

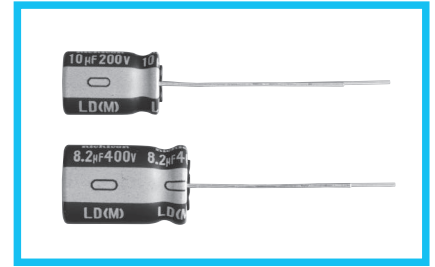
# ALUMINUM ELECTROLYTIC CAPACITORS

# ULD

Miniature sized, Long Life Assurance



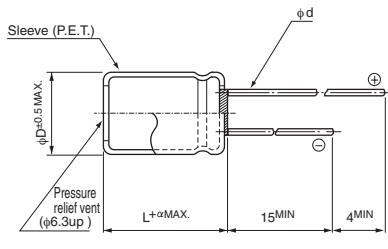
- Long Life product withstanding load life of 10000 to 20000 hours at +105°C.
- Suited for the power supply for LED lighting.
- Compliant to the RoHS directive (2011/65/EU, (EU)2015/863).



## Specifications

Item	Performance Characteristics	
Category Temperature Range	-40 to +105°C	
Rated Voltage Range	10 to 450V	
Rated Capacitance Range	1 to 330µF	
Capacitance Tolerance	±20% at 120Hz, 20°C	
Leakage Current	Rated Voltage(V)	10 to 100
	—	After 2 minutes' application of rated voltage at 20°C, leakage current is not more than 0.01CV or 3(µA), whichever is greater.
Tangent of loss angle (tan δ)	Rated Voltage(V)	10    16    25    35    50    63    100    160 to 450
	tan δ (MAX.)	0.45    0.35    0.3    0.22    0.19    0.17    0.15    0.24
Stability at Low Temperature	Rated voltage (V)	10    16    25-35    50 to 100    160 to 250    400    450
	Impedance ratio (MAX.)	Z-25°C / Z+20°C: 8    6    4    3    3    6    6 Z-40°C / Z+20°C: —    —    —    —    8    10    —
Endurance	Rated Voltage(V)	10 to 100
	—	The specifications listed below shall be met when the capacitors are restored to 20°C after D.C. bias plus rated ripple current is applied for 10000 hours at 105°C, the peak voltage shall not exceed the rated voltage.
	—	The specifications listed below shall be met when the capacitors are restored to 20°C after D.C. bias plus rated ripple current is applied for 20000 hours (12000 hours for φ6.3×11L, 15000 hours for φ8×11.5L, φ10×12.5L) at 105°C, the peak voltage shall not exceed the rated voltage.
	Capacitance change	Within ±25%(10V to 100V) ±30%(160V to 450V) 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 brown sleeve.	

## Radial Lead Type



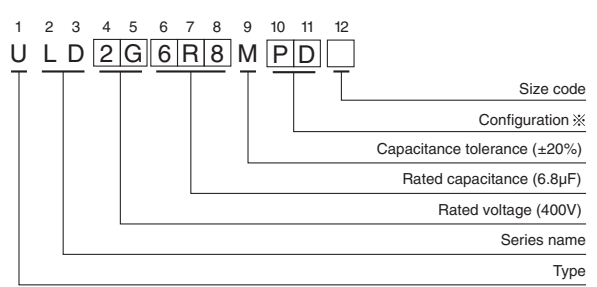
	(mm)							
φD	5	6.3	8	10	12.5	16	18	
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5	
φd	0.5	0.5	0.6	0.6	0.6	0.8	0.8	
α	1.5	1.5	2.0	2.0	2.0	2.0	2.0	

● Please refer to the Guidelines for Aluminum Electrolytic Capacitors for end seal configuration information.

