

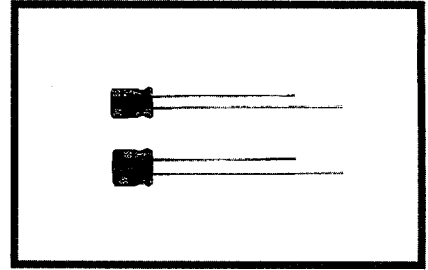
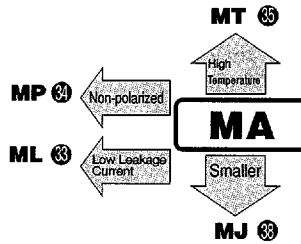
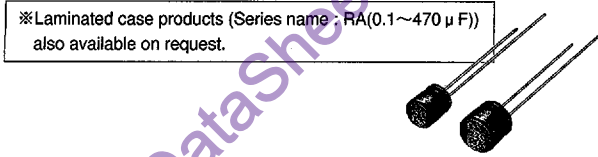
# ALUMINUM ELECTROLYTIC CAPACITORS

A 05-11-01  
nichicon

**MA** series 5mmL, Standard, For General Purposes



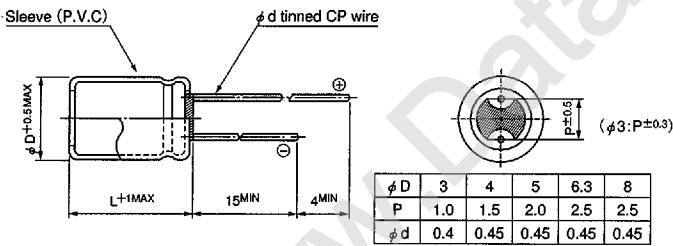
- Standard ultra-miniature series with 5mm height.



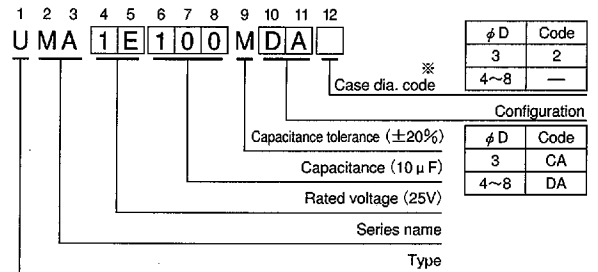
## Specifications

Item	Performance Characteristics																							
Operating Temperature Range	-40~+85°C																							
Voltage Range	4~50V																							
Capacitance Range	0.1~470 μF																							
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)						
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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																							
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Impedance ratio Z-25°C/Z+20°C	7	4	3	2	2	2	2																	
ZT/Z20 (MAX.)	15	8	6	4	4	3	3																	
Load Life	After 1000 hours' application of rated voltage at 85°C, capacitors meet the characteristics requirements listed at right.																							
	<table border="1"> <tr> <td>Capacitance change</td> <td>Within ±20% of initial value (MR series &amp; φ3 product : Within ±25%)</td> </tr> <tr> <td>tan δ</td> <td>200% or less of initial specified value</td> </tr> <tr> <td>Leakage current</td> <td>Initial specified value or less</td> </tr> </table>	Capacitance change	Within ±20% of initial value (MR series & φ3 product : Within ±25%)	tan δ	200% or less of initial specified value	Leakage current	Initial specified value or less																	
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Leakage current	Initial specified value or less																							
Shelf Life	After leaving capacitors under no load at 85°C for 1000 hours, they meet the specified value for load life characteristics listed above.																							
Marking	Printed with white color letter on black sleeve.																							
Applicable Standards	JIS C-5141 and JIS C-5102.																							

## Radial Lead Type



## Type numbering system (Example : 25V 10 μF)



※ In case at φ3 units, put [2] as case dia. code.

## Dimensions

Cap.(μF)	V	DXL(mm)							
		4	6.3	10	16	25	35	50	
Code		0G	0J	1A	1C	1E	1V	1H	
0.1	0R1							4X5(3X5) 1.0(1.0)	
0.22	R22							4X5(3X5) 2.0(2.0)	
0.33	R33							4X5(3X5) 2.8(2.8)	
0.47	R47							4X5(3X5) 4.0(4.0)	
1	010							4X5(3X5) 8.4(8.0)	
2.2	2R2						3X5 8.4	4X5 13(10)	
3.3	3R3					3X5 10	4X5 15(10)	4X5 17	
4.7	4R7				3X5 10	4X5 16(12)	4X5 18	5X5 20	
10	100		3X5 15		4X5 23(18)	5X5 27	5X5 29	6.3X5 33	
22	220	3X5 19	4X5 26(21)	5X5 33	5X5 37	6.3X5 42	6.3X5 46	8X5 52(48)	
33	330	4X5 28	5X5 37	5X5 41	6.3X5 49(43)	6.3X5 52	8X5 62(52)	8X5 71	
47	470	4X5 33	5X5 45	6.3X5 52(43)	6.3X5 58	8X5 70(62)	8X5 80		
100	101	5X5 56	6.3X5 70(68)	8X5 80(76)	8X5 92(86)	8X5 110			
220	221	6.3X5 96	8X5 110(90)	8X5 135					
330	331	8X5 145	8X5 170						
470	471	8X5 185						Allowable ripple	

Size 3X5 is available for capacitors marked. "●"  
Size 5X5 is available for capacitors marked. "○"  
Size 6.3X5 is available for capacitors marked. "□"  
In such a case, [2] will be put at 2nd and 3rd digit of type numbering system.  
Figures in ( ) are for MR series.

Allowable Ripple(mA rms) at 85°C 120Hz