ST Series

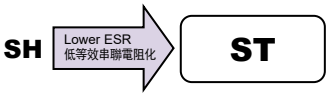
SNAP-IN TERMINAL TYPE, LOW ESR

導箔型, 低等效串聯電阻品



- Low ESR, high reliability
  低等效串聯電阻，高信賴性
- Endurance 3000~5000 hours
  耐久性 3000~5000 小時
- Comply with the RoHS & REACH
  符合 RoHS 與 REACH





□ SPECIFICATIONS 特性表

Items 項目	Characteristics 主要特性	
Category Temperature Range 工作溫度範圍	-40 ~ +105°C	-25 ~ +105°C
Voltage Range 額定工作電壓範圍	16 ~ 100V	160 ~ 450V
Capacitance Range 靜電容量範圍	1000 ~ 22000μF	68 ~ 4700μF
Capacitance Tolerance 靜電容量允許偏差	±20% at 120Hz, 20°C	
Leakage Current 漏電流	I ≤3$\sqrt{CV}$ (after 5 minutes application of rated voltage at 20°C) （在 20°C 環境中施加額定工作電壓 5 分鐘後） I: Leakage current (μA) 漏電流, C: Nominal capacitance (μF) 標稱靜電容量, V: Rated voltage (V) 額定電壓	

Dissipation Factor (tan δ) 損耗角正切

When nominal capacitance is over 1000μF, tan δ shall be added 0.01 to the listed value with increase of every 1000μF.
當標稱靜電容量大於 1000μF，其標稱靜電容量每增加 1000μF，損耗角正切增加 0.01。
Measurement frequency 測試頻率: 120Hz, Temperature 温度: 20°C

Rated Voltage (V) 額定工作電壓	16	25	35	50	63	80	100	160~250	350~450
tan δ (max.) 最大損耗角正切	0.50	0.45	0.40	0.35	0.30	0.25	0.20	0.10	0.15

Stability at Low Temperature 低溫特性

Measurement frequency 測試頻率: 120Hz

Rated Voltage (V) 額定工作電壓		16	25~35	50~63	80~100	160~350	400, 450
Impedance Ratio 阻抗比	Z(-25°C) / Z(+20°C)	4	3	2	2	4	8
	Z(-40°C) / Z(+20°C)	15	10	8	5	—	—

Endurance 耐久性

When the capacitors are restored to 20°C after 5000 hours (WV≤100 products are for 3000 hours) application of the rated voltage at 105°C, they meet the characteristics listed below.
在 105°C 環境中施加額定工作電壓 5000 小時（WV≤100 產品為 3000 小時）後，待電容器恢復至 20°C 時進行測量，電容器的特性符合下表要求。

Capacitance Change 靜電容量變化率	Within ±20% of initial value 初始值的±20%以內
Dissipation Factor 損耗角正切	Less than 200% of specified value 不大於規範值的 200%
Leakage Current 漏電流	Less than specified value 不大於規範值

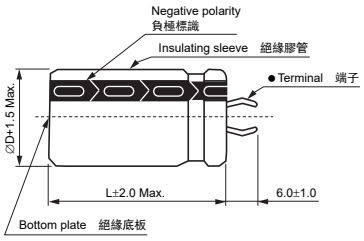
Shelf Life 高溫貯存特性

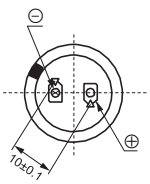
When the capacitors are restored to 20°C after leaving under no load at 105°C for 1000 hours, they meet the specified listed below.
在 105°C 環境中無負荷放置 1000 小時後，待電容器恢復至 20°C 時進行測量，電容器的特性符合下表要求。

Capacitance Change 靜電容量變化率	Within ±15% of initial value 初始值的±15%以內
Dissipation Factor 損耗角正切	Less than 130% of specified value 不大於規範值的 130%
Leakage Current 漏電流	Less than specified value 不大於規範值

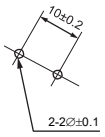
Marking 標識	Printed with white colour on black sleeve (PVC) or printed with white colour on green sleeve (PET). 黑色膠管白字印刷（PVC）或綠色膠管白字印刷（PET）。

