# Notice for TAIYO YUDEN products

### Please read this notice before using the TAIYO YUDEN products.

## **REMINDERS**

#### Product Information in this Catalog

Product information in this catalog is as of October 2019. All of the contents specified herein and production status of the products listed in this catalog are subject to change without notice due to technical improvement of our products, etc. Therefore, please check for the latest information carefully before practical application or use of our products.

Please note that TAIYO YUDEN shall not be in any way responsible for any damages and defects in products or equipment incorporating our products, which are caused under the conditions other than those specified in this catalog or individual product specification sheets.

#### Approval of Product Specifications

Please contact TAIYO YUDEN for further details of product specifications as the individual product specification sheets are available. When using our products, please be sure to approve our product specifications or make a written agreement on the product specification with TAIYO YUDEN in advance.

#### Pre-Evaluation in the Actual Equipment and Conditions

Please conduct validation and verification of our products in actual conditions of mounting and operating environment before using our products.

#### Limited Application

#### 1. Equipment Intended for Use

The products listed in this catalog are intended for generalpurpose and standard use in general electronic equipment (e.g., AV equipment, OA equipment, home electric appliances, office equipment, information and communication equipment including, without limitation, mobile phone, and PC) and other equipment specified in this catalog or the individual product specification sheets.

TAIYO YUDEN has the line-up of the products intended for use in automotive electronic equipment, telecommunications infrastructure and industrial equipment, or medical devices classified as GHTF Classes A to C (Japan Classes I to III). Therefore, when using our products for these equipment, please check available applications specified in this catalog or the individual product specification sheets and use the corresponding products.

#### 2. Equipment Requiring Inquiry

Please be sure to contact TAIYO YUDEN for further information before using the products listed in this catalog for the following equipment (excluding intended equipment as specified in this catalog or the individual product specification sheets) which may cause loss of human life, bodily injury, serious property damage and/or serious public impact due to a failure or defect of the products and/or malfunction attributed thereto.

- (1) Transportation equipment (automotive powertrain control system, train control system, and ship control system, etc.)
- (2) Traffic signal equipment
- (3) Disaster prevention equipment, crime prevention equipment
- (4) Medical devices classified as GHTF Class C (Japan Class III)
- (5) Highly public information network equipment, dataprocessing equipment (telephone exchange, and base station, etc.)
- (6) Any other equipment requiring high levels of quality and/or reliability equal to the equipment listed above

#### 3. Equipment Prohibited for Use

Please do not incorporate our products into the following equipment requiring extremely high levels of safety and/or reliability.

- (1) Aerospace equipment (artificial satellite, rocket, etc.)
- (2) Aviation equipment \*1
- (3) Medical devices classified as GHTF Class D (Japan Class IV), implantable medical devices \*<sup>2</sup>

- (4) Power generation control equipment (nuclear power, hydroelectric power, thermal power plant control system, etc.)
- (5) Undersea equipment (submarine repeating equipment, underwater work equipment, etc.)
- (6) Military equipment
- (7) Any other equipment requiring extremely high levels of safety and/or reliability equal to the equipment listed above

#### \*Notes:

- There is a possibility that our products can be used only for aviation equipment that does not directly affect the safe operation of aircraft (e.g., in-flight entertainment, cabin light, electric seat, cooking equipment) if such use meets requirements specified separately by TAIYO YUDEN. Please be sure to contact TAIYO YUDEN for further information before using our products for such aviation equipment.
- Implantable medical devices contain not only internal unit which is implanted in a body, but also external unit which is connected to the internal unit.

#### 4. Limitation of Liability

Please note that unless you obtain prior written consent of TAIYO YUDEN, TAIYO YUDEN shall not be in any way responsible for any damages incurred by you or third parties arising from use of the products listed in this catalog for any equipment that is not intended for use by TAIYO YUDEN, or any equipment requiring inquiry to TAIYO YUDEN or prohibited for use by TAIYO YUDEN as described above.

#### Safety Design

When using our products for high safety and/or reliability-required equipment or circuits, please fully perform safety and/or reliability evaluation. In addition, please install (i) systems equipped with a protection circuit and a protection device and/or (ii) systems equipped with a redundant circuit or other system to prevent an unsafe status in the event of a single fault for a failsafe design to ensure safety.

#### Intellectual Property Rights

Information contained in this catalog is intended to convey examples of typical performances and/or applications of our products and is not intended to make any warranty with respect to the intellectual property rights or any other related rights of TAIYO YUDEN or any third parties nor grant any license under such rights.

