APPROVAL SHEET

RFDIP 2012 (0805) Type L0 Series – RoHS Compliance

MULTILAYER CERAMIC CHIP DIPLEXER

2.4 GHz & 5GHz ISM Band Working Frequency

P/N: RFDIP2012100L0T

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

FEATURES

1. Multilayer LTCC (Low Temperature Cofired Ceramics) Technology
2. Miniaturized Size 2.00 x 1.25 x 1.00 mm^3
3. Low Insertion Loss reduces power consumption
4. High Isolation
5. High band wide bandwidth design covers from 5.0GHz to 6.0GHz
6. Suitable for 2.4GHz/ 5GHz Working Frequency Operation

APPLICATIONS

1. 2.4GHz/ 5GHz ISM Band WLAN 802.11b/ g/ a Application
2. Band switching for dual band system.

CONSTRUCTION

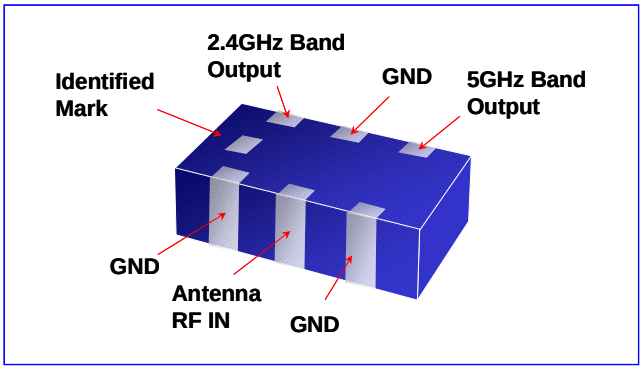


Fig 1. Outline of 2.4GHz/ 5GHz Diplexer (2012 size)

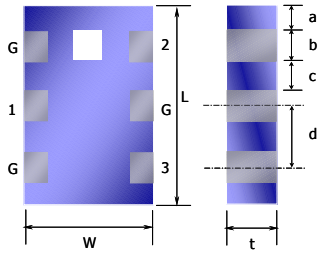
DESCRIPTION

Walsin Technology Corporation develops a new ceramic chip Diplexer specified for 2.4 GHz/ 5GHz ISM Band application, as shown in above “CONSTRUCTION”. 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 increase the data throughput rate, 802.11a is proposed and located on high band 5GHz. To fulfil the combo application requirements, the new ceramic chip Diplexer was released by Walsin Technology Corporation.

This new Diplexer covers both 2.4GHz/ 5GHz which can fulfill the WLAN IEEE802.11b/g/a combo application, and been designed through Walsin’s advanced LTCC (Low Temperature Co-fired Ceramic) technology and superior product design via 3D EM Simulation Skill.

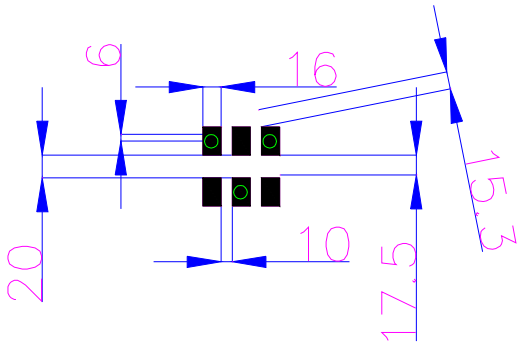
This ceramic Diplexer has a rectangular ceramic body with a tiny dimension of 2.00 x 1.25 x 1.00 mm^3 meet the future SMT automation and miniaturization requirements on modern portable devices.

DIMENSIONS

Figure	Symbol	Dimension	Terminals	Connection
	L	2.00 ± 0.15 mm	G	Ground
	W	1.25 ± 0.15 mm	1	Antenna RF Input
	t	0.95 ± 0.10 mm	2	2.4GHz Low Band Output
	a	0.20 ± 0.20 mm	3	5GHz High Band Output
	b	0.30 ± 0.20 mm		
	c	0.35 ± 0.20 mm		
	d	0.65 ± 0.20 mm		

