

高周波積層チップフィルタ

HIGH FREQUENCY MULTILAYER CHIP FILTER



OPERATING TEMP. -30~+85°C

リフロー/REFLOW

特長 FEATURES

- ・小型・低背
- ・低ロス・高減衰
- ・安定した温度特性

- ・ Compact , Lower profile
- ・ Low loss , High attenuation
- ・ Stable temperature characteristics

用途 APPLICATIONS

- ・ Bluetooth® module、無線LAN、デジタルテレビ

- ・ Bluetooth® module, Wireless LAN, Digital TV

形名表記法 ORDERING CODE

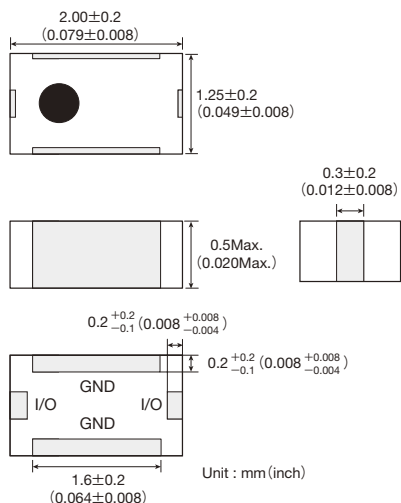
1	3	5	6
デバイスコード	寸法コード [mm]	周波数 [MHz]	仕様コード
FI 高周波フィルタ	212 2.0×1.25	例 2450 2400~2500 0620 470~770	01~ 個別仕様
2	4		7
電極コード	種別コード		包装
△ メッキ品 △=スペース	B バンドパスフィルタ L ローパスフィルタ C バランスフィルタ		-T テーピング

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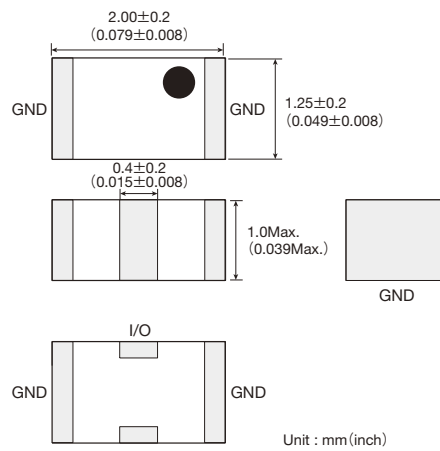
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1	3	5	6
Device code	Dimensions code [mm]	Frequency [MHz]	Spec Code
FI Filters for High Frequency	212 2.0×1.25	example 2450 2400~2500 0620 470~770	01~ Individual Spec
2	4		7
Electrode code	Special Code		Packaging
△ With Plating △=Blank space	B Band Pass Filter L Low Pass Filter C Balanced Filter		-T Tape & reel

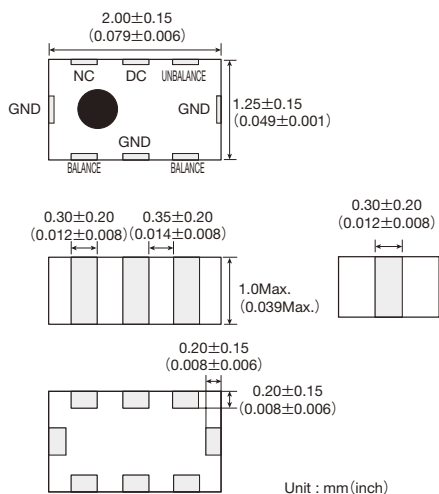
FI 212L Type
①FI 212L062002,3



②FI 212B245021



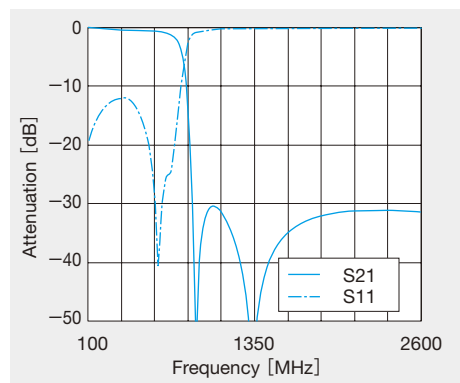
③FI 212C245031



アイテム一覧・電気的特性・代表特性 Part Numbers · Electrical Characteristics · Typical Characteristics

