

# ALUMINUM ELECTROLYTIC CAPACITORS

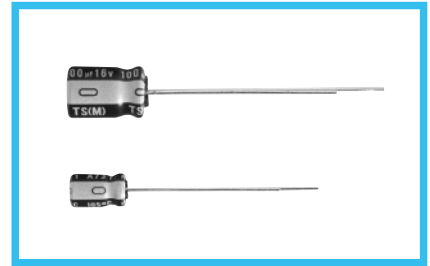
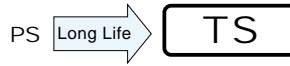


**TS** Miniature Sized,  
High Reliability For Switching Power Supplies  
series



- Smaller case size and Long Life product.
- Compliant to the RoHS directive (2002/95/EC).

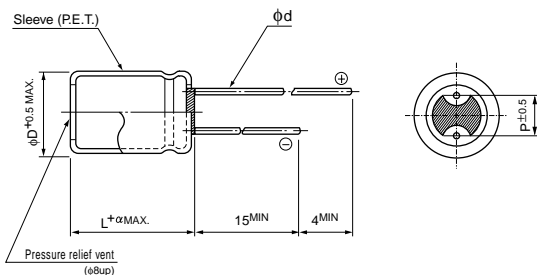
Products which are scheduled to be discontinued.  
Not recommended for new designs



## Specifications

Item	Performance Characteristics																						
Category Temperature Range	-40 to +105°C																						
Rated Voltage Range	6.3 to 50V																						
Rated Capacitance Range	0.1 to 470μF																						
Capacitance Tolerance	±20% at 120Hz, 20°C																						
Leakage Current	After 2 minutes' application of rated voltage, leakage current is less than 0.03CV or 3 (μA), whichever is greater.																						
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C																						
	<table border="1"> <tr> <td>Rated voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> </tr> <tr> <td>tan δ (MAX.)</td> <td>0.30</td> <td>0.28</td> <td>0.24</td> <td>0.18</td> <td>0.16</td> <td>0.14</td> </tr> </table>	Rated voltage (V)	6.3	10	16	25	35	50	tan δ (MAX.)	0.30	0.28	0.24	0.18	0.16	0.14								
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Stability at Low Temperature	Measurement frequency : 120Hz																						
	<table border="1"> <tr> <td colspan="2">Rated voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> </tr> <tr> <td rowspan="2">Impedance ratio ZT / Z20 (MAX.)</td> <td>Z-25°C / Z+20°C</td> <td>5</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z-40°C / Z+20°C</td> <td>10</td> <td>8</td> <td>6</td> <td>4</td> <td>3</td> <td>3</td> </tr> </table>	Rated voltage (V)		6.3	10	16	25	35	50	Impedance ratio ZT / Z20 (MAX.)	Z-25°C / Z+20°C	5	4	3	2	2	2	Z-40°C / Z+20°C	10	8	6	4	3
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	Z-40°C / Z+20°C	10	8	6	4	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 5000 hours at 105°C.	Capacitance change	Within ±30% of the initial capacitance value																				
		tan δ	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 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 blown sleeve.																						

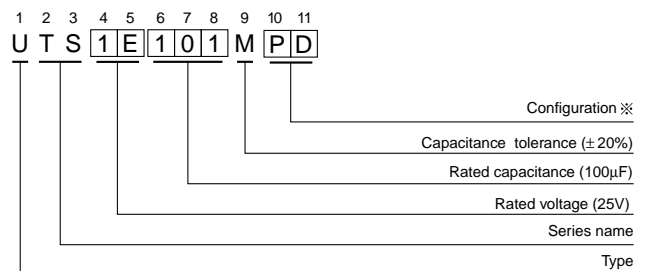
## Radial Lead Type



α		(mm)			
α	(L = 7) 1.0	φD 4	5	6.3	8
	(L ≥ 9) 1.5	P 1.5	2.0	2.5	3.5
		φd 0.45	0.45	0.5 (0.45)	0.6

( ) : Applied to 7mmL products

## Type numbering system (Example : 25V 100μF)



※ Configuration

φ D	Pb-free leadwire Pb-free PET sleeve
4	DD
5	
6.3	PD
8	

- 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.

### ■ Standard Ratings

V (Code)		6.3 (0J)		10 (1A)		16 (1C)		25 (1E)	
Cap.(μF)	Item Code	Case size φD × L (mm)	Rated ripple (mArms) 105°C / 100kHz	Case size φD × L (mm)	Rated ripple (mArms) 105°C / 100kHz	Case size φD × L (mm)	Rated ripple (mArms) 105°C / 100kHz	Case size φD × L (mm)	Rated ripple (mArms) 105°C / 100kHz
10	100					4 × 7	29		
22	220	4 × 7	40			5 × 7	50		
33	330			5 × 7	60			6.3 × 7	86
47	470	5 × 7	65			6.3 × 7	90	6.3 × 9	112
100	101	6.3 × 7	100			6.3 × 9	117	8 × 9	165
220	221	6.3 × 9	150	8 × 9	195				
330	331	8 × 9	210			8 × 9	210		
470	471	8 × 9	210						

V (Code)		35 (1V)		50 (1H)	
Cap.(μF)	Item Code	Case size φD × L (mm)	Rated ripple (mArms) 105°C / 100kHz	Case size φD × L (mm)	Rated ripple (mArms) 105°C / 100kHz
0.1	0R1			4 × 7	3.3
0.22	R22			4 × 7	7.3
0.33	R33			4 × 7	8.8
0.47	R47			4 × 7	13
1	010			4 × 7	18
2.2	2R2			4 × 7	22
3.3	3R3			4 × 7	25
4.7	4R7	4 × 7	30	5 × 7	30
10	100	5 × 7	43	6.3 × 7	54
22	220	6.3 × 7	76	6.3 × 9	86
33	330	6.3 × 9	100		
47	470			8 × 9	153
100	101			8 × 9	188

### ● Frequency coefficient of rated ripple current

Cap. (μF)	Frequency	50Hz	120Hz	300Hz	1kHz	10kHz	100kHz or more
0.1 to 4.7		0.25	0.40	0.50	0.70	0.90	1.00
10 to 47		0.40	0.50	0.60	0.75	0.90	1.00
100 to 470		0.50	0.60	0.70	0.80	0.90	1.00