

# F38 Series



## Conductive Polymer, Miniature, Undertab



### FEATURES

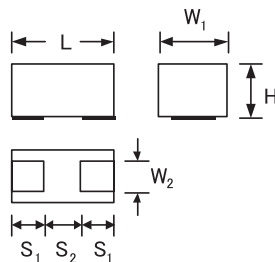
- Compliant to the RoHS2 directive 2011/65/EU
- SMD facedown
- Small and low profile

### APPLICATIONS

- Smartphone
- Tablet PC
- Wireless module
- Portable game

### CASE DIMENSIONS: millimeters (inches)

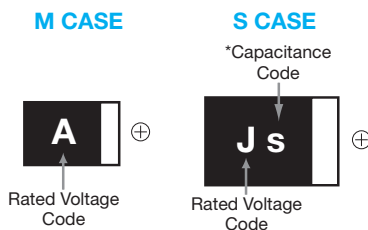
| Code     | L                                                     | W <sub>1</sub>                                        | W <sub>2</sub>             | H                          | S <sub>1</sub>             | S <sub>2</sub>             |
|----------|-------------------------------------------------------|-------------------------------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <b>M</b> | 1.60<br>+0.20<br>-0.10<br>(0.063<br>+0.008<br>-0.004) | 0.85<br>+0.20<br>-0.10<br>(0.033<br>+0.008<br>-0.004) | 0.65±0.10<br>(0.026±0.004) | 0.80±0.10<br>(0.031±0.004) | 0.50±0.10<br>(0.020±0.004) | 0.60±0.10<br>(0.024±0.004) |
| <b>S</b> | 2.00<br>+0.20<br>-0.10<br>(0.079<br>+0.008<br>-0.004) | 1.25<br>+0.20<br>-0.10<br>(0.049<br>+0.008<br>-0.004) | 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) |



### TECHNICAL SPECIFICATIONS

| Item                              | Performance Characteristics                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Category Temperature Range        | -55 to +105°C (Rated temperature: +85°C)                                                                                                                                                                                                                                                                                                                                                                                          |
| Capacitance Tolerance             | ±20% (at 120Hz)                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Dissipation Factor                | Refer to next page                                                                                                                                                                                                                                                                                                                                                                                                                |
| ESR (100kHz)                      | Refer to next page                                                                                                                                                                                                                                                                                                                                                                                                                |
| Leakage Current                   | Refer to the table below<br>Provided that<br>• After 5 minute's application of rated voltage, leakage current at 105°C, 10 times or less than 20°C specified value                                                                                                                                                                                                                                                                |
| Capacitance Change by Temperature | +15% Max. (at +125°C)<br>+10% Max. (at +85°C)<br>-10% Max. (at -55°C)                                                                                                                                                                                                                                                                                                                                                             |
| Damp Heat (Steady State)          | At 40°C, 90 to 95% R.H., 500 hours (No voltage applied)<br>Capacitance Change ..... Refer to next page (*1)<br>Dissipation Factor ..... 200% or less of initial specified value<br>Leakage Current ..... 300% or less of initial specified value                                                                                                                                                                                  |
| Temperature Cycles                | At -55°C / +105°C, For 30 minutes each, 5 cycles<br>Capacitance Change ..... Refer to next page (*1)<br>Dissipation Factor ..... 200% or less of initial specified value<br>Leakage Current ..... 400% or less of initial specified value                                                                                                                                                                                         |
| Resistance to Soldering Heat      | 10 seconds reflow at 240°C<br>Capacitance Change ..... Refer to next page (*1)<br>Dissipation Factor ..... 200% or less of initial specified value<br>Leakage Current ..... 300% or less of initial specified value                                                                                                                                                                                                               |
| Surge                             | After application of surge voltage 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 meet the characteristic requirements table below.<br>Capacitance Change ..... Refer to next page (*1)<br>Dissipation Factor ..... 200% or less of initial specified value<br>Leakage Current ..... 300% or less of initial specified value                     |
| Endurance                         | After 1000 hours' application of rated voltage in series with a 3Ω resistor at 85°C, capacitors meet the characteristic requirements table below.<br>Capacitance Change ..... Refer to next page (*1)<br>Dissipation Factor ..... 200% or less of initial specified value<br>Leakage Current ..... 400% or less of initial specified value                                                                                        |
| 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.<br><br>5N (0.51kg · f)<br>For 10±1 seconds                                                                                                                     |
| 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.<br><br>R230<br>20<br>45 45 1mm |

