



**THE DATASHEET OF  
F921A225MPA**



# F92 Series



## Resin-Molded Chip, Low Profile J-Lead



### FEATURES

- Compliant to the RoHS2 directive 2011/65/EU
- SMD J-lead
- Low profile case sizes

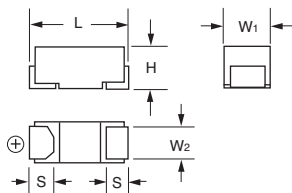
### APPLICATIONS

- Handheld electronics
- USB accessories

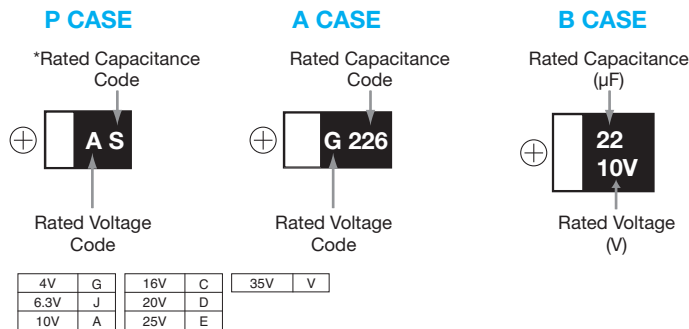


### CASE DIMENSIONS: millimeters (inches)

Code	EIA Code	EIA Metric	L	W <sub>1</sub>	W <sub>2</sub>	H	S
A	1206	3216-12	3.20 ± 0.20 (0.126 ± 0.008)	1.60 ± 0.20 (0.063 ± 0.008)	1.20 ± 0.10 (0.047 ± 0.004)	1.10 ± 0.10 (0.043 ± 0.004)	0.80 ± 0.20 (0.031 ± 0.008)
B	1311	3428-12	3.40 ± 0.20 (0.134 ± 0.008)	2.80 ± 0.20 (0.110 ± 0.008)	2.30 ± 0.10 (0.091 ± 0.004)	1.10 ± 0.10 (0.043 ± 0.004)	0.80 ± 0.20 (0.031 ± 0.008)
P	0805	2012-12	2.00 ± 0.20 (0.079 ± 0.008)	1.25 ± 0.10 (0.049 ± 0.004)	0.90 ± 0.10 (0.035 ± 0.004)	1.10 ± 0.10 (0.043 ± 0.004)	0.50 ± 0.20 (0.020 ± 0.008)

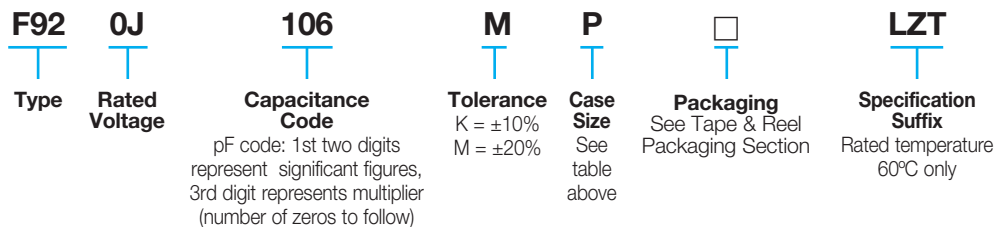


### MARKING



\*Capacitance code of "P" case products are as shown below.

