

**GR** General purpose Series



- Features: 85°C 2000 hours
- Features: For general purpose , decoupling , by pass and filtering circuit in entertainment electronics
- Corresponding product to RoHS

■ Specifications

Item	Characteristics																																										
Operating Temperature Range	-40~+85°C	-25~+85°C																																									
Rated Voltage Range	6.3 ~ 100VDC	160 ~ 450VDC																																									
Rated Capacitance Range	0.1 ~ 22000 $\mu$ F	0.47 ~ 470 $\mu$ F																																									
Capacitance Tolerance	$\pm 20\%$ at 120Hz , 20°C																																										
Leakage Current (MAX) (20°C)	I=0.01CV or 3 $\mu$ A whichever is greater. (After rated voltage applied for 2 minutes )	I=0.03CV+10( $\mu$ A)																																									
Dissipation Factor (MAX) (tan $\delta$ ) (120Hz ,20°C)	<table border="1"> <tr> <td>WV</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> <td>160~250</td> <td>350~450</td> </tr> <tr> <td>tan <math>\delta</math></td> <td>0.22</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> <td>0.15</td> <td>0.20</td> </tr> </table>	WV	6.3	10	16	25	35	50	63	100	160~250	350~450	tan $\delta$	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.15	0.20	When nominal capacitance is over 1000 $\mu$ F , tan $\delta$ shall be added 0.02 to the listed value with increase of every 1000 $\mu$ F .																			
	WV	6.3	10	16	25	35	50	63	100	160~250	350~450																																
tan $\delta$	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.15	0.20																																	
Low Temperature Stability Impedance Ratio (MAX)	<table border="1"> <tr> <td rowspan="2">Z(120Hz)</td> <td colspan="2">WV</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35~100</td> <td>160~250</td> <td>315~350</td> <td>400~450</td> </tr> <tr> <td colspan="2">Z-25°C / Z+20°C</td> <td>8</td> <td>6</td> <td>5</td> <td>3</td> <td>3</td> <td>7</td> <td>10</td> <td>15</td> </tr> <tr> <td colspan="2">Z-40°C / Z+20°C</td> <td>10</td> <td>8</td> <td>6</td> <td>4</td> <td>3</td> <td>—</td> <td>—</td> <td>—</td> <td>—</td> </tr> </table>	Z(120Hz)	WV		6.3	10	16	25	35~100	160~250	315~350	400~450	Z-25°C / Z+20°C		8	6	5	3	3	7	10	15	Z-40°C / Z+20°C		10	8	6	4	3	—	—	—	—										
	Z(120Hz)		WV		6.3	10	16	25	35~100	160~250	315~350	400~450																															
		Z-25°C / Z+20°C		8	6	5	3	3	7	10	15																																
Z-40°C / Z+20°C		10	8	6	4	3	—	—	—	—																																	
Endurance	After applying rated voltage for 2000 hours at 85°C the capacitors shall meet the following requirements.																																										
	Capacitance Change	Within $\pm 20\%$ of initial value																																									
	Leakage Current	initial specified value or less																																									
Shelf Life	After placed at 85°C without voltage applied for 1000 hours, the capacitors shall meet the same requirement as Endurance.																																										

■ Diagram of Dimensions

$\phi$ D	5	6.3	8	10	12	13	16	18	22
P	2.0	2.5	3.5	5.0			7.5		10.0
$\phi$ d	0.5	0.5	0.6	0.6			0.8		0.8 ( 1.0 )
a	1.0	1.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0

( ) : L  $\geq$  40

■ Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	120	300	1K	10K
6.3 ~ 100V Below 68 $\mu$ F	1.00	1.20	1.30	1.50
6.3 ~ 100V 100 ~ 680 $\mu$ F	1.00	1.10	1.15	1.20
6.3 ~ 100V 1000 ~ 22000 $\mu$ F	1.00	1.05	1.10	1.15
160 ~ 450V Below 220 $\mu$ F	1.00	1.25	1.40	1.40
160 ~ 450V 220 $\mu$ F Above	1.00	1.10	1.13	1.13

