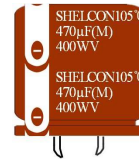


# SHELCON LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

## SHA SERIES

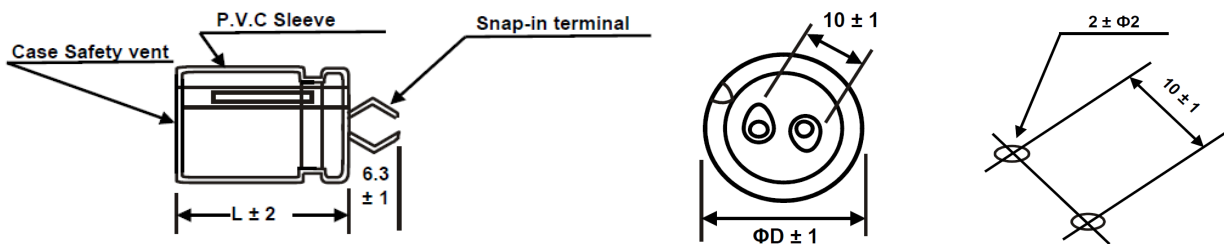


- Endurance with ripple current: 105°C 2000 to 3000 hours
- Non solvent-proof type

### ◆ SPECIFICATIONS

Item	Characteristics	
Category Temperature Range	-25~+105°C	
Voltage Range	160 ~ 450V.DC	
Nominal Cap. Range	39 ~ 3300 µF	
Capacitance Tolerance	±20%(M) 20°C, 120Hz	
Leakage Current	$I \leq 3 \sqrt{CV}$ I: Leakage Current (µA) C: Nominal Capacitance (µF) V: Rated Voltage (V) (at 20°C after 5 min.)	
Dissipation Factor(tanδ) (at 120Hz,20°C)	Rated voltage(V.DC)	160 to 400V
	tanδ(max)	0.15
Low Temp. Impedance Stability at 120Hz	Rated voltage(V.DC)	160 to 400V
	Z - 25°C / Z + 20°C	4
High Temp. Load Test	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to Dc voltage with the rated ripple current is applied for 3000 hours (2000 hours for Φ20X20L products) at 105°C	
	Capacitance change	≤ ±20% of the initial measured value
High Temp. Non-Load Test	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1000 hours at 105°C without voltage applied.	
	Capacitance Change	≤ ±15% of the initial measured value

### ● DRAWING



### ● MULTIPLIER FOR RIPPLE CURRENT

(1) Frequency Coefficient

Cap.(µF)	Freq.(Hz)				
	60(50)	120	500	1K	10K≤
82~470	0.70	1.00	1.10	1.15	1.20
560~1000	0.75	1.00	1.20	1.25	1.35
1200~4700	0.80	1.00	1.25	1.35	1.40
6800 up	0.85	1.00	1.30	1.40	1.45

(2) Temperature Coefficient

Ambient Temperature(°C)	40	60	70	85	105
Coefficient	2.40	2.10	1.78	1.65	1.00

# SHELCON LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

## SHA SERIES

### Standard Ratings

Cap. (μ F) \ WV(Vdc) \ ΦD	160					180				
	20	22	25	30	35	20	22	25	30	35
150						20X20 0.62				
180	20X20 0.68					20X25 0.77	22X20 0.80			
220	20X25 0.85	22X20 0.81				20X25 1.00		25X20 0.90		
270	20X25 1.10		25X20 0.98			20X30 1.10	22X25 1.00	25X20 0.95		
330	20X30 1.20	22X25 1.20	25X20 1.02			20X30 1.20	22X25 1.20	25X25 1.16	30X20 1.15	
390	20X30 1.30	22X25 1.30	25X25 1.26	30X20 1.25		20X35 1.3	22X30 1.35	25X25 1.35	30X20 1.20	
470	20X35 1.34	22X30 1.55	25X25 1.55	30X20 1.30		20X40 1.4	22X35 1.50	25X30 1.50	30X25 1.50	35X20 1.36
560	20X40 1.50	22X35 1.67	25X30 1.67	30X25 1.67	35X20 1.46	20X45 1.55	22X40 1.67	25X30 1.67	30X25 1.67	35X20 1.43
680	20X45 1.70	22X40 1.82	25X30 1.82	30X25 1.82	35X20 1.51	20X50 1.75	22X45 1.78	25X35 1.78	30X30 1.78	35X25 1.83
820		22X45 2.04	25X35 2.04	30X30 2.04	35X25 2.04		22X50 2.04	25X40 2.04	30X30 2.04	35X25 2.04
1000		22X50 2.25	25X40 2.25	30X30 2.25	35X25 2.25			25X45 2.30	30X35 2.30	35X30 2.30
1200			25X45 2.49	30X35 2.49	35X30 2.49			25X50 2.55	30X40 2.55	35X30 2.55
1500			25X60 2.97	30X40 2.84	35X30 2.84				30X45 2.90	35X35 2.90
1800				30X45 3.32	35X35 3.00				30X60 3.49	35X40 3.30
2200				30X60 3.86	35X45 3.50					35X50 3.65
2700					35X50 4.00					35X60 4.19
3300					35X60 4.63	← Upper: Case Size Φ DxL (mm) ← Lower: Rated Ripple Current(Arms)(105°C 120Hz)				

