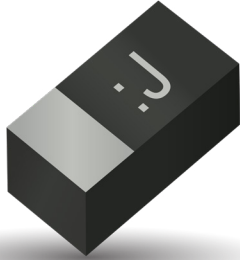


# F98 Series

## Resin-Molded Chip, High CV Undertab



### FEATURES

- Compliant to the RoHS2 directive 2011/65/EU
- SMD face down design
- Small and low profile



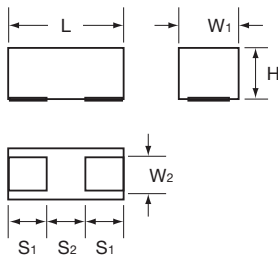
### APPLICATIONS

- Smartphone
- Mobile phone
- Wireless module
- Hearing aid

### CASE DIMENSIONS: millimeters (inches)

| Code | EIA Code | EIA Metric | L  | W <sub>1</sub>   | W <sub>2</sub>             | H                            | S <sub>1</sub>             | S <sub>2</sub>             |
|------|----------|------------|--|--|----------------------------|------------------------------|----------------------------|----------------------------|
| M    | 0603     | 1608-09    | 1.60 <sup>+0.20</sup> <sub>-0.10</sub><br>(0.063 <sup>+0.008</sup> <sub>-0.004</sub> ) | 0.85 <sup>+0.20</sup> <sub>-0.10</sub><br>(0.033 <sup>+0.008</sup> <sub>-0.004</sub> ) | 0.65±0.10<br>(0.026±0.004) | 0.80±0.10*3<br>(0.031±0.004) | 0.50±0.10<br>(0.020±0.004) | 0.60±0.10<br>(0.024±0.004) |
| S    | 0805     | 2012-09    | 2.00 <sup>+0.20</sup> <sub>-0.10</sub><br>(0.079 <sup>+0.008</sup> <sub>-0.004</sub> ) | 1.25 <sup>+0.20</sup> <sub>-0.10</sub><br>(0.049 <sup>+0.008</sup> <sub>-0.004</sub> ) | 0.90±0.10<br>(0.035±0.004) | 0.80±0.10<br>(0.031±0.004)   | 0.50±0.10<br>(0.020±0.004) | 1.00±0.10<br>(0.039±0.004) |
| U    | 0402     | 1106-06    | 1.10±0.05<br>(0.043±0.002)   | 0.60±0.05<br>(0.024±0.002)   | 0.35±0.05<br>(0.014±0.002) | 0.55±0.05<br>(0.022±0.002)   | 0.30±0.05<br>(0.012±0.002) | 0.50±0.05<br>(0.020±0.002) |

\*3 F980J107MMAAXE: 1.0mm Max.

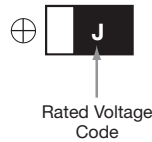


### MARKING

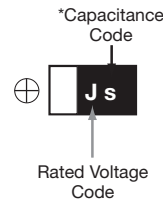
#### U CASE



#### M CASE



#### S CASE



### HOW TO ORDER

**F98**

Type

**0J**

Rated Voltage

**106**

Capacitance Code

pF code: 1st two digits represent significant figures, 3rd digit represents multiplier (number of zeros to follow)

**M**

Tolerance  
M = ±20%

**M**

Case Size  
See table above

**□**

Packaging  
See Tape & Reel Packaging Section

**□□□**

Specification Suffix  
LZT = Rated temperature 60°C  
AXE = Rated temperature 60°C and H dimension 1.0mm Max

### TECHNICAL SPECIFICATIONS

|                             |  |
|-----------------------------|--|
| Category Temperature Range: | -55 to +125°C  |
| Rated Temperature:          | +85°C or +60°C   |
| Capacitance Tolerance:      | ±20% at 120Hz  |
| Dissipation Factor:         | Refer to next page   |
| ESR 100kHz:                 | Refer to next page   |
| Leakage Current:            | After 5 minute's application of rated voltage, leakage current at 85°C or +60°C 10 times or less than 20°C specified value.<br>After 5 minute's application of rated voltage, leakage current at 125°C 12.5 times or less than 20°C specified value. |
| Termination Finish:         | M, S case: Gold Plating (standard), U case: Sn-3.5Ag Plating (standard)  |

