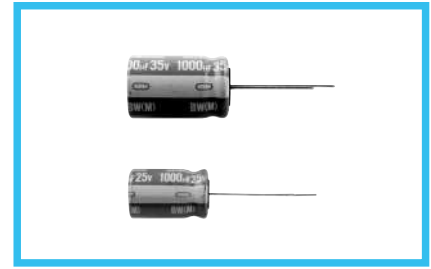
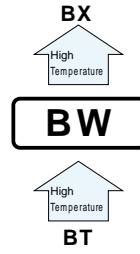


## BW series High Temperature Range, For +135°C Use



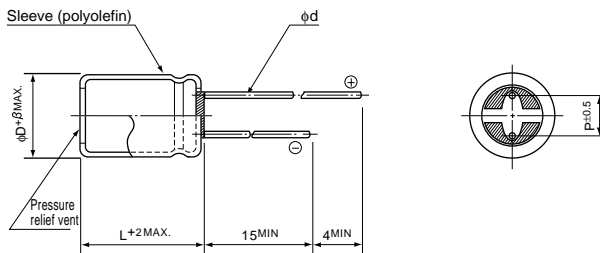
- Highly dependable reliability withstanding load life of 1000 to 3000 hours at +135°C.
- Suited for automobile electronics where heavy duty services are indispensable.
- Compliant to the RoHS directive (2002/95/EC).



### Specifications

Item	Performance Characteristics																																	
Category Temperature Range	-55 to +135°C																																	
Rated Voltage Range	10 to 100V																																	
Rated Capacitance Range	1 to 4700µF																																	
Capacitance Tolerance	±20% at 120Hz, 20°C																																	
Leakage Current	After 1 minute's application of rated voltage, leakage current is not more than 0.03CV or 4 (µA), whichever is greater.																																	
Tangent of loss angle (tan δ)	<table border="1"> <tr> <td>Rated voltage (V)</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>80</td> <td>100</td> <td rowspan="2">120Hz, 20°C</td> </tr> <tr> <td>tan δ (MAX.)</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>0.08</td> <td>0.08</td> </tr> </table> <p>For capacitance of more than 1000µF, add 0.02 for every increase of 1000µF.</p>	Rated voltage (V)	10	16	25	35	50	63	80	100	120Hz, 20°C	tan δ (MAX.)	0.20	0.16	0.14	0.12	0.10	0.10	0.08	0.08														
Rated voltage (V)	10	16	25	35	50	63	80	100	120Hz, 20°C																									
tan δ (MAX.)	0.20	0.16	0.14	0.12	0.10	0.10	0.08	0.08																										
Stability at Low Temperature	<table border="1"> <tr> <td colspan="2">Rated voltage (V)</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>80</td> <td>100</td> <td>120Hz</td> </tr> <tr> <td>Impedance ratio</td> <td>Z-25°C / Z+20°C</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td></td> </tr> <tr> <td>ZT / Z20 (MAX.)</td> <td>Z-40°C / Z+20°C</td> <td>4</td> <td>4</td> <td>4</td> <td>4</td> <td>4</td> <td>4</td> <td>4</td> <td>4</td> <td></td> </tr> </table>	Rated voltage (V)		10	16	25	35	50	63	80	100	120Hz	Impedance ratio	Z-25°C / Z+20°C	3	2	2	2	2	2	2	2		ZT / Z20 (MAX.)	Z-40°C / Z+20°C	4	4	4	4	4	4	4	4	
Rated voltage (V)		10	16	25	35	50	63	80	100	120Hz																								
Impedance ratio	Z-25°C / Z+20°C	3	2	2	2	2	2	2	2																									
ZT / Z20 (MAX.)	Z-40°C / Z+20°C	4	4	4	4	4	4	4	4																									
Endurance	<p>The specifications listed at right shall be met when the capacitors are restored to 20°C after D.C. bias plus rated ripple current is applied for 3000 hours (1000 hours for φD=8, 2000 hours for φD=10) at 135°C, the peak voltage shall not exceed the rated voltage.</p> <table border="1"> <tr> <td>Capacitance change</td> <td>Within ±30% of the initial capacitance value</td> </tr> <tr> <td>Dissipation Factor</td> <td>300% 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 ±30% of the initial capacitance value	Dissipation Factor	300% or less than the initial specified value	Leakage current	Less than or equal to the initial specified value																											
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Dissipation Factor	300% or less than the initial specified value																																	
Leakage current	Less than or equal to the initial specified value																																	
Shelf Life	After storing the capacitors under no load at 135°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 white color letter on blue sleeve.																																	

### Radial Lead Type

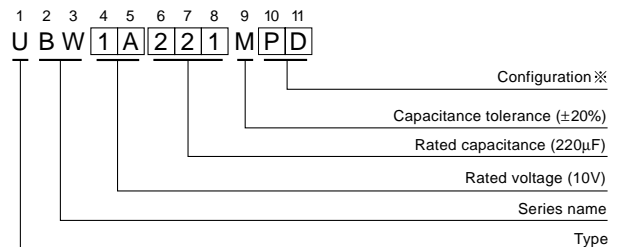


	(mm)			
φD	8	10	12.5	16
β	0.8	0.8	1.0	1.0
P	3.5	5.0	5.0	7.5
φd	0.8	0.6	0.6	0.8

※ In case L > 25 for the φ12.5 dia. unit, lead dia. φd = 0.8mm.

