

F93-AJ6 Series



Resin-Molded Chip - Automotive Product Range



FEATURES

- Compliant to the RoHS2 directive 2011/65/EU
- Compliant to AEC-Q200

APPLICATIONS

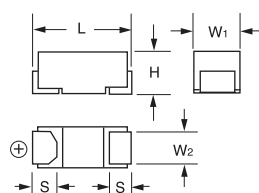
- Cabin electronics
- Infotainment



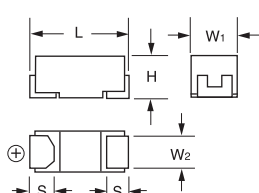
CASE DIMENSIONS: millimeters (inches)

Code	EIA Code	EIA Metric	L	W ₁	W ₂	H	S
A	1206	3216-18	3.20 ± 0.20 (0.126 ± 0.008)	1.60 ± 0.20 (0.063 ± 0.008)	1.20 ± 0.10 (0.047 ± 0.004)	1.60 ± 0.20 (0.063 ± 0.008)	0.80 ± 0.20 (0.031 ± 0.008)
B	1210	3528-21	3.50 ± 0.20 (0.126 ± 0.008)	2.80 ± 0.20 (0.110 ± 0.008)	2.20 ± 0.10 (0.087 ± 0.004)	1.90 ± 0.20 (0.075 ± 0.008)	0.80 ± 0.20 (0.031 ± 0.008)
C	2312	6032-27	6.00 ± 0.20 (0.236 ± 0.008)	3.20 ± 0.20 (0.126 ± 0.008)	2.20 ± 0.10 (0.087 ± 0.004)	2.50 ± 0.20 (0.098 ± 0.008)	1.30 ± 0.20 (0.051 ± 0.008)
N	2917	7343-30	7.30 ± 0.20 (0.287 ± 0.008)	4.30 ± 0.20 (0.169 ± 0.008)	2.40 ± 0.10 (0.094 ± 0.004)	2.80 ± 0.20 (0.110 ± 0.008)	1.30 ± 0.20 (0.051 ± 0.008)

A, B CASE



C, N CASE



MARKING

A CASE	B CASE	C CASE	N CASE
Capacitance Code	Capacitance (μF)	Capacitance (μF)	Capacitance (μF)
⊕ C 685	⊕ 22 16V	⊕ 47 16V	⊕ 100 16V
Rated Voltage Code	Rated Voltage (V)	Rated Voltage (V)	Rated Voltage (V)
4V G 6.3V J 10V A 16V C	20V D 25V E 35V V		

HOW TO ORDER

F93	1A	106	M	A		AJ6
Type	Rated Voltage	Capacitance Code	Tolerance	Case Size	Packaging	AEC-Q200 Compliant
		pF code: 1st two digits represent significant figures, 3rd digit represents multiplier (number of zeros to follow)	K = ±10% M = ±20%	See table above	See Tape & Reel Packaging Section	

TECHNICAL SPECIFICATIONS

Category Temperature Range:	-55 to +125°C
Rated Temperature:	+85°C
Capacitance Tolerance:	±20%, ±10% at 120Hz
Dissipation Factor:	Refer to next page
ESR 100kHz:	Refer to next page
Leakage Current:	After 1 minute's application of rated voltage, leakage current at 20°C is not more than 0.01CV or 0.5μA, whichever is greater. After 1 minute's application of rated voltage, leakage current at 85°C is not more than 0.1CV or 5μA, whichever is greater. After 1 minute's application of derated voltage, leakage current at 125°C is not more than 0.125CV or 6.3μA, whichever is greater.
Capacitance Change By Temperature	+15% Max. at +125°C +10% Max. at +85°C -10% Max. at -55°C

