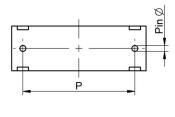
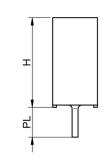
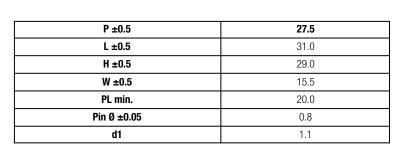
### A Dimensions: [mm]



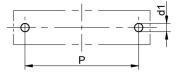




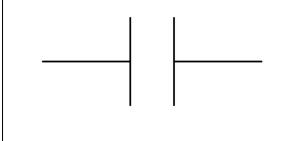




### B Recommended hole pattern: [mm]



### C Schematic:





### **D1 Electrical Properties:**

Properties	Test conditions		Value	Unit	Tol.
Capacitance	1 V/ 1 kHz $\pm$ 0.2 kHz	С	3.3000	μF	± 10%
Rated voltage		$U_{R}$	275	V (AC)	
Isolation Resistance	1 min @ 100V (DC)	R <sub>Iso</sub>	> 10000	MΩ • μF	min.
Dissipation factor	@ 1 kHz	DF	< 0.10	%	max.
Dissipation factor	@ 10 kHz	DF	< 0.70	%	max.
Dissipation factor	@ 100 kHz	DF	-	%	max.
Rate of Voltage Rise		dV/ dt	130	V/ µs	max.
Dielectric strength Pin to Pin	1 minute		1333	V (DC)	
Dielectric strength Pin to Case	1 minute		2000	V (AC)	

### **E General information:**

X2-Safety Class Capacitor; MKP - Metallized Polypropylene

Storage Conditions:  $35^{\circ}\text{C}$ , <45% RH Operating Temperature:  $-40^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$ 

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

DESCRIPTION

				Projection ,
				Würth Elektronik eiSos GmbH & Co. KG
1.3	2015-04-16	SSt	PSL	EMC & Inductive Solutions  Max-Eyth-Str. 1
1.2	2014-08-14	SSt	PSL	74638 Waldenburg
1.1	2014-05-20	SSt	PSL	Germany Tel. +49 (0) 79 42 945 - 0
1.0	2014-01-22	SSt	PSL	www.we-online.com eiSos@we-online.com
			011501550	0.000@110 0.111110.00111

WCAP-FTX2 Film Capacitors

Order.- No.

**890324027025**Size: Pitch 27.5 mm - PL 20



This electronic component has been designed and developed for usage in general electronic equipment where a higher safety standard and reliability 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 elSos GmbH & Co KG products are neither designed nor intended for use in areas such as military, aerospace, aviation, nuclear control, submarine, transportation (automotive real position), transportation signal, disaster prevention, medical, public information network etc.. Würth Elektronik elSos 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.



### **Component Marking:**

Print	Description
1st Line right	Matchcode: FTX2
2 <sup>nd</sup> Line right	Rated Voltage: 275 V~
3 <sup>rd</sup> Line right	Climate Category: 40/105/56/B
1st Line left	Capacitance & Tolerance Code: 335K (Basis pF)
Bottom line	Certificates: ENEC, cULUS, CQC & Internal Marking
Top Cover Marking P < 15	Date Code: YWW
Top Cover Marking P ≥ 15	Date Code & Capacitance & Tolerance Code

### **D2 Approvals:**

Properties	Standard	File
ENEC10 by VDE	IEC 60384 - 14	40038405
cULus	UL 60384 - 14 / CAN/CSA - E60384 - 14	E345659
CQC	IEC 60384 - 14	13001104051

### **D3 Mechanical Properties:**

Properties	Test Conditions		Lead diameter [mm]	Force [N]	condition
Termination Robustness	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

