hz) I=额定纹波电流 (mA) (105℃, 120Hz)

五、构造图及材料表 Frame drawing and materials

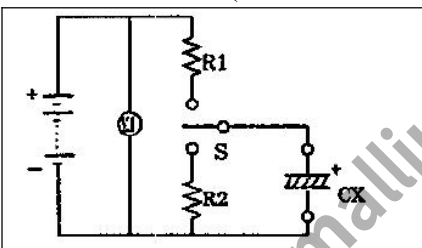


序号 No.	部件名称 Parts	材料名称 Material	主要供应厂家名称 Main supply Factory
1	引出线	铝线 LG3+镀锡铜钢线 AL- wire LG3+Tin- plating of copper cover steel	全用电子有限公司 QUANYONG ELECTRONIC CO., LTD.
2	橡胶塞	丁基橡胶 IIR rubber	韩国 JCC JCC, Co. (KOREA)
3	PE 铝壳 PE- CASE	99.5%纯度铝 AL -99.5%	韩国 DN DN CO.(KOREA)
4	阳极箔 AL – foil(+)	99.99%或 99.98%形成 铝箔 Formed AL 99.98% or 99.98%	日本 JCC 公司 JCC Co. (JAPAN)
5	阴极箔 AL – foil(-)	99.7%铝箔 Etched AL 99.7%	韩国 JCC 公司 JCC Co. (KOREA)
6	电解纸 Separstor paper	电解电容器纸 Electrolytic Capacitor paper	日本 NKK 公司 NKK Co.(Japan)
7	座板 BASE	PPS	韩国 JS 公司 JS Co.(KOREA)

六、试验方法及要求 Tests

1	系列号(SERIES)	CDVT 系列(CDVT SERIES)																									
2	额定电压 (rated voltage)	4~50V																									
3	工作温度范围 Operating temperature range operating	工作温度范围是指电容器在额定电压下能持续工作的所允许外部环境的温度范围 operating temperature range is the range of ambient temperature at which the capacitor can be operated continuously at rated voltage SPEC:-40~+105℃																									
4	电容容量 capacitance	测量等效电路图 measuring circuit equivalent series circuit																									
		测量温度 20℃		measuring temperature																							
		测量频率 120HZ		measuring frequency																							
		测量电压 0.5Vrms		measuring voltage																							
		标称电容量允许偏差:±20% MAX		Nominal Capacitance Tolerance:±20% MAX																							
5	损耗角正切 tangent of the loss angle	损耗角正切的测量应要和测量电容容量一样的条件下进行 Measurement should be made under the same conditions as those given for the measurement of capacitance SPEC: <table><tr><td>损耗角正切 (tgδ)</td><td>U_R (V)</td><td>4</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td></tr><tr><td></td><td>tgδ</td><td>0.35</td><td>0.28</td><td>0.24</td><td>0.20</td><td>0.16</td><td>0.14</td><td>0.12</td></tr></table>								损耗角正切 (tgδ)	U _R (V)	4	6.3	10	16	25	35	50		tgδ	0.35	0.28	0.24	0.20	0.16	0.14	0.12
损耗角正切 (tgδ)	U _R (V)	4	6.3	10	16	25	35	50																			
	tgδ	0.35	0.28	0.24	0.20	0.16	0.14	0.12																			
6	漏电流 leakage current	将额定电压加在电容和 1000±100Ω 的保护电阻上。在充电 2 分钟后，按下列等式计算漏电流 the rated voltage shall be applied across the capacitor and its protective resistor which shall be 1000±100Ω.The leakage current shall be then measured after an electrifications period of (A)min. The leakage current shall be calculated by the following equation 在加上额定电压一定时间后，应满足下列要求：I≤0.01CV or 3μA Which is greater(取较大者)（20℃，2 分钟） SPEC: The following specifications shall be satisfied when the rated voltage is applied for the required time.																									
7	允许最大纹波电流 Maximum permissible ripple current	在规定的某一频率下的最大交流电流，在该电流下电容器连续工作。即使在测过第 16 项下的耐久性后，此要求仍要满足。在此，DC 电压加上最大纹波电压小于等于额定电压。 The maximum sinusoidal alternating current of a frequency specified below, at which the capacitor can be operated continuously. This requirement shall be satisfied even after the measurement of clause 16(electrical endurance) Where(DC voltage +peak ripple voltage)≤rated voltage																									

