

# ALUMINUM ELECTROLYTIC CAPACITORS

# UKW

Standard, For Audio Equipment



- Realization of a harmonious balance of sound quality, made possible by the development of new electrolyte.
- Most suited for AV equipment.
- Compliant to the RoHS directive (2011/65/EU,(EU)2015/863).

**UKW**



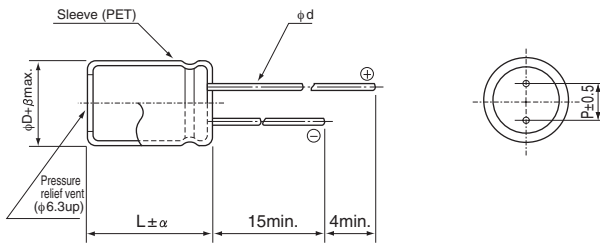
Valued marked with an ※ in the dimension table are scheduled to be discontinued and are not recommended for new designs.

## Specifications

Item	Performance Characteristics																														
Category Temperature Range	-40 to +85°C																														
Rated Voltage Range	6.3 to 100V																														
Rated Capacitance Range	2.2 to 33000μF																														
Capacitance Tolerance	±20% at 120Hz, 20°C																														
Leakage Current ※	After 1 minute's application of rated voltage at 20°C, leakage current is not more than 0.03 CV or 4 (μA), whichever is greater. After 2 minutes' application of rated voltage at 20°C, leakage current is not more than 0.01 CV or 3 (μA), whichever is greater.																														
Tangent of loss angle (tan δ)	<table border="1"> <tr> <th>Rated voltage (V)</th> <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> <th>tan δ (max.)</th> <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> <p>Measurement frequency : 120Hz at 20°C For capacitance of more than 1000μF, add 0.02 for every increase of 1000μF.</p>	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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Stability at Low Temperature	<table border="1"> <tr> <th colspan="2">Rated voltage (V)</th> <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> <th rowspan="2">Impedance ratio (max.)</th> <th>Z(-25°C) / Z(+20°C)</th> <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> <th>Z(-40°C) / Z(+20°C)</th> <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> <p>Measurement frequency : 120Hz</p>	Rated voltage (V)		6.3	10	16	25	35	50	63	100	Impedance ratio (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	3	
Rated voltage (V)		6.3	10	16	25	35	50	63	100																						
Impedance ratio (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	3																						
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours at 85°C.	<table border="1"> <tr> <td>Capacitance change</td> <td>Within ±20% of the initial capacitance value</td> </tr> <tr> <td>tan δ</td> <td>200% or less than the initial specified value</td> </tr> <tr> <td>Leakage current</td> <td>Less than or equal to the initial specified value</td> </tr> </table>	Capacitance change	Within ±20% of the initial capacitance value	tan δ	200% or less than the initial specified value	Leakage current	Less than or equal to the initial specified value																							
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Leakage current	Less than or equal to the initial specified value																														
Shelf Life	After storing the capacitors under no load at 85°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.																														
Marking	Printed with gold color letter on black sleeve.																														

※ I : Leakage Current (μA), C : Rated Capacitance (μF), V : Rated Voltage (V)

## Radial Lead Type



(mm)

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

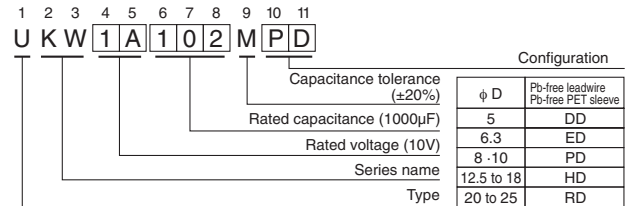
α	(φD < 20) 1.5
	(φD ≥ 20) 2.0

● Please refer to the Guidelines for Aluminum Electrolytic Capacitors for end seal configuration information.

## Frequency coefficient of rated ripple current

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

## Type numbering system (Example : 10V 1000μF)



● Dimension table in next page.