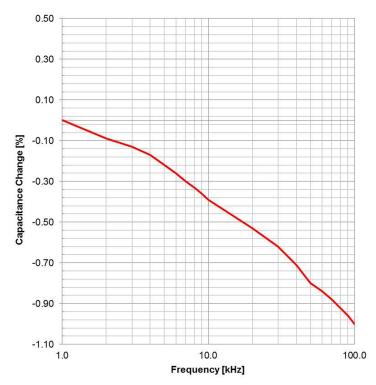
### **D4 Environmental Tests:**

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

				Projection		DESCRIPTION		
						WCAP-FTX2 Film	Canacitore	
				Würth Elektronik eiSos Gmbh	I H & Co. KG	WUAF-FIAZ FIIII	Capacitors	
1.3	2015-04-16	SSt	PSL	EMC & Inductive Solutions Max-Evth-Str. 1				
1.2	2014-08-14	SSt	PSL	74638 Waldenburg		Order No.	COMPLIANT	SIZE
1.1	2014-05-20	SSt	PSL	Germany Tel. +49 (0) 79 42 945 - 0		00000400=00=	ROHS&REACH	
1.0	2014-01-22	SSt	PSL	www.we-online.com eiSos@we-online.com		890324027025		A4
REV	DATE	BY	CHECKED	CICCOSSWC OIIIIIG.COIII		Size: Pitch 27.5 mm - PL 20		

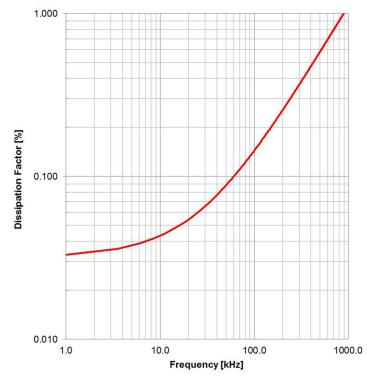


### F1 Capacitance Change over Frequency:



Test Equipment: E4991A or equivalent

### **F2 Dissipation Factor over Frequency:**

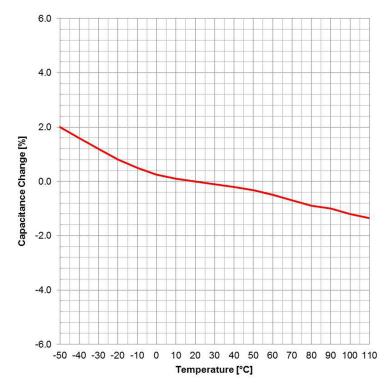


Test Equipment: E4991A or equivalent

				Projection ————————————————————————————————————	WCAP-FTX2 Film Capacitors				
1.3	2015-04-16	SSt	PSL	Würth Elektronik eiSos GmbH & Co. KG EMC & Inductive Solutions Max-Eyth-Str. 1	•				
1.2	2014-08-14	SSt	PSL	74638 Waldenburg	Order No.				
1.1	2014-05-20	SSt	PSL	Germany Tel. +49 (0) 79 42 945 - 0	ROHS&REACH				
1.0	2014-01-22	SSt	PSL	www.we-online.com eiSos@we-online.com	890324027025 WÜRTH ELEKTRONIK				
REV	DATE	BY	CHECKED	- ๘๛๛๛พ๛๛๚๚๛๛๚	Size: Pitch 27.5 mm - PL 20				

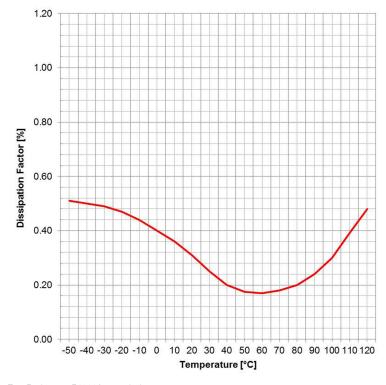


### F3 Capacitance Change vs. Temperature:



Test Equipment: E4991A or equivalent

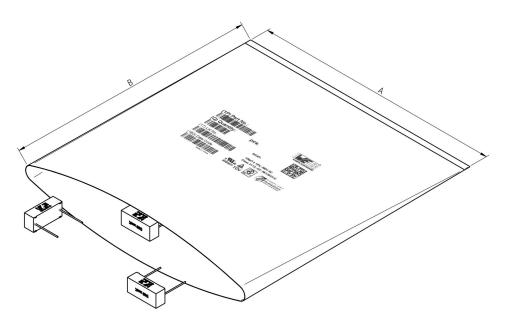
### **F4 Dissipation Factor vs. Temperature:**



