

# SMD Aluminum Solid Capacitors with Conductive Polymer



## FEATURES

- Vishay OS-CON series utilizes a polymerized organic semiconductor as electrolyte
- Features superior heat-proof characteristics compared with previous OS-CON series
- For power supply and other applications where high ripple current and low impedance are necessary
- Rated ripple current values are guaranteed at 105 °C
- No need to consider derating on maximum allowable ripple current
- SMD version with base plate, containing no lead (Pb)
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS  
COMPLIANT**

QUICK REFERENCE DATA			
DESCRIPTION	VALUE		
Operating temperature range	-55 °C to +105 °C		
Capacitance tolerance at 120 Hz	M: ± 20 %		
Tangent of loss angle (tan δ) at 120 Hz	Values in Electrical Data and Ordering Information table		
Leakage current (µA/2 min) (or less) <sup>(1)</sup>	Values in Electrical Data and Ordering Information table		
Equivalent series resistance (Ω), (100 kHz to 300 kHz)	Values in Electrical Data and Ordering Information table		
Characteristics at high temp. and low temp. Impedance ratio at 100 kHz, +20 °C	-55 °C	Z/Z <sub>20 °C</sub>	0.75 to 1.25
	+105 °C	Z/Z <sub>20 °C</sub>	0.75 to 1.25
Endurance +105 °C, 2000 h Rated voltage applied (20 V for 25 V products) (1000 h for A5/B6 sizes)	ΔC/C	Within ± 20 %	
	tan δ	≤ 1.5 x the value of tangent of loss angle	
	ESR	≤ 1.5 x the value of ESR	
	Leakage current	≤ the value of leakage current	
Damp heat (steady state) (+60 °C, 90 % to 95 % RH, 1000 h, no voltage) (500 h for A5/B6 sizes)	ΔC/C	Within ± 20 %	
	tan δ	≤ 1.5 x the value of tangent of loss angle	
	ESR	≤ 1.5 x the value of ESR	
	Leakage current	≤ the value of leakage current after voltage treatment	
Reverse voltage guarantee	Temporary: < 20 % of the rated voltage		
	Continuous: < 10 % of the rated voltage		
Solder heat resistance (VPS) <sup>(2)</sup> (230 °C x 75 s) (Please consult us for A5/B6 sizes)	ΔC/C	Within ± 10 %	
	tan δ	≤ 1.3 x the value of tangent of loss angle	
	ESR	≤ 1.3 x the value of ESR	
	Leakage current	≤ the value of leakage current after voltage treatment	

## Notes

- (1) If any doubt arises, measure the current after applying voltage (voltage treatment). Voltage treatment: The rated voltage is applied to Vishay OS-CON (2.5 WV to 20 WV) for 120 min at 105 °C. (However, 20 V is applied to a 25 WV Vishay OS-CON).
- (2) Refer to Soldering Profile and Land Pattern document [www.vishay.com/doc?90014](http://www.vishay.com/doc?90014) for soldering recommendation.

DIMENSIONS in millimeters		SIZE CODE	Ø D ± 0.5	L max.	W ± 0.2	H ± 0.2	C ± 0.2	R	P ± 0.2
		A5	4.0	5.5	4.3	4.3	5.0	0.5 to 0.8	1.0
		B6	5.0	6.0	5.3	5.3	6.0	0.5 to 0.8	1.4
		C6	6.3	6.0	6.6	6.6	7.3	0.5 to 0.8	2.1
		E7	8.0	7.0	8.3	8.3	9.0	0.5 to 0.8	3.2
		F8	10.0	8.0	10.3	10.3	11.0	0.5 to 0.8	4.6
		E12	8.0	12.0	8.3	8.3	9.0	0.8 to 1.1	3.2
		F12	10.0	12.7	10.3	10.3	11.0	0.8 to 1.1	4.6

RECOMMENDED LAND PATTERN DIMENSIONS in millimeters				
	SIZE CODE	a	b	c
	A5	1.0	6.2	1.6
	B6	1.4	7.4	1.6
	C6	2.1	9.1	1.6
	E7	2.8	11.1	1.9
	F8	4.3	13.1	1.9
	E12	2.8	11.1	1.9
	F12	4.3	13.1	1.9

CASE CODE LIST								
CAPACITANCE ( $\mu$ F)	WV <sup>(1)</sup>	2.5	4	6.3	10	16	20	25
	(SV) <sup>(2)</sup>	(3.3)	(5.2)	(8.2)	(11.5)	(18.4)	(23)	(25)
3.3		-	-	-	-	A5	-	-
4.7		-	-	-	A5	-	-	-
6.8		-	-	-	A5	-	-	C6
10.0		-	-	-	A5	-	B6	E7
15.0		-	-vb	-	A5	B6	-	-
22.0		-	-	A5	-	B6	C6	F8
27.0		-	-	-	-	-	C6	-
33.0		-	A5	-	B6	-	E7	E12
39.0		-	B6	-	-	C6	-	-
47.0		-	-	B6	C6	-	E7	-
56.0		-	-	-	C6	E7	F8	F12
68.0		-	B6	-	-	-	F8	-
82.0		-	-	C6	-	E7	-	-
100.0		-	-	C6	-	F8	E12	-
120.0		-	-	-	E7	-	-	-
150.0		-	C6	-	E7, F8	F8	F12	-
180.0		-	-	-	-	E12	-	-
220.0		-	-	E7, F8	-	-	-	-
270.0		-	-	-	F8	-	-	-
330.0		-	E7	F8	E12	F12	-	-
470.0		-	-	F8, E12	-	-	-	-
560.0		-	E12	-	F12	-	-	-
680.0		E12	F8	-	-	-	-	-
820.0		-	-	F12	-	-	-	-
1200.0		-	F12	-	-	-	-	-
1500.0		F12	-	-	-	-	-	-

**Notes**

<sup>(1)</sup> WV = Rated Voltage.

