

Miniaturized, High-Reliability, High-Ripple Capacitors

GREEN
CAP

105°C
2000hours

- High-reliability, high-ripple capacitors.
- Guarantees 2000 hours at 105°C.



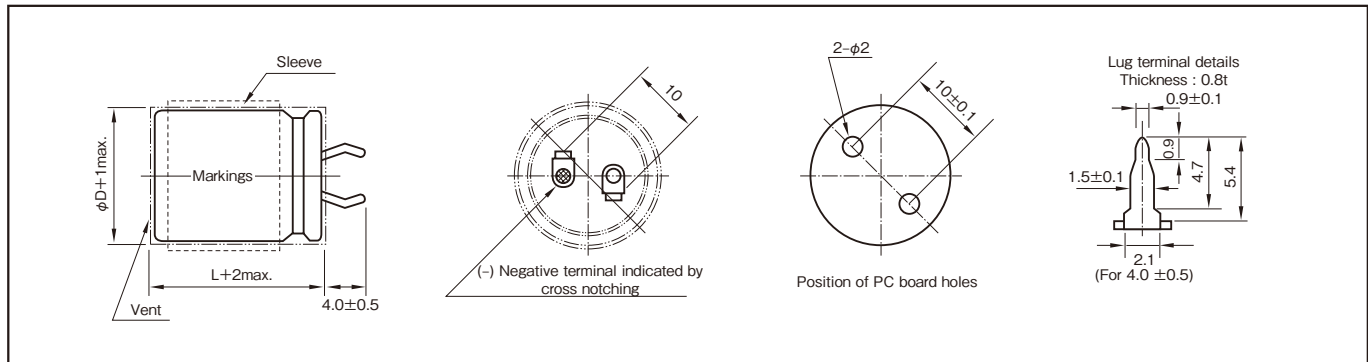
Marking color : White print on a black sleeve

Specifications

Item	Performance							
Category temperature range (°C)	-40 to +105 (-25 to +105 at 160V or more)							
Tolerance at rated capacitance (%)	± 20 (20°C,120Hz)							
Leakage current (μA)	Less than 0.02CV or 3mA whichever is smaller (after 5 minutes) C : Rated capacitance (μF) ; V : Rated voltage (V) (20°C)							
Tangent of loss angle (tanδ)	Rated voltage (V)	16	25	35	50	63 to 100	160 to 250	400 to 450
	tanδ (max.)	0.50	0.40	0.35	0.30	0.20	0.15	0.20
(20°C,120Hz)								
Characteristics at high and low temperature	Rated voltage (V)	16 to 100		160 to 200		250 to 400		
	Impedance ratio (max.)	Z-25°C/Z+20°C		4		4		4
		Z-40°C/Z+20°C		15		—		—
(120Hz)								
Endurance (105°C) (Applied ripple current)	Test time	2000 hours						
	Leakage current	The initial specified value or less						
	Percentage of capacitance change	Within ±20% of initial value						
	Tangent of the loss angle	200% or less of the initial specified value						
Shelf life (105°C)	Test time	1000 hours						
	Leakage current	The initial specified value or less						
	Percentage of capacitance change	Within ±15% of initial value						
	Tangent of the loss angle	150% or less of the initial specified value						
	Voltage application treatment							
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)							

Outline Drawing

Unit: mm



Part numbering system (example : 200V470µF)

LAH	—	200	V	471	M	S33	#	B
Series code		Rated voltage symbol		Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol		Additional symbol

Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	50	120	1k	10k	30k
Rated voltage (V)					
100 or less	0.95	1	1.10	1.15	1.15
160 to 250	0.87	1	1.11	1.18	1.20
315 or more	0.80	1	1.14	1.19	1.20

- The electric characteristics are described on page 144.

NOTE

Design, Specifications are subject to change without notice.
Ask factory for technical specifications before purchase and/or use.