Test Equipment: E4991A or equivalent

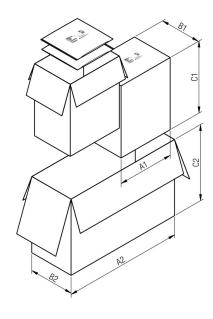
				Projection ————————————————————————————————————	WCAP-FTX2 Film Capacitors				
1.3	2015-04-16	SSt	PSL	Würth Elektronik eiSos GmbH & Co. KG EMC & Inductive Solutions					
1.2	2014-08-14	SSt	PSL	Max-Eyth-Str. 1 74638 Waldenburg	Order No. COMPLIANT SIZE				
1.1	2014-05-20	SSt	PSL	Germany Tel. +49 (0) 79 42 945 - 0	Rohs&Reach				
1.0	2014-01-22	SSt	PSL	www.we-online.com eiSos@we-online.com	890324027025 WÜRTH ELEKTRONIK A4				
REV	DATE	BY	CHECKED	CIOCOSWC OIIIIIC.COIII	Size: Pitch 27.5 mm - PL 20				

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



	Packaging Type	Material of Bulk	Packaging Unit /Bulk	Α	В
Pitch (mm)			pcs.	mm	mm
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

				Γ
1.3	2015-04-16	SSt	PSL	
1.2	2014-08-14	SSt	PSL	
1.1	2014-05-20	SSt	PSL	
1.0	2014-01-22	SSt	PSL	
REV	DATE	BY	CHECKED	



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 DESCRIPTION

## **WCAP-FTX2 Film Capacitors**

Order.- No.

890324027025

COMPLIANT ROHS&REACH WÜRTH ELEKTRONIK

SIZE

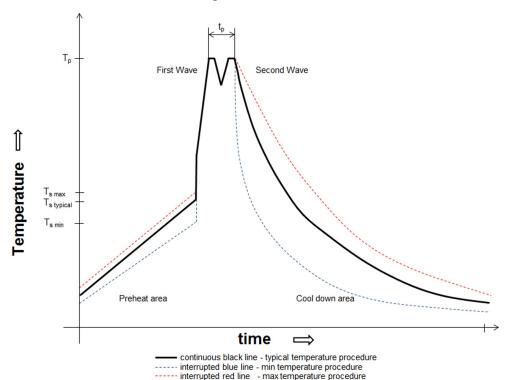
A4

Size: Pitch 27.5 mm - PL 20

### **H Soldering Specifications:**



### **H4: Classification Wave Soldering Profile:**



### **H5: Classification Wave Profile**

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

refer to EN 61760-1:2006

				Projection		DESCRIPTION		
						WCAP-FTX2 Film	Capacitors	
				Würth Elektronik eiSos Gmbl- EMC & Inductive Solutions	H & Co. KG			
1.3	2015-04-16	SSt	PSL	Max-Eyth-Str. 1 74638 Waldenburg				
1.2	2014-08-14	SSt	PSL			Order No.	COMPLIANT	SIZE
1.1	2014-05-20	SSt	PSL	Germany Tel. +49 (0) 79 42 945 - 0		000004007005	ROHS&REACH	O.E.E
1.0	2014-01-22	SSt	PSL	www.we-online.com eiSos@we-online.com		890324027025	TOTAL PERMINANT	A4
REV	DATE	BY	CHECKED			Size: Pitch 27.5 mm - PL 20		

### **I Cautions and Warnings:**

# The following conditions apply to all goods within the product series of WCAP-FTX2 of Würth Elektronik eiSos GmbH & Co. KG:

#### General:

The capacitor is engineered, designed and manufactured to be used within the datasheet 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.



### **J Important Notes:**

# The following conditions apply to all goods within the product range of Würth Elektronik eiSos GmbH & Co. KG:

#### 1. General Customer Responsibility

Some goods within the product range of Würth Elektronik eiSos GmbH & Co. KG contain statements regarding general suitability for certain application areas. These statements about suitability are based on our knowledge and experience of typical requirements concerning the areas, serve as general guidance and cannot be estimated as binding statements about the suitability for a customer application. The responsibility for the applicability and use in a particular customer design is always solely within the authority of the customer. Due to this fact it is up to the customer to evaluate, where appropriate to investigate and decide whether the device with the specific product characteristics described in the product specification is valid and suitable for the respective customer application or not.

