MHA Series

• 85℃ 2,000Hrs assured.

- Non-solvent proof.
- For Digital Household Appliance.
- RoHS compliant.
- Halogen-free capacitors are also available.

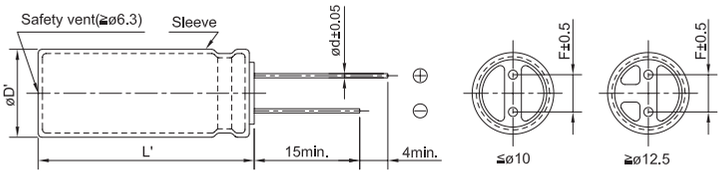
SHL → MHA
Downsized

SPECIFICATIONS

Item	Characteristics	
Rated Voltage Range	6.3 ~ 100 VDC	160 ~ 500 VDC
Operating Temperature Range	-40 ~ +85℃	-25 ~ +85℃
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)	
Leakage Current	After 1 minute: I=0.03CV(μA) or 4μA, whichever is greater. After 2 minutes: I=0.01CV(μA) or 3μA, whichever is greater.	After 1 minute: CV≦1,000: 0.1CV+40; CV>1,000: 0.04CV+100 After 5 minutes: CV≦1,000: 0.03CV+15; CV>1,000: 0.02CV+25
	Where, I: Max. Leakage current(μA), C: Nominal capacitance(μF), V: Rated voltage(VDC) (at 20℃)	
Dissipation Factor (Tanδ)	Rated Voltage(VDC): 6.3 / 10 / 16 / 25 / 35 / 50 / 63 / 100 / 160~250 / 350~500 Tanδ(Max.): 0.34 / 0.24 / 0.20 / 0.16 / 0.14 / 0.12 / 0.10 / 0.09 / 0.20 / 0.24 When the capacitance exceeds 1,000μF, 0.02 shall be added every 1,000μF increase. (at 20℃, 120Hz)	
Temperature Characteristics (Max. Impedance ratio)	Rated Voltage(VDC): 6.3 / 10 / 16 / 25 / 35 / 50 / 63~100 / 160 / 200~250 / 350~500 Z(-25℃)/Z(20℃): 5 / 4 / 3 / 2 / 2 / 2 / 3 / 4 / 8 / 16 Z(-40℃)/Z(20℃): 12 / 10 / 8 / 5 / 4 / 3 / 4 / - / - / - (at 120Hz)	
Load Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 2,000 hours at 85℃. Capacitance change ≦ ±20% of the initial value Tanδ ≦ 200% of the initial specified value Leakage current ≦ The initial specified value	
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 85℃ without voltage applied. The rated voltage shall be applied to the capacitors for a minimum of 30 minutes, at least 24 hours and not more than 48 hours before the measurements. Capacitance change ≦ ±20% of the initial value Tanδ ≦ 200% of the initial specified value Leakage current ≦ The initial specified value (where, 200% for ≧ WV 160 VDC)	
Others	Satisfied characteristics KS C IEC 60384-4	

DIMENSIONS OF MHA Series

Unit(mm)



Marking : BLACK SLEEVE, WHITE INK

øD	5	6.3	8	10	12.5	16	18	22
ød	0.5	0.5	0.6	0.6	0.6	0.8	0.8	1.0
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10.0
øD'	øD+0.5 max.							
L'	L+1.5 max.				L+2.0 max.			

