

F39 Series



Polymer, High Humidity 85°C/85%RH, Facedown 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
- 85/85%RH 500hours (No voltage applied)



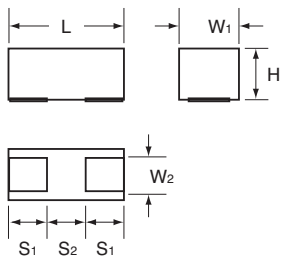
APPLICATIONS

- Smartphone
- Tablet PC
- Wireless module
- Portable game
- Bulk decoupling of SoC (System on chip)

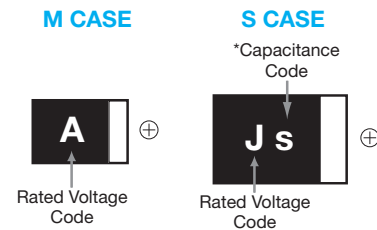
CASE DIMENSIONS: millimeters (inches)

Code	EIA Code	EIA Metric	L	W ₁	W ₂	H	S ₁	S ₂
M	0603	1608-09	1.60 ^{+0.20} _{-0.10} (0.063 ^{+0.008} _{-0.004})	0.85 ^{+0.20} _{-0.10} (0.033 ^{+0.008} _{-0.004})	0.65±0.10 (0.026±0.004)	0.80±0.10*1 (0.031±0.004)	0.50±0.10 (0.020±0.004)	0.60±0.10 (0.024±0.004)
S	0805	2012-09	2.00 ^{+0.20} _{-0.10} (0.079 ^{+0.008} _{-0.004})	1.25 ^{+0.20} _{-0.10} (0.049 ^{+0.008} _{-0.004})	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 CXE: 1.0mm Max.



MARKING



HOW TO ORDER

F39	1A	475	M	M						
Type	Rated Voltage	Capacitance Code	Tolerance	Case Size	Packaging	Special Code				
		pF code: 1st two digits represent significant figures, 3rd digit represents multiplier (number of zeros to follow)	M = ±20%	See table above	<table border="1"> <tr> <td>Reel Dia (φ180)</td> <td>Tape Width (mm)</td> </tr> <tr> <td>A</td> <td>8</td> </tr> </table>	Reel Dia (φ180)	Tape Width (mm)	A	8	CXE = H dimension 1.0mm Max. CXEH3 = H dimension 1.0mm Max., Low ESR AH1, AH2, AH3 = Low ESR
Reel Dia (φ180)	Tape Width (mm)									
A	8									

TECHNICAL SPECIFICATIONS

Category Temperature Range:	-55 to +105°C
Rated Temperature:	+85°C
Capacitance Tolerance:	±20% at 120Hz
Dissipation Factor:	Refer to next page (120Hz)
ESR 100kHz:	Refer to next page
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.

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CAPACITANCE AND RATED VOLTAGE RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage			*Cap Code
µF	Code	6.3V (0J)	10V (1A)	25V (1E)	
4.7	475		M	S	S
10	106		M/M(AH1)		a
22	226	M/M(AH3,AH1)	S		j
33	336				n
47	476	M*/M*(H3)/S/(AH1)			s

Released ratings, (Low ESR)

*4 (CXE) H dimension 1.0mm Max 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.

THE CORRELATIONS AMONG RATED VOLTAGE, SURGE VOLTAGE AND DERATED VOLTAGE

	F39		
Rated Voltage (V) ≤85°C	6.3	10	25
85°C Surge Voltage (V)	8	13	32
105°C Derated Voltage (V)	5	8	20

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)			*1 ΔC/C (%)	MSL
							45°C	85°C	105°C		
6.3 Volt											
F390J226MMA	M	22	6.3	13.9	10	500	224	157	112	*	3
F390J226MMAAH3	M	22	6.3	13.9	10	300	289	202	144	*	3
F390J226MMAAH1	M	22	6.3	13.9	10	200	354	247	177	*	3
F390J476MMACXE	M	47	6.3	59.2	10	500	224	157	112	*	3
F390J476MMACXEH3	M	47	6.3	59.2	10	300	289	202	144	*	3
F390J476MSA	S	47	6.3	29.6	10	200	474	332	237	*	3
F390J476MSAAH1	S	47	6.3	29.6	10	150	548	383	274	*	3
10 Volt											
F391A475MMA	M	4.7	10	10.0	6	500	224	157	112	*	3
F391A106MMA	M	10	10	10.0	15	500	224	157	112	*	3
F391A106MMAAH1	M	10	10	10.0	15	300	289	202	144	*	3
F391A226MSA	S	22	10	22.0	10	200	474	332	237	*	3
25 Volt											
F391E475MSA	S	4.7	25	11.8	10	500	300	210	150	*	3

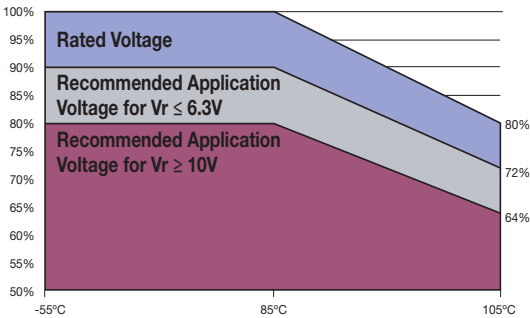
3: ΔC/C Marked “”

