

Type SLP 105 °C Snap-In Aluminum Electrolytic

Best Value 105 °C Snap-In Type



Type SLP is the best value package snap-in series for 105 °C, 3000 h operation. This series is the most cost-effective choice for DC filtering and power supply applications where high temperature, long life and high ripple capability are needed.

Highlights

- 3000 h ripple load life at rated voltage
- 105 °C rated
- Small case size with high capacitance
- Best for switching power supplies
- 22 mm to 35 mm diameter, 10 mm lead spacing
- Best value snap-in type
- High ripple current

Specifications

Temperature Range	-40 °C to +105 °C ≤ 100 Vdc -25 °C to +105 °C ≥ 160 Vdc				
Rated Voltage Range	10 Vdc to 450 Vdc				
Capacitance Range	47 μF to 56,000 μF				
Capacitance Tolerance	±20%				
Leakage Current	≤ 3 √CV μA at 5 minutes				
Ripple Current Multipliers	Ambient Temperature				
	20 °C - 45 °C	65 °C	85 °C	105 °C	
	2.00	1.89	1.52	1.00	
	Frequency				
	Voltage	60 Hz	120 Hz	1 kHz	10 kHz & Up
	10 - 100 Vdc	0.90	1.00	1.15	1.25
160 - 450 Vdc	0.80	1.00	1.25	1.47	
To apply multipliers, see ratings tables for ripple current values					
Low Temperature Characteristics	Impedance ratio: Z _{-20°C} /Z _{+25°C} ≤ 10 (10 Vdc) ≤ 8 (16-50 Vdc) ≤ 4 (63-100 Vdc) ≤ 3 (150-450 Vdc)				
Endurance Life	3,000 h @ full load @105 °C Δ Capacitance ±20% ESR ≤200% of limit DCL 100 % of limit				
Shelf Life	1,000 h @ 105 °C Δ Capacitance ±20% ESR ≤150% of limit DCL 100 % of limit				
Vibration	10 Hz to 55 Hz , 0.06" and 10g max 2 h for each plane				
RoHS Compliant					

Type SLP 105 °C Snap-In Aluminum Electrolytic

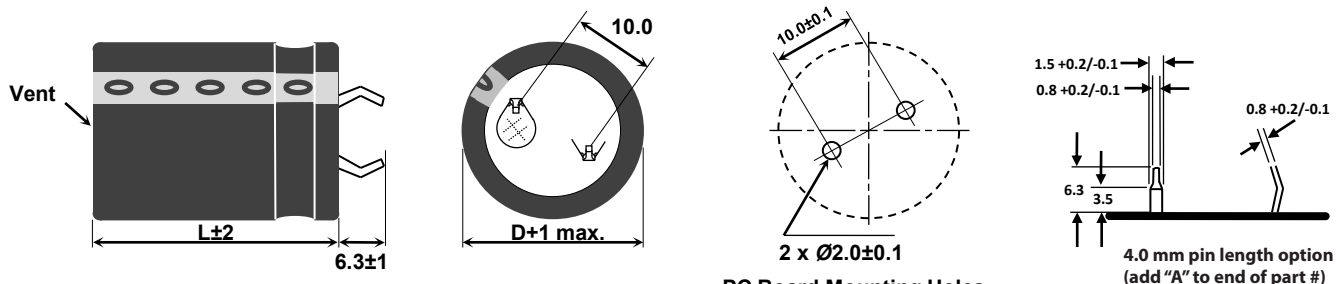
Best Value 105 °C Snap-In Type

Part Numbering System

SLP	562	M	025	A3	P	3	A
Type	Cap	Tolerance	Voltage	Case Code	Polarity	Insulating Sleeve	Pin Style
SLP	821 = 820 μ F 332 = 3300 μ F 103 = 10,000 μ F	M = $\pm$ 20%	025 = 25 Vdc 250 = 250 Vdc		P = Polarized	3 = PVC	Blank = 2 pins snap-in 6.3 mm L A = 2 pins snap-in 4.0 mm L

Diameter		Length					
		25	30	35	40	45	50
mm (in)		(1.00)	(1.18)	(1.38)	(1.57)	(1.77)	(2.00)
22	(0.87)	A1	A3	A5	A7	A4	A9
25	(1.00)	C1	C3	C5	C7	C4	C9
30	(1.18)	E1	E3	E5	E7	E4	E9
35	(1.38)	H1	H3	H5	H7	H4	H9

Outline Drawing



PC Board Mounting Holes

Ratings

Cap (μ F)	3000 h @ 105 °C Catalog Part Number	Max 25 °C ESR (Ω) 120 Hz 20kHz	Max 105 °C Ripple (A _{rms}) 120 Hz 20kHz	Nominal Size (DxL) (mm)
10 Vdc (13 Vdc Surge)				
10000	SLP103M010A1P3	0.073	0.055	1.80 2.25 22 x 25
12000	SLP123M010A3P3	0.061	0.046	2.20 2.75 22 x 30
12000	SLP123M010C1P3	0.061	0.046	2.20 2.75 25 x 25
15000	SLP153M010A5P3	0.049	0.037	2.30 2.88 22 x 35
15000	SLP153M010C1P3	0.049	0.037	2.30 2.88 25 x 25
18000	SLP183M010A7P3	0.041	0.031	2.52 3.15 22 x 40
18000	SLP183M010C3P3	0.041	0.031	2.40 3.00 25 x 30
22000	SLP223M010A4P3	0.033	0.025	2.60 3.25 22 x 45
22000	SLP223M010C5P3	0.033	0.025	2.60 3.25 25 x 35
27000	SLP273M010A9P3	0.027	0.020	3.19 3.99 22 x 50
27000	SLP273M010C7P3	0.027	0.020	3.10 3.88 25 x 40
33000	SLP333M010C4P3	0.022	0.017	3.40 4.25 25 x 45
33000	SLP333M010H3P3	0.022	0.017	3.40 4.25 35 x 30
39000	SLP393M010E7P3	0.019	0.014	3.79 4.74 30 x 40
39000	SLP393M010H3P3	0.019	0.014	3.70 4.63 35 x 30
47000	SLP473M010E4P3	0.016	0.012	4.26 5.33 30 x 45
47000	SLP473M010H5P3	0.016	0.012	4.20 5.25 35 x 35
56000	SLP563M010H7P3	0.013	0.010	5.00 6.25 35 x 40
16 Vdc (20 Vdc Surge)				
6800	SLP682M016A1P3	0.098	0.074	2.20 2.75 22 x 25
8200	SLP822M016A3P3	0.081	0.061	2.40 3.00 22 x 30
10000	SLP103M016A3P3	0.066	0.050	2.60 3.25 22 x 30

