APPROVAL SHEET

RFLPF 2012(0805) Series –RoHS Compliance

MULTILAYER CERAMIC LOW PASS FILTER

2.4 GHz ISM Band Working Frequency

RFLPF2012110A0T series

*Contents in this sheet are subject to change without prior notice.

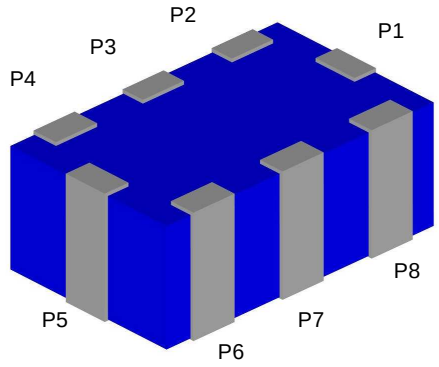
FEATURES

1. Multilayer LTCC (Low Temperature Cofired Ceramics) Technology
2. Reflow solderable
3. Miniatured Size 2.00 x 1.25 x 1.05 mm^3
4. Low Insertion Loss (Typical –0.3dB@2.4GHz)
5. High attenuation on 2nd and 3rd harmonic suppressed
6. Suitable for 2.45 GHz Working Frequency Operation

APPLICATIONS

1. 2.4GHz ISM Band RF Application
2. Bluetooth, Wireless LAN, HomeRF

CONSTRUCTION



PIN	Definition
P1 / P5	Input / output
P2	Ground
P3	Ground
P4	Ground

PIN	Definition
P6	Ground
P7	Ground
P8	Ground

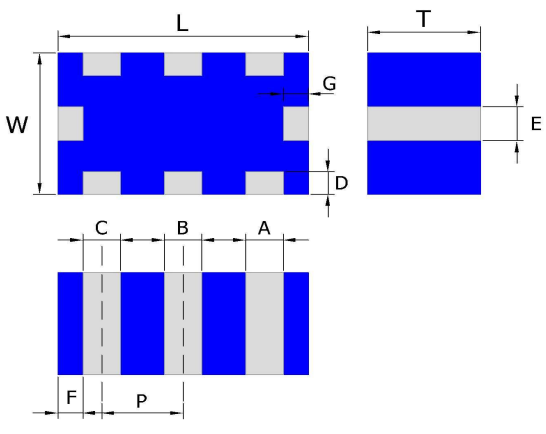
Fig 1. Outline of 2.4GHz Low Pass Filter

DESCRIPTION

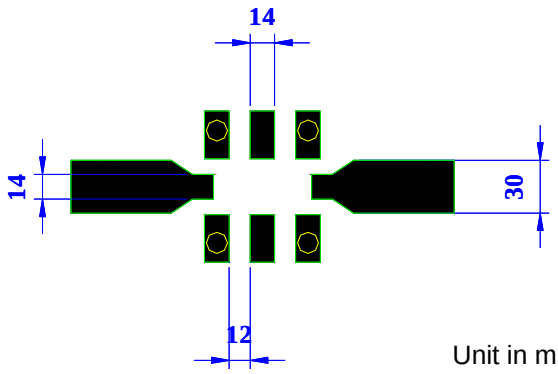
Walsin Technology Corporation develops a new ceramic Low Pass Filter specified for 2.4 GHz ISM Band application, as shown in fig-1. Both of Wireless LAN IEEE 802.11b, and Bluetooth™ typically located on this unlicensed frequency band which range covers from 2.4GHz to 2.4835GHz. To fulfil the in-band and out-band frequency requirements, this Low Pass Filter has been designed to a high suppression on 2nd and 3rd harmonic as well as low insertion loss characteristics through Walsin's advanced LTCC (Low Temperature Co-fired Ceramic) technology and superior product design via 3D EM Simulation Skill.

This Low Pass Filter has a rectangular ceramic body with a tiny dimension of 2.00 x 1.25 x 1.05 mm^3 future meet the SMT automation and miniaturization requirements on modern portable devices.

DIMENSIONS

Figure	Symbol	Dimension
	L	2.00 ± 0.15 mm
	W	1.25 ± 0.10 mm
	T	1.05 ± 0.10 mm
	A	0.30 ± 0.10 mm
	B	0.30 ± 0.10 mm
	C	0.30 ± 0.10 mm
	D	0.25 ± 0.15 mm
	E	0.30 ± 0.10 mm
	F	0.20 ± 0.10 mm
	G	0.25 ± 0.15 mm
	P	0.65 ± 0.10 mm

SOLDER LAND PATTERN



Line width to be design to match 50Ω characteristic impedance, depending on PCB material and thickness

