# F91 Series

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


## FEATURES

- Compliant to the RoHS2 directive 2011/65/EU
- SMD J-lead
- Low ESR

LEAD-FREE
LEAD-FREE COMPATIBLE COMPONENT

RoHS COMPLIANT

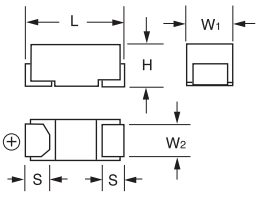
## APPLICATIONS

- General medium power DC/DC convertors

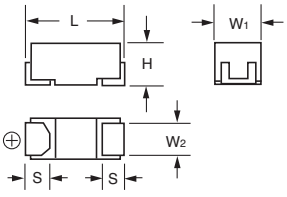
## CASE DIMENSIONS: millimeters (inches)

| Code | EIA Code | EIA Metric | L | $W_1$ | $W_2$ | H | S |
|---|---|---|---|---|---|---|---|
| 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) |

### B CASE

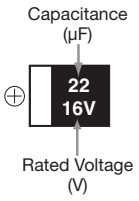



### C, N CASE

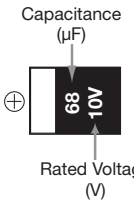



## MARKING

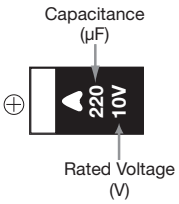
### B CASE




### C CASE




### N CASE




## HOW TO ORDER

| F91 | 1A | 107 | M | C | □ |
|---|---|---|---|---|---|
| **Type** | **Rated Voltage** | **Capacitance Code** pF code: 1st two digits represent significant figures, 3rd digit represents multiplier (number of zeros to follow) | **Tolerance** K = ±10% M = ±20% | **Case Size** See table above | **Packaging** 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 |

# F91 Series

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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) |
| 6.8 | 685 | | | | | | | C |
| 10 | 106 | | | | | | C | N |
| 15 | 156 | | | | | C | | N |
| 22 | 226 | | | | B | | N | N |
| 33 | 336 | | | | B/C | N | N | |
| 47 | 476 | | | B | N | N | N | |
| 68 | 686 | | | C | | | | |
| 100 | 107 | | C | C | N | | | |
| 150 | 157 | C | C | N | | | | |
| 220 | 227 | C | C/N | N | | | | |
| 330 | 337 | N | N | N | | | | |
| 470 | 477 | N | N | | | | | |
| 680 | 687 | N | | | | | | |

Released ratings

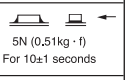
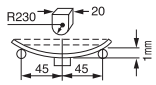
## RATINGS & PART NUMBER REFERENCE