※ø8 X 9L, øD'≤D+0.5 and L'≤L+1.0

RATINGS OF MHA Series

μF \ VDC	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450	500
1						5×11 22	5×11 24	5×11 24	5×11 20 6.3×11 23	5×11 20 6.3×11 23	5×11 24 6.3×11 27	6.3×11 28	6.3×11 29	6.3×11 24	
2.2						5×11 34	5×11 35	5×11 37	5×11 29 6.3×11 33	5×11 34 6.3×11 39	6.3×11 41	6.3×11 43	6.3×11 44	6.3×11 34 8×11.5 40	8×11.5 34
3.3						5×11 41	5×11 43	5×11 44	6.3×11 46	6.3×11 47	6.3×11 48	6.3×11 48 8×11.5 56	6.3×11 51 8×11.5 59	8×11 46 10×12.5 54	8×11 43 10×12.5 50
4.7					5×11 35	5×11 48	5×11 53	5×11 55	6.3×11 56	6.3×11 57	6.3×11 58 8×11.5 66	8×11.5 68	8×11 70 10×12.5 73	10×12.5 65	10×16 68
6.8					5×11 46	5×11 59	5×11 63	5×11 64	6.3×11 67 8×11.5 78	6.3×11 69 8×11.5 80	8×11.5 82	8×11 79 10×12.5 92	10×12.5 95	10×16 83	10×16 78
10			5×11 39	5×11 49	5×11 53	5×11 71	5×11 76	5×11 76	6.3×11 78 8×11.5 82	8×11.5 96	8x11 97 10×12.5 113	10×12.5 106	10×16 123	12.5×16 111	12.5×16 101
22		5×11 52	5×11 68	5×11 73	5×11 80	5×11 106	5×11 113	6.3×11 130	10×12.5 136	10×12.5 152	10×16 182	12.5×16 205	10×25 229	16×20 216	16×20 140
33	5×11 41	5×11 70	5×11 80	5×11 83	5×11 100	5×11 129 8×9 98	6.3×11 159	8×11.5 187	10×16 224	10×16 226	12.5×16 262	12.5×20 275	12.5×20 294	16×20 297	16×25 204
47	5×11 59	5×11 88	5×11 120	5×11 126	5×11 138 8×9 98	6.3×11 177 8×9 110	6.3×11 190	8×11 223 8×15 246	10×16 277	12.5×16 315	12.5×20 340	16×20 395	16×20 407	16×25 368	18×25 233
68	5×11 90	5×11 110	5×11 130	5×11 151	5×11 168 6.3×11 191	6.3×11 213	8×11.5 269	10×12.5 311	12.5×16 377	12.5×20 441	16×20 490	16×25 500	16×25 522	16×31.5 544	18×31.5 269
100	5×11 135	5×11 150	5×11 170	5×11 184 8×9 115	6.3×11 231	8×11.5 306	8×11.5 321	10×16 416	12.5×20 496	16×20 543	16×20 550	16×31.5 674	18×31.5 698	18×35.5 620	
220	5×11 211	5×11 229 8×9 150	5×11 256 6.3×11 290	6.3×11 318	8×11.5 405	10×12.5 506	10×16 615	12.5×20 742	16×25 906	16×31.5 1,029	18×31.5 1,040	22×35 1,074	22×45 1,150		
330	5×11 262 6.3×11 297	6.3×11 322	6.3×11 360	8×11.5 453	8×11 494 8×15 547	10×16 706	10×20 823	12.5×25 987	18×31.5 1,304	18×31.5 1,281	22×35 1,333				
470	6.3×11 355 8×9 241	6.3×11 384	8×11.5 499	8×11 540 8×15 597	10×12.5 682	10×20 918	12.5×20 1,039	16×20 1,299	22×30 1,421	22×35 1,459					
680	8×11.5 503	8×11.5 546	8×11 584 8×15 655	10×16 826	10×16 909	12.5×16 1,190	12.5×25 1,512	16×31.5 1,587	22×40 1,680						
1,000	8×11.5 610	8×11 679 8×15 751	10×12.5 840	10×16 1,007	10×20 1,163	12.5×25 1,715	16×20 1,724	18×31.5 1,932							
2,200	10×16 1,059	10×16 1,129	10×20 1,340	12.5×20 1,651	12.5×30 1,933	16×31.5 2,320	18×31.5 2,654								
3,300	10×20 1,350	10×25 1,657	10×30 1,804	12.5×30 2,159	16×25 2,314	18×31.5 3,118									
4,700	12.5×20 1,822	12.5×20 1,929	16×20 2,200	16×25 2,464	16×35.5 3,061										
6,800	12.5×20 2,235	12.5×30 2,545	16×25 2,690	16×31.5 2,992											
10,000	16×20 2,571	16×25 2,742	16 ×31.5 3,420												
15,000	16×31.5 3,453	18×31.5 3,707	←	←	Case Size ØD×L(mm) Rated Ripple Current(mArms/85℃, 120Hz)										

RATED RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

Cap.(μF) \ Freq.(Hz)	60	120	300	1k	10k~
1~6.8	0.65	1.00	1.35	1.75	2.30
10~68	0.75	1.00	1.25	1.50	1.75
100~1,000	0.80	1.00	1.15	1.30	1.40
2,200~15,000	0.85	1.00	1.03	1.05	1.08