#### 2. Customer Responsibility related to Specific, in particular Safety-Relevant Applications

It has to be clearly pointed out that the possibility of a malfunction of electronic components or failure before the end of the usual lifetime cannot be completely eliminated in the current state of the art, even if the products are operated within the range of the specifications.

In certain customer applications requiring a very high level of safety and especially in customer applications in which the malfunction or failure of an electronic component could endanger human life or health it must be ensured by most advanced technological aid of suitable design of the customer application that no injury or damage is caused to third parties in the event of malfunction or failure of an electronic component.

Therefore, customer is cautioned to verify that data sheets are current before placing orders. The current data sheets can be downloaded at www.we-online.com.

#### 3. Best Care and Attention

Any product-specific notes, cautions and warnings must be strictly observed. Any disregard will result in the loss of warranty.

#### 4. Customer Support for Product Specifications

Some products within the product range may contain substances which are subject to restrictions in certain jurisdictions in order to serve specific technical requirements. Necessary information is available on request. In this case the field sales engineer or the internal sales person in charge should be contacted who will be happy to support in this matter.

#### 5. Product R&D

Due to constant product improvement product specifications may change from time to time. As a standard reporting procedure of the Product Change Notification (PCN) according to the JEDEC-Standard inform about minor and major changes. In case of further queries regarding the PCN, the field sales engineer or the internal sales person in charge should be contacted. The basic responsibility of the customer as per Section 1 and 2 remains unaffected.



#### 6. Product Life Cycle

Due to technical progress and economical evaluation we also reserve the right to discontinue production and delivery of products. As a standard reporting procedure of the Product Termination Notification (PTN) according to the JEDEC-Standard we will inform at an early stage about inevitable product discontinuance. According to this we cannot guarantee that all products within our product range will always be available. Therefore it needs to be verified with the field sales engineer or the internal sales person in charge about the current product availability expectancy before or when the product for application design-in disposal is considered.

The approach named above does not apply in the case of individual agreements deviating from the foregoing for customer-specific products.

#### 7. Property Rights

All the rights for contractual products produced by Würth Elektronik eiSos GmbH & Co. KG on the basis of ideas, development contracts as well as models or templates that are subject to copyright, patent or commercial protection supplied to the customer will remain with Würth Elektronik eiSos GmbH & Co. KG.

Würth Elektronik eiSos GmbH & Co. KG does not warrant or represent that any license, either expressed or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right relating to any combination, application, or process in which Würth Elektronik eiSos GmbH & Co. KG components or services are used.

#### 8. General Terms and Conditions

Unless otherwise agreed in individual contracts, all orders are subject to the current version of the "General Terms and Conditions of Würth Elektronik eiSos Group", last version available at www.we-online.com.

				Projection		DESCRIPTION		
						WCAP-FTX2 Film	Capacitors	
				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		1		
1.3	2015-04-16	SSt	PSL					
1.2	2014-08-14	SSt	PSL			Order No.	COMPLIANT	SIZF
1.1	2014-05-20	SSt	PSL			000004007005	ROHS&REACH	OIZE
1.0	2014-01-22	SSt	PSL			890324027025		A4
REV	DATE	BY	CHECKED			Size: Pitch 27.5 mm - PL 20		

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33910103 YV101103Z060HAND5P 46KN3330JBM1K 413N32200000M 463I333000M1K 46KF2470JBN0M 46KF268000M1M

46KF310000M1M 46KI22205001M 46KI24705201K 46KI2470CK01M 46KI2470ND01K 46KI3680JH01M 46KI315000M2K

46KI315000M2M 46KI3150CKM2K 46KI3150CKM2M 46KI3150NDM2M 46KI3220CKP0M 46KI3220JLM1M 46KN3150JH01K

46KN34705001K 46KN347050N0K 46KN3470JHP0M 46KN410040H1M 46KW510050M1K 474I24700003K PHE840MD6220MD13R30

PHE840MY6470MD14R06 PHE845VD5470MR06 YV500103Z060B20X5P MKPX2R-1/400/10P27 YP102271K050B20C6P

YP102391K050BAND5P YP501101K040BAND5P YP102681K060B20C6P YP501121K040B20C6P