### HOW TO ORDER



### 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	<table border="1"> <thead> <tr> <th>P Case</th> <th>A, B Case</th> </tr> </thead> <tbody> <tr> <td>+20% Max. at +125°C</td> <td>+15% Max. at +125°C</td> </tr> <tr> <td>+15% Max. at +85°C</td> <td>+10% Max. at +85°C</td> </tr> <tr> <td>-15% Max. at -55°C</td> <td>-10% Max. at -55°C</td> </tr> </tbody> </table>	P Case	A, B Case	+20% Max. at +125°C	+15% Max. at +125°C	+15% Max. at +85°C	+10% Max. at +85°C	-15% Max. at -55°C	-10% Max. at -55°C
P Case	A, B Case								
+20% Max. at +125°C	+15% Max. at +125°C								
+15% Max. at +85°C	+10% Max. at +85°C								
-15% Max. at -55°C	-10% Max. at -55°C								

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### CAPACITANCE AND RATED VOLTAGE RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage							*Cap Code
μF	Code	4V (0G)	6.3V (0J)	10V (1A)	16V (1C)	20V (1D)	25V (1E)	35V (1V)	
0.22	224							A	J
0.33	334							A	N
0.47	474				P	A/P		A	S
0.68	684				P	A			W
1.0	105			P	P	A/P	A/P	A	A
1.5	155			P	P	A			E
2.2	225		P	P	A/P	A	A/B	B	J
3.3	335	P	P	A/P	A			B	N
4.7	475	P	P	A/P	A/B	A <sup>(M)</sup> /B	A/B		S
6.8	685	P	P	A/P	B				w
10	106	A/P	A/P	A/P <sup>(M)</sup>	A/B	B			a
15	156	P	A/P <sup>(M)</sup>	A					e
22	226	A/P <sup>(M)</sup>	A/P <sup>(M)</sup>	A/B	B				J
33	336	A/P <sup>(M)</sup>	A/B	B					n
47	476	A/B	A/B	B					s
68	686	A <sup>(M)</sup> /B							w
100	107	A <sup>(M)</sup> /B	A <sup>(M)**</sup> /B						A
150	157	B <sup>(M)</sup>							E
220	227								J

Released ratings (M tolerance only)

\*\*Rated temperature 60°C only. Please contact AVX when you need detail spec.

Please contact to your local AVX sales office when these series are being designed in your application.