#### Limited Warranty

Please note that the scope of warranty for our products is limited to the delivered our products themselves and TAIYO YUDEN shall not be in any way responsible for any damages resulting from a failure or defect in our products. Notwithstanding the foregoing, if there is a written agreement (e.g., supply and purchase agreement, quality assurance agreement) signed by TAIYO YUDEN and your company, TAIYO YUDEN will warrant our products in accordance with such agreement.

#### TAIYO YUDEN's Official Sales Channel

The contents of this catalog are applicable to our products which are purchased from our sales offices or authorized distributors (hereinafter "TAIYO YUDEN's official sales channel"). Please note that the contents of this catalog are not applicable to our products purchased from any seller other than TAIYO YUDEN's official sales channel.

#### Caution for Export

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

# **MULTILAYER EMI SUPPRESSION FILTERS**



[T Series]				* Operating Temp	p.:-25~+85℃
[T Series]					
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1	2 3	4 5 0	6 7	8	
①Series name			_	⑤Characteristics	s
Code	Series	name	_	Code	Characteristics
FK	Multilayer EMI s	uppression filter	_	(example)	
	× W)			A	Sharp
2 Dimensions (L	(~ W)	Dimensions		Bated voltage	
Code	Type(inch)	(I X W) [mm]		Code	Rated voltage[V]
2125	2125(0805)	20×125	_		10
	2120(0000)		-		
③Equivalence c <sup>;</sup>	ircuit			⑦Packaging	
Code	Equivalen	ce circuit		Code	Packaging
Т	Tt	уре	-	—т	Taping
	•		-		
④Cutoff frequer	ncy		_	⑧Internal code	
Code	Cutoff fr	equency		Code	Internal code
(example)	outon n	oquonoy	_	Δ	Standard
△186	18	MHz	_		
△256	25	ИНz	-		
F K 2	1 2 5 T Z	2 0 1 0 8	5 0		$\Delta =$ Blank space
	9	<u> </u>	5	6 7	
	<u> </u>	<u>4</u>	5	67	· · · · · · · · · · · · · · · · · · ·
①Series name		<u>4</u>	5	6 7 5Nominal capaci	itance
①Series name Code	Series	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	5	S Nominal capacit      Code	itance Nominal capacitance[1MHz]
①Series name Code FK	Series Multilayer EMI s	A name uppression filter	5	<ul> <li>SNominal capaci</li> <li>Code</li> <li>C170</li> </ul>	itance Nominal capacitance[1MHz] 17pF
①Series name Code FK	Series Multilayer EMI s	A name uppression filter	5	©Nominal capaci Code C170 C500	itance Nominal capacitance[1MHz] 17pF 50pF
①Series name Code FK ②Dimensions(L	Series Multilayer EMI s × W)	ame uppression filter	5 	© Mominal capaci Code C170 C500 C850	itance Nominal capacitance[1MHz] 17pF 50pF 85pF
①Series name Code FK ②Dimensions (L Code	Series Multilayer EMI s × W) Type (inch)	ame uppression filter	5 	© Nominal capaci Code C170 C500 C850 © Packaging	itance Nominal capacitance[1MHz] 17pF 50pF 85pF
①Series name Code FK ②Dimensions (L Code 2125	Series Multilayer EMI s × W) Type (inch) 2125 (0805)	A name uppression filter Dimensions (L × W) [mm] 2.0 × 1.25	(5) 	© Nominal capaci Code C170 C500 C850 ©Packaging	itance Nominal capacitance[1MHz] 17pF 50pF 85pF Backaging
①Series name Code FK ②Dimensions(L Code 2125	Series Multilayer EMI s × W) Type(inch) 2125(0805)	name       uppression filter       Dimensions       (L × W) [mm]       2.0 × 1.25	(5)  	© 7 © 7 © Nominal capaci Code C170 C500 C850 © Packaging Code T	itance Nominal capacitance [1MHz] 17pF 50pF 85pF Packaging Taping
①Series name Code FK ②Dimensions(L Code 2125 ③Equivalence ci	Series Multilayer EMI s × W) Type (inch) 2125 (0805) ircuit	name       uppression filter       Dimensions       (L × W) [mm]       2.0 × 1.25	(5) 	(6)       (7)         (5)Nominal capaci         Code         C170         C500         C850         (6)Packaging         Code         T	itance Nominal capacitance[1MHz] 17pF 50pF 85pF Packaging Taping
