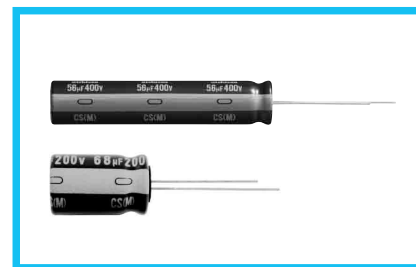
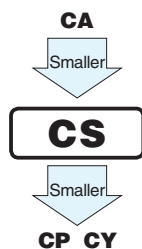


# ALUMINUM ELECTROLYTIC CAPACITORS

**CS** series Miniature Sized, High Ripple Current, High Reliability



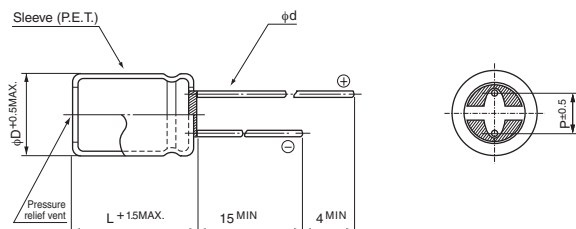
- High ripple current and Long Life product withstanding load life of 8000 to 10000 hours at +105°C.
- Suited for ballast application.
- Compliant to the RoHS directive (2011/65/EU).



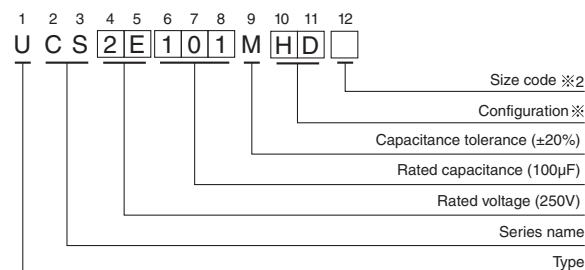
## Specifications

Item	Performance Characteristics																									
Category Temperature Range	-40 to +105°C (160 to 400V), -25 to +105°C (450V)																									
Rated Voltage Range	160 to 450V																									
Rated Capacitance Range	6.8 to 330μF																									
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 0.04CV+100 (μA)																									
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C																									
	<table border="1"> <thead> <tr> <th>Rated voltage (V)</th> <th>160</th> <th>200</th> <th>250</th> <th>350</th> <th>400</th> <th>450</th> </tr> </thead> <tbody> <tr> <td>tan δ (MAX.)</td> <td>0.20</td> <td>0.20</td> <td>0.20</td> <td>0.24</td> <td>0.24</td> <td>0.24</td> </tr> </tbody> </table>	Rated voltage (V)	160	200	250	350	400	450	tan δ (MAX.)	0.20	0.20	0.20	0.24	0.24	0.24											
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Stability at Low Temperature	Measurement frequency : 120Hz																									
	<table border="1"> <thead> <tr> <th rowspan="2">Impedance ratio ZT / Z20 (MAX.)</th> <th colspan="2">Rated voltage (V)</th> <th>160</th> <th>200</th> <th>250</th> <th>350</th> <th>400</th> <th>450</th> </tr> <tr> <th>Z-25°C / Z+20°C</th> <th>Z-40°C / Z+20°C</th> <td>3</td> <td>3</td> <td>3</td> <td>5</td> <td>5</td> <td>6</td> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>-</td> </tr> </tbody> </table>	Impedance ratio ZT / Z20 (MAX.)	Rated voltage (V)		160	200	250	350	400	450	Z-25°C / Z+20°C	Z-40°C / Z+20°C	3	3	3	5	5	6				6	6	6	6	6
Impedance ratio ZT / Z20 (MAX.)	Rated voltage (V)		160	200	250	350	400	450																		
	Z-25°C / Z+20°C	Z-40°C / Z+20°C	3	3	3	5	5	6																		
			6	6	6	6	6	-																		
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 10000 hours (8000 hours for φD=10 × 16L, 10 × 20L) at 105°C, the peak voltage shall not exceed the rated voltage.</p> <table border="1"> <tbody> <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> </tbody> </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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Shelf Life	After storing the capacitors under no load at 105°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 dark brown sleeve.																									

