VT Series

WIDE TEMPERATURE

寬溫品

- Operating with wide temperature range -40 ~ +105°C
  適用於 -40 ~ +105°C 的寬溫範圍
- Load life of 2000 hours
  負荷壽命 2000 小時
- Comply with the RoHS directive
  符合 RoHS 指令

□ SPECIFICATIONS 特性表

Items 項 目	Characteristics 主要特性
Operation Temperature Range 使用溫度範圍	-40 ~ +105°C
Voltage Range 額定工作電壓範圍	4 ~ 100V
Capacitance Range 靜電容量範圍	0.1 ~ 6800μF
Capacitance Tolerance 靜電容量允許偏差	±20% at 120Hz, 20°C
Leakage Current 漏電流	Leakage current (∅4~∅10) ≦0.01CV or 3μA, whichever is greater (after 2 minutes application of rated voltage) Leakage current (∅12.5~∅16) ≦0.03CV or 4μA, whichever is greater (after 1 minute application of rated voltage) 漏電流 (∅4~∅10) ≦0.01CV 或 3μA，取較大值（施加額定工作電壓 2 分鐘後） 漏電流 (∅12.5~∅16) ≦0.03CV 或 4μA，取較大值（施加額定工作電壓 1 分鐘後）
Dissipation Factor (tan δ) 損耗角正切	Measurement frequency 測試頻率: 120Hz, Temperature 溫度: 20°C

Rated Voltage (V) 額定工作電壓		4	6.3	10	16	25	35	50	63	100
tan δ (max.) 最大損耗角正切	∅4~∅10	0.35	0.30	0.24	0.20	0.16	0.14	0.14	0.12	0.12
	∅12.5~∅16	0.42	0.38	0.34	0.30	0.26	0.22	0.18	0.14	0.12

Stability at Low Temperature
低溫特性

Measurement frequency 測試頻率: 120Hz

Rated Voltage (V) 額定工作電壓			4	6.3	10	16	25	35	50~63	100
Impedance Ratio 阻抗比 ZT/Z20 (max.)	∅4~∅10	Z(-25°C) / Z(20°C)	7	4	3	2	2	2	2	3
		Z(-40°C) / Z(20°C)	15	8	6	4	4	3	3	4
	∅12.5~∅16	Z(-25°C) / Z(20°C)	7	5	4	3	2	2	2	2
		Z(-40°C) / Z(20°C)	17	12	10	8	5	4	3	3

Load Life
高溫負荷特性

After 2000 hrs. (1000 hrs. for ∅4~∅6.3×5.4) application of the rated voltage at 105°C, they meet th e characteristics listed below. 在 105°C 環境中施加額定工作電壓 2000 小時（∅4~∅6.3×5.4 為 1000 小時）後，電容器的特性符合下表的要求。

Capacitance Change 靜電容量變化率	Within ±20% of initial value for capacitors of 10V or more (Within ±30% of initial value for capacitors of 4V or less) ≥10V 為初始值的±20%以內（≤4V 為初始值的±30%以內）
Dissipation Factor 損耗角正切	200% or less of initial specified value 不大於規範值的 200%
Leakage Current 漏電流	initial specified value or less 不大於規範值

Shelf Life
高溫貯存特性

After leaving capacitors under no load at 105°C for 1000 hours, they meet the specified value for load life characteristics listed above. 在 105°C 環境中無負荷放置 1000 小時後，電容器的特性符合高溫負荷特性中所列的規定值。

Resistance to Soldering Heat
耐焊接熱特性

After reflow soldering and restored at room temperature, they meet the characteristics listed below.
經過回流焊並冷卻至室溫後，電容器的特性符合下表的要求。

Capacitance Change 靜電容量變化率	Within ±10% of initial value 初始值的±10%以內
Dissipation Factor 損耗角正切	initial specified value or less 不大於規範值
Leakage Current 漏電流	initial specified value or less 不大於規範值

Humidity Life
恒濕特性

After leaving capacitors under no load at 85°C and 85% RH for 500 hours, they meet the specified value for **resistance to soldering heat** characteristics listed above. 在 85°C 與 85%RH 環境中無負荷放置 500 小時後，電容器的特性符合耐焊接熱特性中所列的規定值

Storage
儲存

Storage conditions should be: Temperature：+5℃~+35℃；Humidity：lower than 75%；Place：indoor。
儲存環境應為：溫度：+5℃~+35℃；相對濕度＜75%；儲存場所：室內。