# F98 Series

Resin-Molded Chip, High CV Undertab



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

| Capacitance |      | Rated Voltage |         |           |          |          |          |          |          | *Cap Code |
|-------------|------|---------------|---------|-----------|----------|----------|----------|----------|----------|-----------|
| µF          | Code | 2.5 (0e)      | 4V (0G) | 6.3V (0J) | 10V (1A) | 16V (1C) | 20V (1D) | 25V (1E) | 35V (1V) |           |
| 0.47        | 474  |               |         |           |          | U        |          |          |          | N         |
| 1.0         | 105  |               |         |           |          | M        | M        | M        | S        | A         |
| 2.2         | 225  |               |         |           | M/U      | M        |          |          |          | J         |
| 4.7         | 475  |               | U       | M/U       | M/U**    | M        |          |          |          | S         |
| 10          | 106  |               | U       | M/U**     | M        | S        |          |          |          | a         |
| 15          | 156  |               | U       |           |          |          |          |          |          | e         |
| 22          | 226  |               | M/U**   | M         | M**/S    |          |          |          |          | J         |
| 33          | 336  |               | M       | M         | M**/S    |          |          |          |          | n         |
| 47          | 476  | M             | M       | M/S       | S        |          |          |          |          | s         |
| 68          | 686  |               | M/S     |           |          |          |          |          |          | w         |
| 100         | 107  |               | M/S     | M*4/S     |          |          |          |          |          | A         |
| 220         | 227  |               | S       |           |          |          |          |          |          | J         |

Released ratings

\*4 (AXE) Rated temperature 60°C and H dimension 1.0mm Max. Please contact AVX when you need detail spec.

\*\* (LZT) Rated temperature 60°C. 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.