□ DRAWING & DIMENSIONS 外形圖及尺寸 (Unit: mm)

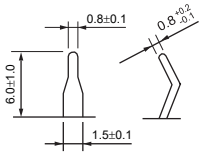




● PC board mounting holes dimensions
線路板安裝孔尺寸



● Terminal dimensions
端子尺寸



□ 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	~ 100μF	0.88	1.00	1.06	1.15	1.20
	160 ~ 250μF	0.85	1.00	1.20	1.25	1.45
	315μF	0.88	1.00	1.15	1.20	1.40

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5~10°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced. 鋁電解電容器在疊加紋波電流後會引起發熱，溫度每上升 5~10°C 壽命會減半。若要保持長壽命性能，請在使用過程中適當降低紋波電流。

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ST Series

□ DIMENSIONS & STANDARD RATINGS 規格尺寸及標準參數

WV / Parameter 參數 / μF		16 (1C)			25 (1E)			35 (1V)		
		Case size ØD×L (mm) 尺寸	ESR (Ω) max. 20°C, 100KHz 等效串聯電阻	Ripple current 紋波電流 (A rms, 105°C, 100KHz)	Case size ØD×L (mm) 尺寸	ESR (Ω) max. 20°C, 100KHz 等效串聯電阻	Ripple current 紋波電流 (A rms, 105°C, 100KHz)	Case size ØD×L (mm) 尺寸	ESR (Ω) max. 20°C, 100KHz 等效串聯電阻	Ripple current 紋波電流 (A rms, 105°C, 100KHz)
2200	222							22 x 25	0.241	1.14
3300	332				22 x 25	0.181	1.25	22 x 30 (25 x 30)	0.161 (0.161)	1.51 (1.92)
4700	472	22 x 25	0.141	1.30	22 x 30 (25 x 25)	0.127 (0.127)	1.61 (1.61)	22 x 35 (25 x 40) (30 x 25)	0.113 (0.113) (0.113)	1.92 (2.31) (1.92)
6800	682	22 x 35 (25 x 30)	0.098 (0.098)	1.80 (1.80)	22 x 35 (25 x 30)	0.088 (0.088)	1.91 (1.91)	22 x 45 (25 x 45) (30 x 30)	0.078 (0.078) (0.078)	2.31 (2.87) (2.33)
10000	103	22 x 45 (25 x 35) (30 x 25)	0.066 (0.066) (0.066)	2.34 (2.25) (2.19)	22 x 45 (25 x 40) (30 x 30)	0.060 (0.060) (0.060)	2.51 (2.42) (2.42)	30 x 35 (35 x 30)	0.053 (0.053)	2.87 (2.87)
15000	153	25 x 45 (30 x 35) (35 x 30)	0.044 (0.044) (0.044)	2.82 (2.82) (2.82)	25 x 45 (30 x 35) (35 x 30)	0.040 (0.040) (0.040)	3.11 (3.11) (3.11)	30 x 45 (35 x 40)	0.035 (0.035)	3.66 (3.66)
22000	223	30 x 45 (35 x 35)	0.030 (0.030)	3.13 (3.09)	30 x 45 (35 x 40)	0.027 (0.027)	3.85 (3.85)	35 x 45	0.024	4.53

