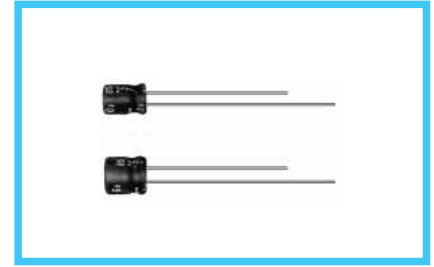
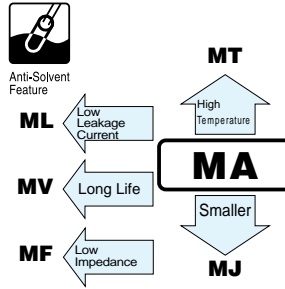


ALUMINUM ELECTROLYTIC CAPACITORS

MA series 5mmL, Standard, For General Purposes

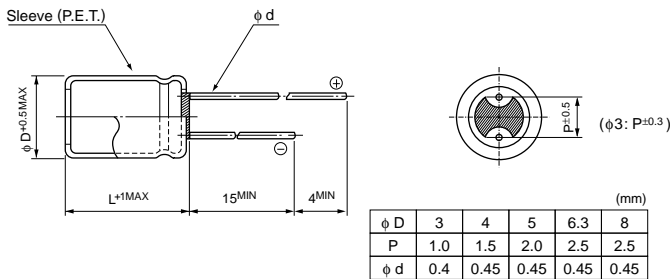
- Standard series with 5mm height.



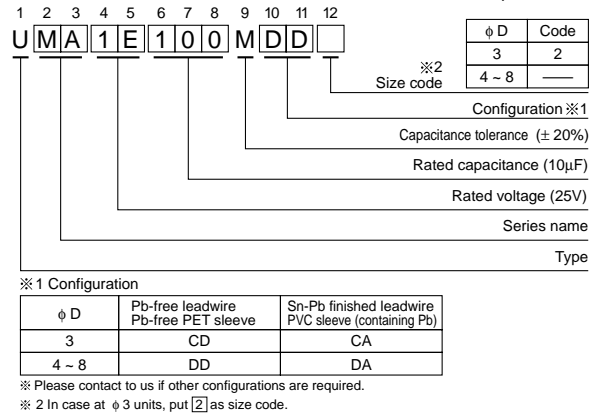
Specifications

Item	Performance Characteristics																									
Category Temperature Range	-40 ~ +85°C																									
Rated Voltage Range	4 ~ 50V																									
Rated Capacitance Range	0.1 ~ 470μF																									
Rated Capacitance Tolerance	±20% at 120Hz, 20°C																									
Leakage Current	After 2 minutes' application of rated voltage, leakage current is not more than 0.01CV or 3(μA), whichever is greater.																									
tan δ	Measurement frequency : 120Hz, Temperature : 20°C																									
	<table border="1"> <tr> <td>Rated voltage (V)</td> <td>4</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td rowspan="2">Figures in () are for MR series.</td> </tr> <tr> <td>tan δ (MAX.)</td> <td>0.35</td> <td>0.24 (0.30)</td> <td>0.20 (0.24)</td> <td>0.16 (0.20)</td> <td>0.14 (0.18)</td> <td>0.12 (0.16)</td> <td>0.10 (0.13)</td> </tr> </table>	Rated voltage (V)	4	6.3	10	16	25	35	50	Figures in () are for MR series.	tan δ (MAX.)	0.35	0.24 (0.30)	0.20 (0.24)	0.16 (0.20)	0.14 (0.18)	0.12 (0.16)	0.10 (0.13)								
Rated voltage (V)	4	6.3	10	16	25	35	50	Figures in () are for MR series.																		
tan δ (MAX.)	0.35	0.24 (0.30)	0.20 (0.24)	0.16 (0.20)	0.14 (0.18)	0.12 (0.16)	0.10 (0.13)																			
Stability at Low Temperature	Measurement frequency : 120Hz																									
	<table border="1"> <tr> <td colspan="2">Rated voltage (V)</td> <td>4</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>7</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z-40°C / Z+20°C</td> <td>15</td> <td>8</td> <td>6</td> <td>4</td> <td>4</td> <td>3</td> <td>3</td> </tr> </table>	Rated voltage (V)		4	6.3	10	16	25	35	50	Impedance ratio ZT / Z20 (MAX.)	Z-25°C / Z+20°C	7	4	3	2	2	2	2	Z-40°C / Z+20°C	15	8	6	4	4	3
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Impedance ratio ZT / Z20 (MAX.)	Z-25°C / Z+20°C	7	4	3	2	2	2	2																		
	Z-40°C / Z+20°C	15	8	6	4	4	3	3																		
Endurance	After 2000 hours' application of rated voltage at 85°C, capacitors meet the characteristic requirements listed at right.																									
	Capacitance change	Within ±20% of initial value (MR series & φ 3 product : Within ±25%)																								
	tan δ	200% or less of initial specified value																								
Shelf Life	After leaving capacitors under no load at 85°C for 1000 hours, they meet the specified value for endurance characteristics listed above.																									
	Leakage current	Initial specified value or less																								
Marking	Printed with white color letter on black sleeve.																									

Radial Lead Type



Type numbering system (Example : 25V 10μF)



Dimensions

Cap. (μF)	Code	4		6.3		10		16		25		35		50	
		0G		0J		1A		1C		1E		1V		1H	
0.1	0R1														4×5(3×5) 1.0(1.0)
0.22	R22														4×5(3×5) 2.0(2.0)
0.33	R33														4×5(3×5) 2.8(2.8)
0.47	R47														4×5(3×5) 4.0(4.0)
1	010														4×5(3×5) 8.4(8.0)
2.2	2R2														4×5 13(10)
3.3	3R3														4×5 17
4.7	4R7														4×5 20
10	100			3×5 15				3×5 10		3×5 10					4×5 20
22	220	3×5 19		4×5 28(21)		5×5 33		4×5 23(18)		5×5 27					4×5 20
33	330	4×5 28		5×5 37		5×5 41		6.3×5 42		6.3×5 42					4×5 20
47	470	4×5 33		5×5 45		6.3×5 52(43)		6.3×5 52		6.3×5 52					4×5 20
100	101	5×5 56		6.3×5 70(68)		8×5 80(76)		8×5 92(86)		8×5 110					4×5 20
220	221	6.3×5 96		8×5 110(90)		8×5 135									4×5 20
330	331	8×5 145		8×5 170											4×5 20
470	471	8×5 185													4×5 20

Size φ3 × 5 is available for capacitors marked. * ● / Size φ5 × 5 is available for capacitors marked. * ○
 Size φ6.3 × 5 is available for capacitors marked. * □ In such a case, [M][R] will be put at 2nd and 3rd digit of type numbering system.
 () = φ3 units and MR series.

Rated Ripple (mA rms) at 85°C 120Hz

Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz ~
Coefficient	0.70	1.00	1.17	1.36	1.50

Please refer to page 19, 20, 21 about the formed or taped product spec.
 Please refer to page 3 for the minimum order quantity.