## 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>2.5 Volt</b> |           |                  |                   |          |                |                  |                         |      |      |       |             |     |
| F980E476MMA     | M         | 47               | 2.5               | 1.2      | 30             | 4                | 79                      | –    | 71   | 32    | ±30         | 3   |
| <b>4 Volt</b>   |           |                  |                   |          |                |                  |                         |      |      |       |             |     |
| F980G475MUA     | U         | 4.7              | 4                 | 0.5      | 20             | 20               | 27                      | –    | 25   | 11    | ±30         | 3   |
| F980G106MUA     | U         | 10               | 4                 | 0.8      | 25             | 20               | 27                      | –    | 25   | 11    | ±30         | 3   |
| F980G156MUA     | U         | 15               | 4                 | 9.0      | 40             | 25               | 24                      | –    | 22   | 10    | ±30         | 3   |
| F980G226MMA     | M         | 22               | 4                 | 0.9      | 15             | 7.5              | 58                      | –    | 52   | 23    | ±30         | 3   |
| F980G226MUALZT  | U         | 22               | 4                 | 25.0     | 40             | 20               | 27                      | 25   | –    | 11    | ±30         | 3   |
| F980G336MMA     | M         | 33               | 4                 | 1.3      | 30             | 4                | 79                      | –    | 71   | 32    | ±30         | 3   |
| F980G476MMA     | M         | 47               | 4                 | 1.9      | 40             | 8                | 56                      | –    | 50   | 22    | ±30         | 3   |
| F980G686MMA     | M         | 68               | 4                 | 27.2     | 50             | 10               | 50                      | –    | 45   | 20    | ±30         | 3   |
| F980G686MSA     | S         | 68               | 4                 | 2.7      | 30             | 4                | 106                     | –    | 95   | 42    | ±30         | 3   |
| F980G107MMA     | M         | 100              | 4                 | 80.0     | 60             | 10               | 50                      | –    | 45   | 20    | ±30         | 3   |
| F980G107MSA     | S         | 100              | 4                 | 4.0      | 35             | 4                | 106                     | –    | 95   | 42    | ±30         | 3   |
| F980G227MSA     | S         | 220              | 4                 | 132      | 80             | 5                | 95                      | –    | 85   | 38    | ±30         | 3   |
| <b>6.3 Volt</b> |           |                  |                   |          |                |                  |                         |      |      |       |             |     |
| F980J475MMA     | M         | 4.7              | 6.3               | 0.5      | 20             | 7.5              | 58                      | –    | 52   | 23    | ±30         | 3   |
| F980J475MUA     | U         | 4.7              | 6.3               | 0.6      | 20             | 20               | 27                      | –    | 25   | 11    | ±30         | 3   |
| F980J106MMA     | M         | 10               | 6.3               | 0.6      | 8              | 6                | 65                      | –    | 58   | 26    | ±30         | 3   |
| F980J106MUALZT  | U         | 10               | 6.3               | 6.3      | 30             | 30               | 22                      | 20   | –    | 9     | ±30         | 3   |
| F980J226MMA     | M         | 22               | 6.3               | 1.4      | 20             | 6                | 65                      | –    | 58   | 26    | ±30         | 3   |
| F980J336MMA     | M         | 33               | 6.3               | 4.2      | 35             | 8                | 56                      | –    | 50   | 22    | ±30         | 3   |
| F980J476MMA     | M         | 47               | 6.3               | 29.6     | 45             | 10               | 50                      | –    | 45   | 20    | ±30         | 3   |
| F980J476MSA     | S         | 47               | 6.3               | 3.0      | 25             | 6                | 87                      | –    | 78   | 35    | ±30         | 3   |
| F980J107MMAAXE  | M         | 100              | 6.3               | 126      | 80             | 10               | 50                      | 45   | –    | 20    | ±30         | 3   |
| F980J107MSA     | S         | 100              | 6.3               | 63.0     | 50             | 8                | 75                      | –    | 68   | 30    | ±30         | 3   |
| <b>10 Volt</b>  |           |                  |                   |          |                |                  |                         |      |      |       |             |     |
| F981A225MMA     | M         | 2.2              | 10                | 0.5      | 6              | 7.5              | 58                      | –    | 52   | 23    | ±30         | 3   |
| F981A225MUA     | U         | 2.2              | 10                | 0.5      | 15             | 15               | 32                      | –    | 28   | 13    | ±30         | 3   |
| F981A475MMA     | M         | 4.7              | 10                | 0.5      | 6              | 6                | 65                      | –    | 58   | 26    | ±30         | 3   |
| F981A475MUALZT  | U         | 4.7              | 10                | 4.7      | 25             | 25               | 24                      | 22   | –    | 10    | ±30         | 3   |
| F981A106MMA     | M         | 10               | 10                | 1.0      | 20             | 7.5              | 58                      | –    | 52   | 23    | ±30         | 3   |
| F981A226MUALZT  | M         | 22               | 10                | 11.0     | 30             | 8                | 56                      | 50   | –    | 22    | ±30         | 3   |
| F981A226MSA     | S         | 22               | 10                | 2.2      | 20             | 4                | 106                     | –    | 95   | 42    | ±30         | 3   |
| F981A336MUALZT  | M         | 33               | 10                | 33.0     | 45             | 8                | 56                      | 50   | –    | 22    | ±30         | 3   |
| F981A336MSA     | S         | 33               | 10                | 3.3      | 30             | 6                | 87                      | –    | 78   | 35    | ±30         | 3   |
| F981A476MSA     | S         | 47               | 10                | 9.4      | 35             | 5                | 95                      | –    | 85   | 38    | ±30         | 3   |
| <b>16 Volt</b>  |           |                  |                   |          |                |                  |                         |      |      |       |             |     |
| F981C474MUA     | U         | 0.47             | 16                | 0.5      | 6              | 25               | 24                      | –    | 22   | 10    | ±20         | 3   |
| F981C105MMA     | M         | 1                | 16                | 0.5      | 6              | 10               | 50                      | –    | 45   | 20    | ±30         | 3   |
| F981C225MMA     | M         | 2.2              | 16                | 0.5      | 6              | 10               | 50                      | –    | 45   | 20    | ±30         | 3   |
| F981C475MMA     | M         | 4.7              | 16                | 0.8      | 12             | 12               | 46                      | –    | 41   | 18    | ±30         | 3   |
| F981C106MSA     | S         | 10               | 16                | 1.6      | 18             | 4                | 106                     | –    | 95   | 42    | ±30         | 3   |
| <b>20 Volt</b>  |           |                  |                   |          |                |                  |                         |      |      |       |             |     |
| F981D105MMA     | M         | 1                | 20                | 0.5      | 6              | 10               | 50                      | –    | 45   | 20    | ±30         | 3   |
| <b>25 Volt</b>  |           |                  |                   |          |                |                  |                         |      |      |       |             |     |
| F981E105MMA     | M         | 1                | 25                | 0.5      | 8              | 10               | 50                      | –    | 45   | 20    | ±30         | 3   |
| <b>35 Volt</b>  |           |                  |                   |          |                |                  |                         |      |      |       |             |     |
| F981V105MSA     | S         | 1                | 35                | 0.7      | 20             | 8                | 75                      | –    | 68   | 30    | ±30         | 3   |

\*2: Leakage Current

After 5 minute's application of rated voltage, leakage current at 20°C.