Additional Voltages and Sizes available at www.cde.com/catalogs/SLP.pdf

Cap (μ F)	3000 h @ 105 °C Catalog Part Number	Max 25 °C ESR (Ω) 120 Hz 20kHz	Max 105 °C Ripple (A _{rms}) 120 Hz 20kHz	Nominal Size (DxL) (mm)
16 Vdc (20 Vdc Surge)				
10000	SLP103M016C1P3	0.066	0.050	2.60 3.25 25 x 25
12000	SLP123M016A5P3	0.055	0.041	2.90 3.63 22 x 35
12000	SLP123M016C3P3	0.055	0.041	2.90 3.63 25 x 30
15000	SLP153M016A7P3	0.044	0.033	3.20 4.00 22 x 40
15000	SLP153M016C5P3	0.044	0.033	3.25 4.06 25 x 35
15000	SLP153M016E1P3	0.044	0.033	3.11 3.89 30 x 25
18000	SLP183M016A4P3	0.037	0.028	3.50 4.38 22 x 45
18000	SLP183M016C7P3	0.037	0.028	3.50 4.38 25 x 40
18000	SLP183M016E3P3	0.037	0.028	3.50 4.38 30 x 30
22000	SLP223M016C4P3	0.030	0.023	3.80 4.75 25 x 45
22000	SLP223M016E3P3	0.030	0.023	3.80 4.75 30 x 30
22000	SLP223M016H3P3	0.030	0.023	3.80 4.75 35 x 30
27000	SLP273M016C9P3	0.025	0.019	4.20 5.25 25 x 50
27000	SLP273M016E5P3	0.025	0.019	4.20 5.25 30 x 35
27000	SLP273M016H3P3	0.025	0.019	4.20 5.25 35 x 30
33000	SLP333M016E7P3	0.020	0.015	4.70 5.88 30 x 40
33000	SLP333M016H5P3	0.020	0.015	4.70 5.88 35 x 35
39000	SLP393M016E4P3	0.017	0.013	4.90 6.13 30 x 45
39000	SLP393M016H7P3	0.017	0.013	5.10 6.38 35 x 40
47000	SLP473M016E9P3	0.014	0.011	5.27 6.59 30 x 50
47000	SLP473M016H4P3	0.014	0.011	5.50 6.88 35 x 45

Type SLP 105 °C Snap-In Aluminum Electrolytic

Best Value 105 °C Snap-In Type

Additional Voltages and Sizes available at www.cde.com/catalogs/SLP.pdf

Cap	3000 h @ 105 °C	Max 25 °C ESR		Max 105 °C Ripple		Nominal
Catalog		(Ω)		(A _{rms})		Size (DxL)
Part Number		120 Hz	20kHz	120 Hz	20kHz	(mm)
25 Vdc (32 Vdc Surge)						
3300	SLP332M025A1P3	0.181	0.136	1.70	2.13	22 x 25
4700	SLP472M025A1P3	0.127	0.095	2.00	2.50	22 x 25
5600	SLP562M025A3P3	0.107	0.080	2.20	2.75	22 x 30
6800	SLP682M025A3P3	0.088	0.066	2.40	3.00	22 x 30
6800	SLP682M025C1P3	0.088	0.066	2.40	3.00	25 x 25
8200	SLP822M025A5P3	0.073	0.055	2.70	3.38	22 x 35
8200	SLP822M025C3P3	0.073	0.055	2.70	3.38	25 x 30
8200	SLP822M025E1P3	0.073	0.055	2.70	3.38	30 x 25
10000	SLP103M025A7P3	0.060	0.045	3.00	3.75	22 x 40
10000	SLP103M025C5P3	0.060	0.045	3.00	3.75	25 x 35
10000	SLP103M025E3P3	0.060	0.045	3.00	3.75	30 x 30
12000	SLP123M025A9P3	0.050	0.038	3.20	4.00	22 x 50
12000	SLP123M025C7P3	0.050	0.038	3.20	4.00	25 x 40
15000	SLP153M025C4P3	0.040	0.030	3.60	4.50	25 x 45
15000	SLP153M025E5P3	0.040	0.030	3.60	4.50	30 x 35
15000	SLP153M025H3P3	0.040	0.030	3.60	4.50	35 x 30
18000	SLP183M025E7P3	0.033	0.025	3.90	4.88	30 x 40
18000	SLP183M025H5P3	0.033	0.025	3.90	4.88	35 x 35
22000	SLP223M025E4P3	0.027	0.020	4.30	5.38	30 x 45
22000	SLP223M025H5P3	0.027	0.020	4.30	5.38	35 x 35
27000	SLP273M025H4P3	0.022	0.017	4.80	6.00	35 x 45
33000	SLP333M025H9P3	0.018	0.014	5.55	6.94	35 x 50
35 Vdc (44 Vdc Surge)						
3900	SLP392M035A3P3	0.136	0.102	2.00	2.50	22 x 30
4700	SLP472M035A5P3	0.113	0.085	2.20	2.75	22 x 35
4700	SLP472M035C1P3	0.113	0.085	2.20	2.75	25 x 25
4700	SLP472M035C5P3	0.113	0.085	2.53	3.16	25 x 35
5600	SLP562M035A5P3	0.095	0.071	2.40	3.00	22 x 35
5600	SLP562M035C3P3	0.095	0.071	2.40	3.00	25 x 30
6800	SLP682M035A7P3	0.078	0.059	2.60	3.25	22 x 40
6800	SLP682M035C5P3	0.078	0.059	2.60	3.25	25 x 35
6800	SLP682M035E1P3	0.078	0.059	2.78	3.48	30 x 25
8200	SLP822M035A9P3	0.065	0.049	2.90	3.63	22 x 50
8200	SLP822M035C7P3	0.065	0.049	2.90	3.63	25 x 40
8200	SLP822M035E3P3	0.065	0.049	2.90	3.63	30 x 30
10000	SLP103M035C4P3	0.053	0.040	3.20	4.00	25 x 45
10000	SLP103M035E5P3	0.053	0.040	3.20	4.00	30 x 35
10000	SLP103M035C7P3	0.053	0.040	3.04	3.80	25 x 40
12000	SLP123M035C9P3	0.044	0.033	3.50	4.38	25 x 50
12000	SLP123M035E7P3	0.044	0.033	3.50	4.38	30 x 40
12000	SLP123M035H3P3	0.044	0.033	3.50	4.38	35 x 30
15000	SLP153M035E4P3	0.035	0.026	3.90	4.88	30 x 45
15000	SLP153M035H5P3	0.035	0.026	3.90	4.88	35 x 35