# F92 Series



## Resin-Molded Chip, Low Profile J-Lead

### RATINGS & PART NUMBER REFERENCE

AVX Part No.	Case Size	Capacitance (µF)	Rated Voltage (V)	DCL (µA)	DF @ 120Hz (%)	ESR @ 100kHz (Ω)	100kHz RMS Current (mA)				*1 ΔC/C (%)	MSL
							25°C	60°C	85°C	125°C		
<b>4 Volt</b>												
F920G335#PA	P	3.3	4	0.5	8	12.0	50	–	45	20	*	1
F920G475#PA	P	4.7	4	0.5	8	6.0	71	–	64	28	*	1
F920G685#PA	P	6.8	4	0.5	10	6.0	71	–	64	28	*	1
F920G106#AA	A	10	4	0.5	8	4.0	122	–	110	49	*	1
F920G106#PA	P	10	4	0.5	10	6.0	71	–	64	28	*	1
F920G156#PA	P	15	4	0.6	10	5.0	77	–	70	31	*	1
F920G226#AA	A	22	4	0.9	12	2.8	146	–	132	59	*	1
F920G226#MPA	P	22	4	0.9	20	5.0	77	–	70	31	*	1
F920G336#AA	A	33	4	1.3	12	2.8	146	–	132	59	*	1
F920G336#MPA	P	33	4	1.3	20	4.0	87	–	78	35	*	1
F920G476#AA	A	47	4	1.9	18	2.8	146	–	132	59	*	1
F920G476#BA	B	47	4	1.9	12	1.7	210	–	189	84	*	1
F920G686#AA	A	68	4	2.7	25	2.8	146	–	132	59	±15	1
F920G686#BA	B	68	4	2.7	18	1.5	224	–	201	89	*	1
F920G107#AA	A	100	4	4.0	30	2.8	146	–	132	59	±15	1
F920G107#BA	B	100	4	4.0	18	1.3	240	–	216	96	*	1
F920G157#MBA	B	150	4	6.0	25	1.3	240	–	216	96	±15	1
<b>6.3 Volt</b>												
F920J225#PA	P	2.2	6.3	0.5	8	12.0	50	–	45	20	*	1
F920J335#PA	P	3.3	6.3	0.5	8	12.0	50	–	45	20	*	1
F920J475#PA	P	4.7	6.3	0.5	8	6.0	71	–	64	28	*	1
F920J685#PA	P	6.8	6.3	0.5	10	6.0	71	–	64	28	*	1
F920J106#AA	A	10	6.3	0.6	8	4.0	122	–	110	49	*	1
F920J106#PA	P	10	6.3	0.6	10	6.0	71	–	64	28	*	1
F920J156#AA	A	15	6.3	0.9	8	4.0	122	–	110	49	*	1
F920J156#MPA	P	15	6.3	0.9	10	6.0	71	–	64	28	*	1
F920J226#AA	A	22	6.3	1.4	12	2.8	146	–	132	59	*	1
F920J226#MPA	P	22	6.3	1.4	20	5.0	77	–	70	31	*	1
F920J336#AA	A	33	6.3	2.1	12	2.8	146	–	132	59	*	1
F920J336#BA	B	33	6.3	2.1	12	1.7	210	–	189	84	*	1
F920J476#AA	A	47	6.3	3.0	18	2.8	146	–	132	59	±15	1
F920J476#BA	B	47	6.3	3.0	12	1.7	210	–	189	84	*	3
F920J107#MAALZT	A	100	6.3	63.0	40	3.0	141	127	–	57	±20	3
F920J107#BA	B	100	6.3	6.3	20	1.3	240	–	216	96	±15	1
<b>10 Volt</b>												
F921A105#PA	P	1	10	0.5	8	12.0	50	–	45	20	*	1
F921A155#PA	P	1.5	10	0.5	8	12.0	50	–	45	20	*	1
F921A225#PA	P	2.2	10	0.5	8	12.0	50	–	45	20	*	1
F921A335#AA	A	3.3	10	0.5	6	7.0	93	–	83	37	*	1
F921A335#PA	P	3.3	10	0.5	8	12.0	50	–	45	20	*	1
F921A475#AA	A	4.7	10	0.5	6	4.0	122	–	110	49	*	1
F921A475#PA	P	4.7	10	0.5	8	6.0	71	–	64	28	*	1
F921A685#AA	A	6.8	10	0.7	6	4.0	122	–	110	49	*	1
F921A685#PA	P	6.8	10	0.7	8	6.0	71	–	64	28	*	1
F921A106#AA	A	10	10	1.0	8	4.0	122	–	110	49	*	1
F921A106#MPA	P	10	10	1.0	14	6.0	71	–	64	28	*	1
F921A156#AA	A	15	10	1.5	8	4.0	122	–	110	49	*	1
F921A226#AA	A	22	10	2.2	14	4.0	122	–	110	49	±15	1
F921A226#BA	B	22	10	2.2	8	1.9	199	–	179	79	*	3
F921A336#BA	B	33	10	3.3	12	1.9	199	–	179	79	*	1
F921A476#BA	B	47	10	4.7	18	1.9	199	–	179	79	±15	1
<b>16 Volt</b>												
F921C474#PA	P	0.47	16	0.5	8	20.0	39	–	35	15	*	1
F921C684#PA	P	0.68	16	0.5	8	12.0	50	–	45	20	*	1
F921C105#PA	P	1	16	0.5	8	12.0	50	–	45	20	*	1
F921C155#PA	P	1.5	16	0.5	8	12.0	50	–	45	20	*	1
F921C225#AA	A	2.2	16	0.5	6	7.0	93	–	83	37	*	1
F921C225#PA	P	2.2	16	0.5	8	12.0	50	–	45	20	*	1
F921C335#AA	A	3.3	16	0.5	6	7.0	93	–	83	37	*	1
F921C475#AA	A	4.7	16	0.8	6	7.0	93	–	83	37	*	1
F921C475#BA	B	4.7	16	0.8	6	3.0	158	–	142	63	*	1
F921C685#BA	B	6.8	16	1.1	6	3.0	158	–	142	63	*	1
F921C106#AA	A	10	16	1.6	8	7.0	93	–	83	37	±15	1
F921C106#BA	B	10	16	1.6	6	2.0	194	–	174	77	*	1
F921C226#BA	B	22	16	3.5	12	2.0	194	–	174	77	±15	1
<b>20 Volt</b>												
F921D474#AA	A	0.47	20	0.5	4	10.0	77	–	70	31	*	1
F921D474#PA	P	0.47	20	0.5	8	20.0	39	–	35	15	*	1
F921D684#AA	A	0.68	20	0.5	4	10.0	77	–	70	31	*	1
F921D105#AA	A	1	20	0.5	4	10.0	77	–	70	31	*	1
F921D105#PA	P	1	20	0.5	8	20.0	39	–	35	15	*	1
F921D155#AA	A	1.5	20	0.5	6	7.4	90	–	81	36	*	1
F921D225#AA	A	2.2	20	0.5	6	7.0	93	–	83	37	*	1

