

# Notice for TAIYO YUDEN products

Please read this notice before using the TAIYO YUDEN products.

## REMINDERS

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Please note that Taiyo Yuden Co., Ltd. shall not be responsible for any defects in products or equipment incorporating such products, which are caused under the conditions other than those specified in this catalog or individual specification.

- Please contact Taiyo Yuden Co., Ltd. for further details of product specifications as the individual specification is available.
- Please conduct validation and verification of products in actual condition of mounting and operating environment before commercial shipment of the equipment.

- All electronic components or functional modules listed in this catalog are developed, designed and intended for use in general electronics equipment.(for AV, office automation, household, office supply, information service, telecommunications, (such as mobile phone or PC) etc.). Before incorporating the components or devices into any equipment in the field such as transportation,( automotive control, train control, ship control), transportation signal, disaster prevention, medical, public information network (telephone exchange, base station) etc. which may have direct influence to harm or injure a human body, please contact Taiyo Yuden Co., Ltd. for more detail in advance. Do not incorporate the products into any equipment in fields such as aerospace, aviation, nuclear control, submarine system, military, etc. where higher safety and reliability are especially required.

In addition, even electronic components or functional modules that are used for the general electronic equipment, if the equipment or the electric circuit require high safety or reliability function or performances, a sufficient reliability evaluation check for safety shall be performed before commercial shipment and moreover, due consideration to install a protective circuit is strongly recommended at customer's design stage.

- The contents of this catalog are applicable to the products which are purchased from our sales offices or distributors (so called "TAIYO YUDEN' s official sales channel"). It is only applicable to the products purchased from any of TAIYO YUDEN' s official sales channel.

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- Caution for export

Certain items in this catalog may require specific procedures for export according to "Foreign Exchange and Foreign Trade Control Law" of Japan, "U.S. Export Administration Regulations", and other applicable regulations. Should you have any question or inquiry on this matter, please contact our sales staff.

# MULTILAYER EMI SUPPRESSION FILTERS



REFLOW

## FEATURES

- 2×1.25mm size EMI filter unifying multilayer capacitor and inductor T series with rapid attenuation characteristics and TZ series with effective maintaining of waveform quality of digital signal are lined up.
- Same shape as multilayer capacitor which is suitable for high speed mounting by automatic machine.

## APPLICATIONS

- Noise countermeasure in visual signal such as DVD, DSC, PDP, etc. (T series)
- Noise countermeasure and maintaining waveform quality in digital signal processing circuit in personal computer, communication equipment, etc. (TZ series)

## OPERATING TEMPERATURE RANGE

- -25~+85°C

## ORDERING CODE

[T Series]

FK 2125 0805 T 186 18MHz L 10V -T

1 Type: Multilayer EMI Suppression Filter

2 External dimensions (L×W) [mm]: 2125 (0805) 2.0×1.25

3 Equivalence circuit: T type

4 Cutoff frequency example: 186 18 MHz, 256 25 MHz

5 Characteristic: A Sharp

6 Rated Voltage [V]: L 10

7 Packaging: -T Tape & Reel

8 Internal Code: △ Standard products, △=Blank space

[TZ Series]

FK 2125 0805 TZ 201 C850 T

1 Type: Multilayer EMI Suppression Filter

2 External dimensions (L×W) [mm]: 2125 (0805) 2.0×1.25

3 Equivalence circuit: T type

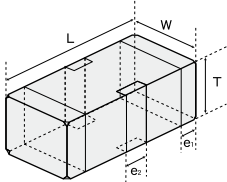
4 Nominal Impedance [100MHz]: Z700 70Ω, Z101 100Ω, Z201 200Ω

5 Nominal Capacitance [1MHz]: C170 17pF, C500 50pF, C850 85pF

6 Packaging: T Tape & Reel

7 Internal Code: △ Standard products, △=Blank space

## EXTERNAL DIMENSIONS/STANDARD QUANTITY



L	W	T	e <sup>1</sup>	e <sup>2</sup>	Standard Quantity [pcs] Embossed tape
2.0±0.2 (0.079±0.008)	1.25±0.2 (0.049±0.008)	1.0±0.2 (0.039±0.008)	0.3±0.2 (0.012±0.008)	0.4±0.2 (0.016±0.008)	3000

Unit : mm (inch)

