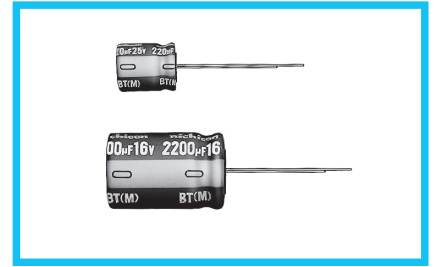
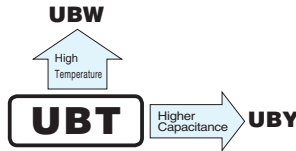


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High Temperature Range, For +125°C Use



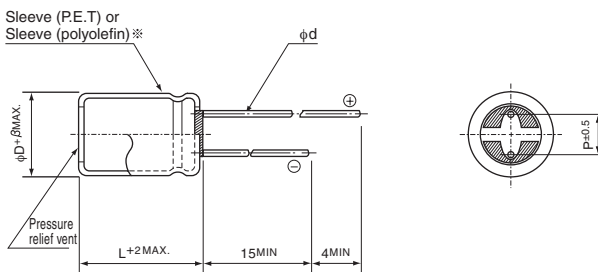
- Highly dependable reliability withstanding load life of 2000 to 10000 hours at +125°C.
- Suited for automobile electronics where heavy duty services are indispensable.
- Compliant to the RoHS directive (2011/65/EU).
- AEC-Q200 compliant. Please contact us for details.



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.																																											
	<table border="1"> <thead> <tr> <th rowspan="2">Rated voltage (V)</th> <th colspan="10">120Hz</th> </tr> <tr> <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>3</td> <td>6</td> </tr> <tr> <td>ZT / Z₂₀ (MAX.) 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> <td>-</td> </tr> </tbody> </table>		Rated voltage (V)	120Hz										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	3	6	ZT / Z ₂₀ (MAX.) Z _{-40°C} / Z _{+20°C}	4	4	4	4	4	4	4	4	6
Rated voltage (V)	120Hz																																											
	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	3	6																																		
ZT / Z ₂₀ (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)																																										
	tan δ	300% or less than the initial specified value (10 to 100V) 200% or less than the initial specified value (160 to 450V)																																										
Shelf Life	Leakage current																																											
	Less than or equal to the initial specified value																																											
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.																																											
Marking	Printed with white color letter on blue sleeve.																																											

Radial Lead Type

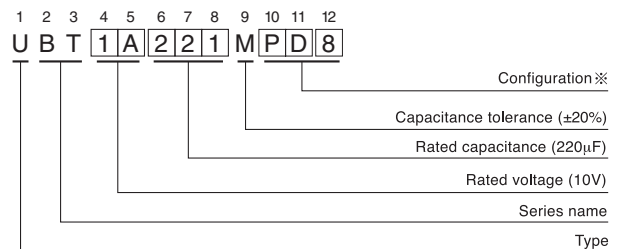


	(mm)				
φD	8	10	12.5	16	18
β	0.8	0.8	1.0	1.0	1.0
P	3.5	5.0	5.0	7.5	7.5
φd	0.6	0.6	0.6 [*]	0.8	0.8

※ 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
φ D	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	12.5 × 20	0.098	930
470	471	10 × 12.5	0.10	680	10 × 16	0.075	945	10 × 20	0.057	1100	12.5 × 20	0.058	1330	12.5 × 25	0.070	1330
1000	102	10 × 20	0.057	1100	12.5 × 20	0.042	1490	12.5 × 25	0.033	1750	16 × 25	0.031	2010	16 × 31.5	0.031	2430
2200	222	12.5 × 25	0.033	1750	16 × 25	0.024	2300	16 × 31.5	0.020	2710	18 × 35.5	0.025	2790			
3300	332	16 × 25	0.024	2300	16 × 31.5	0.020	2710	18 × 31.5	0.017	3310						
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