Standard Ratings

Case φD×L (mm)	Item Casing symbol	Rated voltage (V)	16			25			35			50		
		Rated capacitance	ESR	Rated ripple current	Rated capacitance	ESR	Rated ripple current	Rated capacitance	ESR	Rated ripple current	Rated capacitance	ESR	Rated ripple current	
		μF	Ω	Arms	μF	Ω	Arms	μF	Ω	Arms	μF	Ω	Arms	
22×25	S22	6800	0.122	1.60	4700	0.141	1.55	3300	0.176	1.43	1800	0.184	1.31	
22×30	S23	10000	0.083	1.99	6800	0.098	1.91	3900	0.149	1.65	2700	0.123	1.70	
22×35	S24	12000	0.069	2.28	8200	0.081	2.14	5600	0.104	2.02	3300	0.101	1.98	
22×40	S25	15000	0.055	2.64	10000	0.066	2.40	6800	0.085	2.28	3900	0.085	2.25	
22×45	S26	18000	0.046	2.98	12000	0.055	2.69	—	—	—	4700	0.071	2.56	
22×50	S27	—	—	—	—	—	—	8200	0.071	2.67	5600	0.059	2.89	
25×25	S32	10000	0.083	1.99	6800	0.098	1.91	4700	0.124	1.78	2700	0.123	1.70	
25×30	S33	12000	0.069	2.30	8200	0.081	2.16	5600	0.104	2.04	3300	0.101	2.00	
25×35	S34	15000	0.055	2.68	10000	0.066	2.44	6800	0.085	2.31	3900	0.085	2.28	
25×40	S35	18000	0.046	3.04	12000	0.055	2.74	8200	0.071	2.60	5600	0.059	2.81	
25×45	S36	22000	0.038	3.40	15000	0.044	3.15	10000	0.058	2.92	—	—	—	
25×50	S37	27000	0.031	3.81	18000	0.037	3.54	12000	0.048	3.26	6800	0.049	3.37	
30×25	S42	12000	0.069	2.38	8200	0.081	2.25	5600	0.104	2.12	3900	0.085	2.22	
30×30	S43	18000	0.046	3.00	12000	0.055	2.70	8200	0.071	2.56	4700	0.071	2.58	
30×35	S44	22000	0.038	3.39	15000	0.044	3.13	10000	0.058	2.92	5600	0.059	2.95	
30×40	S45	27000	0.031	3.83	18000	0.037	3.54	12000	0.048	3.28	6800	0.049	3.39	
30×45	S46	33000	0.025	4.30	22000	0.030	4.24	15000	0.039	3.74	8200	0.040	3.71	
30×50	S47	39000	0.021	4.74	—	—	—	—	—	—	10000	0.033	4.09	
35×25	S52	18000	0.046	3.10	12000	0.055	2.80	8200	0.071	2.78	4700	0.071	2.67	
35×30	S53	27000	0.031	3.74	15000	0.044	3.22	12000	0.048	3.20	6800	0.049	3.31	
35×35	S54	33000	0.025	4.24	22000	0.030	3.96	15000	0.039	3.69	8200	0.040	3.66	
35×40	S55	39000	0.021	4.72	—	—	—	18000	0.032	4.16	10000	0.033	4.07	
35×45	S56	47000	0.018	5.27	27000	0.025	4.75	—	—	—	12000	0.028	4.50	
35×50	S57	—	—	—	33000	0.020	5.39	22000	0.026	4.92	—	—	—	