WV / Parameter 參數 / μF		50 (1H)			63 (1J)			80 (1K)		
		Case size ØD×L (mm) 尺寸	ESR (Ω) max. 20°C, 100KHz 等效串聯電阻	Ripple current 紋波電流 (A rms, 105°C, 100KHz)	Case size ØD×L (mm) 尺寸	ESR (Ω) max. 20°C, 100KHz 等效串聯電阻	Ripple current 紋波電流 (A rms, 105°C, 100KHz)	Case size ØD×L (mm) 尺寸	ESR (Ω) max. 20°C, 100KHz 等效串聯電阻	Ripple current 紋波電流 (A rms, 105°C, 100KHz)
1000	102				22 x 25	0.398	0.90	22 x 25	0.332	1.05
1200	122				22 x 25	0.332	1.05	22 x 30 (25 x 25)	0.276 (0.276)	1.24 (1.24)
1500	152	22 x 25	0.310	1.22	22 x 25	0.265	1.28	22 x 35 (25 x 30)	0.221 (0.221)	1.54 (1.54)
2200	222	22 x 30 (25 x 25)	0.211 (0.211)	1.59 (1.59)	22 x 35 (25 x 25)	0.181 (0.181)	1.78 (1.60)	22 x 45 (25 x 35) (30 x 30)	0.151 (0.151) (0.151)	1.95 (1.94) (2.05)
2700	272				22 x 35 (25 x 30)	0.147 (0.147)	1.81 (1.81)			
3300	332	22 x 35 (25 x 30)	0.141 (0.141)	1.93 (1.88)	22 x 40 (25 x 35) (30 x 25) (35 x 25)	0.121 (0.121) (0.121) (0.121)	2.00 (2.03) (1.81) (2.03)	25 x 50 (30 x 35) (35 x 30)	0.101 (0.101) (0.101)	2.25 (2.24) (2.30)
3900	392				20 x 50 (22 x 50) (25 x 40) (30 x 30) (35 x 25)	0.102 (0.102) (0.102) (0.102) (0.102)	2.16 (2.37) (2.22) (2.19) (2.24)			
4700	472	22 x 45 (25 x 35) (30 x 30) (35 x 25)	0.099 (0.099) (0.099) (0.099)	2.43 (2.34) (2.42) (2.42)	25 x 45 (30 x 35) (35 x 25)	0.085 (0.085) (0.085)	2.56 (2.66) (2.46)	30 x 45 (35 x 35)	0.071 (0.071)	2.84 (2.80)
5600	562				25 x 50 (30 x 35) (35 x 30)	0.071 (0.071) (0.071)	2.93 (2.79) (2.88)			
6800	682	25 x 45 (30 x 35) (35 x 30)	0.068 (0.068) (0.068)	3.10 (3.10) (3.10)	30 x 40 (35 x 35) (35 x 40)	0.059 (0.059) (0.059)	3.25 (3.26) (3.49)			
8200	822	30 x 45 (35 x 40)	0.046 (0.046)	4.18 (4.20)	35 x 40	0.049	3.52			

WV / Parameter 參數 / μF		100 (2A)			160 (2C)			200 (2D)		
		Case size ØD×L (mm) 尺寸	ESR (Ω) max. 20°C, 100KHz 等效串聯電阻	Ripple current 紋波電流 (A rms, 105°C, 100KHz)	Case size ØD×L (mm) 尺寸	ESR (Ω) max. 20°C, 100KHz 等效串聯電阻	Ripple current 紋波電流 (A rms, 105°C, 100KHz)	Case size ØD×L (mm) 尺寸	ESR (Ω) max. 20°C, 100KHz 等效串聯電阻	Ripple current 紋波電流 (A rms, 105°C, 100KHz)
220	221				22 x 25	0.603	0.73	22 x 25	0.603	0.80
270	271				22 x 25	0.491	0.81	22 x 25	0.491	1.03
330	331				22 x 25 (25 x 25)	0.402 (0.402)	0.98 (0.94)	22 x 30	0.402	1.21
390	391				22 x 25 (25 x 25)	0.340 (0.340)	1.03 (1.09)	22 x 35 (25 x 25)	0.340 (0.340)	1.39 (1.31)
470	471				22 x 30 (25 x 25)	0.282 (0.282)	1.21 (1.19)	22 x 35 (25 x 30)	0.282 (0.282)	1.52 (1.52)
560	561				22 x 35 (25 x 30) (30 x 25)	0.237 (0.237) (0.237)	1.40 (1.40) (1.40)	22 x 40 (25 x 35) (30 x 25)	0.237 (0.237) (0.237)	1.66 (1.75) (1.64)
680	681				22 x 40 (25 x 35)	0.195 (0.195)	1.62 (1.61)	22 x 45 (25 x 40)	0.195 (0.195)	2.04 (2.04)