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



The Important Information/Disclaimer is incorporated in these specifications by reference and should be reviewed in full before placing any order.

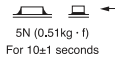
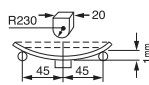
033020

# F98 Series

## Resin-Molded Chip, High CV Undertab



### QUALIFICATION TABLE

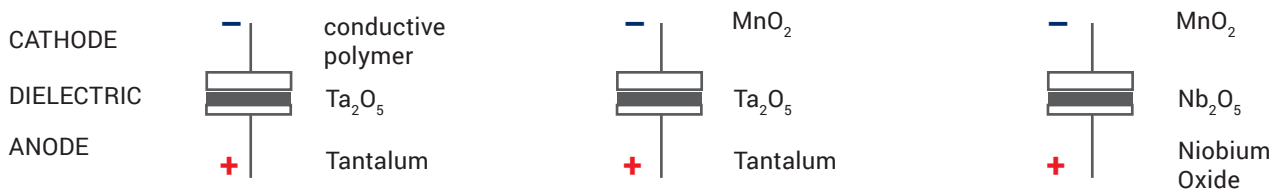
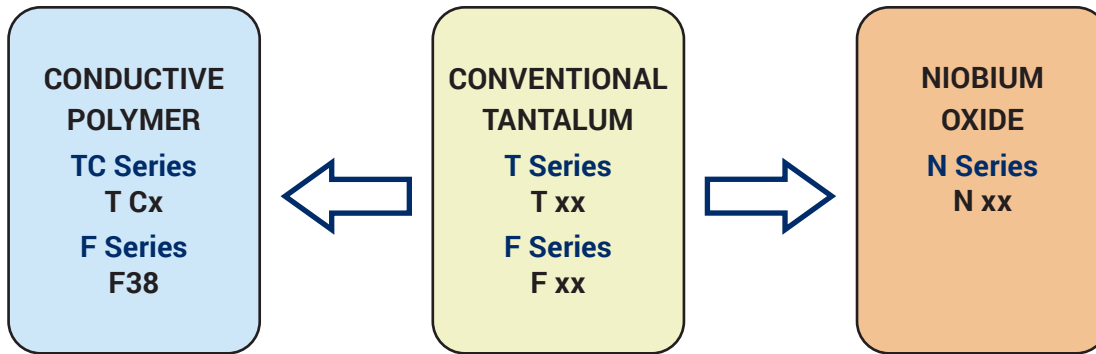
| TEST                                | F98 series (Temperature range -55°C to +125°C)   |  |
|-------------------------------------|--|--|
|                                     | Condition  |  |
| <b>Damp Heat (Steady State)</b>     | At 40°C, 90 to 95% R.H., 500 hours (No voltage applied)<br>Capacitance Change ..... Refer to page 60 (*1)<br>Dissipation Factor ..... 150% or less of initial specified value<br>Leakage Current ..... 200% or less of initial specified value   |  |
| <b>Temperature Cycles</b>           | -55°C / +125°C, 30 minutes each, 5 cycles<br>Capacitance Change ..... Refer to page 60 (*1)<br>Dissipation Factor ..... 150% or less of initial specified value<br>Leakage Current ..... 200% or less of initial specified value   |  |
| <b>Resistance to Soldering Heat</b> | 10 seconds reflow at 260°C, 5 seconds immersion at 260°C.<br>Capacitance Change ..... Refer to page 60 (*1)<br>Dissipation Factor ..... Initial specified value or less<br>Leakage Current ..... Initial specified value or less   |  |
| <b>Surge</b>                        | After application of surge in series with a 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. (Not applied to LZT and AXE.)<br>Capacitance Change ..... Refer to page 60 (*1)<br>Dissipation Factor ..... 150% or less of initial specified value<br>Leakage Current ..... 200% or less of initial specified value |  |
| <b>Endurance</b>                    | After 1000 hours' application of rated voltage in series with a 3Ω resistor at 85°C or +60°C, capacitors shall meet the characteristic requirements in the table above.<br>Capacitance Change ..... Refer to page 60 (*1)<br>Dissipation Factor ..... 150% or less of initial specified value<br>Leakage Current ..... 200% or less of initial specified value   |  |
| <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.   | <br>5N (0.51kg · f)<br>For 10±1 seconds |
| <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.   |   |