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CAPACITANCE AND RATED VOLTAGE RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage						
μF	Code	4V (0G)	6.3V (0J)	10V (1A)	16V (1C)	20V (1D)	25V (1E)	35V (1V)
1.0	105				A		A	A
1.5	155				A		A	A
2.2	225				A	A	A	A/B
3.3	335				A	A	A	B
4.7	475			A	A	A/B	A/B	B/C
6.8	685			A	A	A/B		C
10	106		A	A	A/B	A/B	B/C	C
15	156		A	A	A/B	C	C	N
22	226	A	A	A/B	A/B/C	B/C	C/N	N
33	336	A	A	A/B	B/C	C/N	N	
47	476	A	A/B	A/B/C	B ^M /C/N	C/N	N	
68	686	A	A/B	B/C	C/N			
100	107	A/B	B/C	C/N	C/N			
150	157	B	B/C	N	N			
220	227	B/C	C/N	N				
330	337	C	N	N				
470	477	N	N					
680	687	N						

Released ratings (M tolerance only)

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RATINGS & PART NUMBER REFERENCE

AVX Part No.	Case Size	Capacitance (μF)	Rated Voltage (V)	DCL (μA)	DF @ 120Hz (%)	ESR @ 100kHz (Ω)	*1 ΔC/C (%)	MSL
4 Volt								
F930G226MAAAJ6	A	22	4	0.9	6	2.5	*	3**
F930G336MAAAJ6	A	33	4	1.3	8	2.5	*	3**
F930G476MAAAJ6	A	47	4	1.9	18	2.5	*	3**
F930G686MAAAJ6	A	68	4	2.7	24	2.5	*	3**
F930G107MAAAJ6	A	100	4	4	30	2.0	*	3**
F930G107MBAAJ6	B	100	4	4	14	0.9	*	3**
F930G157MBAAJ6	B	150	4	6	16	0.7	*	3**
F930G227MBAAJ6	B	220	4	8.8	18	0.7	*	3**
F930G227MCCAJ6	C	220	4	8.8	12	0.7	*	3**
F930G337MCCAJ6	C	330	4	13.2	14	0.7	*	3**
F930G477MNCAJ6	N	470	4	18.8	16	0.3	*	3**
F930G687MNCAJ6	N	680	4	27.2	18	0.3	*	3**
6.3 Volt								
F930J106MAAAJ6	A	10	6.3	0.6	6	3.0	*	3**
F930J156MAAAJ6	A	15	6.3	0.9	6	2.9	*	3**
F930J226MAAAJ6	A	22	6.3	1.4	8	2.5	*	3**
F930J336MAAAJ6	A	33	6.3	2.1	8	2.5	*	3**
F930J476MAAAJ6	A	47	6.3	3	18	2.5	*	3**
F930J476MBAAJ6	B	47	6.3	3	6	1.0	*	3**
F930J686MAAAJ6	A	68	6.3	4.3	20	2.0	*	3**
F930J686MBAAJ6	B	68	6.3	4.3	8	1.0	*	3**
F930J107MBAAJ6	B	100	6.3	6.3	14	0.9	*	3**
F930J107MCCAJ6	C	100	6.3	6.3	8	0.7	*	3**
F930J157MBAAJ6	B	150	6.3	9.5	18	0.9	*	3**
F930J157MCCAJ6	C	150	6.3	9.5	12	0.7	*	3**
F930J227MCCAJ6	C	220	6.3	13.9	14	0.7	*	3**
F930J227MNCAJ6	N	220	6.3	13.9	10	0.5	*	3**
F930J337MNCAJ6	N	330	6.3	20.8	14	0.5	*	3**
F930J477MNCAJ6	N	470	6.3	29.6	16	0.3	*	3**
10 Volt								
F931A475MAAAJ6	A	4.7	10	0.5	6	4.0	*	3**
F931A685MAAAJ6	A	6.8	10	0.7	6	3.5	*	3**
F931A106MAAAJ6	A	10	10	1	6	3.0	*	3**
F931A156MAAAJ6	A	15	10	1.5	8	2.9	*	3**
F931A226MAAAJ6	A	22	10	2.2	12	2.5	*	3**
F931A226MBAAJ6	B	22	10	2.2	6	1.9	*	3**
F931A336MAAAJ6	A	33	10	3.3	18	2.5	*	3**
F931A336MBAAJ6	B	33	10	3.3	8	1.4	*	3**
F931A476MAAAJ6	A	47	10	4.7	40	2.0	*	3**
F931A476MBAAJ6	B	47	10	4.7	8	1.0	*	3**
F931A476MCCAJ6	C	47	10	4.7	6	0.9	*	3**
F931A686MBAAJ6	B	68	10	6.8	12	0.9	±15	3**
F931A686MCCAJ6	C	68	10	6.8	8	0.8	*	3**
F931A107MCCAJ6	C	100	10	10	10	0.7	*	3**
F931A107MNCAJ6	N	100	10	10	8	0.6	*	3
F931A157MNCAJ6	N	150	10	15	10	0.6	*	3**
F931A227MNCAJ6	N	220	10	22	12	0.5	*	3
F931A337MNCAJ6	N	330	10	33	18	0.5	*	3**
16 Volt								
F931C105MAAAJ6	A	1	16	0.5	4	7.5	*	3**
F931C155MAAAJ6	A	1.5	16	0.5	4	6.0	*	3**
F931C225MAAAJ6	A	2.2	16	0.5	4	5.0	*	3**
F931C335MAAAJ6	A	3.3	16	0.5	4	4.5	*	3**
F931C475MAAAJ6	A	4.7	16	0.8	6	4.0	*	3**
F931C685MAAAJ6	A	6.8	16	1.1	6	3.5	*	3**
F931C106MAAAJ6	A	10	16	1.6	6	3.0	*	3**

