

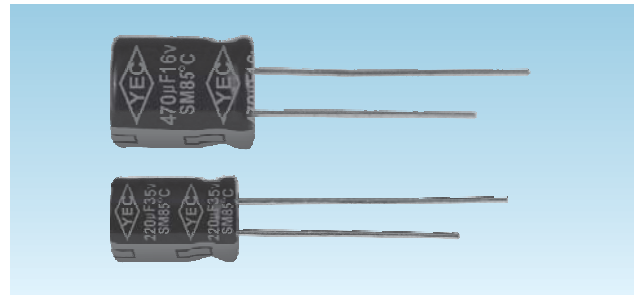
## SM series

### PART1: 6.3~100V.DC

#### ■ Feature 特性

1. 85°C Standard size: For general purpose  
85°C 標準尺寸一般品
2. Load life: 85°C 2000 hours  
負載壽命: 85°C 2000 小時
3. SM→SH (high reliability 105°C 1000 hours)  
SM→SH (高信賴度 105°C 1000 小時)

#### ■ Specification 規格表



Item 項目	Performance Characteristic 特 性																											
<b>Operating Temperature Range</b> 使用溫度範圍	-40~+85°C																											
<b>Rated Working Voltage Range</b> 定格電壓範圍	6.3~100V.DC																											
<b>Capacitance Tolerance</b> 靜電容量容許差	20% (at 20°C, 120Hz)																											
<b>Leakage Current(Max) at 20°C</b> 漏洩電流	<p>The rated voltage shall be applied across Capacitor &amp; its protective resistor of 1000Ω whichever is greater (after 2 minute) at 20°C 將供試電容器串聯保護電阻(約1000Ω)通以額定電壓 2 分鐘後，在20°C環境溫度下測試漏洩電流需小於下述公式值:最小值為3μA.</p> <p><math>I=0.01CV</math> or <math>3\mu A</math> (minimum) I=Leakage Current(μA) C= Capacitance(μF) V= Rated Voltage(V) I=漏洩電流 C=靜電容量 V=額定電壓</p>																											
<b>Dissipation Factor(Max) at 120Hz 20°C</b> 損失角之正接	<p>Tan δ value to be increased by 0.02 per 1000 μ F for capacitance values greater than 1000 μ F. 當電容器靜電容量大於1000μF時，每增加1000μF，tan δ 需增加0.02</p> <table border="1"> <thead> <tr> <th>Rated Voltage 定格電壓(V)</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> </thead> <tbody> <tr> <td>Tan δ</td> <td>0.24</td> <td>0.19</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.09</td> <td>0.08</td> </tr> </tbody> </table>	Rated Voltage 定格電壓(V)	6.3	10	16	25	35	50	63	100	Tan δ	0.24	0.19	0.16	0.14	0.12	0.10	0.09	0.08									
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Tan δ	0.24	0.19	0.16	0.14	0.12	0.10	0.09	0.08																				
<b>Load Life</b> 高溫負載壽命	<p>After 2000 hours application of rated voltage at 85°C, capacitors meet the characteristic of following requirements. 在85°C負載額定電壓2000小時後，在恢復常溫常濕情況下電容器必須滿足下列特性</p> <table border="1"> <tbody> <tr> <td>Variation of capacitance 靜電容量變化率</td> <td>Within 20% of the initial value 初期值之 20%以內</td> </tr> <tr> <td>Tan δ 損失角正接</td> <td>200% or less of initial specified value 低於規格值200%以下</td> </tr> <tr> <td>Leakage current 漏洩電流</td> <td>Initial specified value or less 低於初期規格值以下</td> </tr> <tr> <td>Appearance 外觀</td> <td>Without distinct damage 無顯著異常</td> </tr> </tbody> </table>	Variation of capacitance 靜電容量變化率	Within 20% of the initial value 初期值之 20%以內	Tan δ 損失角正接	200% or less of initial specified value 低於規格值200%以下	Leakage current 漏洩電流	Initial specified value or less 低於初期規格值以下	Appearance 外觀	Without distinct damage 無顯著異常																			
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Appearance 外觀	Without distinct damage 無顯著異常																											
<b>Shelf Life</b> 高溫無負載壽命	<p>The following specification shall be satisfied when the capacitors are stored to 20°C after exposing them for 1000 hours at 85°C without voltage applied, The capacitors meet the specified value for load life characteristics listed above. 電容器在無負載電壓85°C環境下放置1000小時後，恢復20°C環境溫度下，電容器特性必須要符合上述“高溫負載壽命試驗”之電氣特性</p>																											
<b>Stability At Low Temperature</b> 低溫穩定特性	<p>Impedance Ratio At 120Hz 低溫特性阻抗比</p> <table border="1"> <thead> <tr> <th>Rated Voltage 定格電壓(V)</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> </thead> <tbody> <tr> <td>Z(-25°C)/Z(20°C)</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z(-40°C)/Z(20°C)</td> <td>8</td> <td>6</td> <td>4</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> </tr> </tbody> </table>	Rated Voltage 定格電壓(V)	6.3	10	16	25	35	50	63	100	Z(-25°C)/Z(20°C)	4	3	2	2	2	2	2	2	Z(-40°C)/Z(20°C)	8	6	4	4	3	3	3	3
Rated Voltage 定格電壓(V)	6.3	10	16	25	35	50	63	100																				
Z(-25°C)/Z(20°C)	4	3	2	2	2	2	2	2																				
Z(-40°C)/Z(20°C)	8	6	4	4	3	3	3	3																				