# F98 Series

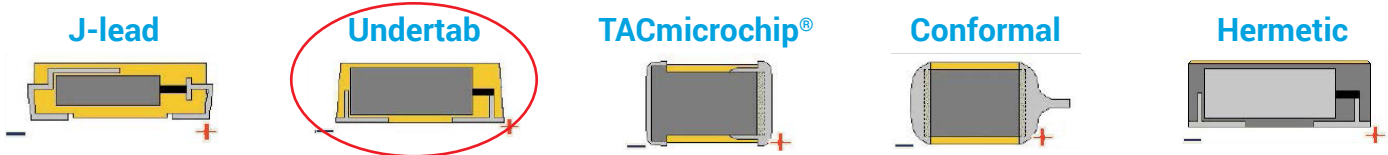
Resin-Molded Chip, High CV Undertab



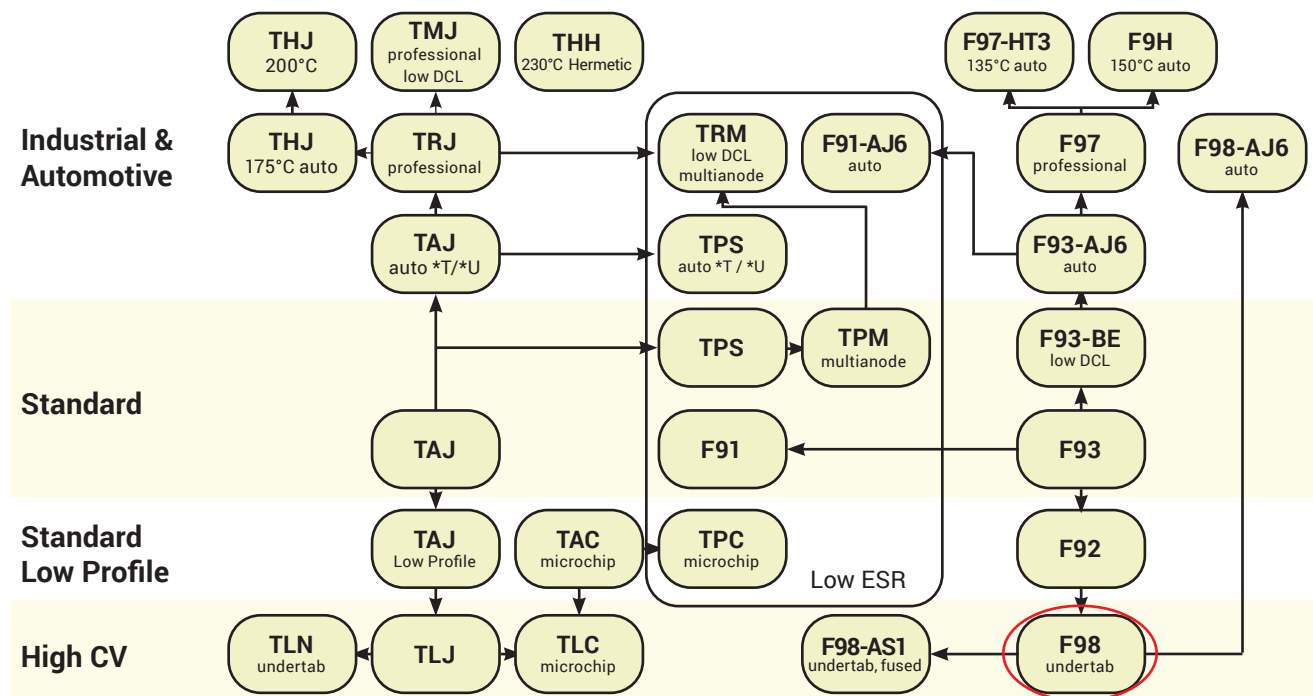
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[F981C106MSA](#) [F980J476MMA](#) [F980J106MUA](#) [F980G475MUA](#) [F980J475MUA](#) [F981E105MMA](#) [F980G686MSA](#)  
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