## PART NUMBERS

### T Series

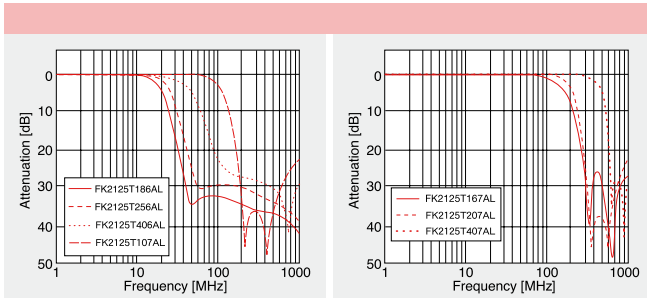
Ordering code	EHS (Environmental Hazardous Substances)	Cut-Off Frequency	insertion-loss [1MHz]	Characteristic attenuation								DC resistance max.	Rated Voltage	Rated current	Insulation resistance
				[50MHz]	[100MHz]	[200MHz]	[350MHz]	[500MHz]	[600MHz]	[800MHz]					
FK2125T186AL	RoHS	18MHz±3.6MHz	≤1.0dB	≥20dB	≥20dB	-	-	≥20dB	-	-	2Ω	10V DC	100mA DC	≥30MΩ	
FK2125T256AL	RoHS	25MHz±5MHz		≥15dB	≥20dB	-	-	≥20dB	-	-					
FK2125T406AL	RoHS	40MHz±10MHz		-	≥15dB	≥20dB	-	≥20dB	-	-					
FK2125T107AL	RoHS	100MHz±20MHz		-	-	≥20dB	-	≥20dB	-	-	3Ω	10V DC	100mA DC	≥30MΩ	
FK2125T167AL	RoHS	160MHz±30MHz		-	-	-	≥20dB	≥20dB	-	-					
FK2125T207AL	RoHS	200MHz±40MHz		-	-	-	≥20dB	≥20dB	-	-	2Ω	10V DC	100mA DC	≥30MΩ	
FK2125T407AL	RoHS	400MHz±80MHz		-	-	-	-	-	≥20dB	≥20dB					

### TZ Series

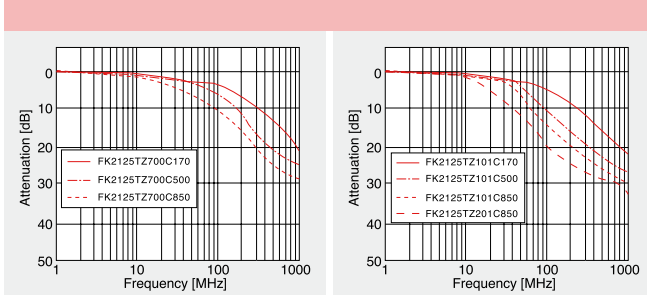
Ordering code	EHS (Environmental Hazardous Substances)	impedance (terminal1-3) [100MHz]	capacitance (terminal1-2) [1MHz]	DC resistance max.	Rated Voltage	Rated current	Insulation resistance
FK2125TZ700C170	RoHS	70Ω±30%	17pF±20%	2Ω	10V DC	100mA DC	≥30MΩ
FK2125TZ700C500	RoHS	70Ω±30%	50pF±20%				
FK2125TZ700C850	RoHS	70Ω±30%	85pF±20%				
FK2125TZ101C170	RoHS	100Ω±30%	17pF±20%				
FK2125TZ101C500	RoHS	100Ω±30%	50pF±20%				
FK2125TZ101C850	RoHS	100Ω±30%	85pF±20%				
FK2125TZ201C850	RoHS	200Ω±30%	85pF±20%				

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● T Series



● TZ Series



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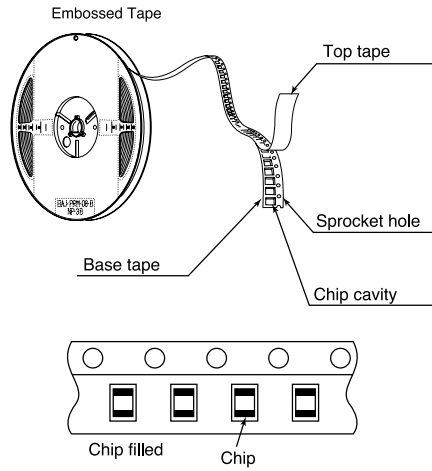
## PACKAGING

