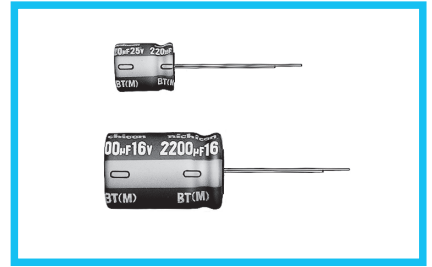
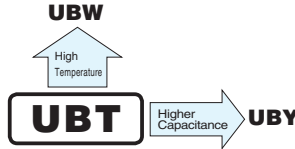


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High Temperature Range, For +125°C Use



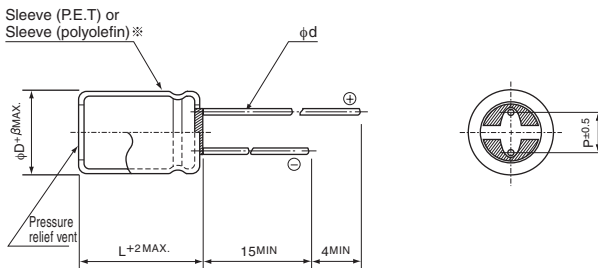
- Highly dependable reliability withstanding load life of 2000 to 10000 hours at +125°C.
- Suited for automobile electronics where heavy duty services are indispensable.
- Compliant to the RoHS directive (2011/65/EU).



Specifications

Item	Performance Characteristics																																	
Category Temperature Range	-40 to +125°C (10 to 250V), -25 to +125°C (350 to 450V)																																	
Rated Voltage Range	10 to 450V																																	
Rated Capacitance Range	4.7 to 4700µF																																	
Capacitance Tolerance	±20% at 120Hz, 20°C																																	
Leakage Current	Rated Voltage (V)	10 to 100 160 to 450																																
	Leakage current	After 1 minute's application of rated voltage at 20°C, leakage current is not more than 0.03CV or 4 (µA), whichever is greater. CV ≤ 1000 : I = 0.1CV+40 (µA) max. CV > 1000 : I = 0.04CV+100 (µA) max.																																
Tangent of loss angle (tan δ)	Rated voltage (V)	10 16 25 35 50 63 80 100 160 to 250 350 to 450 120Hz, 20°C																																
	tan δ (MAX.)	0.20 0.16 0.14 0.12 0.10 0.10 0.08 0.08 0.20 0.24																																
Stability at Low Temperature	For capacitance of more than 1000µF, add 0.02 for every increase of 1000µF.																																	
	120Hz																																	
	<table border="1"> <thead> <tr> <th>Rated voltage (V)</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>80</th> <th>100</th> <th>160 to 250</th> <th>350 to 450</th> </tr> </thead> <tbody> <tr> <td>Impedance ratio 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>2</td> <td>2</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>6</td> </tr> </tbody> </table>		Rated voltage (V)	10	16	25	35	50	63	80	100	160 to 250	350 to 450	Impedance ratio Z _{-25°C} / Z _{+20°C}	3	2	2	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	160 to 250	350 to 450																								
Impedance ratio Z _{-25°C} / Z _{+20°C}	3	2	2	2	2	2	2	2	2	2																								
ZT / Z20 (MAX.)	Z _{-40°C} / Z _{+20°C}	4	4	4	4	4	4	4	4	6																								
Endurance	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 less than 50V (φD = 8 : 2000 hours, φD = 10 : 5000 hours, φD ≥ 12.5 : 10000 hours), 63 to 100V (φD = 8 : 2000 hours, φD = 10 : 3000 hours, φD ≥ 12.5 : 5000 hours), more than 160V (2000 hours) at 125°C, the peak voltage shall not exceed the rated voltage.																																	
	Capacitance change	Within ±30% of the initial capacitance value (10 to 100V) Within ±20% of the initial capacitance value (160 to 450V)																																
	Dissipation Factor	300% or less than the initial specified value (10 to 100V) 200% or less than the initial specified value (160 to 450V)																																
Shelf Life	After storing the capacitors under no load at 125°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.																																	
	Leakage current																																	
Marking	Printed with white color letter on blue sleeve.																																	

Radial Lead Type



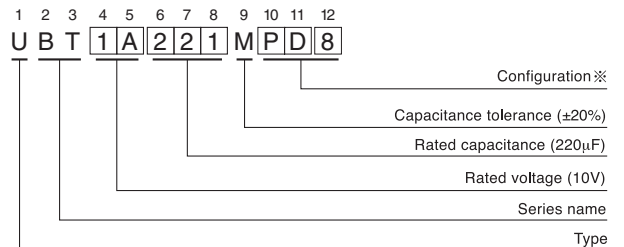
※ polyolefin sleeve product is also available upon request.

	(mm)				
φD	8	10	12.5	16	18
β	0.8	0.8	1.0	1.0	1.0
P	3.5	5.0	5.0	7.5	7.5
φd	0.6	0.6	0.6 ⁺	0.8	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

	Standard type	Semi-standard type
φD	Pb-free leadwire Pb-free PET sleeve	Pb-free leadwire Pb-free Polyolefin sleeve
8, 10	PD8	PD
12.5 to 18	HD8	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.