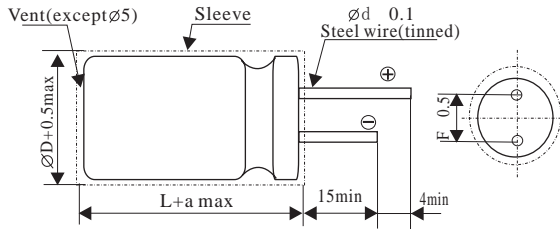
## SM series

**PART1: 6.3~100V.DC**

### Case sizes and Dimensions

寸法圖

Outline Drawing



Lead spacing and wire diameter(unit:mm)

øD	5	6.3	8	10	12.5/13	16	18
F	2.0	2.5	3.5	5.0		7.5	
ød	0.5	0.5	0.6		0.8		
a	1.0(L≤20)			2.0(L>20)			

### Multiplier for ripple current 紋波電流補正係數

Frequency Coefficient 周波數係數

Frequency 周波數 (Hz)		60(50)	120	500	1K	10K≤
Coefficient 係數	0.1~47 μ F	0.80	1.00	1.20	1.30	1.50
	100~1000 μ F	0.80	1.00	1.10	1.15	1.20
	1500~10000 μ F	0.80	1.00	1.05	1.10	1.15

Temperature Coefficient 周圍溫度係數

Ambient Temperature 周圍溫度(°C)	85	70	50≥
Coefficient 係數	1.0	1.6	2.0

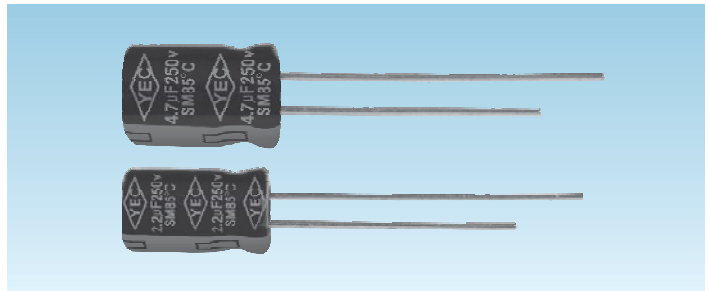
### Standard Size(øDxLmm) & Rated Ripple Current(mA r.m.s.) at 85°C 120HZ