## GR General purpose Series

### ■ Dimensions, Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage													
	6.3 (8)		10 (13)		16 (20)		25 (32)		35 (44)		50 (63)		63 (79)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
0.1											5x11	1		
0.22											5x11	2		
0.33											5x11	3	5x11	3
0.47											5x11	5	5x11	5
0.68											5x11	7		
1.0											5x11	10	5x11	10
2.2											5x11	23	5x11	29
3.3											5x11	35	5x11	40
4.7			5x11	20	5x11	25	5x11	30	5x11	35	5x11	40	5x11	45
6.8											5x11	50		
10			5x11	35	5x11	40	5x11	50	5x11	60	5x11	65	5x11	70
15					5x11	50					5x11	80		
22	5x11	35	5x11	55	5x11	75	5x11	90	5x11	95	5x11	100	5x11	95
													6.3x11	115
33	5x11	55	5x11	80	5x11	110	5x11	115	5x11	120	5x11	105	6.3x11	130
											6.3x11	125	8x11	140
47	5x11	75	5x11	95	5x11	130	5x11	135	5x11	120	6.3x11	140	8x11	190
									6.3x11	140	8x11	150		
68					5x11	150	6.3x11	145						
100	5x11	130	5x11	180	5x11	165	6.3x11	160	6.3x11	185	8x11	230	10x12.5	300
					6.3x11	185	8x11	200	8x11	230	10x12.5	250	10x16	300
150					6.3x11	205								
220	5x11	200	6.3x11	250	6.3x11	260	8x11	290	8x11	290	10x12.5	380	10x16	410
	6.3x11	240			8x11	320	10x12.5	340	10x12.5	370	10x16	440	10x20	490
									10x16	370				
330	6.3x11	260	6.3x11	265	6.3x11	290	8x11	315	10x12.5	420	10x16	490	10x20	540
	8x11	300	8x11	330	8x11	360	8x15	380	10x16	490	10x20	580	13x20	680
							10x12.5	420						
470	6.3x11	330	6.3x11	320	8x11	400	8x15	420	10x16	430	10x20	610	13x20	755
	8x11	380	8x11	400	10x12.5	470	10x12.5	460	10x20	510	13x20	760	13x25	880
							10x16	540	13x20	640			16x25	880
680	8x11	410	10x12.5	460	10x12.5	510	10x16	540	13x20	705			13x25	965
					10x16	565	10x20	595	13x25	780			16x25	1085
1000	8x11	460	10x12.5	580	10x16	630	10x20	760	13x20	950	13x25	1100	16x25	1310
	10x12.5	580	10x16	630	10x20	790	12x16	760	13x25	1100	16x25	1350	16x32	1550
							13x20	950						
1500			10x20	700					16x25	1240				
2200	10x20	840	10x20	880	10x20	925	13x25	1300	16x25	1600	16x36	1850	18x40	2200
	13x20	1050	13x20	1100	13x20	1100	16x25	1550	16x32	1800	18x36	2090	22x35	2200
					13x25	1350	18x20	1550					22x40	2200
3300	10x20	1000	13x20	1250	13x25	1400	16x25	1660	16x36	1970	18x36	2170	22x40	2500
	13x20	1250	13x25	1400	16x25	1700	16x32	1950	18x36	2220	18x40	2400		
4700	13x20	1300	13x25	1500	16x25	1800	16x32	1950	18x36	2400	22x35	2240		
	16x25	1700	16x25	1800	16x32	2100	18x36	2360			22x40	2500		
6800	16x25	1900	16x25	1900	16x32	1980	18x36	2550	22x40	2600				
			16x32	2150	16x36	2200								
					18x36	2500								
10000	16x25	1900	16x36	2225	18x36	2700	22x40	2800						
	16x32	2250	18x36	2500										
15000	16x36	2500	18x36	2950	22x40	3150	22x40	3200						
	18x36	2880												
22000	18x40	3650	22x40	3700	22x40	3800								

☆ Size: D φ x L (mm)    ☆ Ripple Current: (mA/rms). 85°C, 120Hz

**GR** General purpose  
Series

■ Dimensions, Rated Ripple Current

Capacitance ( $\mu\text{F}$ )	Rated (Surge) Voltage													
	100 (125)		160 (200)		200 (250)		250 (300)		350 (400)		400 (450)		450 (500)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
0.22	5X11	5												
0.47	5X11	10	5x11	12	5x11	14	5x11	14	5x11	14	6.3x11	14	6.3x11	14
1.0	5x11	21	5x11	17	5x11	19	5x11	17	6.3x11	19	6.3x11	16	8x11	19
			6.3x11	17			6.3x11	19			8x11	19		
2.2	5x11	30	6.3x11	26	6.3x11	22	6.3x11	24	8x11	33	8x11	26	10x12.5	33
					8x11	27	8x11	30	10x12.5	33	10x12.5	33		
3.3	5x11	45	6.3x11	30	6.3x11	30	8x11	30	8x11	33	10x12.5	40	10x16	42
			8x11	35	8x11	37	10x12.5	38	10x12.5	39				
4.7	5x11	50	6.3x11	32	8x11	36	8x11	36	10x12.5	39	10x16	45	10x16	50
			8x11	40	10x12.5	45	10x12.5	45	10x16	45			10x20	50
6.8	5x11	55					8x11	40					10x16	50
							10x12.5	50					10x20	56
10	5x11	65	8x11	50	10x12.5	57	10x16	70	10x16	70	10x16	50	13x20	60
	6.3x11	75	10x12.5	65	10x16	70	10x20	70	13x20	70	10x20	56	13x25	75
15			10x16	65							13x20	70		
	8x11	93					10x20	75	10x20	90			13x20	93
22							13x20	90						
	6.3x11	105	10x16	110	10x16	120	10x20	130	13x20	130	13x20	100	16x20	100
33	8x11	130	10x20	110							13x25	110	16x25	110
											16x25	130	16x32	130
	8x11	140	10x20	150	10x20	160	13x20	140	13x25	170	13x25	140	16x25	145
47	10x12.5	170					13x25	160	16x25	170	16x20	145	16x32	160
											16x25	170	16x36	180
	10x12.5	190	12x16	145	13x20	160	13x25	210	16x25	220	16x25	180	18x36	200
68	10x16	230	12x25	180	13x25	190	16x25	210			16x32	220	18x40	230
			13x20	180							16x36	220		
100	10x16	280			13x25	230							18x32	265
	10x20	400	13x25	250	16x25	330	16x32	310	16x36	320	18x36	360	22x40	370
150			16x25	300					18x36	360				
	13x20	500					18x40	410						
220	13x25	710	16x32	450	18x25	485	18x36	540						
			16x36	510	18x32	540	18x40	600						
					18x36	600								
330	13x25	720	18x36	540	16x40	710								
	16x25	860	18x40	600	16x45	750								
					18x32	685								
					18x36	725								
470					18x40	800								
	13x40	1100	22x40	900	18x40	750								
	16x25	1100			22x35	1000								
680	16x32	1100												
	16x36	1260												
1000	18x40	1350												
	22x35	1680												
2200	22x40	2300												

☆ Size: D  $\phi$  x L (mm) ☆ Ripple Current: (mA/rms). 85°C, 120Hz