Additional Voltages and Sizes available at www.cde.com/catalog/SER.pdf						
Cap (µF)	3000 h @ 105 °C Catalog Part Number	Max 25 °C ESR (Ω) 120 Hz 20kHz		Max 105 °C Ripple (A _{rms}) 120 Hz 20kHz		Nominal Size (DxL) (mm)
35 Vdc (44 Vdc Surge)						
18000	SLP183M035H7P3	0.029	0.022	4.51	5.64	35 x 40
22000	SLP223M035H4P3	0.024	0.018	5.24	6.55	35 x 45
22000	SLP223M035H9P3	0.024	0.018	5.48	6.85	35 x 50
50 Vdc (63 Vdc Surge)						
1800	SLP182M050A1P3	0.258	0.194	1.50	1.88	22 x 25
2200	SLP222M050A3P3	0.211	0.158	1.70	2.13	22 x 30
2700	SLP272M050A3P3	0.172	0.129	1.80	2.25	22 x 30
2700	SLP272M050C1P3	0.172	0.129	1.80	2.25	25 x 25
3300	SLP332M050A5P3	0.141	0.106	2.00	2.50	22 x 35
3300	SLP332M050C3P3	0.141	0.106	2.00	2.50	25 x 30
3900	SLP392M050A7P3	0.119	0.089	2.23	2.79	22 x 40
3900	SLP392M050C3P3	0.119	0.089	2.20	2.75	25 x 30
3900	SLP392M050E1P3	0.119	0.089	2.20	2.75	30 x 25
4700	SLP472M050A4P3	0.099	0.074	2.50	3.13	22 x 45
4700	SLP472M050C5P3	0.099	0.074	2.43	3.04	25 x 35
4700	SLP472M050E3P3	0.099	0.074	2.50	3.13	30 x 30
5600	SLP562M050A9P3	0.083	0.062	2.80	3.50	22 x 50
5600	SLP562M050C7P3	0.083	0.062	2.80	3.50	25 x 40
5600	SLP562M050E3P3	0.083	0.062	2.76	3.45	30 x 30
6800	SLP682M050C4P3	0.068	0.051	3.30	4.13	25 x 45
6800	SLP682M050E5P3	0.068	0.051	3.30	4.13	30 x 35
6800	SLP682M050H3P3	0.068	0.051	3.30	4.13	35 x 30
8200	SLP822M050E7P3	0.057	0.043	3.71	4.64	30 x 40
8200	SLP822M050H5P3	0.057	0.043	3.85	4.81	35 x 35
10000	SLP103M050E9P3	0.046	0.035	4.51	5.64	30 x 50
10000	SLP103M050H7P3	0.046	0.035	4.49	5.61	35 x 40
12000	SLP123M050H4P3	0.039	0.029	4.56	5.70	35 x 45
15000	SLP153M050H9P3	0.031	0.023	4.80	6.00	35 x 50
63 Vdc (79 Vdc Surge)						
1200	SLP122M063A1P3	0.332	0.249	1.40	1.75	22 x 25
1500	SLP152M063A3P3	0.265	0.199	1.50	1.88	22 x 30
1800	SLP182M063A3P3	0.221	0.166	1.70	2.13	22 x 30
1800	SLP182M063C1P3	0.221	0.166	1.70	2.13	25 x 25
2200	SLP222M063A5P3	0.181	0.136	2.00	2.50	22 x 35
2200	SLP222M063C3P3	0.181	0.136	2.00	2.50	25 x 30
2700	SLP272M063A7P3	0.147	0.110	2.20	2.75	22 x 40
2700	SLP272M063C5P3	0.147	0.110	2.20	2.75	25 x 35
2700	SLP272M063E1P3	0.147	0.110	2.20	2.75	30 x 25
3300	SLP332M063A4P3	0.121	0.091	2.60	3.25	22 x 45
3300	SLP332M063C5P3	0.121	0.091	2.39	2.99	25 x 35
3300	SLP332M063E3P3	0.121	0.091	2.50	3.13	30 x 30
3900	SLP392M063C7P3	0.102	0.077	2.57	3.21	25 x 40
3900	SLP392M063E5P3	0.102	0.077	2.70	3.38	30 x 35

Type SLP 105 °C Snap-In Aluminum Electrolytic

Best Value 105 °C Snap-In Type

Additional Voltages and Sizes available at www.cde.com/catalogs/SLP.pdf

Cap (µF)	3000 h @ 105 °C Catalog Part Number	Max 25 °C ESR (Ω) 120 Hz 20kHz	Max 105 °C Ripple (A _{rms}) 120 Hz 20kHz	Nominal Size (DxL) (mm)
63 Vdc (79 Vdc Surge)				
4700	SLP472M063C9P3	0.085	0.064	3.00 3.75 25 x 50
4700	SLP472M063E7P3	0.085	0.064	3.00 3.75 30 x 40
4700	SLP472M063H3P3	0.085	0.064	3.00 3.75 35 x 30
5600	SLP562M063E7P3	0.071	0.053	3.22 4.03 30 x 40
5600	SLP562M063H5P3	0.071	0.053	3.30 4.13 35 x 35
6800	SLP682M063E9P3	0.059	0.044	3.86 4.83 30 x 50
6800	SLP682M063H7P3	0.059	0.044	3.84 4.80 35 x 40
8200	SLP822M063H4P3	0.049	0.037	4.43 5.54 35 x 45
10000	SLP103M063H9P3	0.040	0.030	5.11 6.39 35 x 50
10000	SLP103M063H4P3	0.040	0.030	4.89 6.11 35 x 45
80 Vdc (100 Vdc Surge)				
1000	SLP102M080A1P3	0.332	0.249	1.19 1.49 22 x 25
1200	SLP122M080A3P3	0.276	0.207	1.50 1.88 22 x 30
1500	SLP152M080A3P3	0.221	0.166	1.59 1.99 22 x 30
1500	SLP152M080C1P3	0.221	0.166	1.59 1.99 25 x 25
1800	SLP182M080A5P3	0.184	0.138	1.79 2.24 22 x 35
1800	SLP182M080C3P3	0.184	0.138	1.71 2.14 25 x 30
2200	SLP222M080A7P3	0.151	0.113	2.03 2.54 22 x 40
2200	SLP222M080C5P3	0.151	0.113	2.10 2.63 25 x 35
2200	SLP222M080E1P3	0.151	0.113	1.98 2.48 30 x 25
2700	SLP272M080A4P3	0.123	0.092	2.39 2.99 22 x 45
2700	SLP272M080C7P3	0.123	0.092	2.35 2.94 25 x 40
2700	SLP272M080E3P3	0.123	0.092	2.35 2.94 30 x 30
3300	SLP332M080C4P3	0.101	0.076	2.64 3.30 25 x 45
3300	SLP332M080E5P3	0.101	0.076	2.61 3.26 30 x 35
3300	SLP332M080H3P3	0.101	0.076	2.60 3.25 35 x 30
3900	SLP392M080C9P3	0.085	0.064	2.92 3.65 25 x 50
3900	SLP392M080E7P3	0.085	0.064	2.82 3.53 30 x 40
3900	SLP392M080H3P3	0.085	0.064	2.97 3.71 35 x 30
4700	SLP472M080E4P3	0.071	0.053	3.34 4.18 30 x 45
4700	SLP472M080H5P3	0.071	0.053	3.38 4.23 35 x 35
5600	SLP562M080E9P3	0.059	0.044	3.80 4.75 30 x 50
5600	SLP562M080H7P3	0.059	0.044	3.80 4.75 35 x 40
6800	SLP682M080H4P3	0.049	0.037	3.90 4.88 35 x 45
8200	SLP822M080H9P3	0.040	0.030	4.20 5.25 35 x 50
100 Vdc (125 Vdc Surge)				
680	SLP681M100A1P3	0.390	0.293	1.09 1.36 22 x 25
820	SLP821M100A3P3	0.324	0.243	1.40 1.75 22 x 30
1000	SLP102M100A3P3	0.265	0.199	1.47 1.84 22 x 30
1000	SLP102M100C1P3	0.265	0.199	1.45 1.81 25 x 25
1200	SLP122M100A5P3	0.221	0.166	1.69 2.11 22 x 35
1200	SLP122M100C3P3	0.221	0.166	1.68 2.10 25 x 30
1500	SLP152M100A7P3	0.177	0.133	1.97 2.46 22 x 40