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## ■ Dimensions

Rated Voltage (V) (code)	Rated Capacitance ( $\mu$ F)	Case Size $\phi$ D×L (mm)	tan $\delta$	Leakage Current ( $\mu$ A)		Rated Ripple (mArms) (85°C/120Hz)	Part Number
				at 20°C after 1 minute	at 20°C after 2 minutes		
6.3 (0J)	330	6.3×11	0.28	62.37	20.79	265	※UKW0J331MED
	470	6.3×11	0.28	88.83	29.61	310	※UKW0J471MED
	1000	8×11.5	0.28	189	63	530	※UKW0J102MPD
	2200	10×20	0.30	415.8	138.6	980	※UKW0J222MPD
	3300	10×20	0.32	623.7	207.9	1170	※UKW0J332MPD
	4700	12.5×20	0.34	888.3	296.1	1350	※UKW0J472MHD
	6800	12.5×25	0.38	1285.2	428.4	1600	※UKW0J682MHD
	10000	16×25	0.46	1890	630	2000	※UKW0J103MHD
	15000	16×35.5	0.56	2835	945	2550	※UKW0J153MHD
	22000	18×40	0.70	4158	1386	3200	※UKW0J223MHD
33000	22×50	0.92	6237	2079	3900	※UKW0J333MRD	
10 (1A)	100	5×11	0.24	30	10	145	※UKW1A101MDD
	220	6.3×11	0.24	66	22	230	※UKW1A221MED
	330	6.3×11	0.24	99	33	270	※UKW1A331MED
	470	6.3×11	0.24	141	47	330	※UKW1A471MED
	1000	10×12.5	0.24	300	100	630	UKW1A102MPD
	2200	10×20	0.26	660	220	1050	UKW1A222MPD
	3300	12.5×20	0.28	990	330	1420	UKW1A332MHD
	4700	12.5×25	0.30	1410	470	1800	UKW1A472MHD
	6800	16×25	0.34	2040	680	2150	UKW1A682MHD
	10000	16×35.5	0.42	3000	1000	2500	UKW1A103MHD
	15000	18×35.5	0.52	4500	1500	2720	UKW1A153MHD
	22000	20×40	0.66	6600	2200	3700	※UKW1A223MRD
33000	22×50	0.88	9900	3300	4500	※UKW1A333MRD	
16 (1C)	100	5×11	0.20	48	16	155	※UKW1C101MDD
	220	6.3×11	0.20	105.6	35.2	250	※UKW1C221MED
	330	8×11.5	0.20	158.4	52.8	360	UKW1C331MPD
	470	8×11.5	0.20	225.6	75.2	420	UKW1C471MPD
	1000	10×16	0.20	480	160	770	UKW1C102MPD
	2200	12.5×20	0.22	1056	352	1250	UKW1C222MHD
	3300	12.5×25	0.24	1584	528	1700	UKW1C332MHD
	4700	16×25	0.26	2256	752	2100	UKW1C472MHD
	6800	16×35.5	0.30	3264	1088	2500	UKW1C682MHD
	10000	18×35.5	0.38	4800	1600	2640	UKW1C103MHD
	15000	20×40	0.48	7200	2400	3400	※UKW1C153MRD
	22000	22×50	0.62	10560	3520	4200	※UKW1C223MRD
33000	25×50	0.84	15840	5280	4800	※UKW1C333MRD	

For cut leads, formed leads or taped parts, please add the appropriate code after the size code (12th digit).  
If there is no size code in the part number, please add size code "1" and then add the appropriate code.

