

# F38 Series



## Conductive Polymer, Miniature, Undertab Solid Electrolytic Chip Capacitors



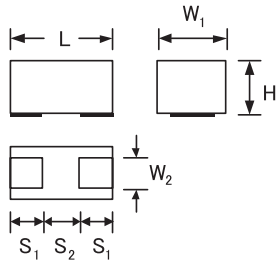
### FEATURES

- Conductive polymer electrode
- Benign failure mode under recommended use conditions
- Compliant to the RoHS2 directive 2011/65/EU
- SMD facedown
- Small and low profile
- High volumetric efficiency



### APPLICATIONS

- Smartphone
- Tablet PC
- Wireless module
- Portable game

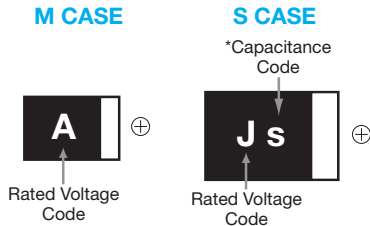


### CASE DIMENSIONS: millimeters (inches)

Code	L	W <sub>1</sub>	W <sub>2</sub>	H	S <sub>1</sub>	S <sub>2</sub>
M	1.60 <sup>+0.20</sup> <sub>-0.10</sub> (0.063 <sup>+0.008</sup> <sub>-0.004</sub> )	0.85 <sup>+0.20</sup> <sub>-0.10</sub> (0.033 <sup>+0.008</sup> <sub>-0.004</sub> )	0.65±0.10 (0.026±0.004)	0.80±0.10 <sup>*</sup> (0.031±0.004)	0.50±0.10 (0.020±0.004)	0.60±0.10 (0.024±0.004)
S	2.00 <sup>+0.20</sup> <sub>-0.10</sub> (0.079 <sup>+0.008</sup> <sub>-0.004</sub> )	1.25 <sup>+0.20</sup> <sub>-0.10</sub> (0.049 <sup>+0.008</sup> <sub>-0.004</sub> )	0.90±0.10 (0.035±0.004)	0.80±0.10 (0.031±0.004)	0.50±0.10 (0.020±0.004)	1.00±0.10 (0.039±0.004)

\*1 F380J476MMAAXE: 1.0mm Max.

### 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)	Tape Width (mm)
A	8

**□□□□□**

Special Code

AXE = Rated temperature 60°C and H dimension 1.0mm Max.  
AXEH3 = Rated temperature 60°C and H dimension 1.0mm Max., Low ESR  
LZT = Rated temperature 60°C only  
AH1, AH2, AH3 = Low ESR

### TECHNICAL SPECIFICATIONS

Category Temperature Range:	-55 to +105°C
Rated Temperature:	+85°C (*2)
Capacitance Tolerance:	±20% at 120Hz
Dissipation Factor:	Refer to next page (120Hz)
ESR 100kHz:	Refer to next page (120Hz)
Leakage Current:	Refer to next page At 20°C after application of rated voltage for 5 minutes Provided that: After 5 minute's application of rated voltage, leakage current at 105°C 10 times or less than 20°C specified value.

\*2 F380J476MMAAXE: Rated temperature +60°C Surge, endurance test temperature +60°C

# F38 Series



## Conductive Polymer, Miniature, Undertab Solid Electrolytic Chip Capacitors

### 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(AH1,AH2)	M/M(AH1)	a
22	226		M/M(AH3,AH1)/S/S(AH1)	S	j
33	336		M**/S		n
47	476		M*/M*(H3)/S/S(AH1)		s
68	686		S**		w
100	107	S*			A

Available Ratings, (Low ESR)

\*Codes under development – subject to change

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

\*\*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.

### RATINGS & PART NUMBER REFERENCE

AVX Part No.	Case Size	Capacitance (µF)	Rated Voltage (V)	Leakage Current (µA)	DF (%) @ 120Hz	ESR (mΩ) @ 100kHz	100kHz RMS Current (mA) 20°C	*3 ΔC/C (%)
<b>6.3 Volt</b>								
F380J106MMA	M	10	6.3	10.0	8	500	224	*
F380J106MMAAH1	M	10	6.3	10.0	8	300	289	*
F380J106MMAAH2	M	10	6.3	10.0	8	200	354	*
F380J226MMA	M	22	6.3	13.9	10	500	224	*
F380J226MMAAH3	M	22	6.3	13.9	10	300	289	*
F380J226MMAAH1	M	22	6.3	13.9	10	200	354	*
F380J226MSA	S	22	6.3	13.9	10	200	474	*
F380J226MSAAH1	S	22	6.3	13.9	10	150	548	*
F380J336MMALZT	M	33	6.3	41.6	10	500	224	*
F380J336MSA	S	33	6.3	20.8	10	200	474	*
F380J476MMAAXE <sup>4</sup>	M	47	6.3	59.2	10	500	224	*
F380J476MMAAXEH3	M	47	6.3	59.2	10	300	289	*
F380J476MSA	S	47	6.3	29.6	10	200	474	*
F380J476MSAAH1	S	47	6.3	29.6	10	150	548	*
F380J686MSALZT	S	68	6.3	86.0	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	*
F381A106MMAAH1	M	10	10	10.0	15	300	289	*
F381A226MSA	S	22	10	22.0	10	200	474	*

\*3: 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

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

	F38 (Standard)		F38-AXE
Rated Voltage (V)	6.3	10	6.3
60°C Surge Voltage (V)	-	-	8
85°C Surge Voltage (V)	8	13	-
85°C Derated Voltage (V)	-	-	4.5
105°C Derated Voltage (V)	5	8	3.3

### QUALIFICATION TABLE

TEST	F38 series (Temperature range -55°C to +105°C)	
	Condition	
<b>Damp Heat (Steady State)</b>	At 40°C, 90 to 95% R.H., 500 hours (No voltage applied) Capacitance Change ..... Refer to page 126 (*3) Dissipation Factor ..... 200% or less of initial specified value Leakage Current ..... 300% or less of Initial specified value	
<b>Temperature Cycles</b>	At -55°C / +105°C, 30 minutes each, 5 cycles Capacitance Change ..... Refer to page 126 (*3) Dissipation Factor ..... 200% or less of initial specified value Leakage Current ..... 400% or less of initial specified value	
<b>Resistance to Soldering Heat</b>	10 seconds reflow at 240°C Capacitance Change ..... Refer to page 126 (*3) Dissipation Factor ..... 200% or less of initial specified value Leakage Current ..... 300% or less of initial specified value	
<b>Surge</b>	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 (*2), capacitors shall meet the characteristic requirements in the table above. Capacitance Change ..... Refer to page 126 (*3) Dissipation Factor ..... 200% or less of initial specified value Leakage Current ..... 300% 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 (*2), capacitors shall meet the characteristic requirements in the table above. Capacitance Change ..... Refer to page 126 (*3) Dissipation Factor ..... 200% or less of initial specified value Leakage Current ..... 400% 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.	
<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.	

\*2 F380J476MMAAXE: Rated temperature +60°C Surge, endurance test temperature +60°C

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