

# F92 Series

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



### FEATURES

- Compliant to the RoHS3 directive 2015/863/EU
- SMD J-Lead
- Low Profile Case Sizes
- 100% Surge Current Tested

### APPLICATIONS

- Handheld Electronics
- USB Accessories

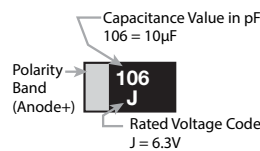
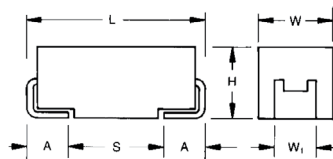


### CASE DIMENSIONS: millimeters (inches)

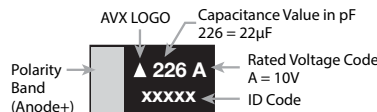
| Code | EIA Code | EIA Metric | L ± 0.20 (0.008) | W+0.20 (0.008) -0.10 (0.004) | H Max.       | W <sub>1</sub> ±0.20 (0.008) | A+0.30 (0.012) -0.20 (0.008) | S Min.       |
|------|----------|------------|------------------|------------------------------|--------------|------------------------------|------------------------------|--------------|
| P    | 0805     | 2012-12    | 2.05 (0.081)     | 1.30 (0.051)                 | 1.20 (0.047) | 1.00 ± 0.10 (0.039 ± 0.004)  | 0.50 (0.020)                 | 0.85 (0.033) |
| A    | 1206     | 3216-12    | 3.20 (0.126)     | 1.60 (0.063)                 | 1.20 (0.047) | 1.20 (0.047)                 | 0.80 (0.031)                 | 1.10 (0.043) |
| B    | 1210     | 3528-12    | 3.50 (0.138)     | 2.80 (0.110)                 | 1.20 (0.047) | 2.20 (0.087)                 | 0.80 (0.031)                 | 1.40 (0.055) |

W<sub>1</sub> dimension applies to the termination width for a dimensional area only

### MARKING P CASE



### A, B CASE



|      |   |     |   |     |   |
|------|---|-----|---|-----|---|
| 4V   | G | 16V | C | 35V | V |
| 6.3V | J | 20V | D |     |   |
| 10V  | A | 25V | E |     |   |

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

### HOW TO ORDER

|                    |                            |  |   |  |  |
|--------------------|----------------------------|--|---|--|--|
| <b>F92</b><br>Type | <b>0J</b><br>Rated Voltage | <b>106</b><br>Capacitance Code<br>pF code: 1st two digits represent significant figures, 3rd digit represents multiplier (number of zeros to follow) | <b>M</b><br>Tolerance<br>K = ±10%<br>M = ±20% | <b>P</b><br>Case Size<br>See table above | <br>Packaging<br>See Tape & Reel Packaging Section |
|--------------------|----------------------------|--|---|--|--|