Cap. (μ F) \ WV(Vdc) \ ΦD	200					220				
	20	22	25	30	35	20	22	25	30	35
120	20X20 0.56					20X20 0.56				
150	20X25 0.71	22X20 0.73				20X25 0.73	22X20 0.67			
180	20X25 0.77	22X20 0.80				20X25 0.90		25X20 0.76		
220	20X25 1.00		25X20 0.85			20X30 1.00	22X25 1.00	25X20 0.84		
270	20X30 1.10	22X25 1.10	25X20	30X20 1.05		20X35 1.15	22X30 1.15	25X25 1.08	30X20 0.98	
330	20X35 1.2	22X30 1.25		30X20 1.10		20X40 1.25	22X35 1.25	25X25 1.25		35X20 1.13
390	20X40 1.31	22X30 1.35	25X25 1.25		35X20 1.30	20X45 1.40	22X35 1.40	25X30 1.40	30X25 1.36	35X20 1.23
470	20X45 1.45	22X35 1.5	25X25 1.35	30X25 1.50	35X20 1.41	20X50 1.51	22X40 1.51	25X35 1.54	30X25 1.50	
560	20X50 1.58	22X40 1.67	25X30 1.50	30X25 1.67			22X45 1.70	25X40 1.72	30X30 1.70	35X25 1.71
680		22X45 1.78	25X30 1.67	30X30 1.78	35X25 1.78			25X45 1.94	30X35 1.93	35X25 1.89
820			25X35 1.78	30X30 2.04	35X25 2.04			25X50 2.18	30X40 2.19	35X30 2.16
1000			25X40 2.04	30X35 2.3	35X30 2.30			25X60 2.54	30X45 2.50	35X35 2.44
1200			25X50 2.30	30X40 2.65	35X35 2.65				30X50 2.81	35X40 2.79
1500			25X60 2.66	30X50 3.08	35X40 3.08				30X60 3.30	35X45 3.22
1800				30X60 3.49	35X45 3.48					35X50 3.63
2200					35X50 3.78	← Upper: Case Size Φ DxL (mm) ← Lower: Rated Ripple Current(Arms)(105°C 120Hz)				35X60 4.23

# SHELCON LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

## SHA SERIES

### ■ Standard Ratings

Cap.(μF)	WV(Vdc)		250					315				
	ΦD		20	22	25	30	35	20	22	25	30	35
56								20X20 0.38				
68								20X25 0.47	22X20 0.45			
82								20X25 0.64	22X20 0.47			
100			20X20 0.51					20X30 0.69	22X25 0.61	25 X20 0.56		
120			20X25 0.58	22X20 0.60				20X30 0.75	22X25 0.75	25 X20 0.62	30X20 0.65	
150			20X25 0.79		25 X20 0.74			20X35 0.82	22X30 0.82	25 X25 0.82	30X20 0.70	
180			20X30 0.90	22X25 0.78	25 X20 0.75			20X40 0.90	22X35 0.92	25 X25 0.92	30X25 0.90	35X20 0.76
220			20X30 1.00	22X25 1.00	25 X25 0.95	30X20 0.95		20X50 1.00	22X40 1.04	25 X30 1.04	30X25 1.04	35X20 0.85
270			20X35 1.10	22X30 1.18	25 X25 1.18	30X20 1.00			22X45 1.16	25 X35 1.16	30X25 1.16	35X20 0.90
330			20X40 1.20	22X35 1.30	25 X30 1.30	30X25 1.30	35X20 1.16		22X50 1.33	25 X40 1.33	30X30 1.33	35X25 1.15
390			20X50 1.45	22X40 1.49	25 X35 1.49	30X25 1.49				25 X45 1.47	30X35 1.47	35X25 1.33
470				22X45 1.65	25 X35 1.65	30X30 1.65	35X25 1.65			25 X50 1.70	30X40 1.70	35X30 1.47
560				22X50 1.67	25 X40 1.8	30X30 1.80	35X25 1.80				30X45 2.05	35X30 1.70
680					25 X50 2.00	30X35 2.00	35X30 2.00				30X50 2.17	35X35 2.05
820					25 X60 2.20	30X40 2.30	35X35 2.30					35X40 2.17
1000						30X50 2.47	35X40 2.47					35X45 2.20
1200						30X60 2.85	35X45 2.60					35X60 2.55
1500							35X50 3.00					
1800							35X60 3.42					