ELECTRICAL CHARACTERISTICS

■ RFLPF2012110A0X Series

Item	Specification
Frequency range (MHz)	2450 ± 50 MHz
Insertion Loss (dB)	0.7 (max)
VSWR	1.5
Attenuation (dB min.)	30 @ 2 x (f_0 ± BW/2) 25 @ 3 x (f_0 ± BW/2)
Operation Temperature	-40℃ ~ +85℃

RELIABILITY TEST

■ **Mechanical performance**

Test item	Test condition / Test method	Specification
Solderability	Solder temp. : 235 ± 5°C Immersion time: 2 ± 1 sec Solder: SN63	At least 80% of a surface of each terminal electrode must be covered by fresh solder.
Resistance to soldering heat	Solder: Sn63 Preheating temperature: 150 ± 10°C Solder Temperature: 260 ± 5°C Immersion time: 10 ± 1 sec Measurement to be made after keeping at room temp. for 24±2 hrs.	No mechanical damage. Ceramic surface shall not be exposed in the middle of the termination or on the terminated product edge by leaching.
Drop Test	Height : 75 cm Direction : 3 directions Times : 3 times	No mechanical damage. Samples shall satisfy electrical specification after test..

■ **Environmental characteristics**

Test item	Test condition / Test method	Specification
Humidity (steady conditions)	Humidity:90% to 95% R.H. Tempertaure:40±2°C Time: 500±24 hours. Measurement: After placing for 24 hours Minimum.	No mechanical damage. Samples shall satisfy electrical specification after test.
Temperature cycle	1. 30±3 minutes at -40°C±3°C, 2. 10~15 minutes at room temperature, 3. 30±3 minutes at +85°±3°C, 4. 10~15 minutes at room temperature, Total 100 continuous cycles Measurement after placing for 48±2 hrs min.	No mechanical damage. Samples shall satisfy electrical specification after test.
High temperature	Temperature: 85°C±2°C Test duration: 24 hours Measurement must be taken after subjection to the above conditions, followed by exposure in room environment for 1 to 2 hours.	No mechanical damage. Samples shall satisfy electrical specification after test.
Low temperature	Temperature: -40°C±3°C Test duration: 24 hours Measurement must be taken after subjection to the above conditions, followed by exposure in room environment for 1 to 2 hours.	No mechanical damage. Samples shall satisfy electrical specification after test.

SOLDERING CONDITION

Typical examples of soldering processes that provide reliable joints without any damage are given in Fig 2,