接上表

8	温度特性 Characteristics of temperature	<table><tr><th>步骤 step</th><th>温度 temperature</th><th>持续时间 Duration</th></tr><tr><td>1</td><td>20±2℃</td><td>15 分钟 15 min</td></tr><tr><td>2</td><td>最低工作温度 minimum operating temperature</td><td>2 小时 2 hours</td></tr><tr><td>3</td><td>20±2℃</td><td>15 分钟 15 min</td></tr><tr><td>4</td><td>最高工作温度 maximum operating temperature</td><td>2 小时 2 hours</td></tr></table>	步骤 step	温度 temperature	持续时间 Duration	1	20±2℃	15 分钟 15 min	2	最低工作温度 minimum operating temperature	2 小时 2 hours	3	20±2℃	15 分钟 15 min	4	最高工作温度 maximum operating temperature	2 小时 2 hours									
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步骤 1: 测量容量, 损耗角正切和阻抗 Step1: Capacitance, tangent of the loss angle impedance shall be measured.																										
步骤 2: 在电容器存放 2 小时后, 测量容量, 损耗角正切和阻抗 Step2: After the capacitor being stored for 2hours, Capacitance, tangent of the loss angle and impedance shall be measured.																										
步骤 3: 电容器在 20±2℃下存放 15 分钟 Step3: The capacitor being stored fro 15min at20±2℃																										
步骤 4: 在电容器存放 2 小时后, 测量容量和漏电流。 Step4: After the capacitor being stored for 2hours, capacitance and leakage current shall be measured																										
		<table><tr><th>额定电压 rated voltage</th><td>4</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td></tr><tr><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></tr><tr><td>Z(-40℃/Z(+20℃)</td><td>15</td><td>8</td><td>6</td><td>4</td><td>4</td><td>3</td><td>3</td></tr></table>	额定电压 rated voltage	4	6.3	10	16	25	35	50	Z(-25℃/Z(+20℃)	7	4	3	2	2	2	2	Z(-40℃/Z(+20℃)	15	8	6	4	4	3	3
额定电压 rated voltage	4	6.3	10	16	25	35	50																			
Z(-25℃/Z(+20℃)	7	4	3	2	2	2	2																			
Z(-40℃/Z(+20℃)	15	8	6	4	4	3	3																			
9	浪涌测试 Surge test	在规定温度下, 循环测试 1000 次, 每次充电 30±5 秒, 在放电大约 5 分 30 秒。在标准温度条件下存放使其稳定, 然后测试。 The capacitor shall be subjected to 1000cycles at a temperature specified below, each consisting of a charge period of 30±5sec, followed by a discharge period of approx. 5min30sec. And the capacitor shall be stored under standard conditions thermal to obtain stability,after which measurements shall be made.																								
		measurement circuit(测试电路图)																								
			<table><tr><td>VS:浪涌电压 Surge voltage</td><td>V1:直流电压 DC voltmeter</td></tr><tr><td>R1:保护电阻 (1KΩ) Protective series resistor</td><td>R2:放电电阻器 Discharge resistor</td></tr><tr><td>CX:测试电容 Test capacitor</td><td>S:开关 Switch</td></tr></table>	VS:浪涌电压 Surge voltage	V1:直流电压 DC voltmeter	R1:保护电阻 (1KΩ) Protective series resistor	R2:放电电阻器 Discharge resistor	CX:测试电容 Test capacitor	S:开关 Switch																	
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CX:测试电容 Test capacitor	S:开关 Switch																									
SPEC: 1) $\Delta C/C \leq 15\%$ 2) $\text{tg } \delta < \text{规定值}$ 3) 电压																										
<table><tr><th>RATED VOLTAGE(V_{DC})</th><td>4</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td></tr><tr><th>SURGE VOLTAGE(V_{DC})</th><td>5</td><td>8</td><td>13</td><td>20</td><td>32</td><td>44</td><td>63</td></tr></table>		RATED VOLTAGE(V _{DC})	4	6.3	10	16	25	35	50	SURGE VOLTAGE(V _{DC})	5	8	13	20	32	44	63									
RATED VOLTAGE(V _{DC})	4	6.3	10	16	25	35	50																			
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接上表