### RATINGS & PART NUMBER REFERENCE

AVX Part No.	Case Size	Capacitance (μF)	Rated Voltage (V)	DCL (μA)	DF @ 120Hz (%)	ESR @ 100kHz (Ω)	100kHz RMS Current (mA)				*1 ΔC/C (%)	MSL
							25°C	60°C	85°C	125°C		
F921D475MAA	A	4.7	20	0.9	10	7.0	93	–	83	37	±10	1
F921D475#BA	B	4.7	20	0.9	6	3.0	158	–	142	63	*	1
F921D106#BA	B	10	20	2.0	8	3.0	158	–	142	63	±10	1
<b>25 Volt</b>												
F921E105#AA	A	1	25	0.5	6	10.0	77	–	70	31	*	1
F921E105#PA	P	1	25	0.5	8	20.0	39	–	35	15	*	1
F921E225#AA	A	2.2	25	0.6	8	10.0	77	–	70	31	±15	1
F921E225#BA	B	2.2	25	0.6	6	4.0	137	–	123	55	*	1
F921E475#AA	A	4.7	25	1.2	10	7.0	93	–	83	37	±10	1
F921E475#BA	B	4.7	25	1.2	6	3.0	158	–	142	63	*	1
<b>35 Volt</b>												
F921V224#AA	A	0.22	35	0.5	4	10.0	77	–	70	31	*	1
F921V334#AA	A	0.33	35	0.5	4	10.0	77	–	70	31	*	1
F921V474#AA	A	0.47	35	0.5	4	10.0	77	–	70	31	*	1
F921V105#AA	A	1	35	0.5	6	10.0	77	–	70	31	*	1
F921V225#BA	B	2.2	35	0.8	6	4.0	137	–	123	55	±10	1
F921V335#BA	B	3.3	35	1.2	10	4.0	137	–	123	55	±10	1

\*1: ΔC/C Marked “\*”

Item	P Case (%)	A, B Case (%)
Damp Heat	±20	±10
Temperature cycles	±10	±5
Resistance soldering heat	±10	±5
Surge	±10	±5
Endurance	±10	±10

#: “M” for ±20% tolerance, “K” for ± 10% tolerance. When you need K tolerance for the part numbers which have M tolerance only, please contact to your local AVX sales office.

