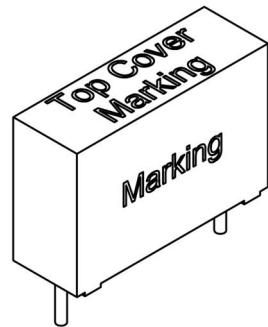




**A Dimensions: [mm]**



<b>P ±0.5</b>	<b>15.0</b>
<b>L ±0.5</b>	18.0
<b>H ±0.5</b>	14.0
<b>W ±0.5</b>	8.0
<b>PL min.</b>	20.0
<b>Pin Ø ±0.05</b>	0.8
<b>d1</b>	1.1

**B Recommended hole pattern: [mm]**



**C Schematic:**



**D1 Electrical Properties:**

Properties	Test conditions		Value	Unit	Tol.
<b>Capacitance</b>	1 V/ 1 kHz ± 0.2 kHz	C	0.4700	µF	± 10%
<b>Rated voltage</b>		U <sub>R</sub>	310	V (AC)	
<b>Isolation Resistance</b>	1 min @ 100V (DC)	R <sub>ISO</sub>	> 10000	MΩ • µF	min.
<b>Dissipation factor</b>	@ 1 kHz	DF	< 0.10	%	max.
<b>Dissipation factor</b>	@ 10 kHz	DF	< 0.20	%	max.
<b>Dissipation factor</b>	@ 100 kHz	DF	< 2.0	%	max.
<b>Rate of Voltage Rise</b>		dV/ dt	220	V/ µs	max.
<b>Dielectric strength Pin to Pin</b>	1 minute		1333	V (DC)	
<b>Dielectric strength Pin to Case</b>	1 minute		2000	V (AC)	

**E General information:**

X2-Safety Class Capacitor  
 Storage Conditions: 35°C, <45% RH  
 Operating Temperature: -40°C to +105°C  
 Climate category: 40/ 105/ 56/ B  
 Maximum Selfheating (rated): 7°C  
 Test conditions of Electrical Properties: 20°C, 33% RH  
 if not specified differently  
 FIT according to separate documentation

				Projection	DESCRIPTION
					<b>WCAP-FTXX Foil Capacitors</b>
				Würth Elektronik eiSos GmbH & Co. KG EMC & Inductive Solutions Max-Eyth-Str. 1 74638 Waldenburg Germany Tel. +49 (0) 79 42 945 - 0 www.we-online.com eiSos@we-online.com	Order.- No.
1.2	2014-08-14	SSt	PSL		<b>890334025039</b>
1.1	2014-05-20	SSt	PSL		
1.0	2014-01-22	SSt	PSL		COMPLIANT RoHS&REACH WÜRTH ELEKTRONIK
REV	DATE	BY	CHECKED		SIZE
					A4



**Component Marking:**

Print	Description
<b>1<sup>st</sup> Line right</b>	Matchcode: FTXX
<b>2<sup>nd</sup> Line right</b>	Rated Voltage: 310 V~
<b>3<sup>rd</sup> Line right</b>	Climate Category: 40/105/56/B
<b>1st Line left</b>	Capacitance & Tolerance Code: 474K (Basis pF)
<b>Bottom line</b>	Certificates: ENEC, cULUS, CQC & Internal Marking
<b>Top Cover Marking P &lt; 15</b>	Date Code: YWW
<b>Top Cover Marking P ≥ 15</b>	Date Code & Capacitance & Tolerance Code

**D2 Approvals:**

Properties	Standard	File
<b>ENEC10 by VDE</b>	IEC 60384 - 14	40038405
<b>cULus</b>	UL 60384 - 14 / CAN/CSA - E60384 - 14	E345659
<b>CQC</b>	IEC 60384 - 14	13001104050

**D3 Mechanical Properties:**

Properties	Test Conditions		Lead diameter [mm]	Force [N]	condition
<b>Termination Robustness</b>	IEC 600668 - 2 - 21	Pull Test	0.5 to ≤ 0.8	10	min. 10 sec.
			0.9 to ≤ 1.25	20	min. 10 sec.
		Bend Test	0.5 to ≤ 0.8	5	min. 2 cycles
			0.9 to ≤ 1.25	10	min. 2 cycles

**D4 Environmental Tests:**

Properties	Standard	
<b>Active Flammability</b>	IEC 60384-14	max. 24 surge pulses @ 2.5 kV (one pulse every 5 seconds)
<b>Passive Flammability</b>	IEC 60384-14	in combination with IEC 60381 - 1 & IEC 60695 - 11 - 5
<b>Vibration</b>	IEC 60068 - 2 - 6	all 3 directions, 2 hours each @ 10 - 55 - 10 Hz, amplitude 0.75 mm or 10 g
<b>Damp Heat</b>	IEC 60068 - 2 - 78	40°C, 95% RH, 56 days
<b>Temperature Cycles</b>	IEC 60068 - 2 - 14	5 cycles, upper and lower temperature 30 min. each, 30 sec. transfer time
<b>Charge/ Discharge Test</b>	IEC 60384 - 14	√2 x U <sub>R</sub> @ 100 V/μs
<b>Surge Test</b>	IEC 60384 - 14	2.5 kV Surge impulses

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This electronic component has been designed and developed for usage in general electronic equipment only. This product is not authorized for use in equipment where a higher safety standard and reliability standard is especially required or where a failure of the product is reasonably expected to cause severe personal injury or death, unless the parties have executed an agreement specifically governing such use. Moreover Würth Elektronik eiSos GmbH & Co KG products are neither designed nor intended for use in areas such as military, aerospace, aviation, nuclear control, submarine, transportation (automotive control, train control, ship control), transportation signal, disaster prevention, medical, public information network etc.. Würth Elektronik eiSos GmbH & Co KG must be informed about the intent of such usage before the design-in stage. In addition, sufficient reliability evaluation checks for safety must be performed on every electronic component which is used in electrical circuits that require high safety and reliability functions or performance.