### ① Minimum Quantity

#### ● Taped package

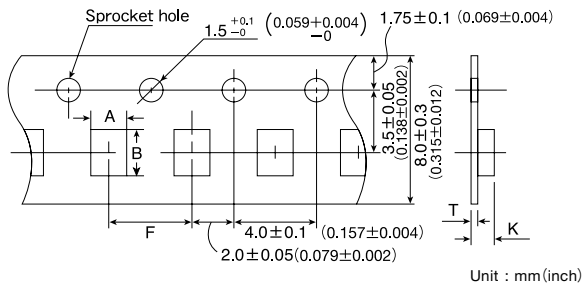
Type	Thickness [mm]	Standard Quantity [pcs] Embossed tape
FK 2125 (0805)	1.0 (0.039)	3000

### ② Tape material



### ③ Taping dimensions

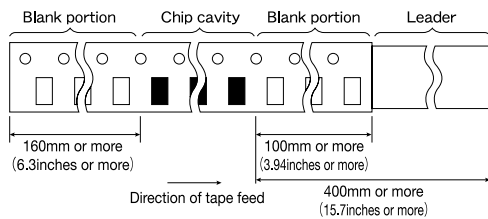
#### ● Embossed tape 8mm wide (0.031 inches wide)



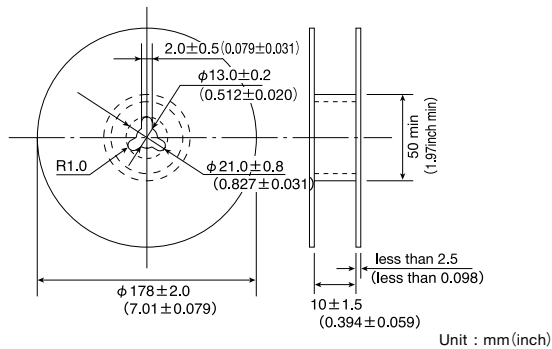
Type	Chip cavity		Insertion pitch	Tape thickness	
	A	B	F	K	T
FK 2125 (0805)	$1.5 \pm 0.2$ (0.059±0.008)	$2.3 \pm 0.2$ (0.091±0.008)	$4.0 \pm 0.1$ (0.157±0.004)	2.0 max. (0.079 max.)	0.3 max. (0.012 max.)

Unit : mm (inch)

### ④ Leader and Blank portion

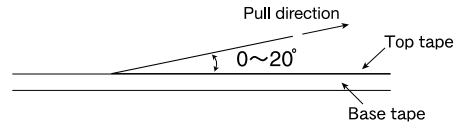


### ⑤ Reel size



### ⑥ Top tape strength

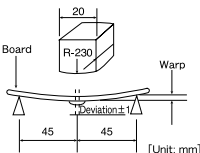
The top tape requires a peel-off force of 0.1~0.7N in the direction of the arrow as illustrated below.



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## RELIABILITY DATA

### MULTILAYER EMI SUPPRESSION FILTER

<b>1. Operating Temperature Range</b>	
Specified	-25~+85°C
<b>2. Storage Temperature Range</b>	
Specified	-25~+85°C
<b>3. Rated Voltage</b>	
Specified	10V DC
<b>4. Rated Current</b>	
Specified	100mA DC
<b>5. Cutoff frequency (T Series)</b>	
Specified	18MHz±3.6MHz, 25MHz±5MHz, 40MHz±10MHz, 100MHz±20MHz, 160MHz±30MHz, 200MHz±40MHz, 400MHz±80MHz
[Test Methods and Remarks]	
Measuring equipment : 8753D (or its equivalent)	
Measuring source : 0dBm	
Input-Output impedance : 50Ω	
<b>6. Impedance (TZ Series)</b>	
Specified	70Ω±30%, 100Ω±30%, 200Ω±30%
[Test Methods and Remarks]	
Measuring frequency : 100MHz	
Measuring equipment : 4291A (or its equivalent)	
Measuring jig : 16192A	
Measuring source : -20dBm	
<b>7. Capacitance (TZ Series)</b>	
Specified	17pF±20%, 50pF±20%, 85pF±20%
[Test Methods and Remarks]	
Measuring equipment : 4194A (or its equivalent)	
Measuring voltage : 0.5V	
Measuring frequency : 1MHz	
Capacitance measurement between Terminals 1 and 2.	
<b>8. DC Resistance</b>	
Specified	2Ω max., 3Ω max. (FK2125T107AL)
[Test Methods and Remarks]	
Conduct measurement between Terminals 1 and 3.	
<b>9. Insulation Resistance</b>	
Specified	30MΩ min.
[Test Methods and Remarks]	
Conduct measurement between Terminals 1 and 2.	
Applied voltage : 10VDC	
<b>10. Resistance to Flexure of Substrate</b>	
Specified	No mechanical damage.
[Test Methods and Remarks]	
Warp : 2mm	
Testing board : glass epoxy-resin substrate	
Thickness : 0.8mm	
	
