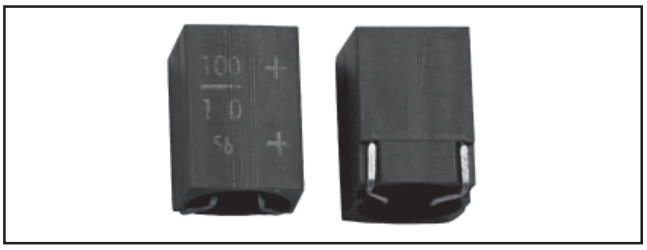
Solid Aluminum Capacitors

With Organic Semiconductor Electrolyte
Surface Mount



FEATURES

- New materials developed to achieve higher temperature tolerance.
- Can be soldered by reflow and mounted by carrier taping.
- 94SM is ideal for use in products such as switching power supplies, VCR's and other products where a surface mount design is necessary.

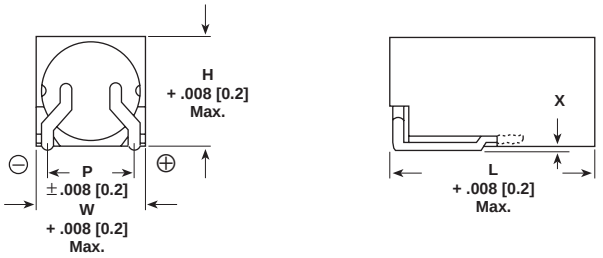
STANDARD RATINGS

CASE CODE	PART* NUMBER	RATED VOLTAGE (V)	NOMINAL CAPACITANCE (μF)	MAX. ALLOWABLE RIPPLE CURRENT (mArms) (@ 100kHz, + 45°C)	MAX. LEAKAGE CURRENT (μA) (After 2 Minutes)	MAX. TANGENT OF LOSS ANGLE	MAX. ESR 100k ~ 300kHz (mΩ)
A	94SM105X0020A	20.0	1.0	430	1.00	0.06	600
	94SM225X0016A	16.0	2.2	450	1.06	0.07	500
	94SM335X0016A	16.0	3.3	500	1.58	0.08	450
	94SM475X0010A	10.0	4.7	540	1.41	0.09	400
	94SM685X06R3A	6.3	6.8	560	1.29	0.09	400
B	94SM225X0020B	20.0	2.2	695	1.32	0.06	300
	94SM335X0020B	20.0	3.3	700	1.98	0.06	300
	94SM475X0016B	16.0	4.7	720	2.26	0.07	300
	94SM685X0016B	16.0	6.8	745	3.26	0.07	250
	94SM106X0010B	10.0	10.0	780	3.00	0.09	250
	94SM156X06R3B	6.3	15.0	815	2.84	0.09	250
C	94SM475X0020C	20.0	4.7	790	4.70	0.07	150
	94SM685X0020C	20.0	6.8	800	6.80	0.07	150
	94SM106X0020C	20.0	10.0	890	10.0	0.07	150
	94SM156X0016C	16.0	15.0	900	12.0	0.07	150
	94SM226X0010C	10.0	22.0	1000	11.0	0.07	150
	94SM336X06R3C	6.3	33.0	1240	10.3	0.07	150
	94SM476X06R3C	6.3	47.0	1320	14.8	0.08	150
D	94SM156X0020D	20.0	15.0	1140	15.0	0.07	125
	94SM226X0020D	20.0	22.0	1450	22.0	0.07	125
	94SM336X0020D	20.0	33.0	1580	33.0	0.07	125
	94SM476X0010D	10.0	47.0	1630	23.5	0.08	100
	94SM686X0010D	10.0	68.0	1650	34.0	0.08	100
E	94SM476X0020E	20.0	47.0	1710	47.0	0.07	80
	94SM686X0020E	20.0	68.0	2020	68.0	0.07	80
	94SM107X0010E	10.0	100.0	2110	50.0	0.08	80
	94SM157X06R3E	6.3	150.0	2150	47.2	0.09	80

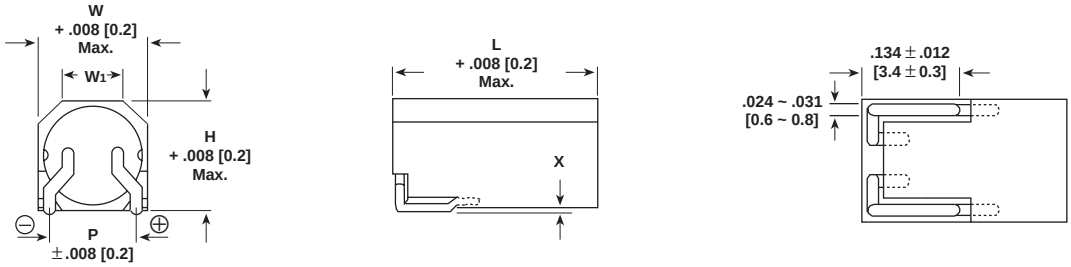
*Part Numbers shown are for ± 20% capacitance tolerance (X0).
94SM105X0020A Part Number is complete.

