



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



**TBL-1608-245-M2 THIN FILM BALUN**

1. Feature

- 1-1 2.45GHz Thin Film Balun.
- 1-2 For ISM Band applications like Bluetooth/WLAN.
- 1-3 Lead Free, RoHS compliance

2. Part Number

TBL — 1608 — 245 — M2 — XX

(1)        (2)        (3)        (4)        (5)

Where                    (1) TBL : Thin Film Balun

(2) Size :

4 digits of number —1608 = 1.60x0.8 mm

(3) Center Frequency :

245 = 2.45 GHz

(4) Type

Refer to Table 3-1

(5) XX

Internal Code

3. Ratings

3-1 Specifications

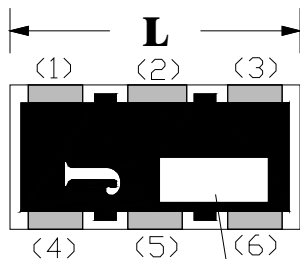
Part Number	TBL-1608-245-M2
Unbalance Port Impedance	50Ω
Balance Port Impedance	100Ω
Nominal Center Frequency	2450MHz
Bandwidth	2400 ~ 2500MHz
Phase Balance	180 ±10°
Amplitude Balance	0 ±1.0dB max
Insertion Loss	1.0 dB Max. at +25°C
VSWR at Unbalance Port in BW	2.0 Max.
Power Capacity	500mW Max.

3-2 Operation Temperature: -40°C to +85°C

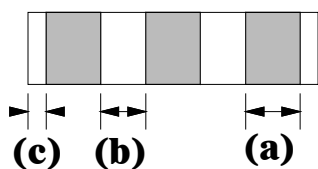
3-3 Storage Temperature: +15°C to +35°C

### 4. Outline Dimension

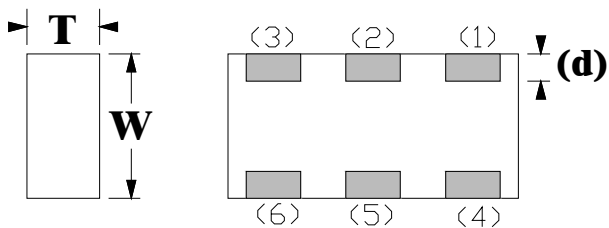
#### TopView



Directional Marking



#### BackView



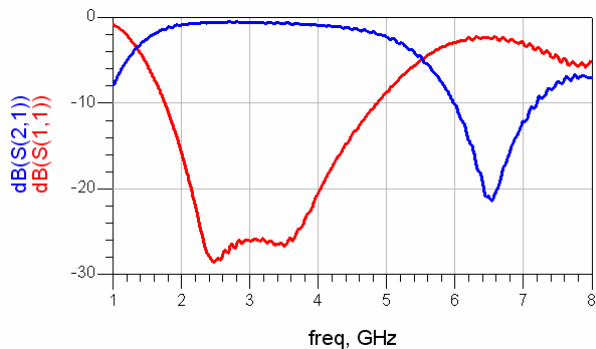
#### Terminal Configuration

Code	Dimension(mm)	Code	Dimension(mm)
L	1.6±0.1	(a)	0.3±0.1
w	0.8±0.2	(b)	0.25±0.1
T	0.4±0.1	(e)	0.1±0.1
		(d)	0.2±0.1

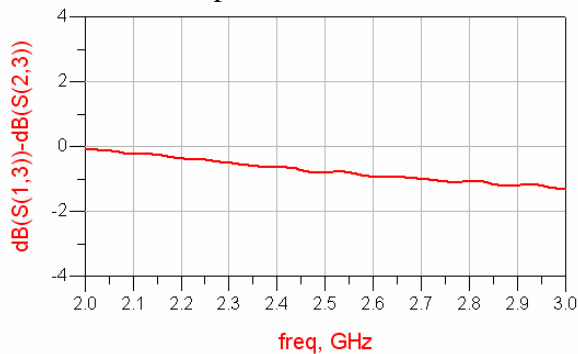
(1)	GND
(2)	NC
(3)	Unbalance Port
(4)	Balance Port
(5)	NC
(6)	Balance Port