Cap (µF)	3000 h @ 105 °C Catalog Part Number	Max 25 °C ESR (Ω) 120 Hz 20kHz	Max 105 °C Ripple (A _{rms}) 120 Hz 20kHz	Nominal Size (DxL) (mm)
100 Vdc (125 Vdc Surge)				
1500	SLP152M100C5P3	0.177	0.133	1.98 2.48 25 x 35
1500	SLP152M100E1P3	0.177	0.133	1.95 2.44 30 x 25
1500	SLP152M100E3P3	0.177	0.133	2.09 2.61 30 x 30
1800	SLP182M100A4P3	0.147	0.110	2.23 2.79 22 x 45
1800	SLP182M100C7P3	0.147	0.110	2.20 2.75 25 x 40
1800	SLP182M100E3P3	0.147	0.110	2.20 2.75 30 x 30
2200	SLP222M100C4P3	0.121	0.091	2.53 3.16 25 x 45
2200	SLP222M100E5P3	0.121	0.091	2.55 3.19 30 x 35
2200	SLP222M100H3P3	0.121	0.091	2.60 3.25 35 x 30
2700	SLP272M100C9P3	0.098	0.074	2.82 3.53 25 x 50
2700	SLP272M100E7P3	0.098	0.074	2.86 3.58 30 x 40
2700	SLP272M100H5P3	0.098	0.074	2.90 3.63 35 x 35
3300	SLP332M100E4P3	0.080	0.060	3.30 4.13 30 x 45
3300	SLP332M100H5P3	0.080	0.060	3.25 4.06 35 x 35
3900	SLP392M100E9P3	0.068	0.051	3.60 4.50 30 x 50
3900	SLP392M100H7P3	0.068	0.051	3.67 4.59 35 x 40
4700	SLP472M100H4P3	0.056	0.042	3.80 4.75 35 x 45
5600	SLP562M100H9P3	0.047	0.035	4.05 5.06 35 x 50
160 Vdc (200Vdc Surge)				
330	SLP331M160A1P3	0.603	0.452	1.20 1.76 22 x 25
390	SLP391M160A3P3	0.510	0.383	1.30 1.91 22 x 30
470	SLP471M160A3P3	0.423	0.317	1.55 2.28 22 x 30
470	SLP471M160C1P3	0.423	0.317	1.55 2.28 25 x 25
560	SLP561M160A5P3	0.355	0.266	1.67 2.45 22 x 35
560	SLP561M160C3P3	0.355	0.266	1.67 2.45 25 x 30
680	SLP681M160A7P3	0.293	0.220	1.82 2.68 22 x 40
680	SLP681M160C5P3	0.293	0.220	1.85 2.72 25 x 35
680	SLP681M160E1P3	0.293	0.220	1.82 2.68 30 x 25
820	SLP821M160A4P3	0.243	0.182	2.04 3.00 22 x 45
820	SLP821M160C7P3	0.243	0.182	2.04 3.00 25 x 40
820	SLP821M160E3P3	0.243	0.182	2.04 3.00 30 x 30
1000	SLP102M160C4P3	0.199	0.149	2.40 3.53 25 x 45
1000	SLP102M160E5P3	0.199	0.149	2.25 3.31 30 x 35
1200	SLP122M160C9P3	0.166	0.125	2.62 3.85 25 x 50
1200	SLP122M160E7P3	0.166	0.125	2.49 3.66 30 x 40
1200	SLP122M160H3P3	0.166	0.125	2.49 3.66 35 x 30
1500	SLP152M160E4P3	0.133	0.100	2.84 4.17 30 x 45
1500	SLP152M160H5P3	0.133	0.100	2.84 4.17 35 x 35
1800	SLP182M160E9P3	0.111	0.083	3.32 4.88 30 x 50
1800	SLP182M160H7P3	0.111	0.083	3.00 4.41 35 x 40
2200	SLP222M160H4P3	0.090	0.068	3.50 5.15 35 x 45
180 Vdc (225Vdc Surge)				
270	SLP271M180A1P3	0.737	0.553	1.00 1.47 22 x 25

Type SLP 105 °C Snap-In Aluminum Electrolytic

Best Value 105 °C Snap-In Type

Additional Voltages and Sizes available at www.cde.com/catalogs/SLP.pdf

Cap (µF)	3000 h @ 105 °C Catalog Part Number	Max 25 °C ESR (Ω) 120 Hz 20kHz	Max 105 °C Ripple (A _{rms}) 120 Hz 20kHz	Nominal Size (DxL) (mm)
180 Vdc (225Vdc Surge)				
330	SLP331M180A3P3	0.603	0.452	1.20 1.76 22 x 30
390	SLP391M180A3P3	0.510	0.383	1.35 1.98 22 x 30
390	SLP391M180C1P3	0.510	0.383	1.35 1.98 25 x 25
470	SLP471M180A5P3	0.423	0.317	1.50 2.21 22 x 35
470	SLP471M180C3P3	0.423	0.317	1.50 2.21 25 x 30
560	SLP561M180A7P3	0.355	0.266	1.67 2.45 22 x 40
560	SLP561M180C3P3	0.355	0.266	1.67 2.45 25 x 30
560	SLP561M180E1P3	0.355	0.266	1.67 2.45 30 x 25
680	SLP681M180A4P3	0.293	0.220	1.78 2.62 22 x 45
680	SLP681M180C5P3	0.293	0.220	1.78 2.62 25 x 35
680	SLP681M180E3P3	0.293	0.220	1.78 2.62 30 x 30
820	SLP821M180A9P3	0.243	0.182	2.04 3.00 22 x 50
820	SLP821M180C7P3	0.243	0.182	2.04 3.00 25 x 40
820	SLP821M180E3P3	0.243	0.182	2.04 3.00 30 x 30
1000	SLP102M180C4P3	0.199	0.149	2.30 3.38 25 x 45
1000	SLP102M180E5P3	0.199	0.149	2.30 3.38 30 x 35
1000	SLP102M180H3P3	0.199	0.149	2.30 3.38 35 x 30
1200	SLP122M180E7P3	0.166	0.125	2.55 3.75 30 x 40
1200	SLP122M180H5P3	0.166	0.125	2.55 3.75 35 x 35
1500	SLP152M180E4P3	0.133	0.100	2.90 4.26 30 x 45
1500	SLP152M180H7P3	0.133	0.100	2.90 4.26 35 x 40
1800	SLP182M180H4P3	0.111	0.083	3.30 4.85 35 x 45
2200	SLP222M180H9P3	0.090	0.068	3.65 5.37 35 x 50
200 Vdc (250 Vdc Surge)				
220	SLP221M200A1P3	0.905	0.679	0.99 1.46 22 x 25
220	SLP221M200A3P3	0.905	0.679	1.07 1.57 22 x 30
270	SLP271M200A1P3	0.737	0.553	1.10 1.62 22 x 25
330	SLP331M200A3P3	0.603	0.452	1.25 1.84 22 x 30
330	SLP331M200C1P3	0.603	0.452	1.25 1.84 25 x 25
330	SLP331M200C3P3	0.603	0.452	1.35 1.98 25 x 30
390	SLP391M200A5P3	0.510	0.383	1.35 1.98 22 x 35
390	SLP391M200C3P3	0.510	0.383	1.35 1.98 25 x 30
470	SLP471M200A7P3	0.423	0.317	1.50 2.21 22 x 40
470	SLP471M200C3P3	0.423	0.317	1.50 2.21 25 x 30
470	SLP471M200C5P3	0.423	0.317	1.60 2.35 25 x 35
470	SLP471M200E1P3	0.423	0.317	1.50 2.21 30 x 25
560	SLP561M200A4P3	0.355	0.266	1.67 2.45 22 x 45
560	SLP561M200C5P3	0.355	0.266	1.70 2.50 25 x 35
560	SLP561M200E1P3	0.355	0.266	1.67 2.45 30 x 25
680	SLP681M200A9P3	0.293	0.220	1.78 2.62 22 x 50
680	SLP681M200C5P3	0.293	0.220	1.72 2.53 25 x 35
680	SLP681M200C7P3	0.293	0.220	1.82 2.68 25 x 40
680	SLP681M200E3P3	0.293	0.220	1.78 2.62 30 x 30