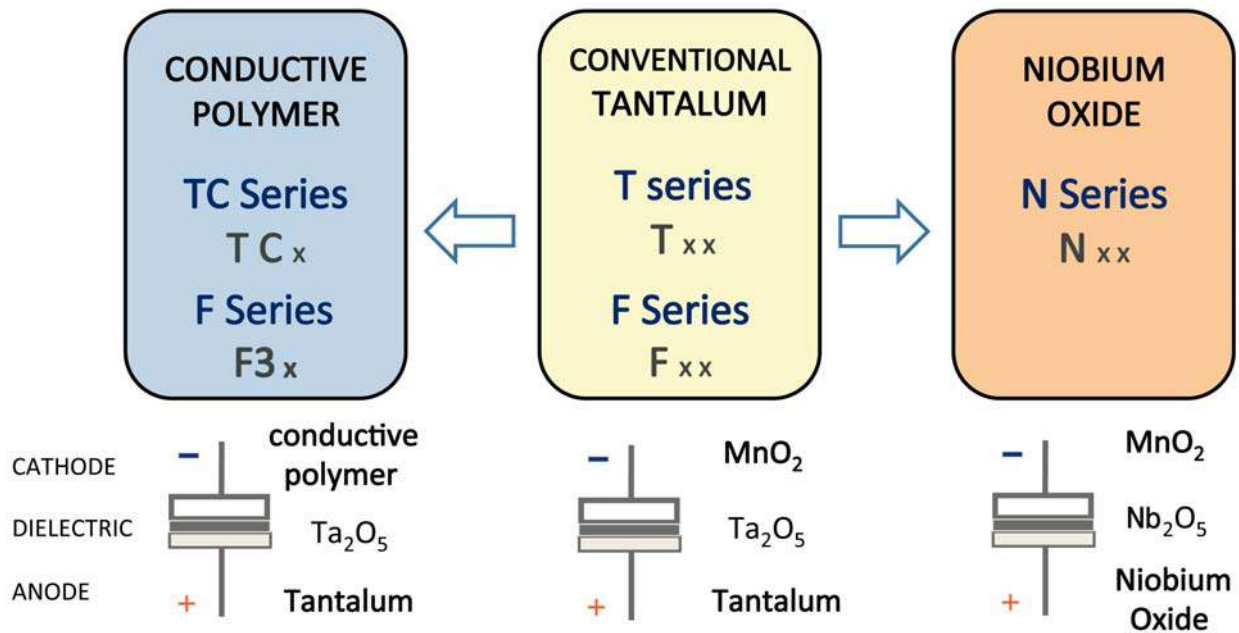
Moisture Sensitivity Level (MSL) is defined according to J-STD-020.

We can consider the type of compliance to AEC-Q200. Please contact to your local AVX sales office when these series are being designed in your application.