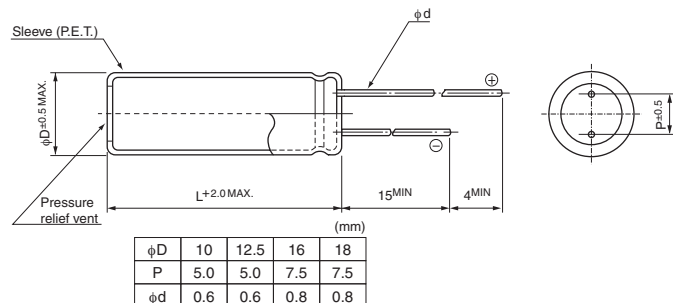
## Radial Lead Type



## Type numbering system (Example : 250V 100μF)



## Pencil - shaped Type



### ※ Configuration

Size code ※2	Blank, 6	9
φ D	Pb-free leadwire Pb-free PET sleeve	Pb-free leadwire Pb-free PET sleeve
10	PD	ND
12.5 to 18	HD	NY

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

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	V Code	160		200		250		350		400		450	
		2C		2D		2E		2V		2G		2W	
6.8	6R8							10 × 16	280	10 × 16	280	10 × 20	280
10	100	10 × 16	320	10 × 16	320	10 × 20	350	10 × 20	350	10 × 20	350	12.5 × 20	450
15	150									12.5 × 20	550	12.5 × 25	600
22	220	10 × 20	500	10 × 20	500	10 × 20	500	12.5 × 20	650	12.5 × 20	760	16 × 20	730
33	330	10 × 20	650	10 × 20	650	12.5 × 20	800	16 × 20	900	16 × 20	900	16 × 25	980
												▲ 18 × 20	980
47	470	10 × 20	750	12.5 × 20	980	12.5 × 20	980	16 × 20	1080	16 × 25	1180	18 × 25	1200
										▲ 18 × 20	1180		
68	680	12.5 × 20	1180	12.5 × 20	1300	16 × 20	1300	16 × 25	1400	18 × 25	1470	18 × 31.5	1575
								▲ 18 × 20	1375				
82	820	12.5 × 20	1275	16 × 20	1380	16 × 20	1380	18 × 25	1530	18 × 25	1525		
100	101	12.5 × 25	1420	16 × 20	1420	16 × 25	1530	18 × 25	1575				
		▲ 16 × 20	1420										
150	151	16 × 20	1890	16 × 25	1890	18 × 25	1940						
220	221	16 × 25	2370	18 × 25	2365	18 × 31.5	3130						
330	331	18 × 31.5	3130	18 × 35.5	3220							Case size φD × L (mm)	※

※: Rated ripple current (mArms) at 105°C 100kHz

▲: In this case, [6] will be put at 12th digit of type numbering system.

## Pencil-shaped Type

Cap. (μF)	V Code	200		250		400		450	
		2D		2E		2G		2W	
27	270							● 10 × 40	580
33	330							● 10 × 40	720
39	390					● 10 × 40	800	● 10 × 50	820
56	560					● 10 × 50	1040		
68	680							● 12.5 × 50	1340
82	820			● 10 × 40	1220	● 12.5 × 50	1400		
100	101	● 10 × 40	1260	● 10 × 50	1360				
120	121	● 10 × 40	1360						
150	151	● 10 × 50	1660						
180	181			● 12.5 × 50	2070				
270	271	● 12.5 × 50	2530					Case size φD × L (mm)	※

Rated ripple current (mArms) at 105°C 100kHz

●: In this case, [9] will be put at 12th digit of type numbering system.

## ● Frequency coefficient of rated ripple current

Frequency	50Hz	120Hz	1kHz	10kHz	100kHz or more
Coefficient	0.40	0.50	0.80	0.90	1.00