尺寸一覽表 (直徑X高度) R. C. =紋波電流 (mA r.m.s.)一覽表

WV (V. DC) 定格電壓	6.3		10		16		25		35		50		63		100	
	SIZE	R.C.	SIZE	R.C.	SIZE	R.C.	SIZE	R.C.	SIZE	R.C.	SIZE	R.C.	SIZE	R.C.	SIZE	R.C.
0.1															5X11	1
0.22															5X11	2
0.33															5X11	4
0.47													5X11	7	5X11	10
1													5X11	13	5X11	20
2.2													5X11	23	5X11	35
3.3													5X11	35	5X11	45
4.7													5X11	40	5X11	50
10											5X11	60	5X11	70	6.3X11	80
22									5X11	90	5X11	95	6.3X11	115	8X11.5	135
33							5X11	95	5X11	110	6.3X11	135	6.3X11	140	8X11.5	180
47					5X11	110	5X11	120	6.3X11	145	6.3X11	160	8X11.5	190	10X12.5	230
100	5X11	130	5X11	135	6.3X11	180	6.3X11	185	8X11.5	240	8X11.5	270	10X12.5	290	10X20	370
220	5X11	215	6.3X11	250	8X11.5	300	8X11.5	310	10X12.5	420	10X16	490	10X20	565	12.5X25	620
330	6.3X11	275	8X11.5	320	8X11.5	370	10X12.5	470	10X16	570	10X20	650	12.5X20	765	16X25	760
470	8X11.5	380	8X11.5	415	8X11.5	450	10X12.5	550	10X20	740	12.5X20	860	12.5X20	880	16X25	950
680	8X11.5	450	10X12.5	500	10X16	600	10X20	720	12.5X20	900	12.5X25	1000	16X25	1050	18X31.5	1200
1000	8X11.5	580	10X12.5	650	10X16	800	10X20	950	12.5X20	1150	16X25	1530	16X31.5	1300	18X41	1350
1500	10X12.5	700	10X16	800	10X20	1000	12.5X20	1200	12.5X25	1400	16X31.5	1600	16X35.5	1700		
2200	10X16	910	10X20	1050	12.5X20	1300	12.5X25	1550	16X25	1800	16X35.5	2100	18X35.5	2200		
3300	10X20	1200	12.5X20	1400	12.5X25	1650	16X25	1950	16X35.5	2300	18X35.5	2500				
4700	12.5X20	1500	12.5X25	1800	16X25	2100	16X35.5	2500	18X35.5	2700	18X41	2900				
6800	12.5X25	1900	16X25	2200	16X31.5	2500	18X35.5	2850	18X41	2950						
10000	16X25	2350	16X35.5	2700	18X35.5	2900	18X41	2950								

**鋁質電解電容器**
**SM series**
**PART2:160~450V.DC**
**Feature 特性**

- 85°C Standard size:For general purpose  
85°C 標準尺寸一般品
- Load life:85°C 2000 hours  
負載壽命:85°C 2000 小時
- SM→SH (high reliability 105°C 1000 hours)  
SM→SH (高信賴度 105°C 1000 小時)

**Specification 規格表**


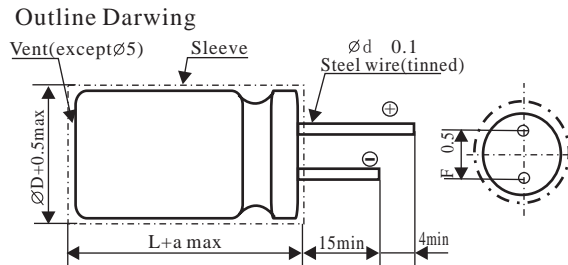
Item 項目	Performance Characteristic 特性						
Operating Temperature Range 使用溫度範圍	-40~+85°C			-25~+85°C			
	160~250V.DC			350~450V.DC			
Rated Working Voltage Range 定格電壓範圍							
Capacitance Tolerance 靜電容量容許差	20% (at 20°C, 120Hz)						
Leakage Current(Max)at 20°C 漏洩電流	The rated voltage shall be applied across Capacitor & its protective resistor of 1000Ω whichever is greater (after 1 minute) at 20°C 將供試電容器串聯保護電阻(約1000Ω)通以額定電壓1分鐘後，在20°C環境溫度下測試漏洩電流需小於下述公式值： 1. CV≤1000: I=0.1CV+40µA以下      2. CV>1000: I=0.04CV+100µA以下 I=Leakage Current(µA)      C= Capacitance(µF)      V= Rated Voltage(V) I= 漏洩電流      C= 靜電容量      V= 額定電壓						
Dissipation Factor(Max) at 120Hz 20°C 損失角之正接	Tan δ value to be increased by 0.02 per 1000 µ F for capacitance values greater than 1000 µ F. 當電容器靜電容量大於1000µF時，每增加1000µF，tan δ需增加0.02						
	Rated Voltage 定格電壓(V)	160	200	250	350	400	450
Tan δ	0.20	0.20	0.20	0.20	0.20	0.20	
Load Life 高溫負載壽命	After 2000 hours application of rated voltage at 85°C, capacitors meet the characteristic of following requirements. 在85°C，負載額定電壓2000小時後，在恢復常溫常濕情況下電容器必須滿足下列特性						
	Variation of capacitance 靜電容量變化率	Within 20% of the initial value 初期值之 20%以內					
	Tan δ 損失角正接	200% or less of initial specified value 低於規格值200%以下					
	Leakage current 漏洩電流	Initial specified value or less 低於初期規格值以下					
Appearance 外觀	Without distinct damage 無顯著異常						
Shelf Life 高溫無負載壽命	The following specification shall be satisfied when the capacitors are stored to 20°C after exposing them for 1000 hours at 85°C without voltage applied, The capacitors meet the specified value for load life characteristics listed above. 電容器在無負載電壓85°C環境下放置1000小時後，恢復20°C環境溫度下，電容器特性必須要符合上述“高溫負載壽命試驗”之電氣特性						
Stability At Low Temperature 低溫穩定特性	Impedance Ratio At 120Hz 低溫特性阻抗比						
	Rated Voltage 定格電壓(V)	160	200	250	350	400	450
	Z(-25°C)/Z(20°C)	3	3	3	5	5	7
Z(-40°C)/Z(20°C)	4	4	4	-	-	-	

