

TBL-1608-245-L2 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 — L2
 (1) (2) (3) (4)

- Where
- (1) TBL : Thin Film Balun
 - (2) Size :
4 digits of number —1608 = 1.6×0.8 mm
 - (3) Center Frequency :
245 = 2.45 GHz
 - (4) Type
Refer to Table 3-1

3. Ratings

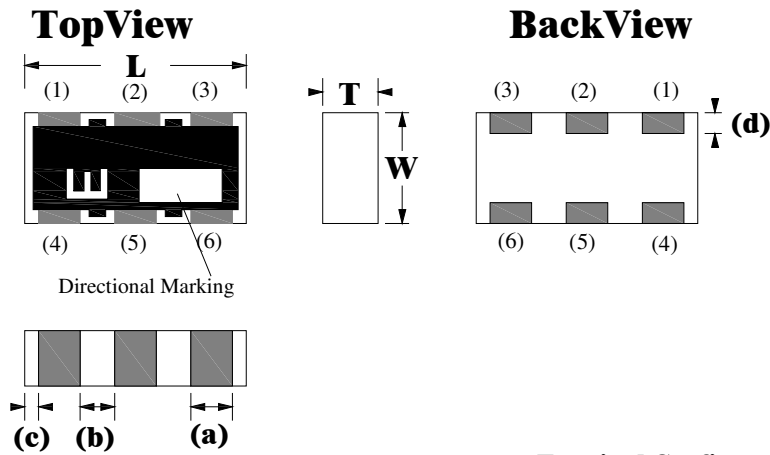
3-1 Specifications

Part Number	TBL-1608-245-L2
Unbalance port Impedance	50Ω
Balance Port Impedance	100Ω
Nominal Center Frequency	2450MHz
Bandwidth	2400~2500MHz
Phase Difference	180 ± 10°
Amplitude Imbalance	1.0dB max.
Insertion Loss	1.2dB 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



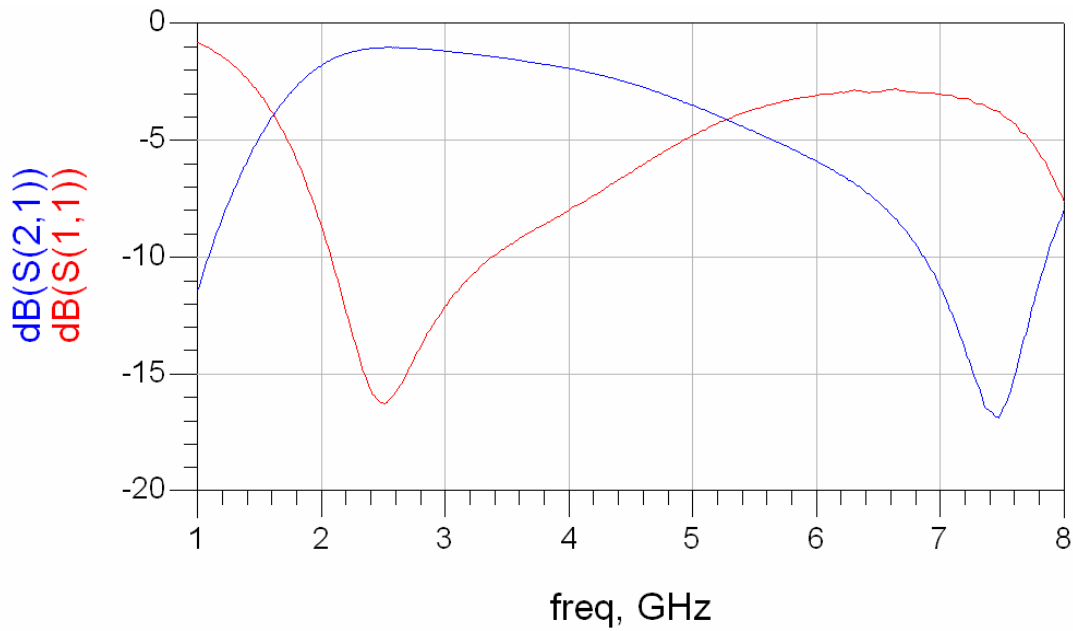
Terminal Configuration

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	(c)	0.1 ± 0.1
		(d)	0.2 ± 0.1