Cap (µF)	3000 h @ 105 °C Catalog Part Number	Max 25 °C ESR (Ω) 120 Hz 20kHz	Max 105 °C Ripple (A _{rms}) 120 Hz 20kHz	Nominal Size (DxL) (mm)
200 Vdc (250 Vdc Surge)				
820	SLP821M200C4P3	0.243	0.182	2.10 3.09 25 x 45
820	SLP821M200E5P3	0.243	0.182	2.04 3.00 30 x 35
820	SLP821M200H3P3	0.243	0.182	2.04 3.00 35 x 30
1000	SLP102M200C9P3	0.199	0.149	2.42 3.56 25 x 50
1000	SLP102M200E7P3	0.199	0.149	2.30 3.38 30 x 40
1000	SLP102M200H5P3	0.199	0.149	2.30 3.38 35 x 35
1200	SLP122M200E4P3	0.166	0.125	2.65 3.90 30 x 45
1200	SLP122M200H5P3	0.166	0.125	2.65 3.90 35 x 35
1200	SLP122M200H3P3	0.166	0.125	2.49 3.66 35 x 30
1500	SLP152M200H7P3	0.133	0.100	3.08 4.53 35 x 40
1800	SLP182M200H4P3	0.111	0.083	3.48 5.12 35 x 45
1800	SLP182M200H7P3	0.111	0.083	3.31 4.87 35 x 40
220 Vdc (270 Vdc Surge)				
220	SLP221M220A1P3	0.905	0.679	1.00 1.47 22 x 25
270	SLP271M220A3P3	0.737	0.553	1.15 1.69 22 x 30
330	SLP331M220A5P3	0.603	0.452	1.25 1.84 22 x 35
330	SLP331M220C1P3	0.603	0.452	1.25 1.84 25 x 25
390	SLP391M220A5P3	0.510	0.383	1.40 2.06 22 x 35
390	SLP391M220C3P3	0.510	0.383	1.40 2.06 25 x 30
470	SLP471M220A7P3	0.423	0.317	1.51 2.22 22 x 40
470	SLP471M220C3P3	0.423	0.317	1.44 2.12 25 x 30
470	SLP471M220E1P3	0.423	0.317	1.50 2.21 30 x 25
560	SLP561M220A4P3	0.355	0.266	1.70 2.50 22 x 45
560	SLP561M220C5P3	0.355	0.266	1.64 2.41 25 x 35
560	SLP561M220E3P3	0.355	0.266	1.70 2.50 30 x 30
560	SLP561M220H1P3	0.355	0.266	1.71 2.51 35 x 25
680	SLP681M220C7P3	0.293	0.220	1.84 2.70 25 x 40
680	SLP681M220E5P3	0.293	0.220	1.93 2.84 30 x 35
680	SLP681M220H3P3	0.293	0.220	1.89 2.78 35 x 30
820	SLP821M220C4P3	0.243	0.182	2.08 3.06 25 x 45
820	SLP821M220E7P3	0.243	0.182	2.19 3.22 30 x 40
820	SLP821M220H3P3	0.243	0.182	2.16 3.18 35 x 30
1000	SLP102M220E4P3	0.199	0.149	2.50 3.68 30 x 45
1000	SLP102M220H5P3	0.199	0.149	2.44 3.59 35 x 35
1200	SLP122M220H7P3	0.166	0.125	2.79 4.10 35 x 40
1500	SLP152M220H4P3	0.133	0.100	3.22 4.73 35 x 45
250 Vdc (300 Vdc Surge)				
180	SLP181M250A1P3	1.106	0.830	0.88 1.29 22 x 25
180	SLP181M250C1P3	1.106	0.830	0.95 1.40 25 x 25
220	SLP221M250A3P3	0.905	0.679	1.00 1.47 22 x 30
220	SLP221M250C1P3	0.905	0.679	1.08 1.59 25 x 25
270	SLP271M250A5P3	0.737	0.553	1.18 1.73 22 x 35
270	SLP271M250C3P3	0.737	0.553	1.27 1.87 25 x 30

Type SLP 105 °C Snap-In Aluminum Electrolytic

Best Value 105 °C Snap-In Type

Additional Voltages and Sizes available at www.cde.com/catalogs/SLP.pdf

Cap (µF)	3000 h @ 105 °C Catalog Part Number	Max 25 °C ESR (Ω) 120 Hz 20kHz	Max 105 °C Ripple (A _{rms}) 120 Hz 20kHz	Nominal Size (DxL) (mm)
250 Vdc (300 Vdc Surge)				
330	SLP331M250A7P3	0.603	0.452	1.30 1.91 22 x 40
330	SLP331M250C3P3	0.603	0.452	1.30 1.91 25 x 30
330	SLP331M250E1P3	0.603	0.452	1.35 1.98 30 x 25
330	SLP331M250A3P3	0.603	0.452	1.15 1.69 22 x 30
390	SLP391M250A4P3	0.510	0.383	1.49 2.19 22 x 45
390	SLP391M250C5P3	0.510	0.383	1.49 2.19 25 x 35
390	SLP391M250E3P3	0.510	0.383	1.49 2.19 30 x 30
470	SLP471M250A9P3	0.423	0.317	1.65 2.43 22 x 50
470	SLP471M250C7P3	0.423	0.317	1.65 2.43 25 x 40
470	SLP471M250E3P3	0.423	0.317	1.65 2.43 30 x 30
560	SLP561M250C4P3	0.355	0.266	1.80 2.65 25 x 45
560	SLP561M250E5P3	0.355	0.266	1.80 2.65 30 x 35
680	SLP681M250C9P3	0.293	0.220	2.03 2.98 25 x 50
680	SLP681M250E7P3	0.293	0.220	2.00 2.94 30 x 40
680	SLP681M250H3P3	0.293	0.220	2.00 2.94 35 x 30
820	SLP821M250E4P3	0.243	0.182	2.30 3.38 30 x 45
820	SLP821M250H5P3	0.243	0.182	2.30 3.38 35 x 35
1000	SLP102M250E9P3	0.199	0.149	2.70 3.97 30 x 50
1000	SLP102M250H7P3	0.199	0.149	2.69 3.95 35 x 40
1200	SLP122M250H4P3	0.166	0.125	3.09 4.54 35 x 45
1500	SLP152M250H9P3	0.133	0.100	3.61 5.31 35 x 50
315 Vdc (365 Vdc Surge)				
120	SLP121M315A1P3	2.765	2.074	0.75 1.10 22 x 25
150	SLP151M315A3P3	2.212	1.659	0.82 1.21 22 x 30
150	SLP151M315C1P3	2.212	1.659	0.82 1.21 25 x 25
180	SLP181M315A5P3	1.843	1.382	0.92 1.35 22 x 35
180	SLP181M315C3P3	1.843	1.382	0.93 1.37 25 x 30
220	SLP221M315A7P3	1.508	1.131	1.04 1.53 22 x 40
220	SLP221M315C3P3	1.508	1.131	1.04 1.53 25 x 30
220	SLP221M315E1P3	1.508	1.131	1.04 1.53 30 x 25
270	SLP271M315A4P3	1.229	0.922	1.16 1.71 22 x 45
270	SLP271M315C5P3	1.229	0.922	1.16 1.71 25 x 35
270	SLP271M315E1P3	1.229	0.922	1.16 1.71 30 x 25
330	SLP331M315A9P3	1.005	0.754	1.33 1.96 22 x 50
330	SLP331M315C7P3	1.005	0.754	1.33 1.96 25 x 40
330	SLP331M315E3P3	1.005	0.754	1.33 1.96 30 x 30
390	SLP391M315C4P3	0.851	0.638	1.47 2.16 25 x 45
390	SLP391M315E5P3	0.851	0.638	1.47 2.16 30 x 35
390	SLP391M315H3P3	0.851	0.638	1.47 2.16 35 x 30
470	SLP471M315E7P3	0.706	0.530	1.70 2.50 30 x 40
470	SLP471M315H3P3	0.706	0.530	1.70 2.50 35 x 30
560	SLP561M315E4P3	0.592	0.444	2.05 3.01 30 x 45
560	SLP561M315H5P3	0.592	0.444	2.05 3.01 35 x 35
680	SLP681M315H7P3	0.488	0.366	2.17 3.19 35 x 40