Rated voltage (V) Case φD×L (mm) Item Casing symbol		63			80			100		
		Rated capacitance	ESR	Rated ripple current	Rated capacitance	ESR	Rated ripple current	Rated capacitance	ESR	Rated ripple current
		μF	Ω	Arms	μF	Ω	Arms	μF	Ω	Arms
22×25	S22	1200	0.207	1.25	820	0.303	1.11	560	0.444	1.07
22×30	S23	1800	0.138	1.52	1200	0.207	1.39	820	0.303	1.35
22×35	S24	2200	0.113	1.73	1500	0.166	1.61	1000	0.249	1.54
22×40	S25	2700	0.092	1.97	1800	0.138	1.83	1200	0.207	1.74
22×45	S26	—	—	—	2200	0.113	2.09	1500	0.166	1.99
22×50	S27	3300	0.075	2.32	—	—	—	—	—	—
25×25	S32	1800	0.138	1.52	1200	0.207	1.39	820	0.303	1.35
25×30	S33	2200	0.113	1.75	1500	0.166	1.62	1000	0.249	1.56
25×35	S34	2700	0.092	1.99	2200	0.113	2.01	1200	0.207	1.76
25×40	S35	3300	0.075	2.27	—	—	—	1500	0.166	2.03
25×45	S36	3900	0.064	2.54	2700	0.092	2.43	1800	0.138	2.28
25×50	S37	4700	0.053	2.88	3300	0.075	2.76	2200	0.113	2.57
30×25	S42	2700	0.092	1.93	1800	0.138	1.81	1200	0.207	1.71
30×30	S43	3300	0.075	2.24	2200	0.113	2.10	1500	0.166	2.00
30×35	S44	3900	0.064	2.55	2700	0.092	2.43	1800	0.138	2.27
30×40	S45	4700	0.053	2.90	3300	0.075	2.78	2200	0.113	2.59
30×45	S46	5600	0.044	3.28	3900	0.064	3.12	2700	0.092	2.94
30×50	S47	6800	0.037	3.73	4700	0.053	3.56	3300	0.075	3.32
35×25	S52	3300	0.075	2.41	2200	0.113	2.17	1500	0.166	2.07
35×30	S53	4700	0.053	2.83	3300	0.075	2.71	2200	0.113	2.52
35×35	S54	5600	0.044	3.24	3900	0.064	3.07	2700	0.092	2.90
35×40	S55	6800	0.037	3.71	4700	0.053	3.50	3300	0.075	3.31
35×45	S56	8200	0.030	4.16	5600	0.044	3.87	3900	0.064	3.69
35×50	S57	10000	0.025	4.69	6800	0.037	4.19	4700	0.053	4.14

(Note) ESR : 20°C, 120Hz ; Rated ripple current : 105°C, 120Hz

• The standard ratings follow the next page.

NOTE

Design, Specifications are subject to change without notice.
Ask factory for technical specifications before purchase and/or use.

Standard Ratings

Case φD×L (mm)	Item Casing symbol	160			180			200		
		Rated capacitance	ESR	Rated ripple current	Rated capacitance	ESR	Rated ripple current	Rated capacitance	ESR	Rated ripple current
		μF	Ω	Arms	μF	Ω	Arms	μF	Ω	Arms
22×25	S22	330	0.754	1.16	270	0.922	1.08	220	1.131	1.08
22×30	S23	390	0.638	1.43	330	0.754	1.30	330	0.754	1.30
22×35	S24	470	0.529	1.52	470	0.529	1.50	390	0.638	1.41
22×40	S25	560	0.444	1.62	560	0.444	1.62	470	0.529	1.50
22×45	S26	680	0.366	1.70	—	—	—	560	0.444	1.58
22×50	S27	820	0.303	1.81	680	0.366	1.76	680	0.366	1.68
25×25	S32	470	0.529	1.55	390	0.638	1.35	330	0.754	1.35
25×30	S33	560	0.444	1.73	470	0.529	1.62	470	0.529	1.47
25×35	S34	680	0.366	1.81	560	0.444	1.69	560	0.444	1.65
25×40	S35	820	0.303	1.98	680	0.366	1.72	680	0.366	1.80
25×45	S36	1000	0.249	2.04	820	0.303	1.78	—	—	—
25×50	S37	1200	0.207	2.12	1000	0.249	1.91	820	0.303	1.87
30×25	S42	680	0.366	1.82	560	0.444	1.67	470	0.529	1.56
30×30	S43	820	0.303	1.98	680	0.366	1.74	680	0.366	1.82
30×35	S44	1000	0.249	2.14	820	0.303	1.85	820	0.303	1.99
30×40	S45	1200	0.207	2.22	1000	0.249	2.01	—	—	—
30×45	S46	1500	0.166	2.46	1200	0.207	2.19	1000	0.249	2.17
30×50	S47	—	—	—	1500	0.166	2.36	1200	0.207	2.22
35×25	S52	820	0.303	1.93	680	0.366	1.92	680	0.366	1.96
35×30	S53	1200	0.249	2.40	1000	0.249	2.16	820	0.303	2.07
35×35	S54	1500	0.166	2.53	1200	0.207	2.34	1000	0.249	2.22
35×40	S55	—	—	—	1500	0.166	2.56	1200	0.207	2.42
35×45	S56	1800	0.138	2.98	1800	0.138	2.67	1500	0.166	2.59
35×50	S57	2200	0.113	3.10	—	—	—	1800	0.138	2.70

