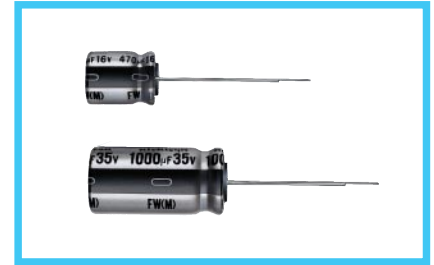


**FW** series Miniature Sized, For Audio Equipment



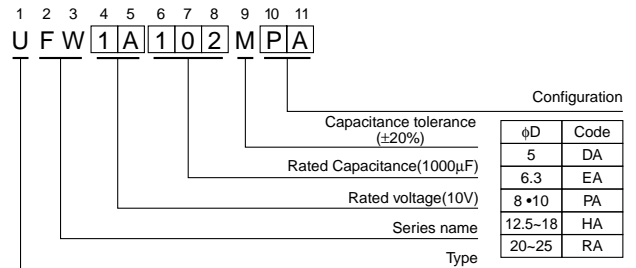
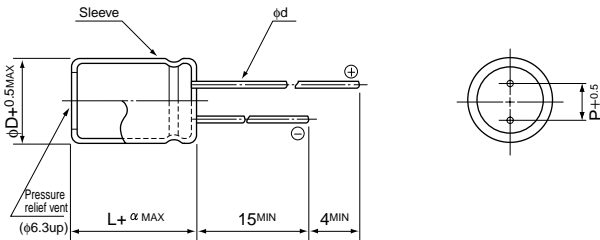
## Specifications

Item	Performance Characteristics																												
Category Temperature Range	-40~+85°C																												
Rated Voltage Range	6.3~100V																												
Rated Capacitance Range	0.1~33000μF																												
Capacitance Tolerance	±20% at 120Hz, 20°C																												
Leakage Current	After 1 minute's application of rated voltage, leakage current is not more than 0.03 CV or 4 (μA), whichever is greater. After 2 minutes' application of rated voltage, leakage current is not more than 0.01 CV or 3 (μA), whichever is greater.																												
tan δ	For capacitance of more than 1000μF, add 0.02 for every increase of 1000μF. Measurement frequency : 120Hz, Temperature : 20°C																												
	<table border="1"> <tr> <td>Rated voltage(V)</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> </tr> <tr> <td>tan δ(MAX.)</td> <td>0.28</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>0.08</td> </tr> </table>	Rated voltage(V)	6.3	10	16	25	35	50	63	100	tan δ(MAX.)	0.28	0.24	0.20	0.16	0.14	0.12	0.10	0.08										
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tan δ(MAX.)	0.28	0.24	0.20	0.16	0.14	0.12	0.10	0.08																					
Stability at Low Temperature	Measurement frequency : 120Hz																												
	<table border="1"> <tr> <td colspan="2">Rated voltage(V)</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> </tr> <tr> <td rowspan="2">Impedance ratio ZT/Z20(MAX.)</td> <td>Z-25°C/Z+20°C</td> <td>5</td> <td>4</td> <td>3</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>12</td> <td>10</td> <td>8</td> <td>5</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> </tr> </table>	Rated voltage(V)		6.3	10	16	25	35	50	63	100	Impedance ratio ZT/Z20(MAX.)	Z-25°C/Z+20°C	5	4	3	2	2	2	2	2	Z-40°C/Z+20°C	12	10	8	5	4	3	3
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	Z-40°C/Z+20°C	12	10	8	5	4	3	3	3																				
Endurance	After 2000 hours' application of voltage at 85°C, capacitors meet the characteristic requirements listed below.																												
	<table border="1"> <tr> <td>Capacitance change</td> <td>Within ±20% of initial value</td> </tr> <tr> <td>tan δ</td> <td>200% or less of initial specified value</td> </tr> <tr> <td>Leakage current</td> <td>Initial specified value or less</td> </tr> </table>	Capacitance change	Within ±20% of initial value	tan δ	200% or less of initial specified value	Leakage current	Initial specified value or less																						
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tan δ	200% or less of initial specified value																												
Leakage current	Initial specified value or less																												
Shelf Life	After leaving capacitors under no load at 85°C for 1000 hours, they meet the specified value for endurance characteristics listed above.																												
Marking	Printed with black color letter on Gold sleeve according to JIS C 5141.																												