Cap (µF)	3000 h @ 105 °C Catalog Part Number	Max 25 °C ESR (Ω) 120 Hz 20kHz	Max 105 °C Ripple (A _{rms}) 120 Hz 20kHz	Nominal Size (DxL) (mm)
820	SLP821M315H4P3	0.405	0.304	2.20 3.23 35 x 45
350 Vdc (400 Vdc Surge)				
100	SLP101M350A1P3	3.317	2.488	0.69 1.01 22 x 25
120	SLP121M350A3P3	2.765	2.074	0.75 1.10 22 x 30
120	SLP121M350C1P3	2.765	2.074	0.75 1.10 25 x 25
150	SLP151M350A5P3	2.212	1.659	0.82 1.21 22 x 35
150	SLP151M350C3P3	2.212	1.659	0.83 1.22 25 x 30
180	SLP181M350A7P3	1.843	1.382	0.92 1.35 22 x 40
180	SLP181M350C3P3	1.843	1.382	0.92 1.35 25 x 30
180	SLP181M350E1P3	1.843	1.382	0.90 1.32 30 x 25
220	SLP221M350A4P3	1.508	1.131	1.05 1.54 22 x 45
220	SLP221M350C5P3	1.508	1.131	1.04 1.53 25 x 35
220	SLP221M350E3P3	1.508	1.131	1.02 1.50 30 x 30
270	SLP271M350A9P3	1.229	0.922	1.16 1.71 22 x 50
270	SLP271M350C7P3	1.229	0.922	1.18 1.73 25 x 40
270	SLP271M350E3P3	1.229	0.922	1.17 1.72 30 x 30
330	SLP331M350C4P3	1.005	0.754	1.29 1.90 25 x 45
330	SLP331M350E5P3	1.005	0.754	1.34 1.97 30 x 35
330	SLP331M350H3P3	1.005	0.754	1.22 1.79 35 x 30
390	SLP391M350C9P3	0.851	0.638	1.51 2.22 25 x 50
390	SLP391M350E7P3	0.851	0.638	1.51 2.22 30 x 40
390	SLP391M350H5P3	0.851	0.638	1.47 2.16 35 x 35
470	SLP471M350E4P3	0.706	0.530	1.65 2.43 30 x 45
470	SLP471M350H5P3	0.706	0.530	1.69 2.48 35 x 35
560	SLP561M350E9P3	0.592	0.444	1.85 2.72 30 x 50
560	SLP561M350H7P3	0.592	0.444	1.90 2.79 35 x 40
680	SLP681M350H4P3	0.488	0.366	2.20 3.23 35 x 45
385 Vdc (435 Vdc Surge)				
68	SLP680M385A1P3	4.879	3.659	0.45 0.66 22 x 25
82	SLP820M385A3P3	4.046	3.035	0.52 0.76 22 x 30
100	SLP101M385A3P3	3.317	2.488	0.58 0.85 22 x 30
120	SLP121M385A5P3	2.765	2.074	0.68 1.00 22 x 35
150	SLP151M385A7P3	2.212	1.659	0.79 1.16 22 x 40
150	SLP151M385E1P3	2.212	1.659	0.75 1.10 30 x 25
180	SLP181M385A4P3	1.843	1.382	0.94 1.38 22 x 45
180	SLP181M385E3P3	1.843	1.382	0.88 1.29 30 x 30
220	SLP221M385E3P3	1.508	1.131	1.00 1.47 30 x 30
270	SLP271M385E7P3	1.229	0.922	1.14 1.68 30 x 40
270	SLP271M385H3P3	1.229	0.922	1.10 1.62 35 x 30
330	SLP331M385E4P3	1.005	0.754	1.31 1.93 30 x 45
330	SLP331M385H5P3	1.005	0.754	1.32 1.94 35 x 35
390	SLP391M385E9P3	0.851	0.638	1.48 2.18 30 x 50
390	SLP391M385H7P3	0.851	0.638	1.48 2.18 35 x 40
470	SLP471M385H4P3	0.706	0.530	1.76 2.59 35 x 45
560	SLP561M385H9P3	0.592	0.444	1.95 2.87 35 x 50