10	端子强度 Terminal strength	1) 拉力(tensile) <table><tr><th>d(mm)</th><th>[N]</th><th>Duration time</th></tr><tr><td>0.3<d≤0.5</td><td>5</td><td rowspan="3">10±2sec(秒)</td></tr><tr><td>0.5<d≤0.8</td><td>10</td></tr><tr><td>0.8<d≤1.25</td><td>20</td></tr></table> 2) 抗弯强度 (Bending) 端子应该在每一方向上折弯一次, 总共两次 The terminal shall be subjected to 1 bend in each direction to give a total 2 bends. <table><tr><th>d(mm)</th><th>[N]</th></tr><tr><td>0.3<d≤0.5</td><td>2.5 (0.25KG)</td></tr><tr><td>0.5<d≤0.8</td><td>5.0 (0.51KG)</td></tr><tr><td>0.8<d≤1.25</td><td>10.0(1.0KG)</td></tr></table> 端子没有破损或松动 SPEC: No breaking and loosening of terminal	d(mm)	[N]	Duration time	0.3<d≤0.5	5	10±2sec(秒)	0.5<d≤0.8	10	0.8<d≤1.25	20	d(mm)	[N]	0.3<d≤0.5	2.5 (0.25KG)	0.5<d≤0.8	5.0 (0.51KG)	0.8<d≤1.25	10.0(1.0KG)
d(mm)	[N]	Duration time																		
0.3<d≤0.5	5	10±2sec(秒)																		
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0.5<d≤0.8	5.0 (0.51KG)																			
0.8<d≤1.25	10.0(1.0KG)																			
11	可焊性 solderability	焊料(Solder) : H60A. H60S or(或)H63A 焊接温度(Solder temperature) : 245±2℃ 浸入时间(Immersion time) : 3±0.5sec(秒) 浸入深度(Immersion depth) : 2mm 熔化: 松香在酒精的浓度是 25% Flux: 25% by weight of rosin in ethanol 从含浸处到顶部, 至少要有 3/4 的部分覆盖有新焊料 SPEC:1)3/4 of the circumference of the surface up to the immersed shall be covered with new solder.																		
12	耐焊接热 Resistance to soldering heat	焊料(Solder) : H60A. H60S or(或)H63A 焊槽温度(Solder temperature) : 260±5℃(or 或 350±10℃ 浸入时间(Immersion time) : 10±1sec(秒) (or 或 3.5±0.5sec) 绝热屏蔽板的厚度 (Thickness of heat shunt:1.6mm) : 1.6mm SPEC:1) 电容量变化 Change in capacitance: ±10%初始值以内 Within±10% of the initial value 2) 损耗角正切 tangent of the loss angle: 小于等于初始规定值 The initial specified value or less 3) 漏电流 leakage current: 小于等于初始规定值 The initial specified value or less																		
13	抗振性 Vibration	试验电容器的耐振性。在整个频率范围内, 从 10 赫兹到 55 赫兹, 然后再返回到 10 赫兹, 就这样在一分钟内往返循环。振幅为 1.5mm。在三个垂直方向上, 每一方向要持续 2 小时, 总共 6 小时 Only endurance conditioning by sweeping shall be made. The entire frequency range, from 10 to 55Hz and return to 10Hz, shall be transversed in 1min. Amplitude(total excursion)1.5mm, This motion shall be applied for a period of 2hours in each of3 muturally perpendicular directions(a total of 6 hours) SPEC:1) 电容量的变化(change in capacitance) : ±5%初始值以内(within ±5%of the initial value) 2) 无可见损伤(No visible damage)																		