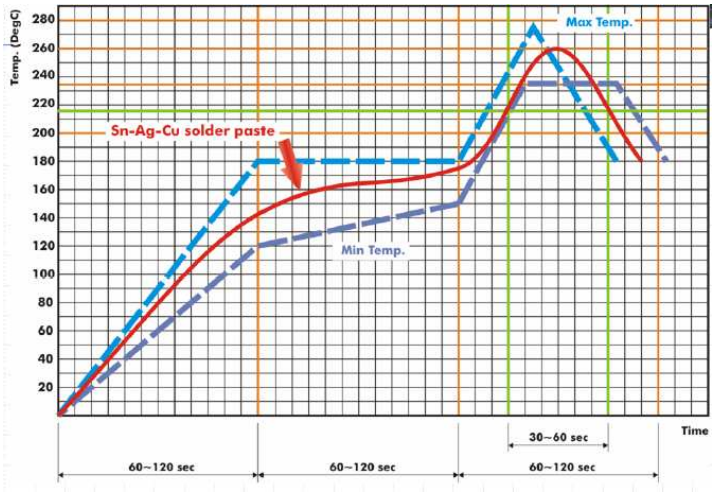


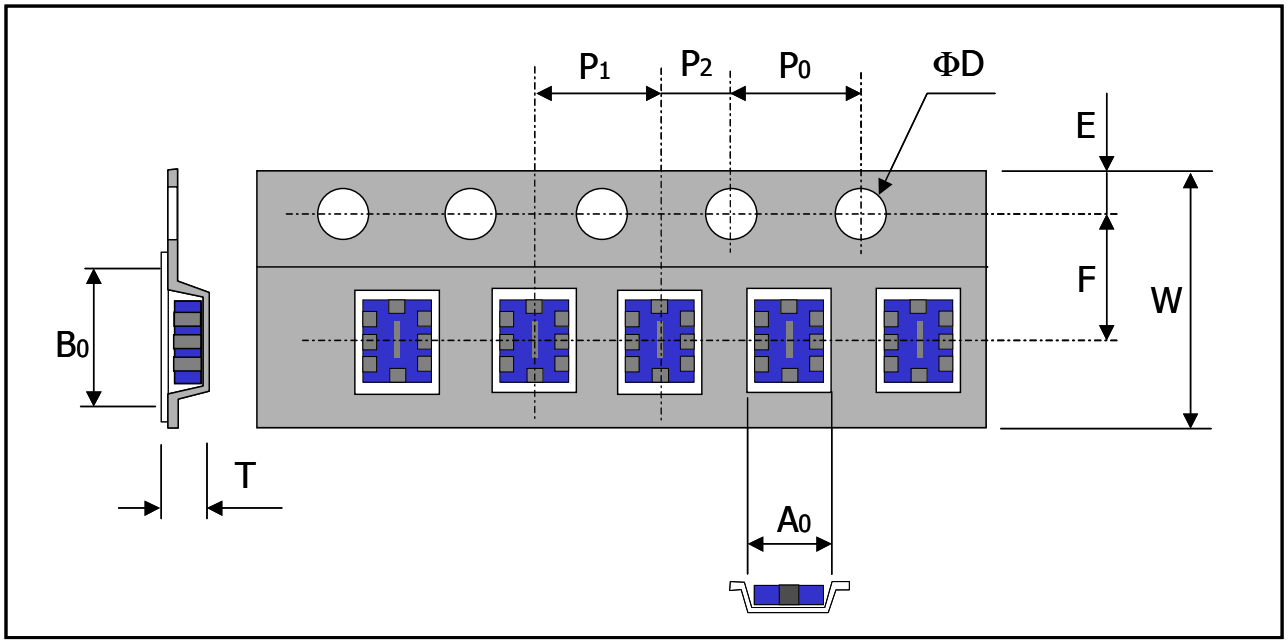
Fig 2. Infrared soldering profile

ORDERING CODE

RF	LPF	201211	0	A	0	T
Walsin RF device	**Product Code** LPF : Low Pass Filter	**Dimension code** Per 2 digits of Length, Width, Thickness : e.g. : 201211 = Length 20, Width 12, Thickness 11	**Unit of dimension** 0 : 0.1 mm 1 : 1.0 mm	**Application** A : 2.4GHZ ISM Band	**Specification** Design Code	**Packing** T: Reeled

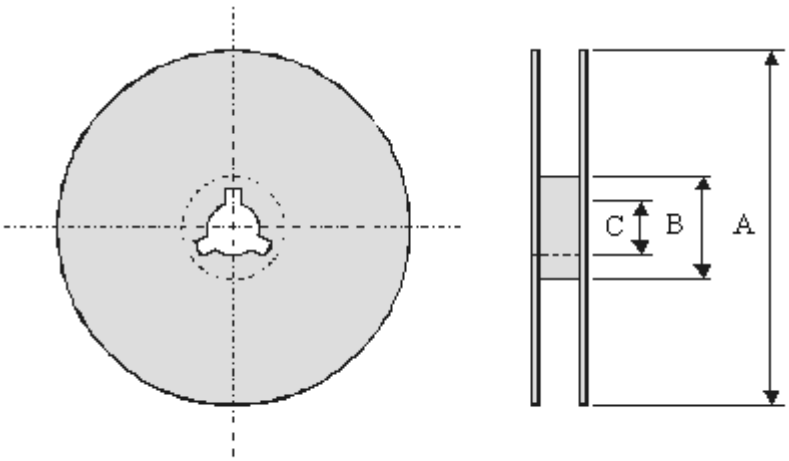
PACKAGING

Plastic Tape specifications (unit :mm)



Index	Ao	Bo	ΦD	T	W
Dimension (mm)	1.45 ± 0.10	2.25 ± 0.10	1.55 ± 0.10	1.10 ± 0.10	8.0 ± 0.30
Index	E	F	Po	P1	P2
Dimension (mm)	1.75 ± 0.10	3.50 ± 0.05	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10

Reel dimensions



	Index	A	B	C
7” Reel	Dimension (mm)	Φ178	Φ60.0	Φ13.5

Taping Quantity: 2000 pieces per 7” reel

CAUTION OF HANDLING

Limitation of Applications

Please contact us before using our products for the applications listed below which require especially high reliability for the prevention of defects, which might directly cause damage to the third party's life, body or property.

(1) Aircraft equipment

(2) Aerospace equipment

(3) Undersea equipment

(4) Medical equipment

(5) Disaster prevention / crime prevention equipment

(6) Traffic signal equipment

(7) Transportation equipment (vehicles, trains, ships, etc.)

(8) Applications of similar complexity and /or reliability requirements to the applications listed in the above.

Storage condition

(1) Products should be used in 6 months from the day of WALSIN outgoing inspection, which can be confirmed.

(2) Storage environment condition.

- Products should be storage in the warehouse on the following conditions.
- Temperature : -10 to +40°C
- Humidity : 30 to 70% relative humidity
- Don't keep products in corrosive gases such as sulfur. Chlorine gas or acid or it may cause oxidization of electrode, resulting in poor solderability.
- Products should be storage on the palette for the prevention of the influence from humidity, dust and son on.
- Products should be storage in the warehouse without heat shock, vibration, direct sunlight and so on.
- Products should be storage under the airtight packaged condition.