DIMENSIONAL CONFIGURATIONS [Numbers in brackets indicate millimeters]

Case Sizes A, B, E



Case Sizes C, D



Refer to Page 34 for Recommended Land Pattern.

CASE CODE	L	W	H	P	X (Max.)	W_1
A	.287 [7.3]	.181 [4.6]	.181 [4.6]	.142 [3.6]	.008 [.2]	—
B	.287 [7.3]	.220 [5.6]	.220 [5.6]	.173 [4.4]	.008 [.2]	—
C	.354 [9.0]	.276 [7.0]	.276 [7.0]	.217 [5.5]	.012 [.3]	.220 [5.6]
D	.472 [12.0]	.276 [7.0]	.276 [7.0]	.217 [5.5]	.012 [.3]	.220 [5.6]
E	.512 [13.0]	.346 [8.8]	.346 [8.8]	.276 [7.0]	.012 [.3]	—

ENVIRONMENTAL PERFORMANCE

ITEMS	CHARACTERISTICS		
1. Operating Temperature Range	- 55°C ~ + 105°C		
2. Capacitance Tolerance @ 120Hz	X0 = ± 20%		
3. Tangent of Loss Angle (tan δ) @ 120Hz	≤ Values in Standard Ratings Table		
4. Maximum Leakage Current (μA/2 minutes)*	A, B sizes 0.03 CV or 1 (whichever is greater). C, D, E sizes 0.05 CV.		
5. Equivalent Series Resistance (Ω) (100k ~ 300kHz)	≤ Values in Standard Ratings Table		
6. Temperature Characteristics Impedance Ratio at 100kHz	- 55°C	$Z/Z_{20°C}$	1.0 ~ 2.0
	+ 105°C	$Z/Z_{20°C}$	0.6 ~ 1.0
7. High Temperature Load (+ 105°C, 2,000 hours) Rated Voltage Applied	Δ C/C		Within ± 20% of the initial value
	tan δ		≤ 1.5 times the value of Item 3
	Leakage Current		≤ The value of Item 4
8. Moisture Resistance (+ 60°C, 90 ~ 95% RH, 500 hours, no voltage)	Δ C/C		Within ± 20% of the initial value
	tan δ		≤ 1.5 times the value of Item 3
	Leakage Current		≤ The value of Item 4
9. Reverse Voltage Guarantee	Temporary: Less than 20% of the rated voltage Continuous: Less than 10% of the rated voltage		
10. Solder Heat Resistance (VPS) (+ 230°C x 10 seconds)**	Δ C/C		Within ± 10% of the initial value
	tan δ		≤ 2 times the value of Item 3
	Leakage Current		≤ The value of Item 4

*If any doubt arises, measure the current after applying voltage (voltage treatment) for 120 minutes at + 105°C. The rated voltage should be applied for all WV.

**The electrostatic capacity of the 94SM may be changed by soldering such as VPS and reflow. Refer to page 34 for soldering specifications.

CASE CODE LIST

CAPACITANCE (μF) \ WV*	6.3	10	16	20
(SV)**	(7.2)	(11.5)	(18.4)	(23)
1.0	—	—	—	A
2.2	—	—	A	B
3.3	—	—	A	B
4.7	—	A	B	C
6.8	A	—	B	C
10.0	—	B	—	C
15.0	B	—	C	D
22.0	—	C	—	D
33.0	C	—	—	D
47.0	C	D	—	E
68.0	—	D	—	E
100.0	—	E	—	—
150.0	E	—	—	—

*WV = Rated Voltage. **(SV) = Surge Voltage (at room temperature).

TEMPERATURE COEFFICIENT FOR RIPPLE CURRENT

Ambient Temperature	~ + 45°C	+ 85°C	+ 95°C	+ 105°C
Coefficient	1.0	0.7	0.4	0.25

PART MARKING***

— Polarity ⊕

— Rated voltage

— Capacitance

— Lot number

***Case color: Purple. Marking: White.