产品规格书 Product Specification

接上表

14	稳态湿热 Damp heat	电容器要在温度 $40\pm 2^{\circ}\text{C}$，相对湿度 90%到 95%条件下存放 240 ± 8 个小时。然后在标准条件下放 1 到 2 小时后进行测量。 the capacitor shall be stored at a temperature of $40\pm 2^{\circ}\text{C}$ and relative humidity of 90 to 95% for 240 ± 8 hours. And then the capacitor shall be subjected to standard atmospheric conditions for 1 to 2 hours, after which measurements shall be made SPEC:1) 电容量的变化 change in capacitance: $\pm 15\%$初始值以内 within $\pm 15\%$ of the initial value; 2) 损耗角正切 tangent of loss angle: 小于等于初始规定值 The initial specified value or less; 3) 漏电流 leakage current: 小于等于初始规定值 The initial specified value or less
15	高温储存 shelf life	在 105°C 温度下不外加电压贮存，电容器存放 1000 小时。然后在标准条件下放 1 到 2 小时后进行测量，并且在测漏电流前，必须满足下列条件。The capacitor shall be stored at 105°C temperature specified below for 1000 hours. During which time no voltage shall be applied. And then the capacitor shall be subjected to standard atmospheric conditions for 1 to 2 hours, after which measurements shall be made, Prior to the measurement of leakage current, following conditioning may be made. SPEC:1) 电容量的变化 change in capacitance: $\pm 20\%$初始值以内 within $\pm 20\%$ of the initial value; ($\leq 16\text{V}$: $\pm 25\%$初始值以内) ($\leq 16\text{V}$: within $\pm 25\%$ of the initial value); 2) 损耗角正切 tangent of loss angle: $\pm 200\%$初始规定值以内 within $\pm 200\%$ of the initial value; 3) 漏电流 leakage current: 小于等于初始规定值 The initial specified value or less
16	耐久性 load life	在 $105\pm 2^{\circ}\text{C}$ 下，电容器加额定电压 1000 小时。在标准条件下放 1 到 2 小时后进行测量。The rated voltage shall be applied continuously to the capacitor at maximum operating temperature $105\pm 2^{\circ}\text{C}$ for 1000 hours. And then the capacitor shall be subjected to standard atmospheric conditions for 1 to 2 hours, after which measurement shall be made. SPEC:1) 电容量的变化 change in capacitance: $\pm 20\%$初始值以内 within $\pm 20\%$ of the initial value; ($\leq 16\text{V}$: $\pm 25\%$初始值以内) ($\leq 16\text{V}$: within $\pm 25\%$ of the initial value); 2) 损耗角正切 tangent of loss angle: $\pm 200\%$初始规定值以内 within $\pm 200\%$ of the initial value; 3) 漏电流 leakage current: 小于等于初始规定值 The initial specified value or less

七、标志 Marking （见外形图及尺寸表）

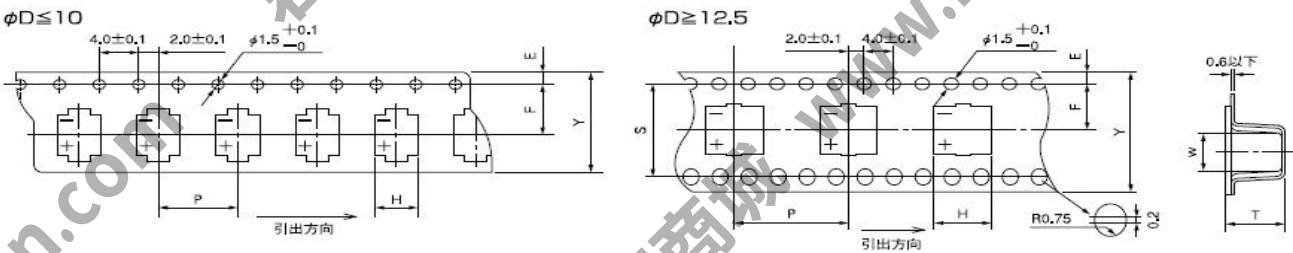
说明：标识中的“VT”是 CDVT 型贴片产品的专属标识。

Information: The mark of “VT” is the special mark of CDVT for SMD Type.