<sup>(2)</sup> (SV) = Surge Voltage (at room temperature). The description contents are subject to change due to technical improvement without notice. Please ask for latest specifications for order and use.



ELECTRICAL DATA AND ORDERING INFORMATION							
U <sub>R</sub> (V)	C <sub>R</sub> (μF)	CASE CODE	MAX. ESR (100 kHz to 300 kHz) (mΩ)	ALLOWABLE RIPPLE CURRENT AT 100 kHz, +105 °C (mA)	MAX. TANGENT OF LOSS ANGLE	MAX. LEAKAGE CURRENT (μA) (after 2 min)	PART NUMBER <sup>(1)</sup>
2.5	680	E12	16	4080	0.15	340	94SVP687X02R5E12
	1500	F12	13	5230	0.18	750	94SVP158X02R5F12
4	33	A5	200	740	0.15	66.0	94SVP336X0004A5
	39	B6	70	1100	0.12	78	94SVP396X0004B6
	68	B6	70	1100	0.12	136	94SVP686X0004B6
	150	C6	50	1620	0.12	120	94SVP157X0004C6
	330	E7	35	2560	0.12	264	94SVP337X0004E7
	680	F8	25	3700	0.12	544	94SVP687X0004F8
	560	E12	16	4080	0.15	448	94SVP567X0004E12
	1200	F12	13	5230	0.18	960	94SVP128X0004F12
6.3	22	A5	220	700	0.12	69.3	94SVP226X06R3A5
	47	B6	90	1060	0.12	148	94SVP476X06R3B6
	82	C6	50	1570	0.12	103	94SVP826X06R3C6
	100	C6	40	1810	0.12	126	94SVP107X06R3C6
	220	E7	35	2560	0.12	277	94SVP227X06R3E7
	220	F8	30	3020	0.12	277	94SVP227X06R3F8
	330	F8	25	3300	0.12	416	94SVP337X06R3F8
	470	E12	17	3960	0.15	592	94SVP477X06R3E12
	470	F8	25	3700	0.12	592	94SVP477X06R3F8
	820	F12	14	5040	0.15	775	94SVP827X06R3F12
10	4.7	A5	260	660	0.08	23.5	94SVP475X0010A5
	6.8	A5	260	660	0.09	34.0	94SVP685X0010A5
	10	A5	240	670	0.10	50.0	94SVP106X0010A5
	15	A5	240	700	0.10	75.0	94SVP156X0010A5
	33	B6	130	990	0.15	165	94SVP336X0010B6
	47	C6	60	1450	0.12	94	94SVP476X0010C6
	56	C6	55	1510	0.12	112	94SVP566X0010C6
	120	E7	40	2120	0.12	240	94SVP127X0010E7
	150	E7	35	2560	0.12	300	94SVP157X0010E7
	150	F8	35	2670	0.12	300	94SVP157X0010F8
	270	F8	30	3020	0.12	540	94SVP277X0010F8
	330	E12	19	3740	0.15	660	94SVP337X0010E12
	560	F12	15	4870	0.15	840	94SVP567X0010F12
16	3.3	A5	280	590	0.07	26.4	94SVP335X0016A5
	15	B6	150	920	0.10	120	94SVP156X0016B6
	22	B6	120	980	0.10	176	94SVP226X0016B6
	39	C6	65	1390	0.10	125	94SVP396X0016C6
	56	E7	50	1800	0.12	179	94SVP566X0016E7
	82	E7	45	1890	0.12	262	94SVP826X0016E7
	100	F8	40	2400	0.12	320	94SVP107X0016F8
	150	F8	35	2670	0.12	480	94SVP157X0016F8
	180	E12	22	3480	0.15	576	94SVP187X0016E12
	330	F12	17	4580	0.15	792	94SVP337X0016F12
20	10	B6	170	850	0.10	100	94SVP106X0020B6
	22	C6	65	1390	0.10	88	94SVP226X0020C6
	27	C6	60	1450	0.10	108	94SVP276X0020C6
	33	E7	50	1700	0.12	132	94SVP336X0020E7
	47	E7	50	1750	0.12	188	94SVP476X0020E7
	56	F8	45	2200	0.12	224	94SVP566X0020F8
	68	F8	45	2200	0.12	272	94SVP686X0020F8
	100	E12	25	3260	0.15	400	94SVP107X0020E12
	150	F12	21	4220	0.15	600	94SVP157X0020F12
25 <sup>(2)</sup>	6.8	C6	80	1200	0.10	85	94SVP685X0025C6 <sup>(2)</sup>
	10	E7	60	1500	0.10	125	94SVP106X0025E7 <sup>(2)</sup>
	22	F8	50	2000	0.10	275	94SVP226X0025F8 <sup>(2)</sup>
	33	E12	30	2980	0.12	413	94SVP336X0025E12 <sup>(2)</sup>
	56	F12	28	3800	0.12	700	94SVP566X0025F12 <sup>(2)</sup>

**Notes**

<sup>(1)</sup> Part numbers shown are for ± 20 % capacitance tolerance (X0).

<sup>(2)</sup> 25 V rated parts are not for new design. Please check 94SVPD ([www.vishay.com/doc?90022](http://www.vishay.com/doc?90022)) for replacement.



## Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

## Material Category Policy

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.**

**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.**