1: ΔC/C Marked “”

Item	All Case (%)
Damp Heat	±10
Temperature cycles	±10
Resistance soldering heat	±10
Surge	±10
Endurance	±10
Load Humidity	±10

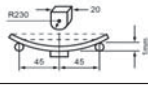
AVX Part No.	Case Size	Capacitance (μF)	Rated Voltage (V)	DCL (μA)	DF @ 120Hz (%)	ESR @ 100kHz (Ω)	*1 ΔC/C (%)	MSL
F931C106MBAAJ6	B	10	16	1.6	6	2.0	*	3**
F931C156MAAAJ6	A	15	16	2.4	10	3.0	*	3**
F931C156MBAAJ6	B	15	16	2.4	6	2.0	*	3**
F931C226MAAAJ6	A	22	16	3.5	15	3.0	±15	3**
F931C226MBAAJ6	B	22	16	3.5	8	1.9	*	3**
F931C226MCCAJ6	C	22	16	3.5	6	1.1	*	3**
F931C336MBAAJ6	B	33	16	5.3	8	1.9	*	3**
F931C336MCCAJ6	C	33	16	5.3	6	1.1	*	3**
F931C476MBAAJ6	B	47	16	7.5	16	2.0	±15	3**
F931C476MCCAJ6	C	47	16	7.5	8	0.9	*	3**
F931C476MNCAJ6	N	47	16	7.5	6	0.7	*	3**
F931C686MCCAJ6	C	68	16	10.9	10	0.8	*	3**
F931C686MNCAJ6	N	68	16	10.9	6	0.6	*	3**
F931C107MCCAJ6	C	100	16	16	15	0.7	*	3**
F931C107MNCAJ6	N	100	16	16	10	0.6	*	3
F931C157MNCAJ6	N	150	16	24	15	0.6	*	3**
20 Volt								
F931D225MAAAJ6	A	2.2	20	0.5	4	5.0	*	3**
F931D335MAAAJ6	A	3.3	20	0.7	4	4.5	*	3**
F931D475MAAAJ6	A	4.7	20	0.9	6	3.0	*	3**
F931D475MBAAJ6	B	4.7	20	0.9	6	2.8	*	3**
F931D685MAAAJ6	A	6.8	20	1.4	6	3.5	*	3**
F931D685MBAAJ6	B	6.8	20	1.4	6	2.5	*	3**
F931D106MAAAJ6	A	10	20	2	8	3.5	*	3**
F931D106MBAAJ6	B	10	20	2	6	2.1	*	3**
F931D156MCCAJ6	C	15	20	3	6	1.2	*	3**
F931D226MBAAJ6	B	22	20	4.4	8	1.9	*	3**
F931D226MCCAJ6	C	22	20	4.4	8	1.1	*	3**
F931D336MCCAJ6	C	33	20	6.6	8	1.1	*	3**
F931D336MNCAJ6	N	33	20	6.6	6	0.7	*	3**
F931D476MCCAJ6	C	47	20	9.4	10	1.1	*	3**
F931D476MNCAJ6	N	47	20	9.4	8	0.7	*	3**
25 Volt								
F931E105MAAAJ6	A	1	25	0.5	4	7.5	*	3**
F931E155MAAAJ6	A	1.5	25	0.5	4	6.7	*	3**
F931E225MAAAJ6	A	2.2	25	0.6	6	6.3	*	3**
F931E335MAAAJ6	A	3.3	25	0.8	6	6.0	*	3**
F931E475MAAAJ6	A	4.7	25	1.2	8	4.0	*	3**
F931E475MBAAJ6	B	4.7	25	1.2	6	2.8	*	3**
F931E106MBAAJ6	B	10	25	2.5	12	1.9	*	3**
F931E106MCCAJ6	C	10	25	2.5	6	1.5	*	3**
F931E156MCCAJ6	C	15	25	3.8	8	1.2	*	3**
F931E226MCCAJ6	C	22	25	5.5	8	1.1	*	3**
F931E226MNCAJ6	N	22	25	5.5	6	0.7	*	3**
F931E336MNCAJ6	N	33	25	8.3	8	0.7	*	3**
F931E476MNCAJ6	N	47	25	11.8	8	0.7	*	3**
35 Volt								
F931V105MAAAJ6	A	1	35	0.5	4	7.5	*	3**
F931V155MAAAJ6	A	1.5	35	0.5	6	7.5	*	3**
F931V225MAAAJ6	A	2.2	35	0.8	6	7.0	*	3**
F931V225MBAAJ6	B	2.2	35	0.8	4	3.8	*	3**
F931V335MBAAJ6	B	3.3	35	1.2	4	3.5	*	3**
F931V475MBAAJ6	B	4.7	35	1.6	8	3.1	*	3**
F931V475MCCAJ6	C	4.7	35	1.6	6	1.8	*	3**
F931V685MCCAJ6	C	6.8	35	2.4	6	1.8	*	3**
F931V106MCCAJ6	C	10	35	3.5	6	1.6	*	3**
F931V156MNCAJ6	N	15	35	5.3	6	0.7	*	3**
F931V226MNCAJ6	N	22	35	7.7	8	0.7	*	3**