| AVX Part No. | Case Size | Capacitance (µF) | Rated Voltage (V) | DCL (µA) | DF @ 120Hz (%) | ESR @ 100kHz (mΩ) | 100kHz RMS Current (mA) 20°C | MSL |
|---|---|---|---|---|---|---|---|---|
| **4 Volt** | | | | | | | | |
| F910G157MCC | C | 150 | 4 | 6.0 | 12 | 250 | 663 | 1 |
| F910G227MCC | C | 220 | 4 | 8.8 | 12 | 250 | 663 | 1 |
| F910G337MNC | N | 330 | 4 | 13.2 | 10 | 100 | 1225 | 1 |
| F910G477MNC | N | 470 | 4 | 18.8 | 16 | 100 | 1225 | 1 |
| F910G687MNC | N | 680 | 4 | 27.2 | 18 | 100 | 1225 | 1 |
| **6.3 Volt** | | | | | | | | |
| F910J107MCC | C | 100 | 6.3 | 6.3 | 8 | 250 | 663 | 1 |
| F910J157MCC | C | 150 | 6.3 | 9.5 | 12 | 250 | 663 | 1 |
| F910J227MCC | C | 220 | 6.3 | 13.9 | 14 | 250 | 663 | 1 |
| F910J227MNC | N | 220 | 6.3 | 13.9 | 10 | 100 | 1225 | 1 |
| F910J337MNC | N | 330 | 6.3 | 20.8 | 14 | 100 | 1225 | 1 |
| F910J477MNC | N | 470 | 6.3 | 29.6 | 16 | 100 | 1225 | 1 |
| **10 Volt** | | | | | | | | |
| F911A476MBA | B | 47 | 10 | 4.7 | 8 | 500 | 412 | 1 |
| F911A686MCC | C | 68 | 10 | 6.8 | 8 | 300 | 606 | 1 |
| F911A107MCC | C | 100 | 10 | 10.0 | 10 | 250 | 663 | 1 |
| F911A157MNC | N | 150 | 10 | 15.0 | 10 | 100 | 1225 | 1 |
| F911A227MNC | N | 220 | 10 | 22.0 | 12 | 100 | 1225 | 3 |
| F911A337MNC | N | 330 | 10 | 33.0 | 18 | 100 | 1225 | 3 |
| **16 Volt** | | | | | | | | |
| F911C226MBA | B | 22 | 16 | 3.5 | 8 | 950 | 299 | 1 |
| F911C336MBA | B | 33 | 16 | 5.3 | 8 | 950 | 299 | 1 |
| F911C336MCC | C | 33 | 16 | 5.3 | 6 | 400 | 524 | 1 |
| F911C476MNC | N | 47 | 16 | 7.6 | 6 | 150 | 1000 | 1 |
| F911C107MNC | N | 100 | 16 | 16 | 10 | 100 | 1225 | 3 |
| **20 Volt** | | | | | | | | |
| F911D156MCC | C | 15 | 20 | 3 | 6 | 450 | 494 | 1 |
| F911D336MNC | N | 33 | 20 | 6.6 | 6 | 200 | 866 | 1 |
| F911D476MNC | N | 47 | 20 | 9.4 | 8 | 200 | 866 | 1 |
| **25 Volt** | | | | | | | | |
| F911E106MCC | C | 10 | 25 | 2.5 | 6 | 450 | 494 | 1 |
| F911E226MNC | N | 22 | 25 | 5.5 | 6 | 200 | 866 | 1 |
| F911E336MNC | N | 33 | 25 | 8.3 | 8 | 200 | 866 | 1 |
| F911E476MNC | N | 47 | 25 | 11.8 | 8 | 250 | 775 | 1 |
| **35 Volt** | | | | | | | | |
| F911V685MCC | C | 6.8 | 35 | 2.4 | 6 | 600 | 428 | 1 |
| F911V106MNC | N | 10 | 35 | 3.5 | 6 | 300 | 707 | 1 |
| F911V156MNC | N | 15 | 35 | 5.3 | 6 | 300 | 707 | 1 |
| F911V226MNC | N | 22 | 35 | 7.7 | 8 | 300 | 707 | 1 |