● Frequency coefficient of rated ripple current (10~100V)

Cap.(µF)	Frequency	120Hz	1kHz	10kHz	100kHz
1 to 10µF		0.42	0.60	0.80	1.00
22 to 33µF		0.55	0.75	0.90	1.00
47 to 330µF		0.70	0.85	0.95	1.00

## Type numbering system (Example : 400V 6.8µF)



※ Configuration	
φ D	Pb-free leadwire Pb-free PET sleeve
5	DD
6.3	ED
8 × 10	PD
12.5 to 18	HD

● Frequency coefficient of rated ripple current (160~450V)

Cap.(µF)	Frequency	120Hz	1kHz	10kHz	100kHz or more
1 to 5.6µF		1.00	1.60	1.80	2.00
6.8 to 18µF		1.00	1.50	1.70	1.90
22 to 68µF		1.00	1.40	1.60	1.80

● Dimension table in next page.

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## ■ Dimensions

Rated Voltage (V) (code)	Rated Capacitance ( $\mu$ F)	Case Size $\phi$ D $\times$ L (mm)	tan $\delta$	Leakage Current ( $\mu$ A)		Rated Ripple (mArms)		Part Number
				at 20°C after 1 minute	at 20°C after 2 minutes	105°C/ 100kHz	105°C/ 120Hz	
10 (1A)	100	5 $\times$ 11	0.45	—	10	130	—	ULD1A101MDD
	220	6.3 $\times$ 11	0.45	—	22	210	—	ULD1A221MED
	330	8 $\times$ 11.5	0.45	—	33	330	—	ULD1A331MPD
16 (1C)	47	5 $\times$ 11	0.35	—	7.52	130	—	ULD1C470MDD
	100	6.3 $\times$ 11	0.35	—	16	210	—	ULD1C101MED
	150	6.3 $\times$ 11	0.35	—	24	210	—	ULD1C151MED
	220	8 $\times$ 11.5	0.35	—	35.2	330	—	ULD1C221MPD
	270	8 $\times$ 11.5	0.35	—	43.2	330	—	ULD1C271MPD
25 (1E)	33	5 $\times$ 11	0.30	—	8.25	130	—	ULD1E330MDD
	47	5 $\times$ 11	0.30	—	11.75	130	—	ULD1E470MDD
	100	6.3 $\times$ 11	0.30	—	25	210	—	ULD1E101MED
	150	8 $\times$ 11.5	0.30	—	37.5	330	—	ULD1E151MPD
35 (1V)	33	5 $\times$ 11	0.22	—	11.55	130	—	ULD1V330MDD
	47	6.3 $\times$ 11	0.22	—	16.45	210	—	ULD1V470MED
	100	8 $\times$ 11.5	0.22	—	35	330	—	ULD1V101MPD
50 (1H)	1	5 $\times$ 11	0.19	—	3	25	—	ULD1H010MDD
	2.2	5 $\times$ 11	0.19	—	3	35	—	ULD1H2R2MDD
	3.3	5 $\times$ 11	0.19	—	3	70	—	ULD1H3R3MDD
	4.7	5 $\times$ 11	0.19	—	3	80	—	ULD1H4R7MDD
	6.8	5 $\times$ 11	0.19	—	3.4	80	—	ULD1H6R8MDD
	10	5 $\times$ 11	0.19	—	5	90	—	ULD1H100MDD
	22	5 $\times$ 11	0.19	—	11	135	—	ULD1H220MDD
	33	6.3 $\times$ 11	0.19	—	16.5	190	—	ULD1H330MED
	47	6.3 $\times$ 11	0.19	—	23.5	190	—	ULD1H470MED
100	8 $\times$ 11.5	0.19	—	50	270	—	ULD1H101MPD	
63 (1J)	10	5 $\times$ 11	0.17	—	6.3	80	—	ULD1J100MDD
	22	6.3 $\times$ 11	0.17	—	13.86	170	—	ULD1J220MED
	33	6.3 $\times$ 11	0.17	—	20.79	170	—	ULD1J330MED
	47	8 $\times$ 11.5	0.17	—	29.61	240	—	ULD1J470MPD
100 (2A)	4.7	5 $\times$ 11	0.15	—	4.7	70	—	ULD2A4R7MDD
	6.8	5 $\times$ 11	0.15	—	6.8	70	—	ULD2A6R8MDD
	10	6.3 $\times$ 11	0.15	—	10	150	—	ULD2A100MED
	22	8 $\times$ 11.5	0.15	—	22	230	—	ULD2A220MPD
160 (2C)	5.6	6.3 $\times$ 11	0.24	129.6	—	—	52	ULD2C5R6MED
	6.8	6.3 $\times$ 11	0.24	143.52	—	—	55	ULD2C6R8MED
	15	8 $\times$ 11.5	0.24	196	—	—	92	ULD2C150MPD
	22	10 $\times$ 12.5	0.24	240.8	—	—	121	ULD2C220MPD
	33	10 $\times$ 16	0.24	311.2	—	—	158	ULD2C330MPD