* In case of capacitance tolerance ± 10% type, “K” will be put at 9th digit of type numbering system

** Dry pack is recommended for reduction of stress during soldering but you can choose an option without dry pack.

Moisture Sensitivity Level (MSL) is defined according to J-STD-020.

QUALIFICATION TABLE

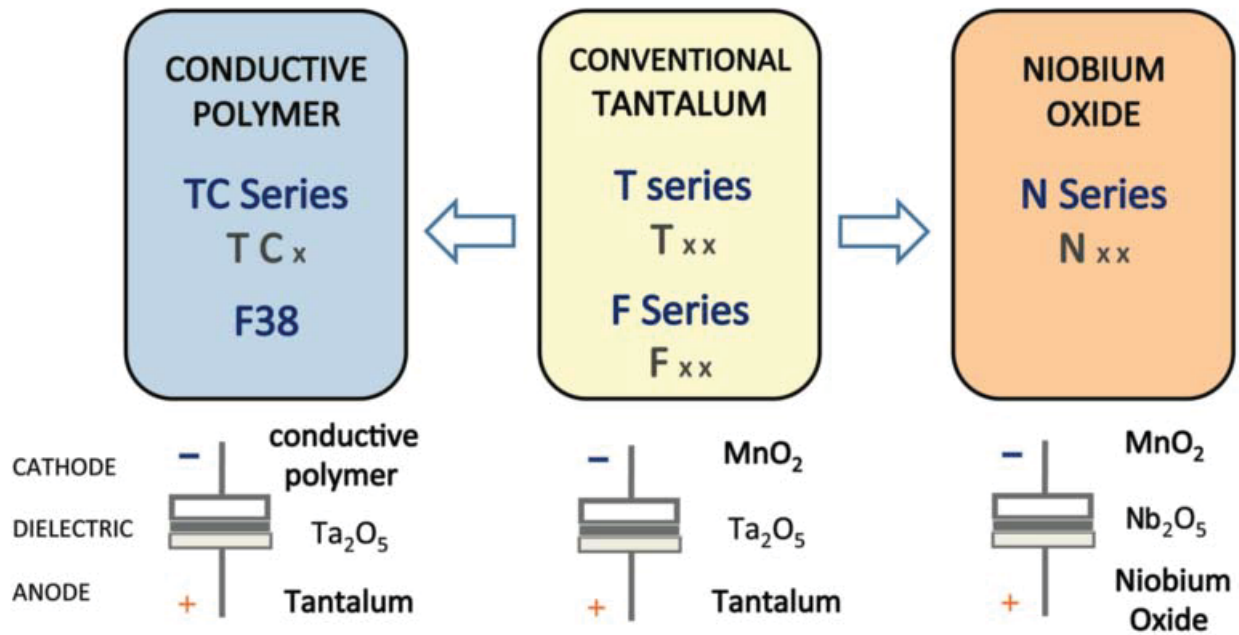
TEST	F93-AJ6 series (Temperature range -55°C to +125°C)	
	Condition	
Damp Heat (Steady State)	At 40°C, 90 to 95% R.H., 500 hours (No voltage applied) Capacitance Change Refer to page 41 (*1) Dissipation Factor Initial specified value or less Leakage Current Initial specified value or less	
Load Humidity	After 1000 hour's application of rated voltage in series with a 33Ω resistor at 85°C, 85% R.H., capacitors meet the characteristics requirements table below. Capacitance Change Refer to page 41 (*1) Dissipation Factor Initial specified value or less Leakage Current 125% or less than the initial specified value	
Temperature Cycles	At -55°C / +125°C, 30 minutes each, 1000 cycles Capacitance Change Refer to page 41 (*1) Dissipation Factor Initial specified value or less Leakage Current Initial specified value or less	
Resistance to Soldering Heat	10 seconds reflow at 260°C, 10 seconds immersion at 260°C. Capacitance Change Refer to page 41 (*1) Dissipation Factor Initial specified value or less Leakage Current Initial specified value or less	