- Please refer to page 20 about the end seal configuration.

### Type numbering system (Example : 10V 220µF)



※ Configuration

φ D	Pb-free leadwire Pb-free Polyolefin sleeve
8 · 10	PD
12.5 · 16	HD

Please refer to page 20, 21, 22 about the formed or taped product spec.  
Please refer to page 4 for the minimum order quantity.

• Dimension table in next page.

## ■ Dimensions

Cap. ( $\mu$ F)	V(Code) Item Code	10 (1A)			16 (1C)			25 (1E)			35 (1V)		
		Case size $\phi$ D $\times$ L (mm)	Impedance ( $\Omega$ ) MAX.	Rated ripple (mArms)	Case size $\phi$ D $\times$ L (mm)	Impedance ( $\Omega$ ) MAX.	Rated ripple (mArms)	Case size $\phi$ D $\times$ L (mm)	Impedance ( $\Omega$ ) MAX.	Rated ripple (mArms)	Case size $\phi$ D $\times$ L (mm)	Impedance ( $\Omega$ ) MAX.	Rated ripple (mArms)
100	101				8 $\times$ 11.5	0.32	340	8 $\times$ 11.5	0.13	500	10 $\times$ 12.5	0.15	620
220	221	8 $\times$ 11.5	0.26	340	10 $\times$ 12.5	0.15	620	10 $\times$ 12.5	0.10	680	10 $\times$ 16	0.094	790
330	331	10 $\times$ 12.5	0.15	620	10 $\times$ 12.5	0.10	680	10 $\times$ 16	0.075	945	10 $\times$ 20	0.075	950
470	471	10 $\times$ 12.5	0.10	680	10 $\times$ 16	0.075	945	10 $\times$ 20	0.057	1100	12.5 $\times$ 20	0.058	1330
1000	102	10 $\times$ 20	0.057	1100	12.5 $\times$ 20	0.042	1490	12.5 $\times$ 25	0.033	1750	16 $\times$ 25	0.031	2010
2200	222	12.5 $\times$ 25	0.033	1750	16 $\times$ 25	0.024	2300	16 $\times$ 31.5	0.020	2710			
3300	332	16 $\times$ 25	0.024	2300	16 $\times$ 31.5	0.020	2710						
4700	472	16 $\times$ 31.5	0.020	2710									

Cap. ( $\mu$ F)	V(Code) Item Code	50 (1H)			63 (1J)			80 (1K)			100 (2A)		
		Case size $\phi$ D $\times$ L (mm)	Impedance ( $\Omega$ ) MAX.	Rated ripple (mArms)	Case size $\phi$ D $\times$ L (mm)	Impedance ( $\Omega$ ) MAX.	Rated ripple (mArms)	Case size $\phi$ D $\times$ L (mm)	Impedance ( $\Omega$ ) MAX.	Rated ripple (mArms)	Case size $\phi$ D $\times$ L (mm)	Impedance ( $\Omega$ ) MAX.	Rated ripple (mArms)
1	010	8 $\times$ 11.5	2.00	35									
2.2	2R2	8 $\times$ 11.5	1.80	50									
3.3	3R3	8 $\times$ 11.5	1.50	60									
4.7	4R7	8 $\times$ 11.5	1.15	85							8 $\times$ 11.5	2.00	130
10	100	8 $\times$ 11.5	0.75	180							8 $\times$ 11.5	1.50	150
22	220	8 $\times$ 11.5	0.50	250	8 $\times$ 11.5	2.00	130	8 $\times$ 11.5	1.50	150	10 $\times$ 12.5	0.80	480
33	330	8 $\times$ 11.5	0.45	300	8 $\times$ 11.5	1.50	150	10 $\times$ 12.5	0.80	480	10 $\times$ 12.5	0.80	480
47	470	8 $\times$ 11.5	0.35	440	10 $\times$ 12.5	0.59	530	10 $\times$ 12.5	0.80	480	10 $\times$ 16	0.55	630
100	101	10 $\times$ 12.5	0.18	555	10 $\times$ 16	0.41	690	10 $\times$ 20	0.39	790	12.5 $\times$ 20	0.25	990
220	221	10 $\times$ 20	0.098	930	12.5 $\times$ 20	0.16	1050	12.5 $\times$ 25	0.18	1240	16 $\times$ 25	0.11	1500
330	331	12.5 $\times$ 20	0.070	1330	12.5 $\times$ 25	0.12	1290	12.5 $\times$ 31.5	0.16	1390	16 $\times$ 31.5	0.079	1790
470	471	12.5 $\times$ 25	0.055	1650	12.5 $\times$ 31.5	0.097	1460	16 $\times$ 25	0.11	1500			
1000	102	16 $\times$ 31.5	0.031	2430	16 $\times$ 31.5	0.055	1900						

Rated ripple current (mArms) at 135°C 100kHz  
Impedance ( $\Omega$ ) MAX. at 20°C 100kHz

## ● Frequency coefficient of rated ripple current

CV	Frequency	120Hz	300Hz	1kHz	10kHz or more
1000 > CV		0.50	0.64	0.83	1.00
1000 $\leq$ CV		0.67	0.79	0.91	1.00