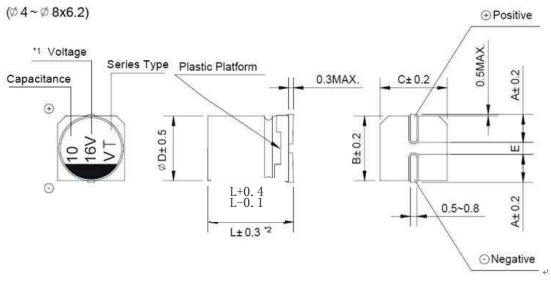
Working conditions
工作條件

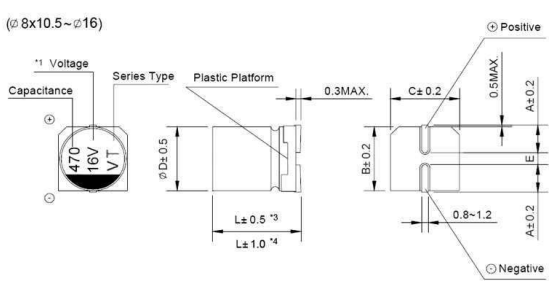
Make sure that no higher than the rated voltage and temperature is applied the capacitor。確認无超過額定電壓和額定溫度通過電容器

Marking 標 示

Black print on the case top. 鋁殼頂部黑字印刷。

□ DRAWING (Unit: mm) 外形圖





*1. Voltage mark for 6.3V is [6V] 6.3V的產品標識為 [6V]
*2. Applicable to ∅6.3×7.7 適用於∅6.3x7.7
*3. Applicable to ∅8×10.5~∅10 適用於∅8×10.5~∅10
*4. Applicable to ∅12.5~∅16 適用於∅12.5~∅16

eSmic Component

VT Series

☐ DIMENSIONS (Unit: mm) 尺寸表

∅D x L	4 x 5.4	5 x 5.4	6.3 x 5.4	6.3 x 7.7	8 x 6.2	8 x 10.5	10 x 10.5	10 x 13.5	12.5 x 13.5	12.5 x 16	16 x 16.5
A	1.8	2.2	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

☐ DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT 規格尺寸及最大允許紋波電流

WV	4		6.3		10		16		25	
Code 代碼	0G		0J		1A		1C		1E	
μF	Case size 尺寸	Ripple current 紋波電流	Case size 尺寸	Ripple current 紋波電流	Case size 尺寸	Ripple current 紋波電流	Case size 尺寸	Ripple current 紋波電流	Case size 尺寸	Ripple current 紋波電流
4.7 4R7					4 x 5.4	13	4 x 5.4	13	4 × 5.4	13
0.33 R33							4 x 5.4	13		
10 100					4 × 5.4	18	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)
68 680			5 × 5.4	35	6.3 × 5.4	43	6.3 × 5.4	50	6.3 × 5.4	50
100 101	6.3 × 5.4 (5 × 5.4)	60 (43)	6.3 × 5.4 (5 × 5.4)	50 (39)	5X5.4 (6.3 × 5.4) (8 × 6.2)	39 (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 ×5.4 6.3 × 7.7 (8 × 6.2)	85 105 (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 x 7.7)	210 (120)	10 × 10.5 (8 × 10.5)	260 (210)	10 × 10.5 (8 × 10.5)	295 (230)	10 × 10.5	280
560 561									10X10.5	320
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）								

WV	35		50		63		100	
Code 代碼	1V		1H		1J		2A	
μF	Case size 尺寸	Ripple current 紋波電流	Case size 尺寸	Ripple current 紋波電流	Case size 尺寸	Ripple current 紋波電流	Case size 尺寸	Ripple current 紋波電流
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)	5 × 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)
56 560					10 × 10.5 (8 × 10.5)	165 (120)		
68 680	4 × 5.4	13					12.5 x 13.5 (10 x 13.5)	300 (180)

SMD Code.net

VT Series

●Case size ∅D×L(mm), ripple current (mA rms) at 105°C 120Hz ●尺寸∅D×L(mm)，紋波電流(mA rms)於 105°C 120Hz

□ DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT 規格尺寸及最大允許紋波電流

WV / Code 代碼 / μF		35		50		63		100	
		1V		1H		1J		2A	
		Case size 尺寸	Ripple current 紋波電流	Case size 尺寸	Ripple current 紋波電流	Case size 尺寸	Ripple current 紋波電流	Case size 尺寸	Ripple current 紋波電流
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 x 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 x 13.5)	560 (470) (235)	16 × 16.5	550
330	331	10 × 10.5	245	16 × 16.5 (12.5 × 13.5) (10 x 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 ∅D×L(mm), ripple current (mA rms) at 105°C 120Hz ●尺寸∅D×L(mm)，紋波電流(mA rms)於 105°C 120Hz

□ FREQUENCY COEFFICIENT OF ALLOWABLE RIPPLE CURRENT 紋波電流頻率補償系數

Frequency 頻 率			50Hz	120Hz	300Hz	1KHz	10KHz~
Coefficient 系數	∅4 ~ ∅10	0.1 ~ 68μF	0.70	1.00	1.17	1.36	1.50
		100 ~ 3300μF	0.85	1.00	1.08	1.20	1.30
	∅12.5 ~ ∅16	~ 68μF	0.75	1.00	1.35	1.57	2.00
		100 ~ 680μF	0.80	1.00	1.23	1.34	1.50
		1000 ~ 6800μF	0.85	1.00	1.10	1.13	1.15

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