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ST Series

□ DIMENSIONS & STANDARD RATINGS 規格尺寸及標準參數

WV / Parameter 參數 / μF		100 (2A)			160 (2C)			200 (2D)		
		Case size ØD×L (mm) 尺寸	ESR (Ω) max. 20°C, 100KHz 等效串聯電阻	Ripple current 紋波電流 (A rms, 105°C, 100KHz)	Case size ØD×L (mm) 尺寸	ESR (Ω) max. 20°C, 100KHz 等效串聯電阻	Ripple current 紋波電流 (A rms, 105°C, 100KHz)	Case size ØD×L (mm) 尺寸	ESR (Ω) max. 20°C, 100KHz 等效串聯電阻	Ripple current 紋波電流 (A rms, 105°C, 100KHz)
820	82				22 x 45 (25 x 40) (30 x 30)	0.162 (0.162) (0.162)	1.86 (1.86) (1.79)	25 x 45 (30 x 35)	0.162 (0.162)	2.34 (2.27)
1000	102	22 x 30 (25 x 25)	0.265 (0.265)	1.36 (1.36)	22 x 50 (25 x 45) (30 x 35)	0.133 (0.133) (0.133)	2.81 (2.15) (2.09)	25 x 50 (30 x 40) (35 x 30)	0.133 (0.133) (0.199)	2.26 (2.63) (2.51)
1200	122	22 x 35 (25 x 30)	0.221 (0.221)	1.48 (1.49)	25 x 50 (30 x 40) (35 x 30)	0.111 (0.111) (0.166)	2.35 (2.35) (2.29)	30 x 45 (35 x 35)	0.111 (0.166)	3.00 (2.92)
1500	152	22 x 40 (25 x 35) (30 x 25)	0.177 (0.177) (0.177)	1.82 (1.85) (1.80)	30 x 35 (35 x 35)	0.088 (0.133)	2.56 (2.72)	30 x 50 (35 x 40)	0.088 (0.133)	3.36 (3.34)
1800	182				30 x 45 (35 x 40)	0.074 (0.111)	2.97 (3.09)	30 x 60 (35 x 45)	0.074 (0.111)	3.64 (3.51)
2200	222	25 x 45 (30 x 35) (35 x 30)	0.121 (0.121) (0.121)	2.50 (2.50) (2.50)	30 x 60 (35 x 50)	0.060 (0.090)	3.48 (3.51)	35 x 55	0.090	4.01
2700	272	25 x 50 (30 x 40) (35 x 35)	0.098 (0.098) (0.098)	2.70 (2.72) (2.82)	35 x 55	0.074	4.05			
3300	102	30 x 45 (35 x 35)	0.080 (0.080)	3.11 (3.07)						
3900	122	30 x 50 (35 x 40)	0.068 (0.068)	3.40 (3.38)						
4700	152	35 x 45	0.056	3.90						