### MARKING



### HOW TO ORDER

**F38**  
Type

**1A**  
Rated Voltage

**225**  
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            |                      |
|----------------------|----------------------|
| Reel Dia (φ180)<br>A | Tape Width (mm)<br>B |

# F38 Series



## Conductive Polymer, Miniature, Undertab

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

| Capacitance |      | Rated Voltage |           |          | *Cap Code |
|-------------|------|---------------|-----------|----------|-----------|
| µF          | Code | 4V (0G)       | 6.3V (0J) | 10V (1A) |           |
| 2.2         | 225  |               |           | M        | –         |
| 4.7         | 475  |               |           | M        | –         |
| 10          | 106  |               | M         | M        | a         |
| 22          | 226  |               | M/S       | S*       | j         |
| 33          | 336  |               | S         |          | n         |
| 47          | 476  |               | M*/S      |          | s         |
| 100         | 107  | S*            |           |          | A         |

Available Ratings

\*Codes under development – subject to change

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

### RATINGS & PART NUMBER REFERENCE

| AVX Part Number | Case Size | Cap (µF) | Rated Voltage (V) | *2 Leakage Current (µA) | Dissipation Factor (%@120Hz) | ESR (mΩ@100kHz) | Ripple Current (mA <sub>rms</sub> @100kHz, 20°C) | *1 ΔC/C (%) |
|-----------------|-----------|----------|-------------------|-------------------------|------------------------------|-----------------|--------------------------------------------------|-------------|
| <b>6.3 Volt</b> |           |          |                   |                         |                              |                 |                                                  |             |
| F380J106MMA     | M         | 10       | 6.3               | 10.0                    | 8                            | 500             | 224                                              | *           |
| F380J226MMA     | M         | 22       | 6.3               | 13.9                    | 10                           | 500             | 224                                              | *           |
| F380J226MSA     | S         | 22       | 6.3               | 13.9                    | 10                           | 200             | 474                                              | *           |
| F380J336MSA     | S         | 33       | 6.3               | 20.8                    | 10                           | 200             | 474                                              | *           |
| F380J476MSA     | S         | 47       | 6.3               | 29.6                    | 10                           | 200             | 474                                              | *           |
| <b>10 Volt</b>  |           |          |                   |                         |                              |                 |                                                  |             |
| F381A225MMA     | M         | 2.2      | 10                | 10.0                    | 6                            | 500             | 224                                              | *           |
| F381A475MMA     | M         | 4.7      | 10                | 10.0                    | 6                            | 500             | 224                                              | *           |
| F381A106MMA     | M         | 10       | 10                | 10.0                    | 15                           | 500             | 224                                              | *           |

\*1: ΔC/C Marked “\*”

| Item                        | All Case (%) |
|-----------------------------|--------------|
| Damp Heat, steady state     | -20 to +30   |
| Rapid change of temperature | ±20          |
| Resistance soldering heat   | ±20          |
| Surge                       | ±20          |
| Endurance                   | ±20          |

\*2: Leakage Current

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

### THE CORELATIONS AMONG RATED VOLTAGE, SURGE VOLTAGE AND DERATED VOLTAGE

|                           |     |    |
|---------------------------|-----|----|
| Rated Voltage (V)         | 6.3 | 10 |
| 85°C Surge Voltage (V)    | 8   | 13 |
| 105°C Derated Voltage (V) | 5   | 8  |

**NOTICE: DESIGN, SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.**