Oseries name     Code     FK     Ode     Ode     2125     Ode     Ode     Code     Ode     Ode	Series Multilayer EMI s × W) Type (inch) 2125 (0805) ircuit Equivalen	A name uppression filter Dimensions (L × W) [mm] 2.0 × 1.25 ce circuit	(5) 	S Nominal capaci      Code     C170     C500     C850      Backaging     Code     T      ⑦Internal code	itance Nominal capacitance [1MHz] 17pF 50pF 85pF Packaging Taping
①Series name Code FK ②Dimensions (L Code 2125 ③Equivalence ci Code T	Series Multilayer EMI s × W) Type (inch) 2125 (0805) ircuit Equivalen T t	A mame uppression filter Dimensions (L × W) [mm] 2.0 × 1.25 ce circuit ype	(5) 	<ul> <li>(6) (7)</li> <li>(5) Nominal capaci</li> <li>Code</li> <li>C170</li> <li>C500</li> <li>C850</li> <li>(6) Packaging</li> <li>Code</li> <li>T</li> <li>(7) Internal code</li> <li>Code</li> </ul>	itance Nominal capacitance [1MHz] 17pF 50pF 85pF Packaging Taping Internal code
①Series name Code FK ②Dimensions(L Code 2125 ③Equivalence ci Code T	Series Multilayer EMI s × W) Type (inch) 2125 (0805) ircuit Equivalen T t	2     0     1     0     0       (4)     0     0     0     0       uppression filter     0     0     0     0       Dimensions     (L × W) [mm]     0     0     0     0       2.0 × 1.25     0     0     0     0     0       ce circuit     type     0     0     0     0	(5) 	⑤       ⑦         ⑤Nominal capaci         Code         C170         C500         C850         ⑥Packaging         Code         T         ⑦Internal code         Code         △	itance Nominal capacitance [1MHz] 17pF 50pF 85pF Packaging Taping Internal code Standard
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Oseries name     Code     FK     Object Stress (L)     Code     2125     Object Stress (L)     Code     Object Stress (L)     Code     T	Series Multilayer EMI s × W) Type (inch) 2125 (0805) ircuit Equivalen T t dance Nominal imped	name       uppression filter       Dimensions       (L×W) [mm]       2.0×1.25       ce circuit       ype	(5) 	<ul> <li>⑤ ⑦</li> <li>⑤ Nominal capaci</li> <li>Code</li> <li>C170</li> <li>C500</li> <li>C850</li> <li>⑥Packaging</li> <li>Code</li> <li>T</li> <li>⑦Internal code</li> <li>Code</li> <li>Δ</li> </ul>	itance Nominal capacitance [1MHz] 17pF 50pF 85pF Packaging Taping Internal code Standard
(1)Series name     Code     FK     (2)Dimensions (L     Code     2125     (3)Equivalence ci     Code     T     (4)Nominal imped     Code     Z700     Z101     Z201	Series Multilayer EMI s × W) Type (inch) 2125 (0805) ircuit Equivalen T t dance Nominal imped 70	name uppression filter Dimensions $(L \times W) [mm]$ $2.0 \times 1.25$ ce circuit ype ance [100MHz] $\Omega$ $\Omega$ $\Omega$ $\Omega$	(5) 	<ul> <li>⑤ ⑦</li> <li>⑤ Nominal capaci</li> <li>Code</li> <li>C170</li> <li>C500</li> <li>C850</li> <li>⑥Packaging</li> <li>Code</li> <li>T</li> <li>⑦Internal code</li> <li>Code</li> <li>Δ</li> </ul>	itance Nominal capacitance [1MHz] 17pF 50pF 85pF Packaging Taping Internal code Standard
<ul> <li>①Series name</li> <li>Code</li> <li>FK</li> <li>②Dimensions (L</li> <li>Code</li> <li>2125</li> <li>③Equivalence ci</li> <li>Code</li> <li>T</li> <li>④Nominal imped</li> <li>Code</li> <li>Z700</li> <li>Z101</li> <li>Z201</li> </ul>	Series Multilayer EMI s × W) Z125 (0805) ircuit Equivalen T t dance Nominal imped 70 10 20	2         0         1         0         0           (4)         (4)         (4)         (4)         (4)           uppression filter         (14)		<ul> <li>⑤ ⑦</li> <li>⑤ Nominal capaci</li> <li>Code</li> <li>C170</li> <li>C500</li> <li>C850</li> <li>⑥ Packaging</li> <li>Code</li> <li>T</li> <li>⑦ Internal code</li> <li>Code</li> <li>△</li> </ul>	itance          Nominal capacitance [1MHz]         17pF         50pF         85pF         Packaging         Taping         Internal code         Standard