### 5. Electrical Performance

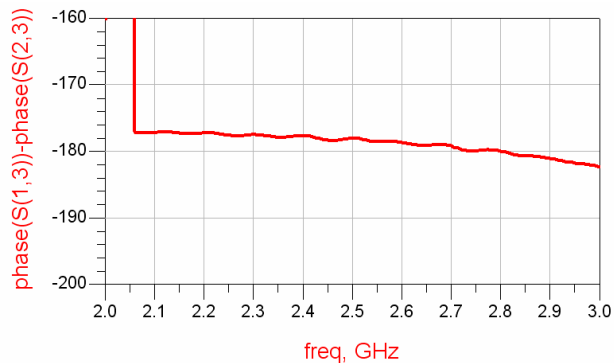
#### Insertion Loss and Return Loss



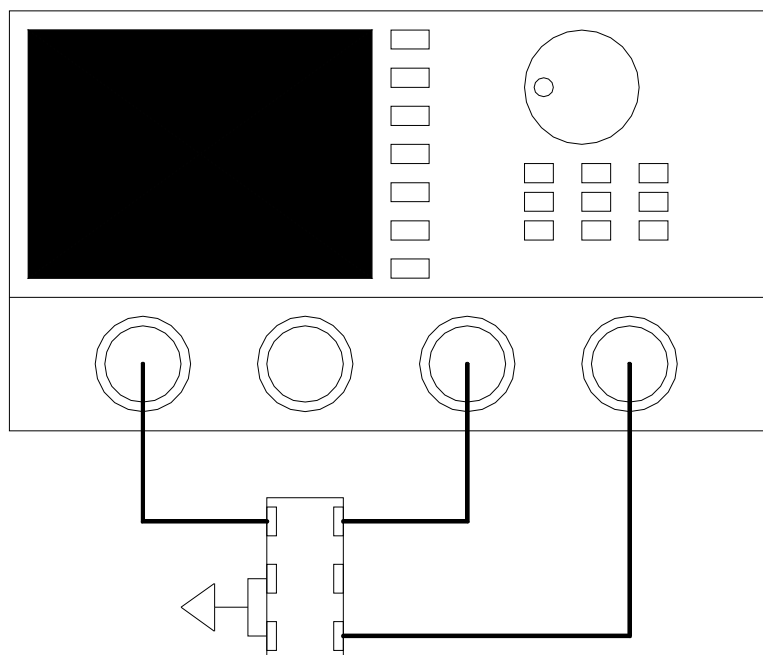
#### Amplitude Balance



#### Phase Balance

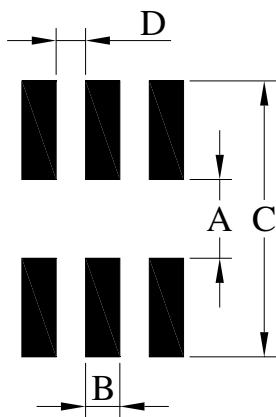


6. Measurement



Network analyzer : Agilent PNA N5230A

7. Recommended Land Pattern



A	0.3
B	0.25
C	1.4
D	0.25

Unit : mm

8. Reliability Test

8-1 Electrical

Item	Specification and Requirement	Test Method
Temperature Characteristics	Satisfy electrical characteristics	Solder the sample on PCB. Exposure at each temperature, -40°C, -20°C, 0°C, +25°C, +50°C, +85°C for 30minutes