<b>11. Solderability</b>	
Specified	At least 75% of terminal electrode is covered by new solder.
[Test Methods and Remarks]	
Solder temperature : 230±5°C	
Duration : 4±1 sec.	
Preheating temperature : 150 to 180°C	
Preheating time : 2 to 3 min.	
Flux : Immersion into methanol solution with colophony for 3 to 5 sec.	
<b>12. Resistance to Soldering</b>	
Specified	No significant abnormality in appearance.
[Test Methods and Remarks]	
Solder temperature : 260±5°C	
Duration : 10±0.5 sec.	
Preheating temperature : 150 to 180°C	
Preheating time : 2 to 3 min.	
Flux : Immersion into methanol solution with colophony for 3 to 5 sec.	
<b>13. Thermal Shock</b>	
Specified	No mechanical damage. Insulation resistance (between 1 and 2) : 20MΩ min. DC resistance (between 1 and 3) : 2Ω max. 3Ω max. (FK2125T107AL)
[Test Methods and Remarks]	
Conditions for 1 cycle	
Step1 : Minimum operating temperature $+0^{\circ}\text{C}$ : 30±3 min	
Step2 : Room temperature $-3^{\circ}\text{C}$ : 2 to 3 min	
Step3 : Maximum operating temperature $+3^{\circ}\text{C}$ : 30±3 min	
Step4 : Room temperature $-0^{\circ}\text{C}$ : 2 to 3 min	
Number of cycles : 5	
Recovery : 2 to 3 hrs of recovery under the standard condition after the test.	

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## RELIABILITY DATA

### MULTILAYER EMI SUPPRESSION FILTER

#### 14. Damp Heat steady state

Specified	No mechanical damage. Insulation resistance (between 1 and 2) : 20MΩ min. DC resistance (between 1 and 3) : 2Ω max. 3Ω max. (FK2125T107AL)
<b>[Test Methods and Remarks]</b> Temperature : 40±2°C Humidity : 90 to 95%RH Duration : 500±12 hrs Recovery : 2 to 3 hrs of recovery under the standard condition after the removal from test chamber.	

#### 15. Loading under Damp Heat

Specified	No mechanical damage. Insulation resistance (between 1 and 2) : 20MΩ min. DC resistance (between 1 and 3) : 2Ω max. 3Ω max. (FK2125T107AL)
<b>[Test Methods and Remarks]</b> Temperature : 40±2°C Humidity : 90 to 95%RH Applied voltage : Rated voltage (between 1 and 2) Applied current : Rated current (between 1 and 3) Duration : 500±12 hrs Recovery : 2 to 3 hrs of recovery under the standard condition after the removal from test chamber.	

#### 16. Loading at High Temperature

Specified	No mechanical damage. Insulation resistance (between 1 and 2) : 20MΩ min. DC resistance (between 1 and 3) : 2Ω max. 3Ω max. (FK2125T107AL)
<b>[Test Methods and Remarks]</b> Temperature : 85±2°C Applied voltage : Rated voltage (between 1 and 2) Applied current : Rated current (between 1 and 3) Duration : 500±12 hrs Recovery : 2 to 3 hrs of recovery under the standard condition after the removal from test chamber.	

#### Note on standard condition :

"standard condition" referred to herein is defined as follows :  
5 to 35°C of temperature, 45 to 85% relative humidity and 86 to 106kPa of air pressure.

When there are questions concerning measurement results :  
In order to provide correlation data, the test shall be conducted under condition of 20±2°C of temperature, 60 to 70% relative humidity and 86 to 106kPa of air pressure.  
Unless otherwise specified, all the tests are conducted under the "standard condition."

#### ※Circuit diagram

