

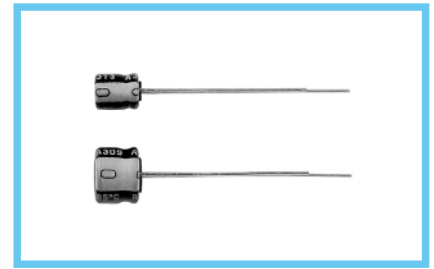
**ML** series 5mmL, Low Leakage Current



- Low leakage current series with 5mm height.
- Adapted to the RoHS directive (2002/95/EC).

Products which are scheduled to discontinue.  
Not recommended for new designs

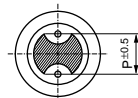
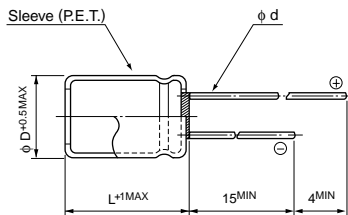
MA Low Leakage Current ML



## Specifications

Item	Performance Characteristics	
Category Temperature Range	-40 to +85°C	
Rated Voltage Range	4 to 50V	
Rated Capacitance Range	0.1 to 100μF	
Rated Capacitance Tolerance	±20% at 120Hz, 20°C	
Leakage Current	After 2 minutes' application of rated voltage, leakage current is not more than 0.002CV or 0.4 (μA), whichever is greater.	
tan δ	Measurement frequency : 120Hz, Temperature : 20°C	
	Rated voltage (V)	4 6.3 10 16 25 35 50
	tan δ (MAX.)	0.35 0.24 0.20 0.16 0.14 0.12 0.10
Stability at Low Temperature	Measurement frequency : 120Hz	
	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 10 8 6 4 3 3
Endurance	After 1000 hours' application of rated voltage at 85°C, capacitors meet the characteristic requirements listed at right.	
	Capacitance change	Within ±20% of initial value
	tan δ	200% or less of initial specified value
	Leakage current	Initial specified value or less
Shelf Life	After storing the capacitors under no load at 85°C for 1000 hours, and after performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they will meet the specified value for endurance characteristics listed above.	
Marking	Printed with white color letter on black sleeve.	

## Radial Lead Type



φ D	4	5	6.3
P	1.5	2.0	2.5
φ d	0.45	0.45	0.45

## Type numbering system (Example : 10V 33μF)

1	2	3	4	5	6	7	8	9	10	11
U	M	L	1	A	3	3	0	M	D	D
Configuration ※										
Capacitance tolerance (± 20%)										
Rated capacitance (33μF)										
Rated voltage (10V)										
Serie name										
Type										
※ Configuration										
φ D Pb-free leadwire Pb-free PET sleeve										
4 to 6.3 DD										

## Dimensions

V	4	6.3	10	16	25	35	50
Cap.(μF)	0G	0J	1A	1C	1E	1V	1H
0.1	0R1						4×5 1.0
0.22	R22						4×5 2.0
0.33	R33						4×5 2.8
0.47	R47						4×5 4.0
1	010						4×5 8.4
2.2	2R2						4×5 13
3.3	3R3						5×5 17
4.7	4R7						5×5 20
10	100						6.3×5 33
22	220	4×5 28	5×5 33	5×5 37	6.3×5 42	6.3×5 46	
33	330	5×5 28	5×5 37	5×5 41	6.3×5 49	6.3×5 52	
47	470	5×5 33	5×5 45	6.3×5 52	6.3×5 58		
100	101	6.3×5 56	6.3×5 70				

Rated Ripple (mA) at 85°C 120Hz

## 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.

**CAT.8100W**