Datasheet.Directory

## Radial Lead Type

Type numbering system (Example : 10V 1000μF)



α	(φD<20) 1.5
	(φD≥20) 2.0

φD	5	6.3	8	10	12.5	16	18	20	22	25
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10	10	12.5
φd	0.5	0.5	0.6	0.6	0.6	0.8	0.8	1.0	1.0	1.0
β	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.0	1.0

Please refer to page 18, 19, 20 about the formed or taped product spec.  
Please refer to page 3 for the minimum order quantity.

Dimension table in next page.

## ■ Dimensions

D×L (mm)

Cap.(μF)	Code	V		6.3		10		16		25		35		50		63		100	
		OJ	1A	1C	1E	1V	1H	1J	2A										
0.1	0R1													5×11	1.1			5×11	2.1
0.22	R22													5×11	2.4			5×11	4.7
0.33	R33													5×11	3.5			5×11	7.0
0.47	R47													5×11	5.0			5×11	10
1	010													5×11	10			5×11	21
2.2	2R2													5×11	23			5×11	30
3.3	3R3													5×11	35			5×11	40
4.7	4R7													5×11	40			5×11	45
10	100													5×11	65	5×11	70	6.3×11	75
22	220													5×11	95	5×11	100	6.3×11	120
33	330									5×11	105	5×11	120	6.3×11	140	8×11.5	160		
47	470							5×11	115	5×11	120	6.3×11	150	6.3×11	165	10×12.5	210		
100	101			5×11	145	5×11	155	6.3×11	185	6.3×11	200	8×11.5	250	10×12.5	300	10×20	350		
220	221			6.3×11	230	6.3×11	250	8×11.5	320	10×12.5	370	10×12.5	410	10×16	470	12.5×25	600		
330	331	6.3×11	265	6.3×11	270	8×11.5	360	10×12.5	420	10×12.5	470	10×16	570	10×20	650	12.5×25	750		
470	471	6.3×11	310	6.3×11	330	8×11.5	420	10×12.5	530	10×16	630	12.5×20	760	12.5×20	880	16×25	1000		
1000	102	8×11.5	530	10×12.5	630	10×16	770	10×20	950	12.5×20	1100	12.5×25	1300	16×25	1300	18×40	1370		
2200	222	10×20	980	10×20	1050	12.5×20	1250	12.5×25	1550	16×25	1800	16×35.5	2090	18×35.5	2200	22×50	2400		
3300	332	10×20	1170	12.5×20	1420	12.5×25	1700	16×25	1950	16×35.5	2220	18×35.5	2360	20×40	2700	25×50	2900		
4700	472	12.5×20	1350	12.5×25	1800	16×25	2100	16×31.5	2360	18×35.5	2490	20×40	2900	22×50	3400				
6800	682	12.5×25	1600	16×25	2150	16×35.5	2500	18×35.5	2590	20×40	3000	22×50	3500	25×50	3500				
10000	103	16×25	2000	16×35.5	2500	18×35.5	2640	20×40	3000	22×50	3700	25×50	4000						
15000	153	16×35.5	2550	18×35.5	2720	20×40	3400	22×50	3800	25×50	4300								
22000	223	18×40	3200	20×40	3700	22×50	4200	25×50	4500										
33000	333	22×50	3900	22×50	4500	25×50	4800											Case size	Rated ripple

Rated Ripple (mA rms) at 85°C 120Hz

## ■ Frequency coefficient of rated ripple current

Cap.(μF)	Frequency	50Hz	120Hz	300Hz	1kHz	10kHz~
~ 47		0.75	1.00	1.35	1.57	2.00
100 ~ 470		0.80	1.00	1.23	1.34	1.50
1000 ~ 33000		0.85	1.00	1.10	1.13	1.15