### TECHNICAL SPECIFICATIONS

|  |   |                     |
|--|---|---------------------|
| <b>Category Temperature Range</b>        | -55 to +125°C   |                     |
| <b>Rated Temperature</b>                 | +85°C   |                     |
| <b>Capacitance Tolerance</b>             | ±20%, ±10% at 120Hz   |                     |
| <b>Dissipation Factor</b>                | Refer to next page  |                     |
| <b>ESR 100kHz</b>                        | Refer to next page  |                     |
| <b>Leakage Current</b>                   | 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.<br>After 1 minute's application of rated voltage, leakage current at 85°C is not more than 0.1CV or 5µA, whichever is greater.<br>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. |                     |
| <b>Capacitance Change By Temperature</b> | <b>P Case</b>   | <b>A, B Case</b>    |
|  | +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) | Code      |
| 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      | P        | A        | A         |
| 1.5         | 155  |                     |                    | P                  |          | A        |          |          | E         |
| 2.2         | 225  |                     | P                  | P                  | A/P      |          | A/B      | B        | J         |
| 3.3         | 335  | P                   | P                  | A/P                | A        |          |          |          | N         |
| 4.7         | 475  | P                   | P                  | A/P                | A/B      |          | B        |          | S         |
| 6.8         | 685  | P                   | P                  | P                  | B        |          |          |          | w         |
| 10          | 106  | P                   | A/P                | A/P <sup>(M)</sup> | B        |          |          |          | a         |
| 15          | 156  | P                   | P <sup>(M)</sup>   | A                  |          |          |          |          | e         |
| 22          | 226  | A                   | A/P <sup>(M)</sup> | B                  |          |          |          |          | J         |
| 33          | 336  |                     | B                  |                    |          |          |          |          | n         |
| 47          | 476  | B                   | B                  |                    |          |          |          |          | s         |
| 68          | 686  |                     |                    |                    |          |          |          |          | w         |
| 100         | 107  | A <sup>(M)</sup> /B |                    |                    |          |          |          |          | A         |

Released ratings <sup>(M tolerance only)</sup>

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

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

### RATINGS & PART NUMBER REFERENCE

| Part Number     | 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#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   |
| F920G476#BA     | B         | 47               | 4                 | 1.9      | 12             | 1.7              | 210                     | –    | 189  | 84    | *           | 1   |
| F920G107MAA     | 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   |
| <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   |
| F920J156MPA     | 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   |
| F920J226MPA     | P         | 22               | 6.3               | 1.4      | 20             | 5.0              | 77                      | –    | 70   | 31    | *           | 1   |
| F920J336#BA     | B         | 33               | 6.3               | 2.1      | 12             | 1.7              | 210                     | –    | 189  | 84    | *           | 1   |
| F920J476#BA     | B         | 47               | 6.3               | 3.0      | 12             | 1.7              | 210                     | –    | 189  | 84    | *           | 3   |
| <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#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   |
| F921A106MPA     | 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#BA     | B         | 22               | 10                | 2.2      | 8              | 1.9              | 199                     | –    | 179  | 79    | *           | 3   |
| <b>16 Volt</b>  |           |                  |                   |          |                |                  |                         |      |      |       |             |     |
| F921C474#PA     | P         | 0.47             | 16                | 0.5      | 8              | 20.0             | 39                      | –    | 35   | 15    | *           | 1   |

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### RATINGS & PART NUMBER REFERENCE

| Part Number    | 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 |             |     |
| 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   |
| 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#BA    | B         | 10               | 16                | 1.6      | 6              | 2.0              | 194                     | –    | 174  | 77    | *           | 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   |
| <b>25 Volt</b> |           |                  |                   |          |                |                  |                         |      |      |       |             |     |
| 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#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   |

\*1: ΔC/C Marked “\*\*”

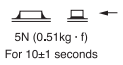
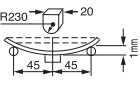
| Item                      | P Case (%) | A, B Case (%) |
|---------------------------|------------|---------------|
| Damp Heat                 | ±20        | ±10           |
| Temperature cycles        | ±10        | ±5            |
| Resistance soldering heat | ±10        | ±5            |
| Surge                     | ±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 KYOCERA AVX sales office.  
Moisture Sensitivity Level (MSL) is defined according to J-STD-020.