STANDARD EXTERNAL DIMENSIONS / STANDARD QUANTITY



L	w	т	e¹	e²	Standard quantity[pcs] Embossed tape
2.0±0.2 (0.079±0.008)	1.25±0.2 (0.049±0.008)	$1.0 \pm 0.2$ (0.039 $\pm 0.008$ )	0.3±0.2 (0.012±0.008)	0.4±0.2 (0.016±0.008)	3000
					Unit:mm(inch)

## for General Electronic Equipment

#### PARTS NUMBER

T Series														
Parts number		Cut off EHS frequency		Characteristic								The second section is		
	EHS		insertion loss		attnuation					DC resistance Rated voltage [Ω](max.) [V](DC)	Rated current [mA](DC)	resistance		
		[MHZ]	[1MHz]	50MHz	100MHz	200MHz	350MHz	500MHz	600MHz	800MHz				[101.25.]
FK2125T 186AL-T	RoHS	18±3.6	≦1.0dB	≧20dB	≧20dB	-	-	≧20dB	-	-	2	10	100	≧30
FK2125T 256AL-T	RoHS	25±5	≦1.0dB	$\geq 15 dB$	≧20dB	-	-	≧20dB	-	-	2	10	100	≧30
FK2125T 406AL-T	RoHS	40±10	≦1.0dB	-	$\geq 15 dB$	≧20dB	-	≧20dB	-	-	2	10	100	≧30
FK2125T 107AL-T	RoHS	100±20	≦1.0dB	-	-	≧20dB	-	≧20dB	-	-	3	10	100	≧30
FK2125T 167AL-T	RoHS	$160 \pm 30$	≦1.0dB	-	-	-	≧20dB	≧20dB	-	-	2	10	100	≧30
FK2125T 207AL-T	RoHS	200±40	≦1.0dB	-	-	-	≧20dB	≧20dB	-	-	2	10	100	≧30
FK2125T 407AL-T	RoHS	400±80	≦1.0dB	-	-	-	-	-	≧20dB	≧20dB	2	10	100	≧30

#### TZ Series

Parts number	EHS	Impedance(terminal1-3) [100MHz]	Capacitance(terminal1-2) [1MHz]	DC resistance [Ω](max.)	Rated voltage [V](DC)	Rated current [mA](DC)	Insulation resistance [MΩ]
FK2125TZ700C170T	RoHS	$70\Omega\pm30\%$	17pF±20%	2	10	100	≧30
FK2125TZ700C500T	RoHS	$70\Omega\pm30\%$	50pF±20%	2	10	100	≧30
FK2125TZ700C850T	RoHS	$70\Omega \pm 30\%$	85pF±20%	2	10	100	≧30
FK2125TZ101C170T	RoHS	$100\Omega \pm 30\%$	17pF±20%	2	10	100	≧30
FK2125TZ101C500T	RoHS	$100\Omega \pm 30\%$	50pF±20%	2	10	100	≧30
FK2125TZ101C850T	RoHS	$100\Omega \pm 30\%$	85pF±20%	2	10	100	≧30
FK2125TZ201C850T	RoHS	$200\Omega \pm 30\%$	85pF±20%	2	10	100	≧30

## MULTILAYER EMI SUPPRESSION FILTERS

#### PACKAGING



### 4Leader and Blank portion









#### 6 Top tape strength

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



## MULTILAYER EMI SUPPRESSION FILTERS

### RELIABILITY DATA

1. Operating Temperature Range				
Specified Value	-25~+85°C			

2. Storage Tempera	2. Storage Temperature Range		
Specified Value	$-25 \sim +85^{\circ} C$		

3. Rated Voltage	
Specified Value	10V DC

4. Rated Current	
Specified Value	100mA DC

5. Cutoff frequency	(T Series)	
Specified Value	18MHz±3.6MHz, 25MHz±5MH 160MHz±30MHz, 200MHz±40	z, 40MHz±10MHz, 100MHz±20MHz, MHz, 400MHz±80MHz
Test Methods and Remarks	Measuring equipment Measuring source Input-Output impedance	: 8753D (or its equivalent) : 0dBm : 50Ω