WV / Parameter 參數 / μF		250 (2E)			350 (2V)			400 (2G)		
		Case size ØD×L (mm) 尺寸	ESR (Ω) max. 20°C, 100KHz 等效串聯電阻	Ripple current 紋波電流 (A rms, 105°C, 100KHz)	Case size ØD×L (mm) 尺寸	ESR (Ω) max. 20°C, 100KHz 等效串聯電阻	Ripple current 紋波電流 (A rms, 105°C, 100KHz)	Case size ØD×L (mm) 尺寸	ESR (Ω) max. 20°C, 100KHz 等效串聯電阻	Ripple current 紋波電流 (A rms, 105°C, 100KHz)
68	680							22 x 25	2.927	0.52
82	820							22 x 30	2.427	0.54
100	101				22 x 25	1.990	0.52	22 x 30	1.990	0.67
120	121				22 x 30 (25 x 25)	1.659 (1.659)	0.62) (0.65)	22 x 35 (25 x 25)	1.659 (1.659)	0.78 (0.69)
150	151				22 x 35	0.885	0.74	22 x 40 (25 x 30)	1.327 (1.327)	0.91 (0.83)
180	181	22x 25	0.737	0.77	22 x 40 (25 x 30)	1.106 (1.106)	0.81 (0.77)	22 x 45 (25 x 35)	1.106 (1.106)	1.04 (0.97)
220	221	22 x 30	0.603	0.87	22 x 45 (25 x 35)	0.905 (0.905)	0.94 (0.91)	22 x 50 (25 x 40) (30 x 30)	0.905 (0.905) (0.905)	1.17 (1.14) (1.12)
270	271	22 x 30 (25 x 25)	0.491 (0.491)	1.02 (1.08)	22 x 50 (25 x 40) (30 x 30)	0.491 (0.491) (0.491)	1.09 (1.06) (1.05)	25 x 50 (30 x 35) (35 x 30)	0.737 (0.737)	1.40 (1.39) (1.31)
330	331	22 x 35 (25 x 30)	0.402 (0.402)	1.20 (1.27)	25 x 45 (30 x 35) (35 x 30)	0.402 (0.402) (0.603)	1.24 (1.24) (1.33)	30 x 40 (35 x 30)	0.603 (0.603)	1.31 (1.27)
390	391	22 x 40 (25 x 35) (30 x 25)	0.340 (0.340) (0.340)	1.38 (1.46) (1.39)	30 x 40 (35 x 30)	0.340 (0.510)	1.42 (1.39)	30 x 45 (35 x 35)	0.510 (0.510)	1.49 (1.47)
470	471	22 x 45 (25 x 40) (30 x 30)	0.282 (0.282) (0.282)	1.46 (1.69) (1.63)	30 x 45 (35 x 35)	0.282 (0.423)	1.56 (1.53)	30 x 50 (35 x 40)	0.423 (0.423)	1.72 (1.71)
560	561	25 x 45	0.237	1.93	30 x 50 (35 x 40)	0.237 (0.355)	1.77	30 x 60 (35 x 45)	0.355 (0.355)	2.03 (2.23)
680	681	25 x 50 (30 x 35) (35 x 30)	0.195 (0.195) (0.293)	2.04 (2.06) (2.06)	30 x 60 (35 x 50)	0.195 (0.293)	1.94	35 x 55	0.293	2.31
820	821	30 x 45 (35 x 35)	0.162 (0.243)	2.48 (2.41)	35 x 55	0.243	2.23	35 x 60	0.243	2.54
1000	102	30 x 50 (35 x 40)	0.133 (0.199)	2.65 (2.76)						
1200	122	30 x 50 (35 x 40)	0.111 (0.166)	3.14 (3.14)						
1500	152	30 x 60 (35 x 45)	0.102 (0.135)	3.36 (3.34)						
1800	182	35 x 60	0.111	3.97						

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ST Series

□ DIMENSIONS & STANDARD RATINGS 規格尺寸及標準參數

WV / Parameter 參數 / μF		450 (2W)		
		Case size ØD×L (mm) 尺寸	ESR (Ω) max. 20°C, 100KHz 等效串聯電阻	Ripple current 紋波電流 (A rms, 105°C, 100KHz)
82	820	22 x 30 (25 x 25)	2.427 (2.427)	0.54 (0.57)
100	101	22 x 35	1.990	0.67
120	121	22 x 40 (25 x 30) (30 x 25)	1.659 (1.659) (1.659)	0.78 (0.74) (0.77)
150	151	22 x 45 (25 x 35) (30 x 30) (35 x 25)	1.327 (1.327) (1.327) (1.327)	0.92 (0.89) (0.93) (0.95)
180	181	22 x 50 (25 x 40) (30 x 30) (35 x 25)	1.106 (1.106) (1.106) (1.106)	1.06 (1.03) (1.01) (1.04)
220	221	25 x 45 (30 x 35) (35 x 30)	0.905 (0.905) (0.905)	1.18 (1.18) (1.22)
270	271	30 x 40	0.737	1.17
330	331	30 x 50 (35 x 35)	0.603 (0.603)	1.42 (1.64)
390	391	35 x 40	0.510	1.54
470	471	35 x 50	0.423	1.85
560	561	35 x 50	0.355	2.02

- Please refer to page 23 “Packaging Specifications” for the minimum package quantity. 最小包裝數量請查閱第 23 頁“包裝標準”。
- Please refer to page 18 for the Part Number System. 產品編碼規則請查閱第 18 頁。

Note: All design and specifications are for reference only and is subject to change without prior notice. If any doubt about safety for your application, please contact us immediately for technical assistance before purchase.
注：以上所提供的設計及特性參數僅供參考，任何修改不作預先通知。如果在使用上有疑問，請在採購前與我們聯繫，以便提供技術上的協助。