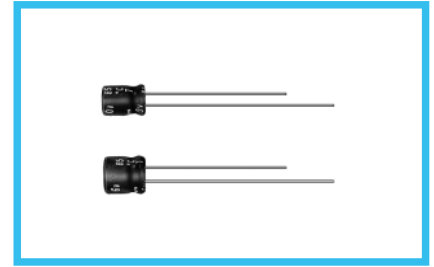
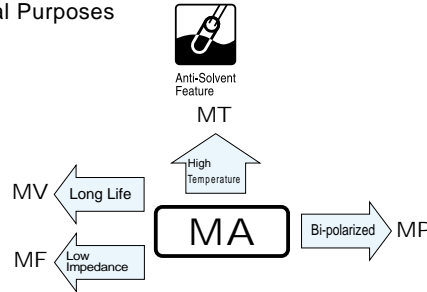


MA series

5mmL, Standard, For General Purposes

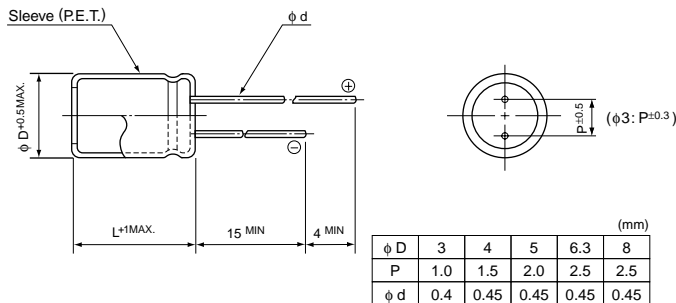
- Standard series with 5mm height.
- Compliant to the RoHS directive (2011/65/EU).



## Specifications

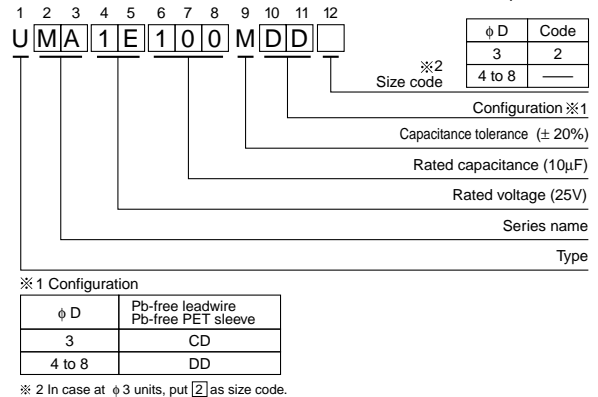
Item	Performance Characteristics															
Category Temperature Range	-40 to +85°C															
Rated Voltage Range	4 to 50V															
Rated Capacitance Range	0.1 to 470μF															
Rated Capacitance Tolerance	±20% at 120Hz, 20°C															
Leakage Current	After 2 minutes' application of rated voltage, leakage current is not more than 0.01CV or 3(μA), whichever is greater.															
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C															
	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															
	Rated voltage (V)		4	6.3	10	16	25	35	50							
	Impedance ratio	Z-25°C / Z+20°C	7	4	3	2	2	2	2							
	ZT / Z20 (MAX.)	Z-40°C / Z+20°C	15	8	6	4	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 2000 hours at 85°C.															
									Capacitance change	Within ±20% of the initial capacitance value (MR series & φ3 product : Within ±25%)						
									tan δ	200% 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 85°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 black sleeve.															

## Radial Lead Type



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

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



## Dimensions

V	4	6.3	10	16	25	35	50
Cap. (μF)	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					3×5 8.4	• 4×5 13(10)
3.3	3R3					• 4×5 15(10)	4×5 17
4.7	4R7				3×5 10	• 4×5 16(12)	4×5 18
10	100	3×5 15		• 4×5 23(18)	5×5 27	5×5 29	6.3×5 33
22	220	3×5 19	• 4×5 28(21)	5×5 33	5×5 37	6.3×5 42	6.3×5 46
33	330	4×5 28	5×5 37	5×5 41	○ 6.3×5 49(43)	6.3×5 52	□ 8×5 62(52)
47	470	4×5 33	5×5 45	○ 6.3×5 52(43)	6.3×5 58	□ 8×5 70(62)	8×5 80
100	101	5×5 56	○ 6.3×5 70(68)	□ 8×5 80(76)	□ 8×5 92(86)	8×5 110	
220	221	6.3×5 96	□ 8×5 110(90)	8×5 135			
330	331	8×5 145	8×5 170				
470	471	8×5 185					
							Case size φ D × L (mm)
							Rated ripple

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.

Rated ripple current (mArms) at 85°C 120Hz  
( ) = φ3 units and MR series.

## Frequency coefficient of rated ripple current

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

Please refer to page 20, 21, 22 about the formed or taped product spec.  
Please refer to page 4 for the minimum order quantity.