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### ■ Dimensions

Rated Voltage (V) (code)	Rated Capacitance ( $\mu$ F)	Case Size $\phi$ D×L (mm)	tan $\delta$	Leakage Current ( $\mu$ A)		Rated Ripple (mArms) (85°C/120Hz)	Part Number
				at 20°C after 1 minute	at 20°C after 2 minutes		
25 (1E)	47	5×11	0.16	35.25	11.75	115	※UKW1E470MDD
	100	6.3×11	0.16	75	25	185	※UKW1E101MED
	220	8×11.5	0.16	165	55	320	UKW1E221MPD
	330	10×12.5	0.16	247.5	82.5	420	UKW1E331MPD
	470	10×12.5	0.16	352.5	117.5	530	UKW1E471MPD
	1000	10×20	0.16	750	250	950	UKW1E102MPD
	2200	12.5×25	0.18	1650	550	1550	UKW1E222MHD
	3300	16×25	0.20	2475	825	1950	UKW1E332MHD
	4700	16×30.5	0.22	3525	1175	2360	UKW1E472MHD
	6800	18×35.5	0.26	5100	1700	2590	UKW1E682MHD
	10000	20×40	0.34	7500	2500	3000	※UKW1E103MRD
	15000	22×50	0.44	11250	3750	3800	※UKW1E153MRD
22000	25×50	0.58	16500	5500	4500	※UKW1E223MRD	
35 (1V)	33	5×11	0.14	34.65	11.55	105	※UKW1V330MDD
	47	5×11	0.14	49.35	16.45	120	※UKW1V470MDD
	100	6.3×11	0.14	105	35	200	※UKW1V101MED
	220	10×12.5	0.14	231	77	370	UKW1V221MPD
	330	10×12.5	0.14	346.5	115.5	470	UKW1V331MPD
	470	10×16	0.14	493.5	164.5	630	UKW1V471MPD
	1000	12.5×20	0.14	1050	350	1100	UKW1V102MHD
	2200	16×25	0.16	2310	770	1800	UKW1V222MHD
	3300	16×35.5	0.18	3465	1155	2220	UKW1V332MHD
	4700	18×35.5	0.20	4935	1645	2490	UKW1V472MHD
	6800	20×40	0.24	7140	2380	3000	※UKW1V682MRD
	10000	22×50	0.32	10500	3500	3700	※UKW1V103MRD
15000	25×50	0.42	15750	5250	4300	※UKW1V153MRD	
50 (1H)	2.2	5×11	0.12	4	3	23	※UKW1H2R2MDD
	3.3	5×11	0.12	4.95	3	35	※UKW1H3R3MDD
	4.7	5×11	0.12	7.05	3	40	※UKW1H4R7MDD
	10	5×11	0.12	15	5	65	※UKW1H100MDD
	22	5×11	0.12	33	11	95	※UKW1H220MDD
	33	5×11	0.12	49.5	16.5	120	※UKW1H330MDD
	47	6.3×11	0.12	70.5	23.5	150	※UKW1H470MED
	100	8×11.5	0.12	150	50	250	UKW1H101MPD
	220	10×12.5	0.12	330	110	410	UKW1H221MPD
	330	10×16	0.12	495	165	570	UKW1H331MPD
	470	12.5×20	0.12	705	235	760	UKW1H471MHD
	1000	12.5×25	0.12	1500	500	1300	UKW1H102MHD
	2200	16×35.5	0.14	3300	1100	2090	UKW1H222MHD
	3300	18×35.5	0.16	4950	1650	2360	UKW1H332MHD
	4700	20×40	0.18	7050	2350	2900	※UKW1H472MRD
6800	22×50	0.22	10200	3400	3500	※UKW1H682MRD	
10000	25×50	0.30	15000	5000	4000	※UKW1H103MRD	

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## ■ Dimensions

Rated Voltage (V) (code)	Rated Capacitance ( $\mu$ F)	Case Size $\phi$ D×L (mm)	tan $\delta$	Leakage Current ( $\mu$ A)		Rated Ripple (mArms) (85°C/120Hz)	Part Number
				at 20°C after 1 minute	at 20°C after 2 minutes		
63 (1J)	10	5×11	0.10	18.9	6.3	70	※UKW1J100MDD
	22	5×11	0.10	41.58	13.86	100	※UKW1J220MDD
	33	6.3×11	0.10	62.37	20.79	140	※UKW1J330MED
	47	6.3×11	0.10	88.83	29.61	165	※UKW1J470MED
	100	10×12.5	0.10	189	63	300	UKW1J101MPD
	220	10×16	0.10	415.8	138.6	470	UKW1J221MPD
	330	10×20	0.10	623.7	207.9	650	UKW1J331MPD
	470	12.5×20	0.10	888.3	296.1	880	UKW1J471MHD
	1000	16×25	0.10	1890	630	1300	UKW1J102MHD
	2200	18×35.5	0.12	4158	1386	2200	UKW1J222MHD
	3300	20×40	0.14	6237	2079	2700	※UKW1J332MRD
	4700	22×50	0.16	8883	2961	3400	※UKW1J472MRD
6800	25×50	0.20	12852	4284	3500	※UKW1J682MRD	
100 (2A)	2.2	5×11	0.08	6.6	3	30	※UKW2A2R2MDD
	3.3	5×11	0.08	9.9	3.3	40	※UKW2A3R3MDD
	4.7	5×11	0.08	14.1	4.7	45	※UKW2A4R7MDD
	10	6.3×11	0.08	30	10	75	※UKW2A100MED
	22	6.3×11	0.08	66	22	120	※UKW2A220MED
	33	8×11.5	0.08	99	33	160	UKW2A330MPD
	47	10×12.5	0.08	141	47	210	UKW2A470MPD
	100	10×20	0.08	300	100	350	UKW2A101MPD
	220	12.5×25	0.08	660	220	600	UKW2A221MHD
	330	12.5×25	0.08	990	330	750	UKW2A331MHD
	470	16×25	0.08	1410	470	1000	UKW2A471MHD
	1000	18×40	0.08	3000	1000	1370	UKW2A102MHD
	2200	22×50	0.10	6600	2200	2400	※UKW2A222MRD
3300	25×50	0.12	9900	3300	2900	※UKW2A332MRD	

For cut leads, formed leads or taped parts, please add the appropriate code after the size code (12th digit).  
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- For formed lead or taped product specifications and minimum order quantity, please refer to the Guidelines for Aluminum Electrolytic Capacitors.