Surge	After application of surge voltage in series with a 33Ω resistor at the rate of 30 seconds ON, 30 seconds OFF, for 1000 successive test cycles at 85°C, capacitors shall meet the characteristic requirements in the table above. Capacitance Change Refer to page 41 (*1) Dissipation Factor Initial specified value or less Leakage Current Initial specified value or less	
Endurance	After 2000 hours' application of rated voltage in series with a 3Ω resistor at 85°C, or derated voltage in series with a 3Ω resistor at 125°C, capacitors shall meet the characteristic requirements in the table above. Capacitance Change Refer to page 41 (*1) Dissipation Factor Initial specified value or less Leakage Current Initial specified value or less	
Shear Test	After applying the pressure load of 17.7N for 60 seconds horizontally to the center of capacitor side body which has no electrode and has been soldered beforehand on a substrate, there shall be found neither exfoliation nor its sign at the terminal electrode.	
Terminal Strength	Keeping a capacitor surface-mounted on a substrate upside down and supporting the substrate at both of the opposite bottom points 45mm apart from the center of capacitor, the pressure strength is applied with a specified jig at the center of the substrate so that substrate may bend by 1mm as illustrated. Then, there shall be found no remarkable abnormality on the capacitor terminals.	
Failure Rate	1% per 1000 hours at 85°C, V_R with 0.1Ω/V series impedance, 60% confidence level.	

F93-AJ6 Series

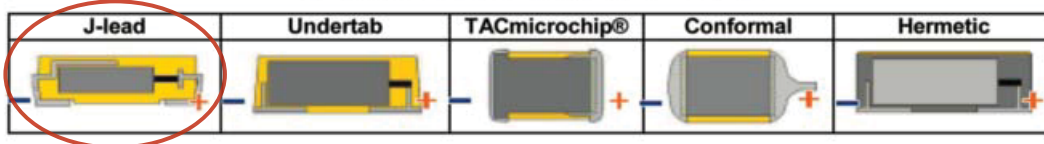
Resin-Molded Chip - Automotive Product Range