八、片式铝电解电容的编带

V- Chip Type Aluminum Electrolytic Capacitors

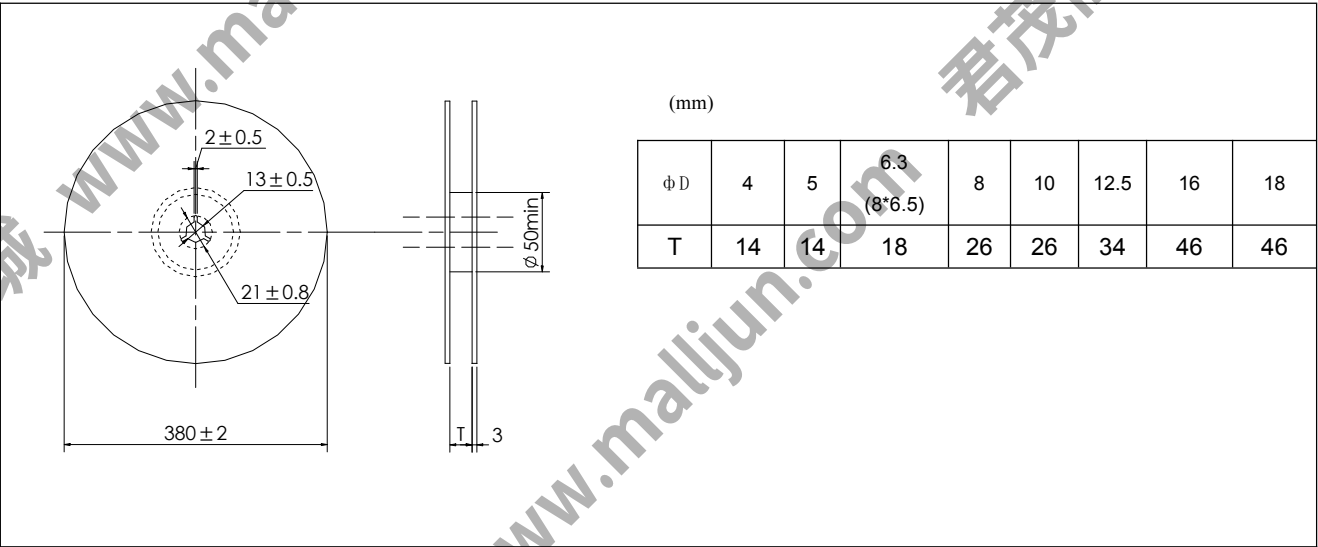
编带 Carrier tape



ΦD×L	4×5.4	5×5.4	6.3×5.4	6.3×7.7	6.3*10.5	8×10.5	8×12.5	10×10.5	10×12.5	12.5×13.5	12.5×16.5	16×16.5	18×16.5	18×21.5
W	12.0	12.0	16.0	16.0	16.0	24.0	24.0	24.0	24.0	32.0	32.0	44.0	44.0	44.0
P	8.0	12.0	12.0	12.0	12.0	16.0	16.0	16.0	16.0	24.0	24.0	28.0	32.0	32.0
F	5.5	5.5	7.5	7.5	7.5	11.5	11.5	11.5	11.5	14.2	14.2	20.2	20.2	20.2
A ₀	5.0	6.0	7.0	7.0	7.0	8.7	8.7	10.7	10.7	13.2	13.2	17.5	19.5	19.5
B ₀	5.0	6.0	7.0	7.0	7.0	8.7	8.7	10.7	10.7	13.2	13.2	17.5	19.5	19.5
T ₂	5.8	5.8	5.8	8.0	11.0	11.0	13.3	11.0	13.3	14.3	17.3	17.3	17.8	22.5

■ 编

带包装盘 Reel



■ Package quantity 包装数量

ΦD×L	Quantity / Reel 数量 / 每盘	pcs/ Small packing box 数量/小包装箱	pcs/Large packing box 数量/大包装箱
4×5.4	2000pcs	24000pcs	48000pcs
5×5.4	1000pcs	12000pcs	24000pcs
6.3×5.4、6.3×7.7、8×6.5	1000pcs	10000pcs	20000pcs
8×10.5、10×10.5	500pcs	3500pcs	7000pcs
6.3×10.5	800pcs	8000pcs	16000pcs
8×12.5	400pcs	2800pcs	5600pcs
10×12.5	400pcs	2800pcs	5600pcs
12.5×13.5	250pcs	2500pcs	5000pcs
12.5×16.5	200pcs	800pcs	1600pcs
16×16.5	200pcs	800pcs	1600pcs
18×16.5	175pcs	700pcs	1400pcs
18×21.5	125pcs	500pcs	1000pcs