8-2 Mechanical

Item	Specification and Requirement	Test Method
Solderability	The Surface of terminal immersed shall be minimum of 95% covered with a new coating of solder	Solder bath : After immersing in flux, dip in 245 ± 5°C molten solder bath for 2 ± 0.5 seconds
Resistance to solder Heat	Satisfy electrical characteristics without distinct deformation in appearance	(1) Pre-heat : 100 ~ 110°C for 30 seconds (2) Immersed at solder bath of 270 ± 5°C for 20 ± 1 seconds
Vibration	Satisfy electrical characteristics without Mechanical damage such as break	Vibrate as apply 20 to 2,000Hz, 186m/s <sup>2</sup> (19G) acceleration 1.5mm amplitude for 2 hours in each of three (X, Y, Z) axis (total 6 hours).
Shock	Satisfy electrical characteristics without mechanical damaged such as break	(1) Break value : 490 N (2) Duration of pulse : 11ms (3) 3 times in each positive and negative direction of 3 mutual perpendicular directions.
Bending Test	Satisfy electrical characteristics without mechanical damage such as break	Bending value : 3mm for 30 ± 1 seconds
Solvent Resistant	Marking should be legible without mechanical and distinct damage in appearance	(1) Solvent : Trichloroethane or Isopropyl alcohol. (2) Immersed in solvent at room temperature for 90 seconds
Drop Test	Satisfy electrical characteristics without mechanical damage	Drop the sample from a height of 1m to concrete ground for 10 times

8-3 Load Life

Item	Specification and Requirement	Test Method
Rapid change of temperature	Satisfy Electrical Characteristics. Without distinct damage.	Perform 5 cycles as follows : -55°C for 30minutes → room temperature for 3 minutes→ +125°C for 30minutes → room temperature for 3 minutes. (Dwell time : 5 to 8 minutes)
Humidity Resistance Test	Satisfy Electrical Characteristics. Without distinct damage.	Precondition at +25°C for 1hour. Let stand at temperature +40 ± 3°C, 90~95% relative humidity for 1,000 hours before taking final measurements.
Low Temperature Store	Satisfy Electrical Characteristics. Without distinct damage.	Solder the sample on PCB. Exposure at -55 ± 3°C for 1,000 hours. 1~2 hours exposure at room temperature and humidity, prior to measurement.
High Temperature Store	Satisfy Electrical Characteristics. Without distinct damage.	Solder the sample on PCB. Exposure at +85 ± 3°C for 1,000 hours. 1~2 hours exposure at room temperature and humidity, prior to measurement.