Case φD×L (mm)	Item Casing symbol	250			400			450		
		Rated capacitance	ESR	Rated ripple current	Rated capacitance	ESR	Rated ripple current	Rated capacitance	ESR	Rated ripple current
		μF	Ω	Arms	μF	Ω	Arms	μF	Ω	Arms
22×25	S22	180	1.382	0.94	68	4.879	0.47	56	5.924	0.47
22×30	S23	220	1.131	1.10	82	4.046	0.56	68	4.879	0.56
22×35	S24	270	0.922	1.13	120	2.765	0.64	82	4.046	0.64
22×40	S25	330	0.754	1.20	150	2.212	0.70	100	3.317	0.70
22×45	S26	390	0.638	1.26	—	—	—	120	2.765	0.73
22×50	S27	470	0.529	1.37	180	1.843	0.78	150	2.212	0.78
25×25	S32	220	1.131	1.15	82	4.046	0.65	68	4.879	0.65
25×30	S33	330	0.754	1.30	120	2.765	0.70	100	3.317	0.70
25×35	S34	390	0.638	1.41	150	2.212	0.73	120	2.765	0.73
25×40	S35	470	0.529	1.52	180	1.843	0.82	150	2.212	0.82
25×45	S36	560	0.444	1.59	220	1.508	0.87	180	1.843	0.87
25×50	S37	680	0.366	1.66	270	1.229	0.94	220	1.508	0.94
30×25	S42	330	0.754	1.30	120	2.765	0.78	100	3.317	0.78
30×30	S43	470	0.529	1.36	180	1.843	0.83	150	2.212	0.83
30×35	S44	560	0.444	1.57	220	1.508	0.86	180	1.843	0.83
30×40	S45	680	0.366	1.76	270	1.229	0.95	220	1.508	0.95
30×45	S46	820	0.303	1.83	330	1.005	1.11	270	1.229	1.11
30×50	S47	1000	0.249	1.87	390	0.851	1.15	330	1.005	1.15
35×25	S52	470	0.529	1.40	180	1.843	0.86	150	2.212	0.86
35×30	S53	560	0.444	1.56	270	1.229	0.91	220	1.508	0.91
35×35	S54	820	0.303	1.82	330	1.005	1.13	270	1.229	1.13
35×40	S55	1000	0.249	1.99	390	0.851	1.26	330	1.005	1.26
35×45	S56	1200	0.207	2.10	470	0.706	1.31	390	0.851	1.31
35×50	S57	—	—	—	560	0.592	1.50	470	0.706	1.50

(Note) ESR : 20°C, 120Hz ; Rated ripple current : 105°C, 120Hz

NOTE

Design, Specifications are subject to change without notice.
Ask factory for technical specifications before purchase and/or use.