•FI212L062002

Passband frequency	470-770MHz	Actual Data
Insertion Loss at Passband	0.9dBMax. (470-600MHz) (25 deg-C)	0.65dB
	1.1dBMax. (470-600MHz) (-30~+85 deg-C)	
	1.5dBMax. (600-710MHz) (25 deg-C)	1.25dB
	1.7dBMax. (600-710MHz) (-30~+85 deg-C)	
	3.4dBMax. (710-770MHz) (25 deg-C)	2.9dB
	3.7dBMax. (710-770MHz) (-30~+85 deg-C)	
Ripple at Passband	1.2dBMax. (470-710MHz)	0.85dB
V.S.W.R. at Passband	2.0Max. (470-710MHz)	1.5
	5dBMin. (830-840MHz)	9.5dB
Attenuation	25dBMin. (888-925MHz)	32dB
	25dBMin. (940-960MHz)	34dB
	27dBMin. (1429-1453MHz)	33dB
	26dBMin. (1920-1980MHz)	29.5dB
	26dBMin. (2400-2500MHz)	29.5dB
	Impedance	50Ω



セレクションガイド
Selection Guide

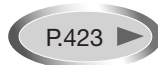
アイテム一覧
Part Numbers

特性図
Electrical Characteristics

梱包
Packaging

信頼性
Reliability Data

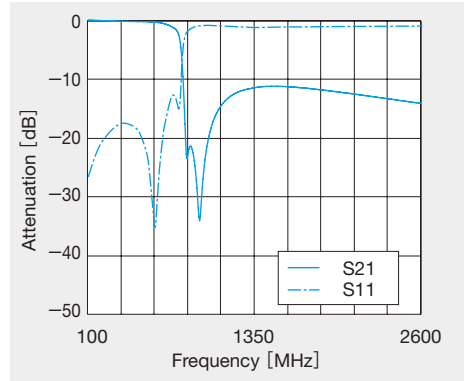
使用上の注意
Precautions



etc

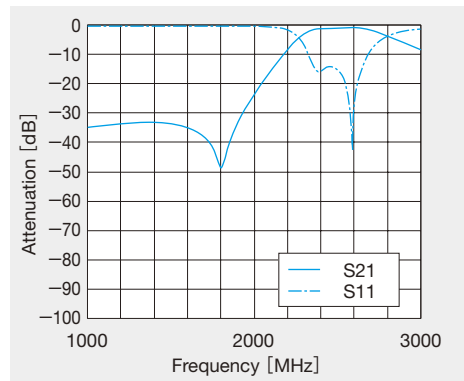
FI 212L062003

	Specification	Actual Data
Passband frequency	470-770MHz	
Insertion Loss at Passband	0.7dBMax. (470-600MHz) (25 deg-C)	0.5dB
	0.9dBMax. (470-600MHz) (-30~+85 deg-C)	
	1.5dBMax. (600-710MHz) (25 deg-C)	1.1dB
	1.7dBMax. (600-710MHz) (-30~+85 deg-C)	
	3.3dBMax. (710-770MHz) (25 deg-C)	2.5dB
	3.7dBMax. (710-770MHz) (-30~+85 deg-C)	
Ripple at Passband	1.2dBMax. (470-710MHz)	0.9dB
V.S.W.R. at Passband	2.5Max. (470-710MHz)	1.6dB
Attenuation	15dBMin. (830-840MHz) (25 deg-C)	20dB
	11dBMin. (830-840MHz) (-30~+85 deg-C)	
	15dBMin. (888-925MHz)	22dB
	15dBMin. (940-960MHz)	24dB
	7dBMin. (1429-1453MHz)	10dB
	8dBMin. (1920-1980MHz)	10.5dB
	8dBMin. (2400-2500MHz)	11dB
Impedance	50 Ω	—



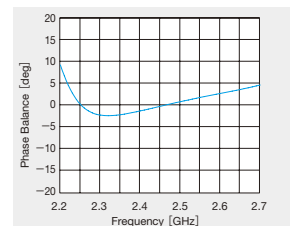
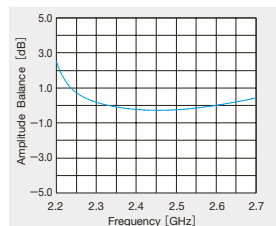
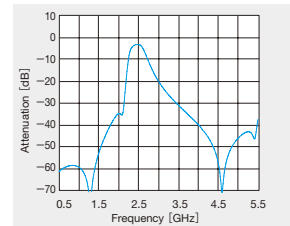
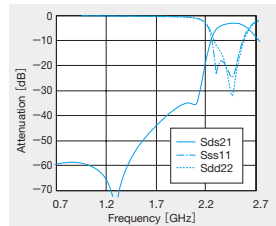
FI 212B245021