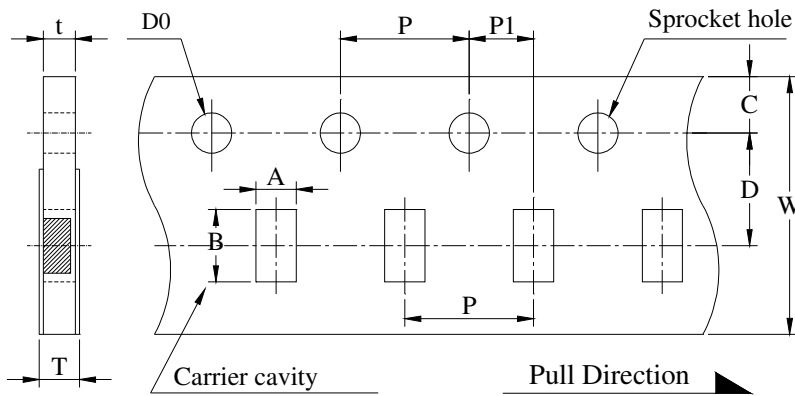
9. Packaging

9-1 Dimensions

9-1-1 Tape packaging dimensions

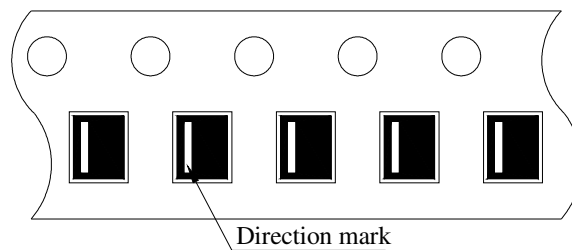
Cover Material : Polyethylene

Tape Material : Paper

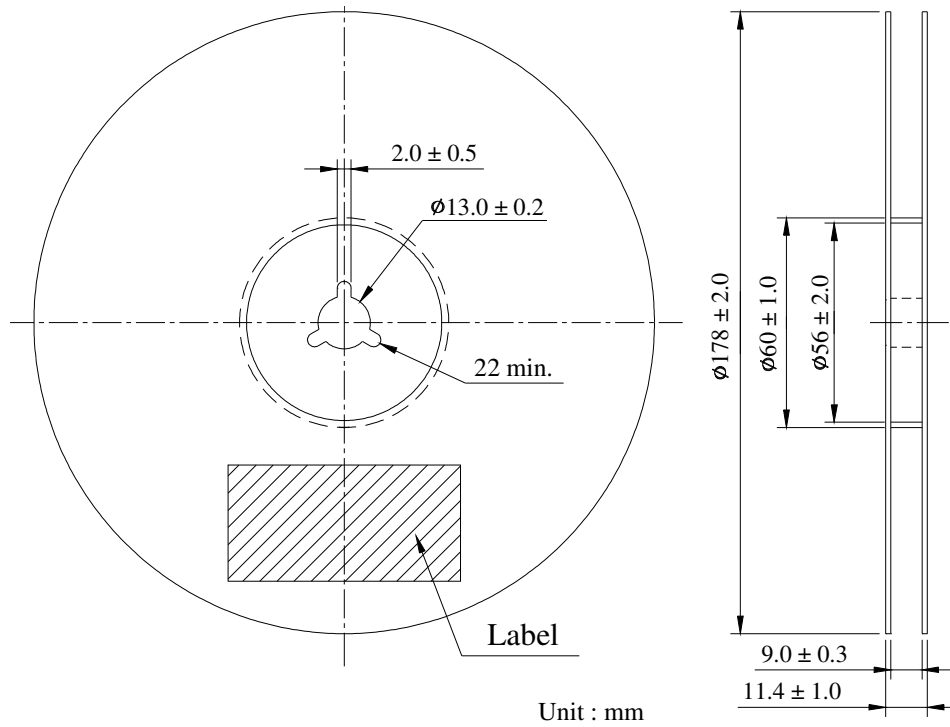


Code	Dimensions (mm)
A	1.10 ±0.10
B	1.90 ±0.10
C	1.75 ±0.1
D	3.5 ±0.05
W	8.0 ±0.3
P	4.0 ±0.1
P1	2.0 ±0.05
T	0.65 ±0.10
t	0.6 ±0.10
D0	φ 1.5 <sup>+0.1</sup> <sub>-0.0</sub>

9-1-2 Setting Direction



9-1-3 Reel dimensions( Material : Polystyrene )

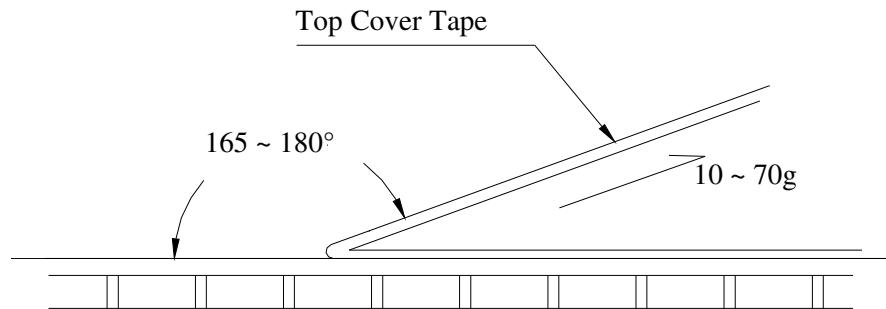




9-2 Peel force of top cover tape

The peel speed shall be about 300 mm/minute

The peel force of top cover tape shall be between 10 to 70g



9-3 Numbers of taping

4,000 pieces/reel

9-4 Label marking

The following items shall be marked on the production and shipping Label on the reel.

9-4-1 Production Label

- (1) Part No.
- (2) Description
- (3) Quantity
- (4) Taping No.

9-4-2 Shipping Label

- (1) \*Customer's name
- (2) \*Customer's part No.
- (3) Manufacturer's part No.
- (4) Manufacturer's name
- (5) Manufacturer's country

\*Note : Item (1) and (2) are listed by request