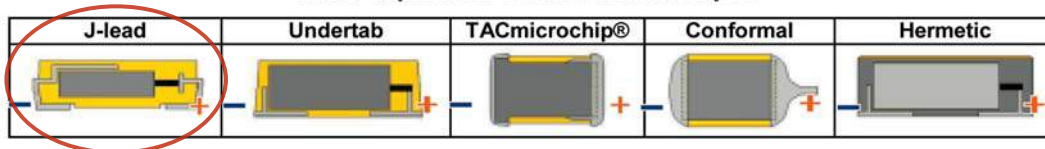
### QUALIFICATION TABLE

TEST	F92 series (Temperature range -55°C to +125°C)	
	Condition	
<b>Damp Heat (Steady State)</b>	<b>P Case</b>	<b>A, B Case</b>
	At 40°C, 90 to 95% R.H., 500 hours (No voltage applied)	
	Capacitance Change ..... Refer to page 28 (*1) Dissipation Factor ..... 150% or less than the initial specified value Leakage Current ..... Initial specified value or less	Refer to page 28 (*1) Initial specified value or less Initial specified value or less
<b>Temperature Cycles</b>	-55°C / +125°C, 30 minutes each, 5 cycles	
	Capacitance Change ..... Refer to page 28 (*1) Dissipation Factor ..... 150% or less than the initial specified value Leakage Current ..... Initial specified value or less	Refer to page 28 (*1) Initial specified value or less Initial specified value or less
	10 seconds reflow at 260°C, 5 seconds immersion at 260°C.	
<b>Resistance to Soldering Heat</b>	Capacitance Change ..... Refer to page 28 (*1) Dissipation Factor ..... 150% or less than the initial specified value Leakage Current ..... Initial specified value or less	Refer to page 28 (*1) Initial specified value or less Initial specified value or less
	After application of surge voltage in series with a 33Ω (For “P” case: 1kΩ) 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 28 (*1) Dissipation Factor ..... 150% or less than the initial specified value Leakage Current ..... Initial specified value or less	Refer to page 28 (*1) Initial specified value or less Initial specified value or less
<b>Endurance</b>	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 28 (*1) Dissipation Factor ..... 150% or less than the initial specified value Leakage Current ..... Initial specified value or less	Refer to page 28 (*1) Initial specified value or less Initial specified value or less
<b>Shear Test</b>	After applying the pressure load of 5N for 10±1 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.	
<b>Terminal Strength</b>	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 substrate so that the substrate may bend by 1mm as illustrated. Then, there shall be found no remarkable abnormality on the capacitor terminals.	

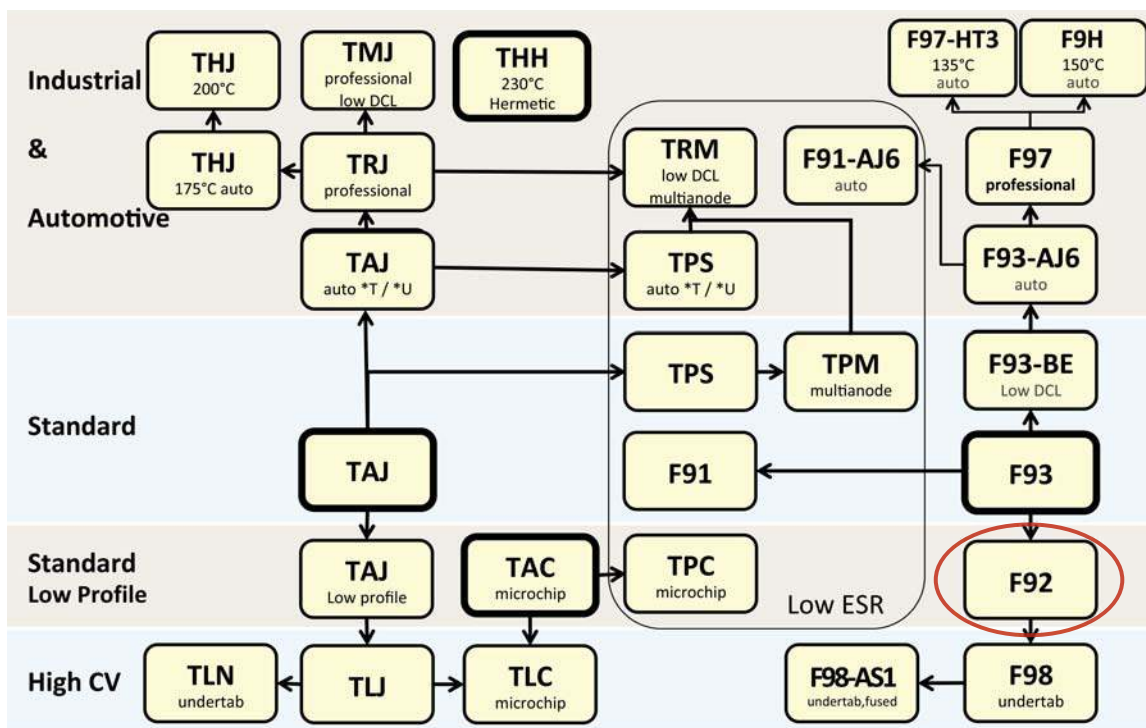
### AVX SOLID ELECTROLYTE CAPACITOR ROADMAP



### Five Capacitor Construction Styles



### SERIES LINE UP: CONVENTIONAL SMD MnO<sub>2</sub>



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