← Upper: Case Size ΦDxL (mm)  
 ← Lower: Rated Ripple Current(Arms)(105°C 120Hz)

Cap.(μF)	WV(Vdc)		350					400				
	ΦD		20	22	25	30	35	20	22	25	30	35
39								20X20 0.32				
47			20X20 0.35					20X25 0.39	22X20 0.37			
56			20X25 0.43	22X20 0.41				20X25 0.51		25 X20 0.42		
68			20X25 0.47		25 X20 0.46			20X30 0.56	22X25 0.50	25 X20 0.46		
82			20X30 0.54	22X25 0.55	25 X20 0.51			20X30 0.64	22X25 0.64		30X20 0.55	
100			20X30 0.60	22X25 0.69		30X20 0.60		20X35 0.7	22X30 0.70	25 X25 0.70	30X20 0.60	
120			20X35 0.68	22X30 0.75	25 X25 0.75	30X20 0.65		20X40 0.75	22X35 0.75	25 X25 0.75	30X25 0.73	35X20 0.75
150			20X40 0.78	22X35 0.82	25 X30 0.83	30X25 0.82	35X20 0.76	20X45 0.83	22X40 0.88	25 X30 0.88	30X25 0.88	35X20 0.80
180			20X45 0.87	22X40 0.92	25 X30 0.92	30X25 0.90			22X45 0.98	25 X35 0.98	30X30 0.98	35X25 0.98
220			20X50 1.00	22X45 1.05	25 X35 1.04	30X30 1.02	35X25 1.04		22X50 1.10	25 X40 1.10	30X30 1.10	35X25 1.10
270				22X50 1.16	25 X40 1.18	30X30 1.17	35X25 1.20			25 X45 1.22	30X35 1.22	35X30 1.22
330					25 X45 1.29	30X35 1.34	35X30 1.22			25 X50 1.44	30X40 1.44	35X30 1.44
390					25 X50 1.51	30X40 1.51	35X35 1.47			25 X60 1.51	30X45 1.60	35X35 1.60
470					25 X60 1.66	30X45 1.65	35X35 1.69				30X50 1.90	35X40 1.90
560						30X50 1.85	35X40 1.90				30X60 2.10	35X45 2.12
680						30X60 2.15	35X50 1.99					35X60 2.27
820							35X60 2.31					

← Upper: Case Size ΦDxL (mm)  
 ← Lower: Rated Ripple Current(Arms)(105°C 120Hz)

# SHELCON LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

## SHA SERIES

### Standard Ratings

Cap. (μ F)	WV(Vdc) ΦD	420					450				
		20	22	25	30	35	20	22	25	30	35
39	20X20 0.32						20X25 0.34				
47	20X25 0.39	22X20 0.37					20X25 0.39				
56	20X25 0.51		25 X20 0.42				20X30 0.51	22X25 0.4			
68	20X30 0.56	22X25 0.5	25 X20 0.46				20X35 0.56	22X30 0.53	25 X25 0.50		
82	20X35 0.64	22X25 0.64	25 X25 0.58	30X20 0.53			20X35 0.64	22X30 0.64	25 X25 0.64		
100	20X35 0.70	22X30 0.7	25 X25 0.7	30X20 0.59			20X45 0.69	22X35 0.69	25 X30 0.69	30X25 0.64	
120	20X40 0.75	22X35 0.75	25 X30 0.75	30X25 0.73	35X20 0.67		20X50 0.75	22X40 0.80	25 X30 0.8	30X25 0.80	35X25 0.73
150	20X50 0.88	22X40 0.88	25 X35 0.88	30X25 0.88				22X45 0.88	25 X35 0.88	30X30 0.88	35X25 0.75
180		22X45 0.95	25 X35 0.95	30X30 0.95	35X25 0.94			22X50 1	25 X40 1	30X30 1	
220		22X50 1.1	25 X45 1.1	30X35 1.10	35X25 1.1				25 X45 1.12	30X35 1.12	35X30 1.12
270			25 X50 1.22	30X40 1.22	35X30 1.22				25 X60 1.18	30X40 1.28	35X35 1.28
330			25 X60 1.41	30X45 1.45	35X35 1.45					30X50 1.45	35X40 1.45
390				30X50 1.55	35X40 1.55					30X60 1.51	35X40 1.55
470				30X60 1.79	35X45 1.90						35X50 1.85
560					35X50 2.15						35X60 1.91
680					35X60 2.27	← Upper: Case Size Φ DxL (mm) ← Lower: Rated Ripple Current(Arms)(105°C 120Hz)					