6. Impedance (TZ S	eries)				
Specified Value	70 Ω $\pm$ 30%, 100 Ω $\pm$ 30%,	$0 \Omega \pm 30\%, 100 \Omega \pm 30\%, 200 \Omega \pm 30\%$			
Test Methods and Remarks	Measuring frequency Measuring equipment Measuring jig Measuring source	: 100MHz : 4291A (or its equivalent) : 16192A : —20dBm			

7. Capacitance (TZ	Series)				
Specified Value	17pF±20%, 50pF±20%	/7pF±20%, 50pF±20%, 85pF±20%			
Test Methods and Remarks	Measuring equipment Measuring voltage Measuring frequency Capacitance measuremen	: 4194A (or its equivalent) : 0.5V : 1MHz it between Terminals 1 and 2.			

8. DC Resistance	
Specified Value	2Ωmax., 3Ωmax. (FK2125T107AL)
Test Methods and Remarks	Conduct measurement between Terminals 1 and 3.

9. Insulation Resistance			
Specified Value	30MΩ min.		
Test Methods and Remarks	Conduct measurement between Terminals 1 and 2. Applied voltage : 10VDC		

10. Resistance to Flexure of Substrate			
Specified Value	No mechanical damage.		
Test Methods and Remarks	Warp : 2mm Testing board : glass epoxy-resin substrate Thickness : 0.8mm Board Warp Unit : mm)		



11. Solderability				
Specified Value	At least 75% of terminal electrode is covered by new solder.			
Test Methods and Remarks	Solder temperature Duration Preheating temperature Preheating time Flux	: 230±5°C : 4±1 sec. : 150 to 180°C : 2 to 3 min. : Immersion into methanol solution with colophony for 3 to 5 sec.		

12. Resistance to Soldering			
Specified Value	No significant abnormality in appearance.		
Test Methods and Remarks	Solder temperature Duration Preheating temperature Preheating time Flux	: 260±5°C : 10±0.5 sec. : 150 to 180°C : 2 to 3 min. : Immersion into methanol solution with colophony for 3 to 5 sec.	

13. Thermal Shock				
Specified Value	No mechanical damage. Insulation resistance (between 1 and 2) DC resistance (between 1 and 3)		: 20M Ω min. : 2 Ω max. : 3 Ω max. (FK21	25T107AL)
	Conditions	s for 1 cycle		
	Step	Temperature (°C)		Duration (min)
Test Methods and Remarks	1	Minimum operating temperature $+0/-3$		30±3
	2	Room temperature		2 to 3
	3	Maximum operating temperature $+3/-0$		30±3
	4	Room temperature		2 to 3
	Number of	f cycles : 5	nder the standard o	andition after the test

14. Damp Heat steady state			
Specified Value	No mechanical damage. Insulation resistance (between 1 and 2) DC resistance (between 1 and 3)		: 20MΩ min. : 2Ω max. : 3Ω max. (FK2125T107AL)
Test Methods and Remarks	Temperature:Humidity:Duration:Recovery:	40±2℃ 90 to 955%RH 500±12 hrs 2 to 3 hrs of recovery under	the standard condition after the removal from test chamber.

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

16. Loading at High Temperature			
Specified Value	No mechanical damage.         Insulation resistance (between 1 and 2)       : $20M\Omega$ min.         DC resistance (between 1 and 3)       : $2\Omega$ max.         : $3\Omega$ max. (FK2125T107AL)		
Test Methods and Remarks	Temperature Applied voltage Applied current Duration Recovery	: 85±2°C : Rated voltage (between 1 and 2) : Rated current (between 1 and 3) : 500±12 hrs : 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  $^\circ\!C$  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  $20\pm 2^{\circ}C$  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."



Since neither 1 nor 3 is directional, either could be served as the IN terminal.

# **Mouser Electronics**

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Taiyo Yuden:

<u>FK2125T107AL-T</u> <u>FK2125T186AL-T</u> <u>FK2125T207AL-T</u> <u>FK2125T256AL-T</u> <u>FK2125T406AL-T</u> <u>FK2125T406AL-T</u> <u>FK2125TZ101C170T</u> <u>FK2125TZ101C500T</u> <u>FK2125TZ101C850T</u> <u>FK2125TZ201C850T</u>