MARKING: No marking, the white block means up-side and unbalanced input

SOLDER LAND PATTERN



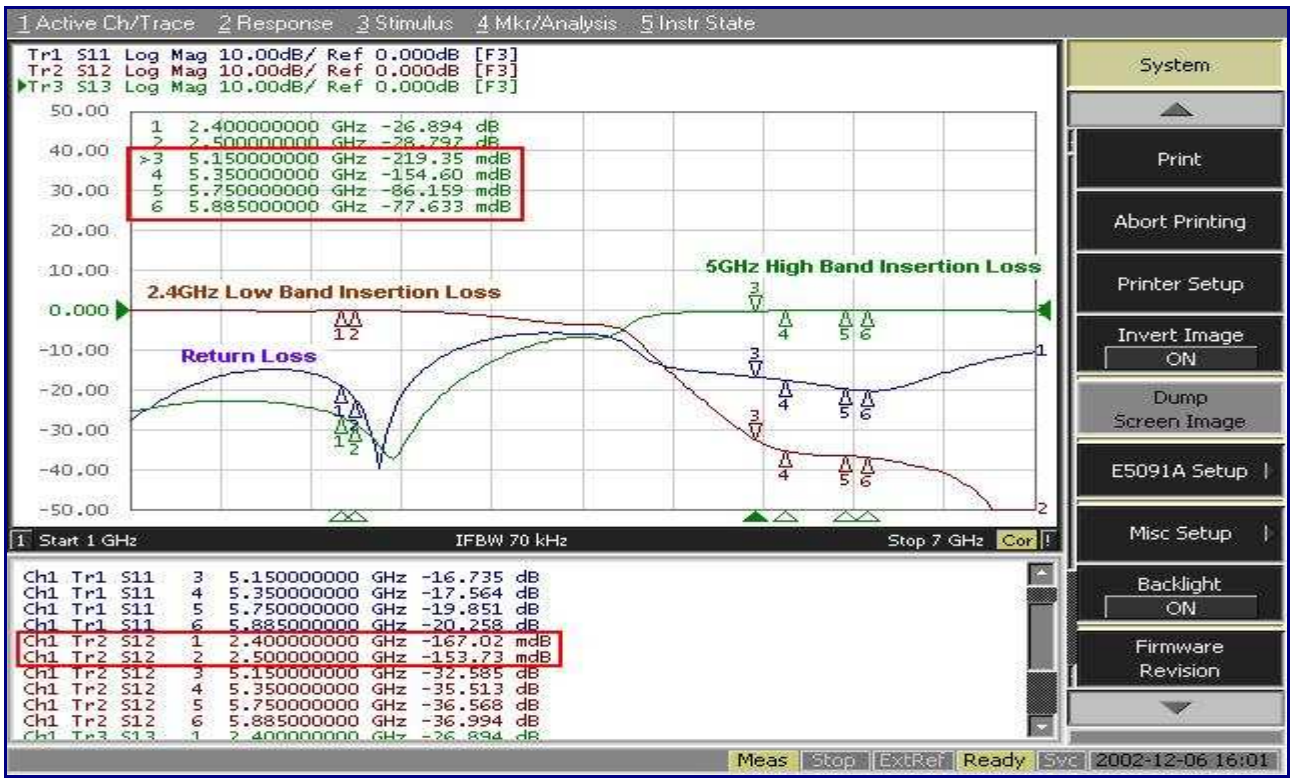
Unit in mil

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

ELECTRICAL CHARACTERISTICS

RFDIP2012100L0T	Band_1	Band_2
Central Frequency	2450 ± 50 MHz	5400 ± 500 MHz
Impedance	50 Ω	50 Ω
Insertion Loss	0.7dB	0.9dB
Return Loss	Min. 10 dB	
Attenuation	-20dB @ 4.9GHz -25dB @ 5.2GHz -25dB @ 5.8GHz	-25dB @ 2.45GHz
Ripple	0.5dB	

TYPICAL FREQUENCY CHARACTERISTICS (TRL Calibration)



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 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,

