



# WR Series

Standard product 85°C2000Hrs or 105°C1000Hrs  
標準品 85°C2000小時或者105°C1000小時

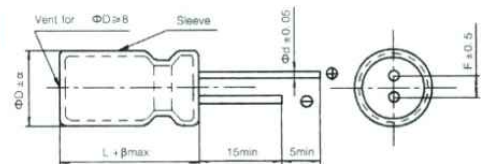
Suit for use in electronic complete sets of wide temperature  
適用於高品質電子整機

## Specifications

Items 項目	Characteristics 特性																		
Operating Temperature Range 使用溫度範圍	-40°C ~ +85°C (-40°C ~ +105°C)																		
Rated Voltage Range 額定電壓範圍	6.3V ~ 100V VDC																		
Capacitance Tolerance 靜電容量偏差	±20% (M) (at 20°C, 120Hz)																		
Leakage Current 漏電流	$I = 0.01CV$ or $3\mu A$ Whichever is greater (at 20°C, after 2 minutes) Where, I: Leakage current ( $\mu A$ ), C: Nominal capacitance ( $\mu F$ ), V: Rated voltage (V)																		
Dissipation Factor ( $\tan \delta$ ) 損失角正切 ( $\tan \delta$ )	<table border="1"> <thead> <tr> <th>Rated voltage (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>DF (<math>\tan \delta</math>)</td> <td>0.24</td> <td>0.20</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.10</td> <td>0.10</td> </tr> </tbody> </table> <p>When the capacitance exceeds 1000 <math>\mu F</math>, 0.02 shall be added every 1000 <math>\mu F</math> increase. (at 20°C, 120Hz)</p>	Rated voltage (V)	6.3	10	16	25	35	50	63	100	DF ( $\tan \delta$ )	0.24	0.20	0.16	0.14	0.12	0.10	0.10	0.10
Rated voltage (V)	6.3	10	16	25	35	50	63	100											
DF ( $\tan \delta$ )	0.24	0.20	0.16	0.14	0.12	0.10	0.10	0.10											
Low Temperature Characteristics 低溫特性	<table border="1"> <thead> <tr> <th>Rated voltage (V)</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50~100</th> </tr> </thead> <tbody> <tr> <td>Z (-40°C) / (20°C)</td> <td>12</td> <td>10</td> <td>8</td> <td>5</td> <td>4</td> <td>3</td> </tr> </tbody> </table> <p>Impedance ratio max at 20°C, 120Hz</p>	Rated voltage (V)	6.3	10	16	25	35	50~100	Z (-40°C) / (20°C)	12	10	8	5	4	3				
Rated voltage (V)	6.3	10	16	25	35	50~100													
Z (-40°C) / (20°C)	12	10	8	5	4	3													
Load Life 高溫負荷特性	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage with the rated ripple current is applied for 2000 hours at 85°C (for 1000 hours at 105°C) Capacitance change $\leq \pm 20\%$ of the initial measured value DF ( $\tan \delta$ ) $\leq 200\%$ of the initial specified value Leakage current $\leq$ The initial specified value																		
Shelf Life 高溫貯存特性	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1000 hours at 85°C (or 105°C) without voltage applied. the rated voltage shall be applied to the capacitors for a minimum of 30 minutes, at least 24 hours and not more than 48 hours before the measurements. Capacitance change $\leq \pm 20\%$ of the initial measured value DF ( $\tan \delta$ ) $\leq 200\%$ of the initial specified value Leakage current $\leq$ The initial specified value																		

## Pitch Dimension (mm)

D $\Phi$	5	6	8	10	12	13	16	18	20	22
F	2.0	2.5	3.5	5	5	5	7.5	7.5	10	10
d	0.5	0.5	0.6	0.6	0.6	0.6	0.8	0.8		
$\alpha$	0.5									
$\beta$	+1.5-0.5									



## Ripple Current Multipliers

### Frequency Coefficient 頻率修正系數

Freq 頻率 (Hz)	120	1K	10K~30K	60K~100K
Factor 修正因子	1.0	1.1	1.2	1.2

### Temperature Coefficient 溫度修正系數

Ambient temp 環境溫度 (°C)	60	70	85	105
Factor 修正因子	1.50	1.30	1.00	0.57



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## Standard Ratings

VDC (V)	6.3		10		16		25		35		50		63		100	
Item Cap(μF)	Case Size ΦD*L (mm)	Ripple Current 85°C 120Hz (mA)	Case Size ΦD*L (mm)	Ripple Current 85°C 120Hz (mA)	Case Size ΦD*L (mm)	Ripple Current 85°C 120Hz (mA)	Case Size ΦD*L (mm)	Ripple Current 85°C 120Hz (mA)	Case Size ΦD*L (mm)	Ripple Current 85°C 120Hz (mA)	Case Size ΦD*L (mm)	Ripple Current 85°C 120Hz (mA)	Case Size ΦD*L (mm)	Ripple Current 85°C 120Hz (mA)	Case Size ΦD*L (mm)	Ripple Current 85°C 120Hz (mA)
0.1											5*11	4				
0.22											5*11	6				
0.33											5*11	8				
0.47											5*11	9	5*11	9	5*11	9
1											5*11	13	5*11	13	5*11	13
2.2											5*11	20	5*11	20	5*11	20
3.3											5*11	25	5*11	25	5*11	25
4.7									5*11	30	5*11	30	5*11	30	5*11	30
10							5*11	44	5*11	44	5*11	44	5*11	44	6.3*12	60
22							5*11	65	5*11	65	5*11	65	6.3*12	89	8*12	103
33			5*11	80			5*11	80	5*11	91	6.3*12	105	6.3*12	109	8*14	136
47			5*11	95	5*11	95	5*11	95	6*11	135	6*11 6.3*12	125 130	8*12	151	8*16	174
100	5*11	139	5*11	139	5*11 6.3*12	139 168	6.3*12	178	8*12	206	8*12 10*13	220 256	8*14 10*13	238 256	10*20 13*21	318 372
220	6.3*12	237	6.3*12	237	6.3*12 8*12	237 288	8*12	306	8*12 8*14	353 381	10*15 10*17	422 435	10*17	435	13*26	614
330	6.3*12	290	6.3*12 8*12	290 335	8*12	335	8*12 8*14	374 432	10*13 10*15	466 500	10*17	498	13*21	675	16*26	865
470	8*12	400	8*12 8*14	410 443	8*12 8*14	410 443	8*16 10*13 10*15	516 520 560	10*15 10*17 10*20	597 636 690	10*25 13*21	722 754	13*21 13*26	806 897	16*32 18*30	1104 1134
1000	8*12 8*14	583 630	8*14 8*16 10*13 10*17	630 674 716 818	8*16 10*17 10*20	674 818 888	10*20 13*21	888 1100	10*25 13*21 13*26	1053 1100 1224	13*26 16*26 18*20	1095 1215 1130	16*32	1611	22*36	1874
1500	10*12	842									13*30	1365				
2200	10*17 10*20	973 1056	10*20 13*21	1140 1332	10*20 10*25 13*21	1056 1180 1460	13*21 13*26	1280 1624	13*30 16*26	1839 1899	16*35	2091				
3300	13*21	1511	10*25 13*26	1446 1681	13*21 13*26	1632 1816	13*30 16*26	1951 2207	18*30	2514	18*41	2683				
4700	13*21	1803	13*26	2006	13*26 16*26	2006 2226	16*32	2667	18*36	3287						
6800	13*26 16*26	2019 2240	16*26 16*30	2505 2690	16*30	2876	18*36	3342								
10000	16*30	2610	16*32	2874	16*40	3370	20*40	3768								