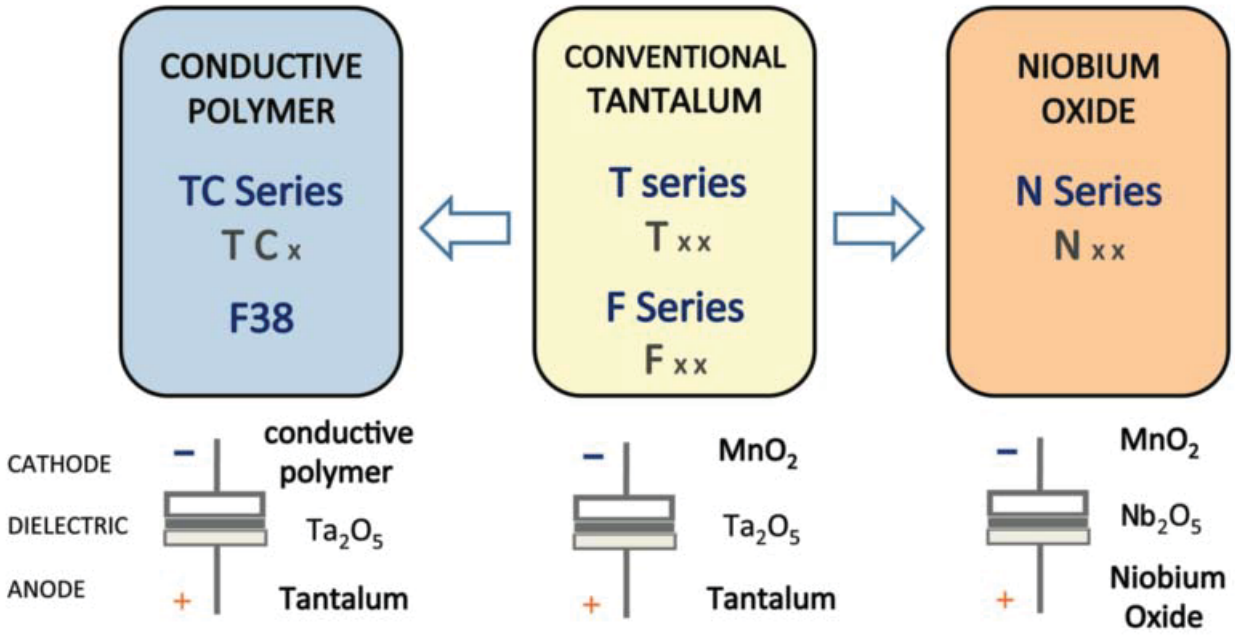
* In case of capacitance tolerance ± 10% type, "K" will be put at 9th digit of type numbering system

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

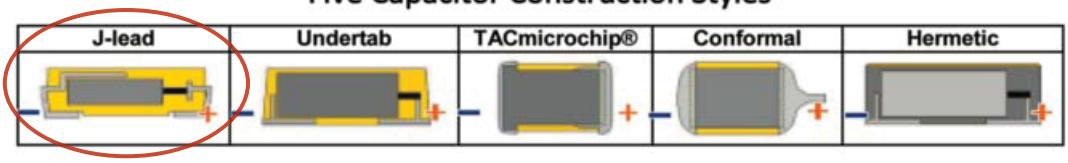
## QUALIFICATION TABLE

| TEST | F91 series (Temperature range -55ºC to +125ºC)<br>Condition |
|---|---|
| **Damp Heat (Steady State)** | At 40°C, 90 to 95% R.H., 500 hours (No voltage applied)<br>Capacitance Change ..... Within ±10% of the initial value<br>Dissipation Factor ..... Initial specified value or less<br>Leakage Current ..... Initial specified value or less |
| **Temperature Cycles** | -55°C / +125°C, 30 minutes each, 5 cycles<br>Capacitance Change ..... Within ±5% of the initial value<br>Dissipation Factor ..... Initial specified value or less<br>Leakage Current ..... Initial specified value or less |
| **Resistance to Soldering Heat** | 10 seconds reflow at 260°C, 5 seconds immersion at 260°C.<br>Capacitance Change ..... Within ±5% of the initial value<br>Dissipation Factor ..... Initial specified value or less<br>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 85ºC, capacitors shall meet the characteristic requirements in the table above.<br>Capacitance Change ..... Within ±5% of the initial value<br>Dissipation Factor ..... Initial specified value or less<br>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.<br>Capacitance Change ..... Within ±10% of the initial value<br>Dissipation Factor ..... Initial specified value or less<br>Leakage Current ..... 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.  |

### AVX SOLID ELECTROLYTIC CAPACITOR ROADMAP




### Five Capacitor Construction Styles




### SERIES LINE UP: CONVENTIONAL SMD $MnO_2$