	Specification	Actual Data
Passband frequency	2400-2500MHz	
Insertion Loss at Passband	1.6dB Max. (25deg-C)	1.25dB
	1.9dB Max. (-30~+85deg-C)	
Ripple at Passband	1.0dB Max.	0.33dB
V.S.W.R. at Passband	2.0 Max.	1.29
Attenuation	25dB Min. (1710-1910MHz)	31.1dB
	20dB Min. (4800-5000MHz)	23.9dB
Impedance	50Ω	



FI 212C245031

	Specification	Actual Data
Unbalanced Port Impedance	50 Ω	—
Balanced Port Impedance	Conjugated to CSR BC3	—
Passband frequency	2400~2500 MHz	—
Insertion Loss at Passband	3.7dB Max. (25deg-C)	3.3 dB
	4.0dB Max. (-30~+85deg-C)	
Ripple at Passband	1.0 dB Max.	0.24 dB
Amp. balance at Passband	2.0 dB Max.	0.87 dB
Phase Balance at Passband	180 ±10 deg	178~179.7 deg
Single ended Port V.S.W.R at Passband	2.0 Max.	1.4
Balanced Port V.S.W.R at Passband	2.0 Max.	1.3
Attenuation	35 dB Min. (880 ~ 960 MHz)	54.2 dB
	20 dB Min. (1710~1990 MHz)	43.3 dB
	20 dB Min. (1990~2170 MHz)	23.9 dB
	20 dB Min. (4800~5000 MHz)	49 dB



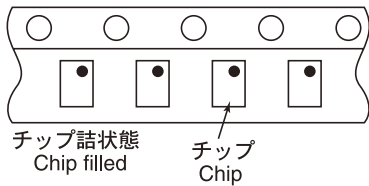
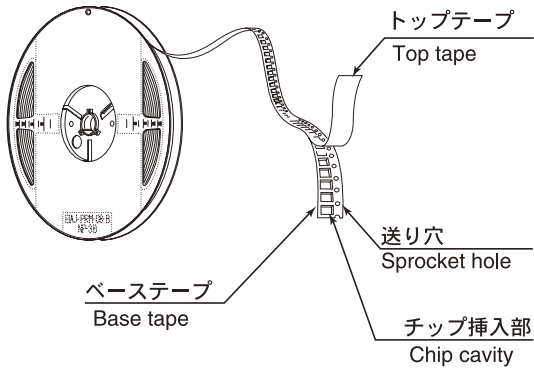
①最小受注単位数 Minimum Quantity

形式 Type	エンボステープ [pcs] Embossed Tape
212B	3000
212L	3000
212C	3000

②テーピング材質 Tape Material

エンボステープ Embossed Tape

紙テープ Card board carrier tape



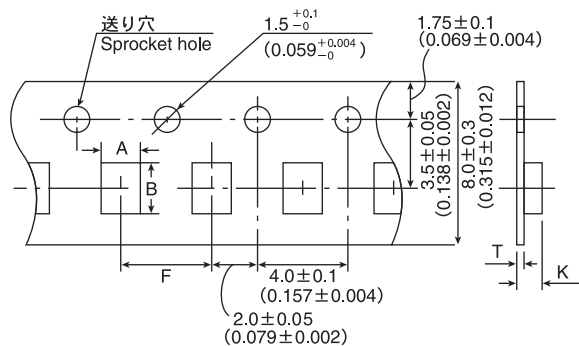
■テーピング梱包 Taped packaging

形式 (EIA) Type	製品厚み Thickness mm (inch)	標準数量
		Standard quantity [pcs] エンボステープ Embossed tape
212B	0.90typ. (0.035)	3000
212L	0.45typ. (0.018)	3000
212C	0.90typ. (0.035)	3000

③テーピング寸法 Taping dimensions

エンボステープ (212Bタイプ, 212Cタイプ) 8mm幅
Embossed tape (0.315 inches wide)

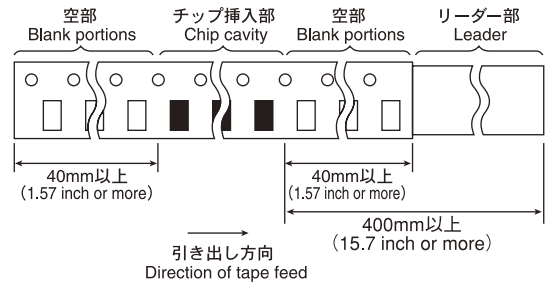
紙テープ (212Lタイプ) 8mm幅
Paper tape (0.315 inches wide)