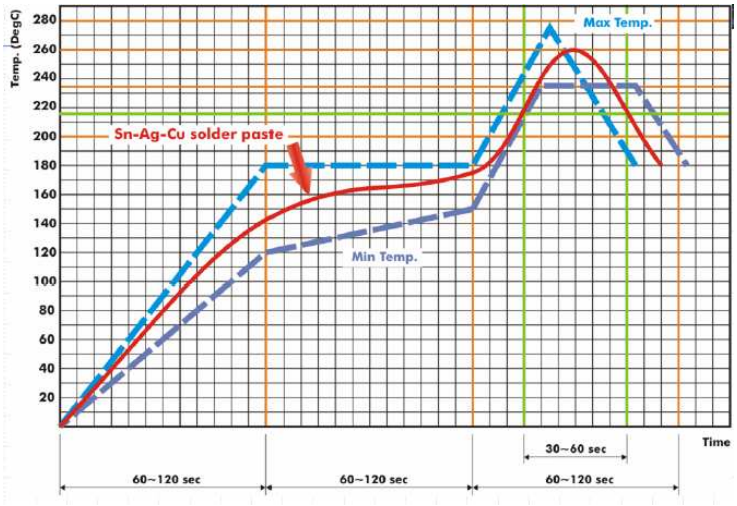


Fig 2. Infrared soldering profile

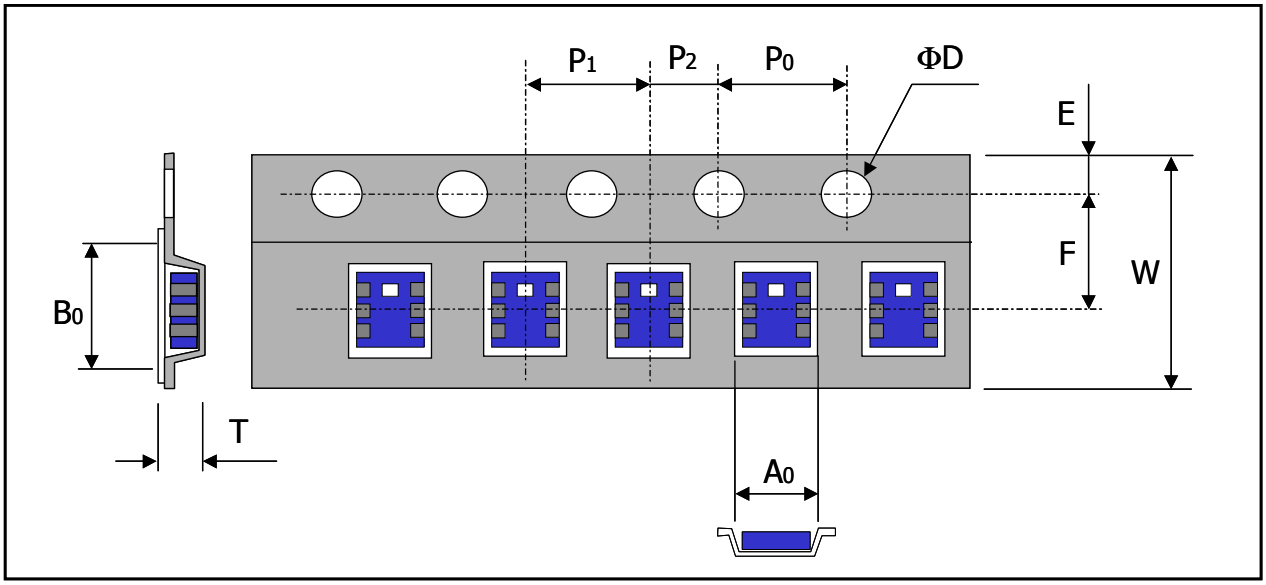
ORDERING CODE

RF	DIP	201210	0	L	0	T
Walsin RF device	**Product Code** DIP: Diplexer	**Dimension code** 201210 = Length 20, Width 12, Thickness 10	**Unit of dimension** 0 : 0.1 mm 1 : 1.0 mm	**Application** L : 2.4GHz/ 5GHz	**Specification** Design Code	**Packing** T : 7" Reeled

Minimum Ordering Quantity: 2000 pcs per reel.

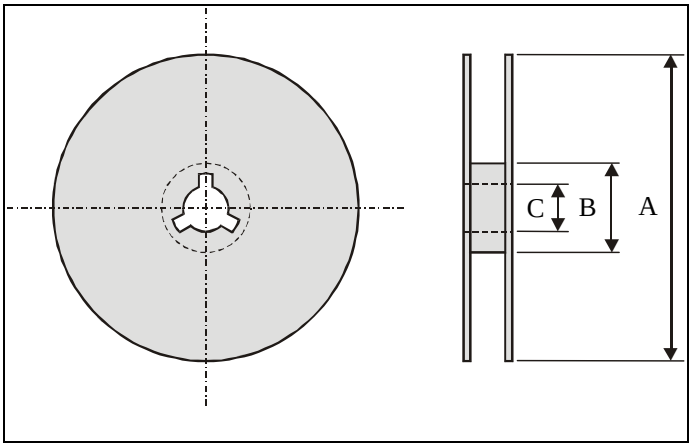
PACKAGING

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
Dimension (mm)	Φ178	Φ60.0	Φ13.5

Typing 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.