## SM series

### PART2:160~450V.DC

#### Case sizes and Dimensions

寸法圖



Lead spacing and wire diameter(unit:mm)

∅D	5	6.3	8	10	12.5/13	16	18
F	2.0	2.5	3.5	5.0		7.5	
∅d	0.5	0.5	0.6		0.8		
α	1.0(L≤20)			2.0(L>20)			

#### Multiplier for ripple current 紋波電流補正係數

Frequency Coefficient 周波數係數

Frequency 周波數(Hz)		60(50)	120	500	1K	10K≤
Coefficient 係數	0.1~47 μ F	0.80	1.00	1.20	1.30	1.50
	68~330 μ F	0.80	1.00	1.10	1.15	1.20

Temperature Coefficient 周圍溫度係數

Ambient Temperature 周圍溫度(°C)	85	70	50≥
Coefficient 係數	1.0	1.6	2.0

#### Standard Size(∅DXLmm) & Rated Ripple Current(mA r.m.s.) at 85°C 120HZ

尺寸一覽表 (直徑X高度) R. C. =紋波電流 (mA r.m.s.) 一覽表

WV(V.DC) 定格電壓	160		200		250		350		400		450	
	SIZE	R.C.	SIZE	R.C.	SIZE	R.C.	SIZE	R.C.	SIZE	R.C.	SIZE	R.C.
0.1~0.68	5X11	5	6.3X11	10	6.3X11	10	6.3X11	10	6.3X11	10	8X11.5	10
1	5X11	10	6.3X11	15	6.3X11	15	6.3X11	20	6.3X11	20	8X11.5	20
2.2	6.3X11	20	6.3X11	25	6.3X11	30	8X11.5	30	10X12.5	30	10X12.5	27
3.3	6.3X11	30	6.3X11	35	8X11.5	45	10X12.5	45	10X12.5	43	10X16	40
4.7	6.3X11	45	8X11.5	50	8X11.5	50	10X12.5	55	10X16	55	10X20	55
6.8	8X11.5	60	10X12.5	65	10X16	70	10X20	75	12.5X20	70	12.5X20	60
10	8X11.5	80	10X12.5	85	10X16	90	10X20	95	12.5X20	90	12.5X20	80
22	10X16	130	10X20	135	12.5X20	150	12.5X25	180	12.5X25	170	16X25	130
33	10X20	175	12.5X20	190	12.5X20	200	16X25	220	16X25	220	16X31.5	170
47	12.5X20	220	12.5X20	230	12.5X25	250	16X31.5	270	16X31.5	270	18X35.5	210
68	12.5X25	280	16X25	300	16X31.5	320	18X35.5	330	18X35.5	330		
100	12.5X25	380	16X25	390	16X31.5	440	18X41	410	18X41	410		
220	16X35.5	640	18X35.5	670								
330	18X35.5	750										