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■ Dimensions

V(Code)		10 (1A)			16 (1C)			25 (1E)			35 (1V)			50 (1H)		
Cap. (μF)	Item Code	Case size φD × L (mm)	Impedance (Ω) MAX.	Rated ripple (mA _{rms})	Case size φD × L (mm)	Impedance (Ω) MAX.	Rated ripple (mA _{rms})	Case size φD × L (mm)	Impedance (Ω) MAX.	Rated ripple (mA _{rms})	Case size φD × L (mm)	Impedance (Ω) MAX.	Rated ripple (mA _{rms})	Case size φD × L (mm)	Impedance (Ω) MAX.	Rated ripple (mA _{rms})
4.7	4R7															
10	100													8 × 11.5	1.15	85
22	220													8 × 11.5	0.75	180
33	330													8 × 11.5	0.50	250
47	470													8 × 11.5	0.45	300
100	101				8 × 11.5	0.32	340	8 × 11.5	0.13	500	10 × 12.5	0.15	620	8 × 11.5	0.35	440
220	221	8 × 11.5	0.26	340	10 × 12.5	0.15	620	10 × 12.5	0.10	680	10 × 16	0.094	790	10 × 20	0.18	555
330	331	10 × 12.5	0.15	620	10 × 12.5	0.10	680	10 × 16	0.075	945	10 × 20	0.075	950	10 × 20	0.098	930
470	471	10 × 12.5	0.10	680	10 × 16	0.075	945	10 × 20	0.057	1100	10 × 20	0.075	950	12.5 × 20	0.070	1330
1000	102	10 × 20	0.057	1100	12.5 × 20	0.042	1490	12.5 × 25	0.033	1750	12.5 × 20	0.058	1330	12.5 × 25	0.055	1650
2200	222	12.5 × 25	0.033	1750	16 × 25	0.024	2300	16 × 31.5	0.020	2710	16 × 25	0.031	2010	16 × 31.5	0.031	2430
3300	332	16 × 25	0.024	2300	16 × 31.5	0.020	2710	18 × 31.5	0.017	3310	18 × 35.5	0.025	2790			
4700	472	16 × 31.5	0.020	2710	18 × 31.5	0.018	3270									

V(Code)		63 (1J)			80 (1K)			100 (2A)		
Cap. (μF)	Item Code	Case size φD × L (mm)	Impedance (Ω) MAX.	Rated ripple (mA _{rms})	Case size φD × L (mm)	Impedance (Ω) MAX.	Rated ripple (mA _{rms})	Case size φD × L (mm)	Impedance (Ω) MAX.	Rated ripple (mA _{rms})
10	100							8 × 11.5	1.50	150
22	220	8 × 11.5	2.00	130	8 × 11.5	1.50	150	10 × 12.5	0.80	480
33	330	8 × 11.5	1.50	150	10 × 12.5	0.80	480	10 × 12.5	0.80	480
47	470	10 × 12.5	0.59	530	10 × 12.5	0.80	480	10 × 16	0.55	630
100	101	10 × 16	0.41	690	10 × 20	0.39	790	12.5 × 20	0.25	990
220	221	12.5 × 20	0.16	1050	12.5 × 25	0.18	1240	16 × 25	0.11	1500
330	331	12.5 × 25	0.12	1290	12.5 × 31.5	0.16	1390	16 × 31.5	0.079	1790
470	471	12.5 × 31.5	0.097	1460	16 × 25	0.11	1500			

Rated ripple current (mA_{rms}) at 125°C 100kHz
Impedance (Ω) MAX. at 20°C 100kHz

● Frequency coefficient of rated ripple current

V	CV	Frequency			
		120Hz	300Hz	1kHz	10kHz or more
10 to 100	1000 > CV	0.50	0.64	0.83	1.00
	1000 ≤ CV	0.67	0.79	0.91	1.00

V(Code)		160 (2C)		200 (2D)		250 (2E)		350 (2V)		400 (2G)		450 (2W)	
Cap. (μF)	Item Code	Case size φD × L (mm)	Rated ripple (mA _{rms})	Case size φD × L (mm)	Rated ripple (mA _{rms})	Case size φD × L (mm)	Rated ripple (mA _{rms})	Case size φD × L (mm)	Rated ripple (mA _{rms})	Case size φD × L (mm)	Rated ripple (mA _{rms})	Case size φD × L (mm)	Rated ripple (mA _{rms})
4.7	4R7							10 × 20	53	10 × 20	53	10 × 25	58
10	100			10 × 20	78	10 × 20	78	10 × 25	85	10 × 25	86	12.5 × 20	86
22	220	10 × 20	115	10 × 25	126	12.5 × 20	128	12.5 × 25	139	12.5 × 31.5	142	16 × 25	154
33	330	10 × 25	154	12.5 × 20	157	12.5 × 25	171	16 × 25	189	16 × 25	189	16 × 31.5	203
47	470	12.5 × 20	187	12.5 × 25	204	16 × 25	225	16 × 31.5	243	16 × 31.5	243		
68	680	12.5 × 25	245	16 × 20	250	16 × 31.5	292						
100	101	16 × 25	329	16 × 25	329								
150	151	16 × 31.5	434										

Rated ripple current (mA_{rms}) at 125°C 120Hz

● Frequency coefficient of rated ripple current

V	Cap. (μF)	Frequency					
		50Hz	120Hz	300Hz	1kHz	10kHz	100kHz or more
160 to 450	4.7 to 33	0.75	1.00	1.25	1.50	1.75	1.80
	47 to 150	0.80	1.00	1.15	1.30	1.40	1.50