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

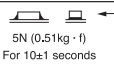
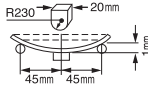
Item	All Case (%)
Damp Heat, steady state	-20 to +30
Rapid change of temperature	±20
Resistance soldering heat	±20
Surge	±20
Endurance	±20

RECOMMENDED DERATING FACTOR

Voltage and temperature derating as percentage of Vr



QUALIFICATION TABLE

TEST	F39 series (Temperature range -55°C to +105°C)	
	Condition	
Damp Heat (Steady State)	At 85°C, 85% R.H., 500 hours (No voltage applied) Capacitance Change Refer to page 233 (*3) Dissipation Factor 300% or less of initial specified value Leakage Current 500% or less of Initial specified value	
Temperature Cycles	At -55°C / +105°C, 30 minutes each, 5 cycles Capacitance Change Refer to page 233 (*3) Dissipation Factor 200% or less of initial specified value Leakage Current 400% or less of initial specified value	
Resistance to Soldering Heat	5 seconds reflow at 260°C Capacitance Change Refer to page 233 (*3) Dissipation Factor 200% or less of initial specified value 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 (*2), capacitors shall meet the characteristic requirements in the table above. Capacitance Change Refer to page 233 (*3) Dissipation Factor 200% or less of initial specified value 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 (*2), capacitors shall meet the characteristic requirements in the table above. Capacitance Change Refer to page 233 (*3) Dissipation Factor 200% or less of initial specified value 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. 	
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. 	

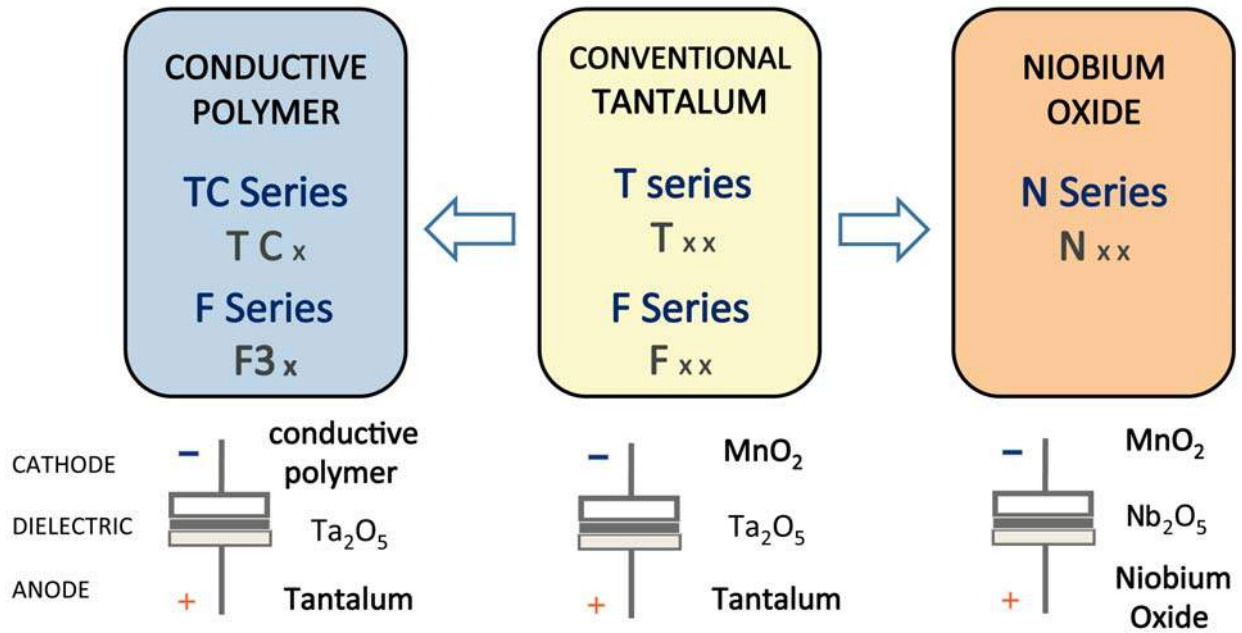
NOTICE: DESIGN, SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

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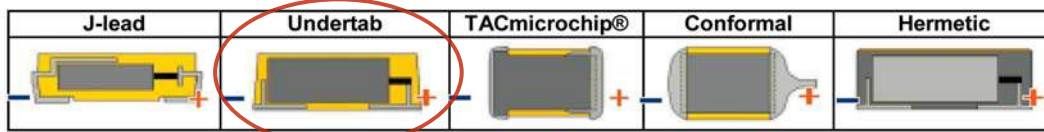


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AVX SOLID ELECTROLYTIC CAPACITOR ROADMAP



Five Capacitor Construction Styles



SERIES LINE UP: CONDUCTIVE POLYMER