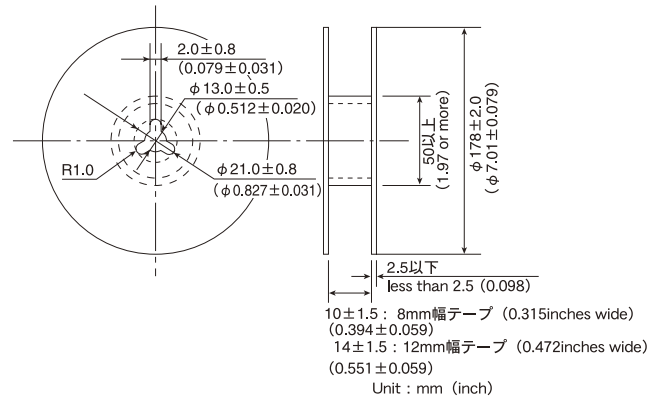
Type (EIA)	チップ挿入部 Chip cavity		挿入ピッチ Insertion Pitch	テープ厚み max Tape Thickness	
	A	B	F	K	T
212B	1.5±0.2 (0.059±0.008)	2.3±0.2 (0.091±0.008)	4.0±0.1 (0.157±0.004)	1.6 (0.063)	0.3 (0.012)
	1.55±0.2 (0.061±0.008)	2.3±0.2 (0.091±0.008)		0.65 (0.026)	0.65 (0.026)
212L	1.55±0.2 (0.061±0.008)	2.3±0.2 (0.091±0.008)	4.0±0.1 (0.157±0.004)	1.6 (0.063)	0.3 (0.012)
	1.55±0.2 (0.061±0.008)	2.3±0.2 (0.091±0.008)		0.65 (0.026)	0.65 (0.026)

Unit : mm (inch)

④リーダー部・空部 Leader and Blank portion



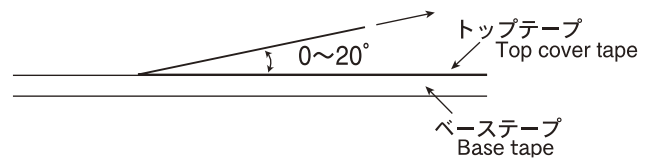
⑤リール寸法 Reel size

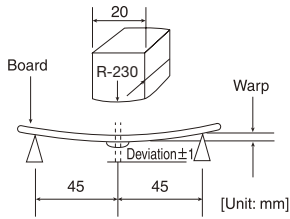
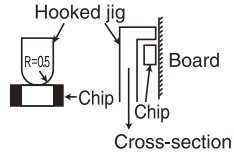


⑥トッテープ強度 Top Tape Strength

トッテープのはがし力は下図矢印方向にて0.1~0.7Nとなります。

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

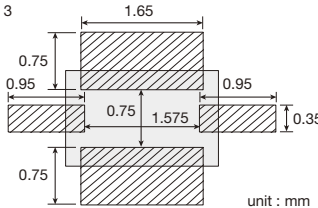
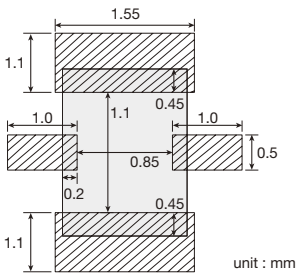
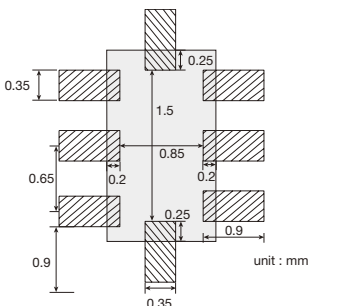
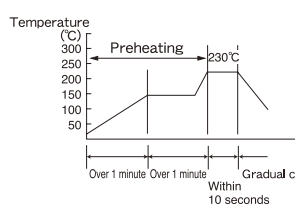
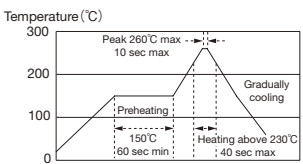