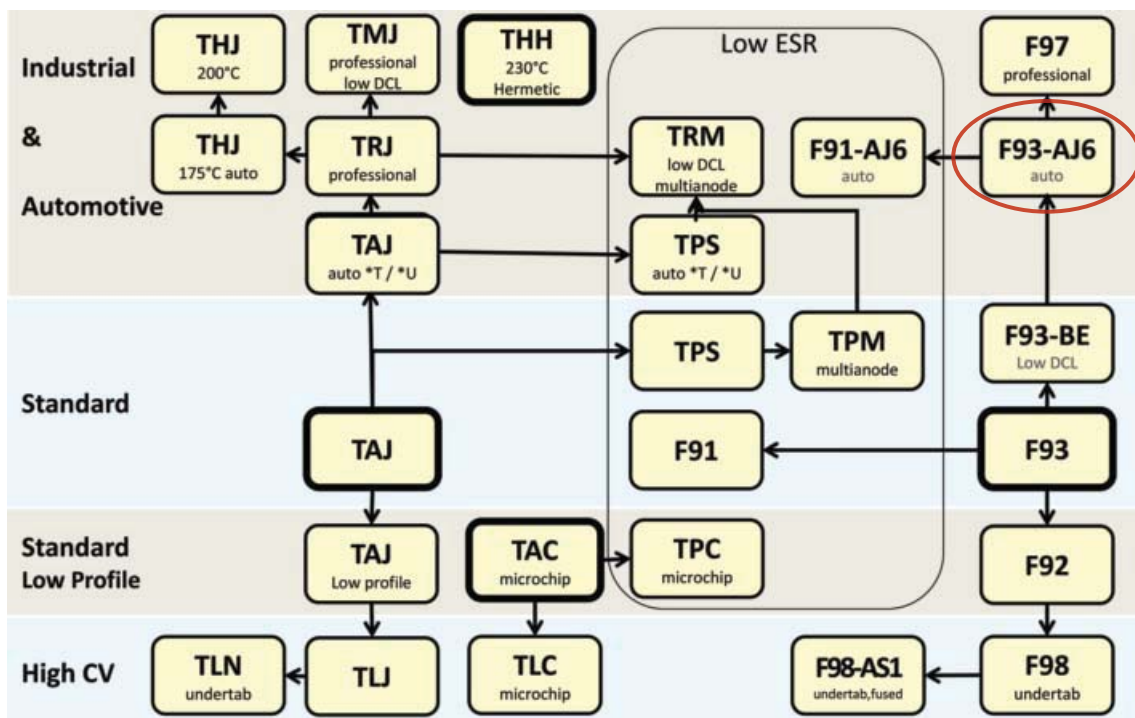
AVX SOLID ELECTROLYTIC CAPACITOR ROADMAP



Five Capacitor Construction Styles



SERIES LINE UP: CONVENTIONAL SMD MnO₂



Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

AVX:

F931A106MAAAJ6	F931A475MAAAJ6	F930J107MBAAJ6	F931C156KAAAJ6	F931V105MAAAJ6
F930J476MAAAJ6	F931A227KNCAJ6	F931C336KBAAJ6	F931C476MCCAJ6	F931V685MCCAJ6
F931V226MNCAJ6	F931A476KBAAJ6	F931A107MCCAJ6	F931E226KCCAJ6	F931C107KNCAJ6
F931E336MNCAJ6	F931C475MAAAJ6	F931V475MBAAJ6	F931C336MBAAJ6	F931A337MNCAJ6
F931D106MBAAJ6	F931A107MNCAJ6	F931A226MAAAJ6	F931C476MNCAJ6	F931C226KBAAJ6
F931C106KAAAJ6	F931C336MCCAJ6	F931A226MBAAJ6	F931V225KAAAJ6	F931A336MAAAJ6
F931A476MAAAJ6	F931C226MAAAJ6	F931C476MBAAJ6	F931C157MNCAJ6	F930J477MNCAJ6
F931C156MAAAJ6	F930J686MAAAJ6	F931C686MCCAJ6	F930J157MBAAJ6	F930J227MCCAJ6
F931A686MBAAJ6	F931C226MBAAJ6	F931C106MAAAJ6	F931A157MNCAJ6	F931C155MAAAJ6
				F931C686MCC