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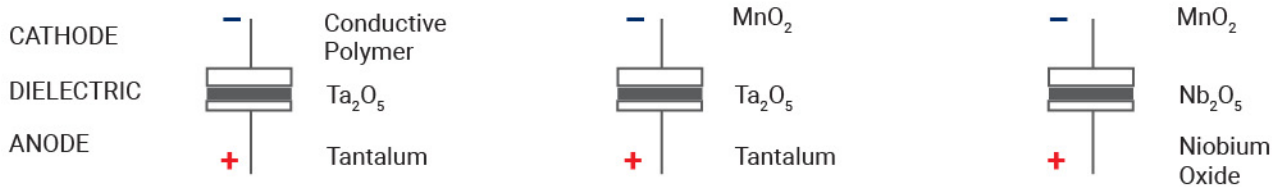
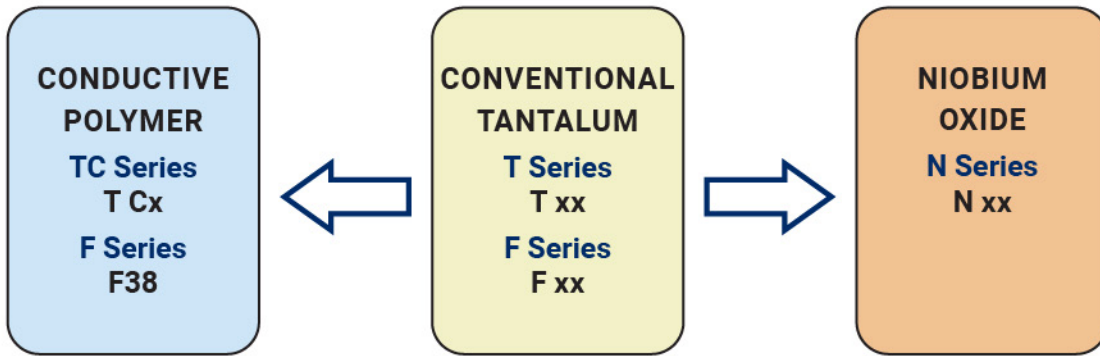
### QUALIFICATION TABLE

| TEST                         | F92 series (Temperature range -55°C to +125°C)   |   |
|------------------------------|--|---|
|                              | Condition  |   |
| Damp Heat (Steady State)     | <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 the table above (*1)   | Refer to the table above (*1)   |
| Temperature Cycles           | -55°C / +125°C, 30 minutes each, 5 cycles  |   |
|                              | Capacitance Change ..... Refer to the table above (*1)   | Refer to the table above (*1)   |
|                              | Dissipation Factor ..... 150% or less than the initial specified value   | Initial specified value or less   |
| Resistance to Soldering Heat | 10 seconds reflow at 260°C, 5 seconds immersion at 260°C.  |   |
|                              | Capacitance Change ..... Refer to the table above (*1)   | Refer to the table above (*1)   |
|                              | Dissipation Factor ..... 150% or less than the initial specified value   | Initial specified value or less   |
| Surge                        | 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 the table above (*1)   | Refer to the table above (*1)   |
|                              | Dissipation Factor ..... 150% or less than the initial specified value   | 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 the table above (*1)   | Refer to the table above (*1)   |
|                              | Dissipation Factor ..... 150% or less than the initial specified value   | Initial specified value or less   |
| Shear Test                   | 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.   |   |
| 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 substrate so that the substrate may bend by 1mm as illustrated. Then, there shall be found no remarkable abnormality on the capacitor terminals. |  |

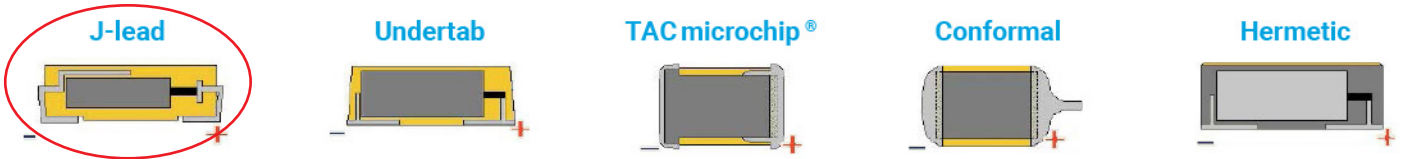
# F92 Series

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

### SOLID ELECTROLYTE CAPACITOR ROADMAP



### FIVE CAPACITOR CONSTRUCTION STYLES



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