For cut leads, formed leads or taped parts, please add the appropriate code after the size code (12th digit).  
If there is no size code in the part number, please add size code "1" and then add the appropriate code.

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## ■ Dimensions

Rated Voltage (V) (code)	Rated Capacitance (μF)	Case Size φD×L (mm)	tan δ	Leakage Current (μA) (at 20°C after 1 minute)	Rated Ripple (mArms) (105°C/120Hz)	Part Number
200 (2D)	2.2	6.3×11	0.24	84	36	ULD2D2R2MED
	3.3	6.3×11	0.24	106	42	ULD2D3R3MED
	4.7	6.3×11	0.24	134	49	ULD2D4R7MED
	5.6	6.3×11	0.24	144.8	50	ULD2D5R6MED
	10	8×11.5	0.24	180	80	ULD2D100MPD
	18	10×12.5	0.24	244	113	ULD2D180MPD
	27	10×16	0.24	316	149	ULD2D270MPD
250 (2E)	1.8	6.3×11	0.24	85	33	ULD2E1R8MED
	2.2	6.3×11	0.24	95	36	ULD2E2R2MED
	3.3	6.3×11	0.24	122.5	42	ULD2E3R3MED
	5.6	8×11.5	0.24	156	62	ULD2E5R6MPD
	6.8	8×11.5	0.24	168	68	ULD2E6R8MPD
	10	10×12.5	0.24	200	90	ULD2E100MPD
	12	10×12.5	0.24	220	97	ULD2E120MPD
	18	10×16	0.24	280	129	ULD2E180MPD
400 (2G)	1	6.3×11	0.24	80	24	ULD2G010MED
	1.5	6.3×11	0.24	100	29	ULD2G1R5MED
	2.2	8×11.5	0.24	128	40	ULD2G2R2MPD
	2.7	8×11.5	0.24	143.2	43	ULD2G2R7MPD
	3.3	8×11.5	0.24	152.8	47	ULD2G3R3MPD
	3.9	10×12.5	0.24	162.4	57	ULD2G3R9MPD
	4.7	10×12.5	0.24	175.2	61	ULD2G4R7MPD
	5.6	10×12.5	0.24	189.6	64	ULD2G5R6MPD
	6.8	10×16	0.24	208.8	85	ULD2G6R8MPD
	8.2	10×16	0.24	231.2	88	ULD2G8R2MPD
450 (2W)	5.6	10×16	0.24	200.8	58	ULD2W5R6MPD
	6.8	10×16	0.24	222.4	62	ULD2W6R8MPD
	8.2	10×20	0.24	247.6	88	ULD2W8R2MPD
	10	10×20	0.24	280	92	ULD2W100MPD
	15	12.5×20	0.24	370	140	ULD2W150MHD
	22	12.5×25	0.24	496	240	ULD2W220MHD
	22	16×20	0.24	496	292	ULD2W220MHD6
	27	16×20	0.24	586	305	ULD2W270MHD
	33	16×25	0.24	694	392	ULD2W330MHD
	33	18×20	0.24	694	312	ULD2W330MHD6
	47	18×25	0.24	946	480	ULD2W470MHD
68	18×31.5	0.24	1324	520	ULD2W680MHD	

For cut leads, formed leads or taped parts, please add the appropriate code after the size code (12th digit).  
If there is no size code in the part number, please add size code "1" and then add the appropriate code.

- For formed lead or taped product specifications and minimum order quantity, please refer to the Guidelines for Aluminum Electrolytic Capacitors.