Item	Specified Value	Test Methods and Remarks															
1. Operating Temperature Range	-30~+85°C																
2. Storage Temperature Range	-30~+85°C	※Note : -20 to +35°C in taped packaging															
3. Resistance to Flexure of Substrate	No mechanical damage.	Warp : 2mm Testing board : Glass epoxy-resin substrate Thickness : 0.8mm 															
4. Adhesion of Electrode	Characteristics: shall satisfy the electrical characteristics. Appearance: No significant abnormality.	Applied force : 5N Duration : 10 sec. 															
5. Solderability	75% or more of immersed surface of terminal electrode shall be covered with fresh solder.	Solder temperature : 230±5°C Duration : 4±1sec Preconditioning : Immersion into flux. Immersion and Removal speed : 25 mm/sec.															
6. Resistance to Solder Heat	Characteristics: shall satisfy the electrical characteristics. Appearance: No significant abnormality.	Preheating : 150°C for 2 min. Solder temperature : 260±5°C Duration : 5±0.5sec. Preconditioning : Immersion into flux. Immersion and Removal speed : 25 mm/sec. Recovery : 2 to 3 hrs of recovery under the standard condition after the removal from test chamber															
7. Thermal Shock	Characteristics: shall satisfy the electrical characteristics. Appearance: No significant abnormality.	According to JIS C 0025. Conditions for 1 cycle <table border="1" data-bbox="874 1316 1428 1469"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Duration (min)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-40 ± 3°C</td> <td>30 ± 3</td> </tr> <tr> <td>2</td> <td>Room Temperature</td> <td>Within 3</td> </tr> <tr> <td>3</td> <td>85 ± 2°C</td> <td>30 ± 3</td> </tr> <tr> <td>4</td> <td>Room Temperature</td> <td>Within 3</td> </tr> </tbody> </table> Number of cycles : 100 Mounting method : Soldering onto PC board. Recovery : 2 to 3 hrs of recovery under the standard condition after the removal from test chamber.	Step	Temperature (°C)	Duration (min)	1	-40 ± 3°C	30 ± 3	2	Room Temperature	Within 3	3	85 ± 2°C	30 ± 3	4	Room Temperature	Within 3
Step	Temperature (°C)	Duration (min)															
1	-40 ± 3°C	30 ± 3															
2	Room Temperature	Within 3															
3	85 ± 2°C	30 ± 3															
4	Room Temperature	Within 3															
8. Humidity (steady state)	Characteristics: shall satisfy the electrical characteristics. Appearance: No significant abnormality.	Temperature : +40±2°C Humidity : 90 to 95%RH Duration : 96 hrs Recovery : 2 to 3 hrs of recovery under the standard condition after the removal from test chamber.															
9. High temperature life test	Characteristics: shall satisfy the electrical characteristics. Appearance: No significant abnormality.	Temperature: +85±2°C Duration: 96 hrs Recovery : 2 to 3 hrs of recovery under the standard condition after the removal from test chamber.															
10. Low temperature life test	Characteristics: shall satisfy the electrical characteristics. Appearance: No significant abnormality.	Temperature: -40±2°C Duration: 96 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 result: 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".

Stages	Precautions	Technical considerations
1. PCB Design	(Land pattern design)	<p>Land pattern dimension examples</p> <p>① FI 212L Type FI 212L062002, 3</p>  <p>unit : mm</p> <p>② FI 212B245021</p>  <p>unit : mm</p> <p>③ FI 212C245031</p>  <p>unit : mm</p>
2. Soldering		<p>Conditions for Reflow soldering (for reference)</p> <p><u>Reflow Profile</u></p>   <p>Temperature (°C)</p> <p>Peak 260°C max : 10 sec max</p> <p>Gradually cooling</p> <p>Preheating : 150°C : 60 sec min</p> <p>Heating above 230°C : 40 sec max</p> <p>※ Ceramic chip components should be preheated to within 100 to 130°C of the soldering.</p> <p>※ Assured to be reflow soldering for 2 times.</p>
3. Storage conditions	<p>◆Storage</p> <p>1. To maintain the solderability of terminal electrodes and to keep the packaging material in good condition, care must be taken to control temperature and humidity in the storage area.</p> <p>Humidity should especially be kept as low as possible.</p> <ul style="list-style-type: none"> Recommended conditions Ambient temperature -20~+35°C Humidity Below 60%RH The ambient temperature must be kept below 30 °C. Even under ideal storage conditions inductor electrode solderability decreases as time passes, so inductors should be used within 6 months from the time of delivery. The packaging material should be kept where no chlorine or sulfur exists in the air. 	<p>1. If the parts are stocked in a high temperature and humidity environment, problems such as reduced solderability caused by oxidation of terminal electrodes and deterioration of taping/ packaging materials may take place. For this reason, components should be used within 6 months from the time of delivery. If exceeding the above period, please check solderability before using the inductors.</p>

■ Please contact of our offices for further details of specifications.

All of the standard values listed here are subject to change without notice due to technical improvements.

Therefore, please check the specifications carefully before use.