Type SLP 105 °C Snap-In Aluminum Electrolytic

Best Value 105 °C Snap-In Type

Additional Voltages and Sizes available at www.cde.com/catalogs/SLP.pdf

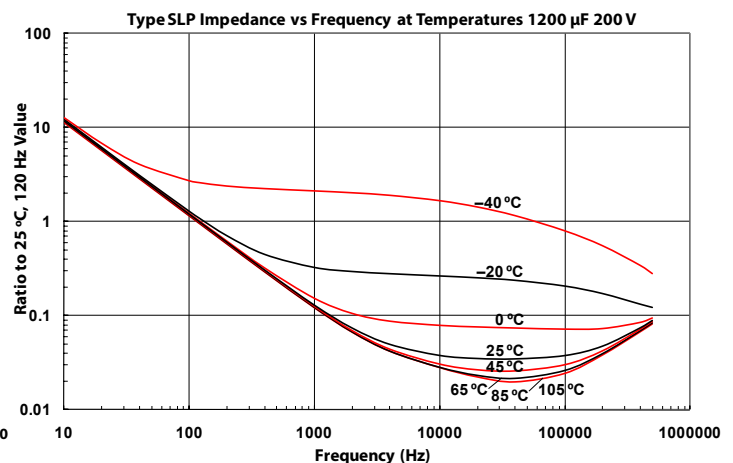
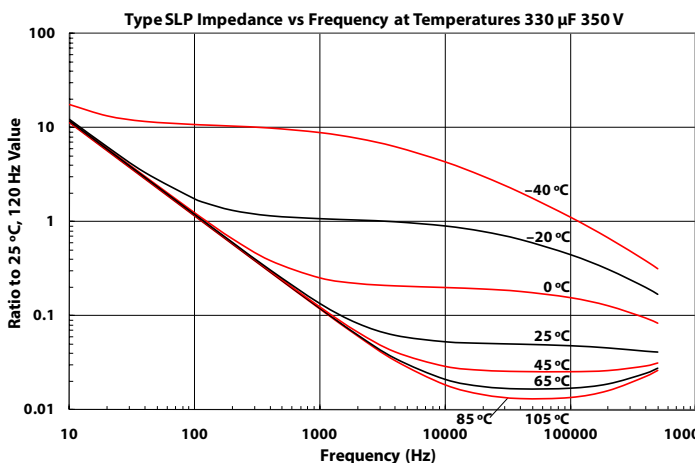
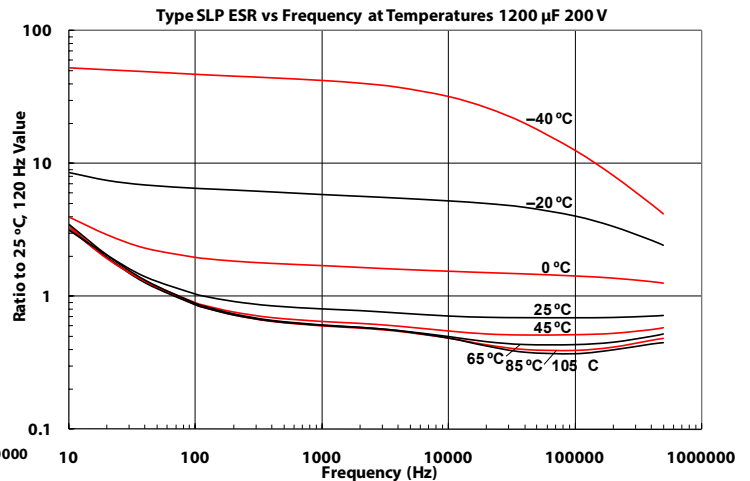
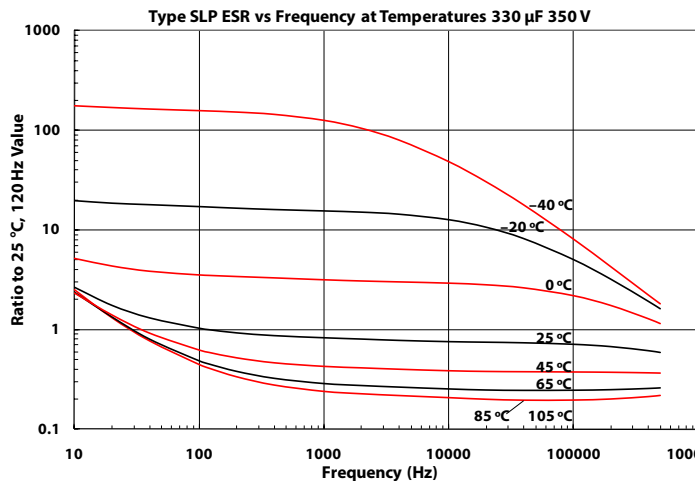
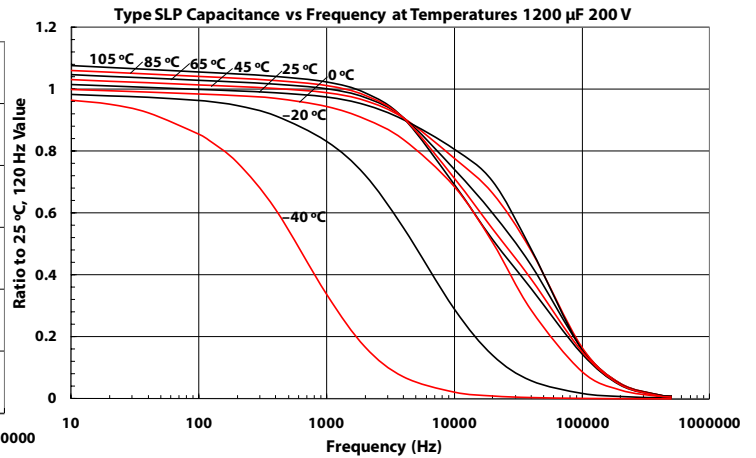
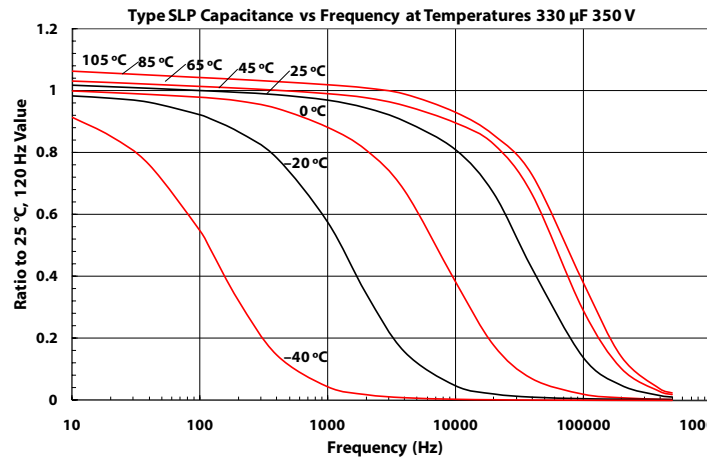
Cap (µF)	3000 h @ 105 °C Catalog Part Number	Max 25 °C ESR (Ω) 120 Hz 20kHz	Max 105 °C Ripple (A _{rms}) 120 Hz 20kHz	Nominal Size (DxL) (mm)
400 Vdc (450 Vdc Surge)				
47	SLP470M400A1P3	7.058	5.294	0.42 0.62 22 x 25
68	SLP680M400A1P3	4.879	3.659	0.50 0.74 22 x 25
82	SLP820M400A1P3	4.046	3.035	0.64 0.94 22 x 25
100	SLP101M400A3P3	3.317	2.488	0.70 1.03 22 x 30
100	SLP101M400C1P3	3.317	2.488	0.70 1.03 25 x 25
120	SLP121M400A5P3	2.765	2.074	0.75 1.10 22 x 35
120	SLP121M400C3P3	2.765	2.074	0.75 1.10 25 x 30
150	SLP151M400A7P3	2.212	1.659	0.88 1.29 22 x 40
150	SLP151M400C5P3	2.212	1.659	0.89 1.31 25 x 35
150	SLP151M400E1P3	2.212	1.659	0.88 1.29 30 x 25
150	SLP151M400C3P3	2.212	1.659	0.83 1.22 25 x 30
180	SLP181M400A4P3	1.843	1.382	0.98 1.44 22 x 45
180	SLP181M400E3P3	1.843	1.382	0.98 1.44 30 x 30
220	SLP221M400A9P3	1.508	1.131	1.10 1.62 22 x 50
220	SLP221M400C5P3	1.508	1.131	1.04 1.53 25 x 35
220	SLP221M400C7P3	1.508	1.131	1.10 1.62 25 x 40
220	SLP221M400E3P3	1.508	1.131	1.10 1.62 30 x 30
220	SLP221M400E5P3	1.508	1.131	1.28 1.88 30 x 35
270	SLP271M400C9P3	1.229	0.922	1.29 1.90 25 x 50
270	SLP271M400E5P3	1.229	0.922	1.22 1.79 30 x 35
270	SLP271M400H3P3	1.229	0.922	1.22 1.79 35 x 30
330	SLP331M400E4P3	1.005	0.754	1.55 2.28 30 x 45
330	SLP331M400H3P3	1.005	0.754	1.44 2.12 35 x 30
330	SLP331M400E5P3	1.005	0.754	1.39 2.04 30 x 35
390	SLP391M400E4P3	0.851	0.638	1.60 2.35 30 x 45
390	SLP391M400H5P3	0.851	0.638	1.60 2.35 35 x 35
470	SLP471M400H7P3	0.706	0.530	1.90 2.79 35 x 40
560	SLP561M400H4P3	0.592	0.444	2.12 3.12 35 x 45
680	SLP681M400H4P3	0.488	0.366	2.34 3.44 35 x 45
420 Vdc (470 Vdc Surge)				
68	SLP680M420A1P3	4.879	3.659	0.55 0.81 22 x 25
82	SLP820M420A1P3	4.046	3.035	0.64 0.94 22 x 25
82	SLP820M420C1P3	4.046	3.035	0.58 0.85 25 x 25
100	SLP101M420A3P3	3.317	2.488	0.70 1.03 22 x 30
100	SLP101M420C1P3	3.317	2.488	0.70 1.03 25 x 25
120	SLP121M420A5P3	2.765	2.074	0.75 1.10 22 x 35
120	SLP121M420C3P3	2.765	2.074	0.75 1.10 25 x 30
120	SLP121M420E1P3	2.765	2.074	0.78 1.15 30 x 25
150	SLP151M420A7P3	2.212	1.659	0.88 1.29 22 x 40
150	SLP151M420C5P3	2.212	1.659	0.88 1.29 25 x 35
150	SLP151M420E1P3	2.212	1.659	0.88 1.29 30 x 25
180	SLP181M420A4P3	1.843	1.382	0.95 1.40 22 x 45
180	SLP181M420C7P3	1.843	1.382	0.97 1.43 25 x 40
180	SLP181M420E3P3	1.843	1.382	0.96 1.41 30 x 30
180	SLP181M420H1P3	1.843	1.382	0.94 1.38 35 x 25