**F1 Capacitance Change over Frequency:**



Test Equipment: E4991A or equivalent

**F2 Dissipation Factor over Frequency:**



Test Equipment: E4991A or equivalent

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### F3 Capacitance Change vs. Temperature:



Test Equipment: E4991A or equivalent

### F4 Dissipation Factor vs. Temperature:



Test Equipment: E4991A or equivalent

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**G Packaging Specification - Bulk and Carton [mm]:**



Pitch (mm)	Packaging Type	Material of Bulk	Packaging Unit /Bulk	A	B
7,5	Bulk	PET	500	200	200
10	Bulk	PET	500	200	200
12,5	Bulk	PET	500	200	200
15	Bulk	PET	500	250	300
22,5	Bulk	PET	200	250	300
27,5	Bulk	PET	80	300	300
37,5	Bulk	PET	40	300	300



	Inner Carton	A1	B1	C1	Master Carton	A2	B2	C2
size	no.	mm	mm	mm	no.	mm	mm	mm
FTXX	2	275,0	200,0	350,0	1	580,0	220,0	370,0
FTX2	2	275,0	200,0	350,0	1	580,0	220,0	370,0

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## H Soldering Specifications:



### H4: Classification Wave Soldering Profile:



### H5: Classification Wave Profile

Profile Feature	Pb-Free Assembly	Sn-Pb Assembly
Preheat - Temperature Min ( $T_{smin}$ ) - Temperature Typical ( $T_{stypical}$ ) - Temperature Max ( $T_{smax}$ ) - Time ( $t_p$ ) from ( $T_{smin}$ to $T_{smax}$ )	100°C 120°C 130°C 70 seconds	100°C 120°C 130°C 70 seconds
$\Delta$ preheat to max Temperature	150°C max.	150°C max.
Peak temperature ( $T_p$ )	250°C - 260°C	235°C - 260°C
Time of actual peak temperature ( $t_p$ )	max. 10 seconds max. 5 second each wave	max. 10 seconds max. 5 second each wave
Ramp-down rate - Min - Typical - Max	~ 2 K/s ~ 3.5 K/s ~ 5 K/s	~ 2 K/s ~ 3.5 K/s ~ 5 K/s
Time 25°C to 25°C	4 minutes	4 minutes

refer to EN 61760-1:2006

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## I Cautions and Warnings:

The following conditions apply to all goods within the product series of **WCAP-FTXX** of Würth Elektronik eiSos GmbH & Co. KG:

### General:

The capacitor is engineered, designed and manufactured to be used within the data sheet specified values. Do not use the capacitor neither short term nor long term outside the specified values, which are given in the data sheet.

### Product specific:

Follow all instructions mentioned in the data sheet, especially:

- The soldering profile has to be complied with according to the technical reflow soldering specification, otherwise this will void the warranty.
- Wave soldering is only allowed after evaluation and approval.
- Do not exceed the lower and/ or upper specified temperature!
- Do not use the capacitor with other than specified voltage!
- Prevent any kind of mechanical stress to the capacitor terminals!
- Do not use the soldered capacitor on a PCB for any movement or transportation to avoid any tensile force to the capacitor!
- Do not apply any kind of flexural or compressive force onto soldered or unsoldered component!
- Prevent the capacitor surface from any damage or scratches with sharp edges (e.g. chassis, screwdrivers, pincers)
- The capacitor must be placed on a PCB while using the recommended drill hole pattern without changing of the specific lead pitch!
- Avoid any other than specified temperature and / or time conditions during soldering!
- Avoid any overload or conditions that are not specified in the capacitors datasheet!
- Avoid any water or heavy dust on capacitors surface which may cause electrical leakage, damage, overheating or corrosion!

### Storage conditions:

These film capacitors must be stored in stable climatic conditions, which are listed within the general information on front of data sheet.

### Storage duration:

All products shall be used before the end of the period of 12 months based on the product date code, if not a 100% solderability can't be ensured.

### Flammability:

Avoid any external energy or open fire (passive flammability).



### Vibration resistance:

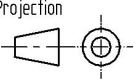

Do not exceed the vibration limits given by IEC60068-2-6.

### Cleaning:

Do not use any other cleaning solvents for box-typed capacitors except: ethanol, isopropanol, n-propanol - water mixtures. After cleaning a drying process with temperatures not exceeding 65°C and not longer than 4 hours is mandatory to prevent any kind of electrical damage.

### Full covered or embedded capacitors in final applications:

If final assemblies will be placed completely in any plastic resin, physical, chemical and thermal influences must be considered. If any specific evaluation or test is necessary please contact the related Würth Elektronik Capacitor Business Division.

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