Cap (µF)	3000 h @ 105 °C Catalog Part Number	Max 25 °C ESR (Ω) 120 Hz 20kHz	Max 105 °C Ripple (A _{rms}) 120 Hz 20kHz	Nominal Size (DxL) (mm)
420 Vdc (470 Vdc Surge)				
220	SLP221M420C4P3	1.508	1.131	1.13 1.66 25 x 45
220	SLP221M420E5P3	1.508	1.131	1.10 1.62 30 x 35
220	SLP221M420H1P3	1.508	1.131	1.10 1.62 35 x 25
270	SLP271M420C9P3	1.229	0.922	1.37 2.01 25 x 50
270	SLP271M420E7P3	1.229	0.922	1.25 1.84 30 x 40
270	SLP271M420H3P3	1.229	0.922	1.22 1.79 35 x 30
330	SLP331M420E4P3	1.005	0.754	1.49 2.19 30 x 45
330	SLP331M420H5P3	1.005	0.754	1.45 2.13 35 x 35
390	SLP391M420E9P3	0.851	0.638	1.67 2.45 30 x 50
390	SLP391M420H7P3	0.851	0.638	1.66 2.44 35 x 40
470	SLP471M420H4P3	0.706	0.530	1.90 2.79 35 x 45
450 Vdc (500 Vdc Surge)				
47	SLP470M450A1P3	7.060	5.295	0.40 0.59 22 x 25
56	SLP560M450A1P3	5.924	4.443	0.50 0.74 22 x 25
68	SLP680M450A3P3	4.879	3.659	0.53 0.78 22 x 30
68	SLP680M450C1P3	4.879	3.659	0.53 0.78 25 x 25
82	SLP820M450A3P3	4.046	3.035	0.64 0.94 22 x 30
82	SLP820M450C1P3	4.046	3.035	0.64 0.94 25 x 25
100	SLP101M450A5P3	3.317	2.488	0.69 1.01 22 x 35
100	SLP101M450C3P3	3.317	2.488	0.69 1.01 25 x 30
100	SLP101M450E1P3	3.317	2.488	0.72 1.06 30 x 25
100	SLP101M450C7P3	3.317	2.488	0.78 1.15 25 x 40
100	SLP101M450A3P3	3.317	2.488	0.65 0.96 22 x 30
120	SLP121M450A7P3	2.765	2.074	0.80 1.18 22 x 40
120	SLP121M450C3P3	2.765	2.074	0.80 1.18 25 x 30
120	SLP121M450E1P3	2.765	2.074	0.80 1.18 30 x 25
150	SLP151M450A4P3	2.212	1.659	0.88 1.29 22 x 45
150	SLP151M450C5P3	2.212	1.659	0.88 1.29 25 x 35
150	SLP151M450E3P3	2.212	1.659	0.88 1.29 30 x 30
150	SLP151M450C3P3	2.121	1.591	0.82 1.21 25 x 30
180	SLP181M450C7P3	1.843	1.382	1.00 1.47 25 x 40
180	SLP181M450E3P3	1.843	1.382	1.00 1.47 30 x 30
220	SLP221M450C4P3	1.508	1.131	1.12 1.65 25 x 45
220	SLP221M450E5P3	1.508	1.131	1.12 1.65 30 x 35
220	SLP221M450H3P3	1.508	1.131	1.12 1.65 35 x 30
220	SLP221M450E3P3	1.508	1.131	1.05 1.54 30 x 30
270	SLP271M450E7P3	1.229	0.922	1.28 1.88 30 x 40
270	SLP271M450H5P3	1.229	0.922	1.28 1.88 35 x 35
330	SLP331M450E9P3	1.005	0.754	1.45 2.13 30 x 50
330	SLP331M450H5P3	1.005	0.754	1.37 2.01 35 x 35
330	SLP331M450H7P3	1.005	0.754	1.45 2.13 35 x 40
390	SLP391M450H7P3	0.851	0.638	1.55 2.28 35 x 40
470	SLP471M450H4P3	0.706	0.530	1.77 2.60 35 x 45
470	SLP471M450H9P3	0.706	0.530	1.85 2.72 35 x 50
560	SLP561M450H9P3	0.590	0.443	2.00 2.94 35 x 50

Type SLP 105 °C Snap-In Aluminum Electrolytic

Best Value 105 °C Snap-In Type

Typical Performance Curves



Notice and Disclaimer: All product drawings, descriptions, specifications, statements, information and data (collectively, the "Information") in this datasheet or other publication are subject to change. The customer is responsible for checking, confirming and verifying the extent to which the Information contained in this datasheet or other publication is applicable to an order at the time the order is placed. All Information given herein is believed to be accurate and reliable, but it is presented without any guarantee, warranty, representation or responsibility of any kind, expressed or implied. Statements of suitability for certain applications are based on the knowledge that the Cornell Dubilier company providing such statements ("Cornell Dubilier") has of operating conditions that such Cornell Dubilier company regards as typical for such applications, but are not intended to constitute any guarantee, warranty or representation regarding any such matter – and Cornell Dubilier specifically and expressly disclaims any guarantee, warranty or representation concerning the suitability for a specific customer application, use, storage, transportation, or operating environment. The Information is intended for use only by customers who have the requisite experience and capability to determine the correct products for their application. Any technical advice inferred from this Information or otherwise provided by Cornell Dubilier with reference to the use of any Cornell Dubilier products is given gratis (unless otherwise specified by Cornell Dubilier), and Cornell Dubilier assumes no obligation or liability for the advice given or results obtained. Although Cornell Dubilier strives to apply the most stringent quality and safety standards regarding the design and manufacturing of its products, in light of the current state of the art, isolated component failures may still occur. Accordingly, customer applications which require a high degree of reliability or safety should employ suitable designs or other safeguards (such as installation of protective circuitry or redundancies or other appropriate protective measures) in order to ensure that the failure of an electrical component does not result in a risk of personal injury or property damage. Although all product-related warnings, cautions and notes must be observed, the customer should not assume that all safety measures are indicated in such warnings, cautions and notes, or that other safety measures may not be required.