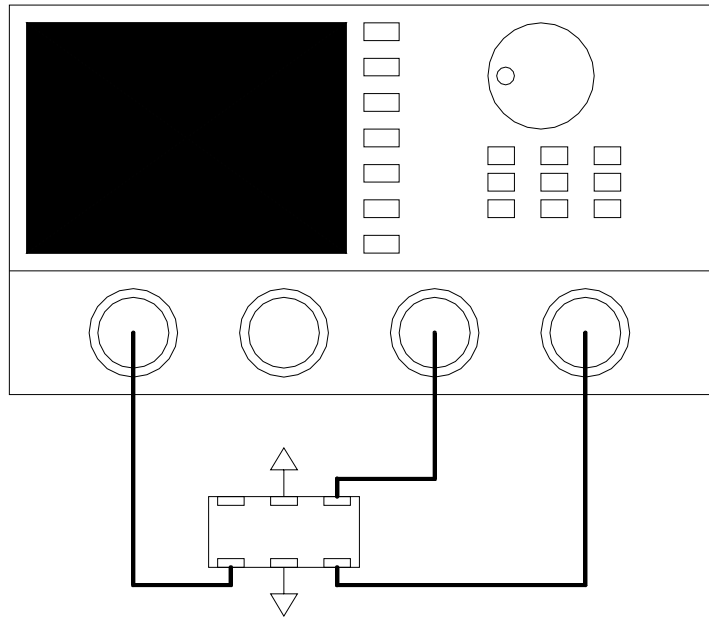
Unit : mm

(1)	Balance Port
(2)	GND or DC feed + RF GND
(3)	Unbalance Port
(4)	Balance Port
(5)	GND or DC feed + RF GND
(6)	NC

5. Electrical Performance

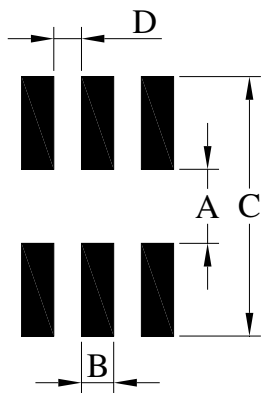


6. Measurement



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 $245 \pm 5^\circ\text{C}$ molten solder bath for 2 ± 0.5 seconds
Resistance to solder Heat	Satisfy electrical characteristics without distinct deformation in appearance	(1) Pre-heat : $100 \sim 110^\circ\text{C}$ for 30 seconds (2) Immersed at solder bath of $270 \pm 5^\circ\text{C}$ for 20 ± 1 seconds
Vibration	Satisfy electrical characteristics without Mechanical damage such as break	Vibrate as apply 20 to 2,000Hz, 186m/s^2 (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.

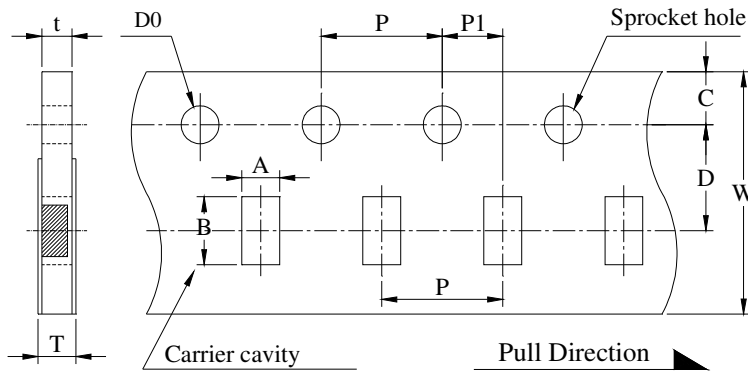
9. Packaging

9-1 Dimensions

9-1-1 Tape packaging dimensions

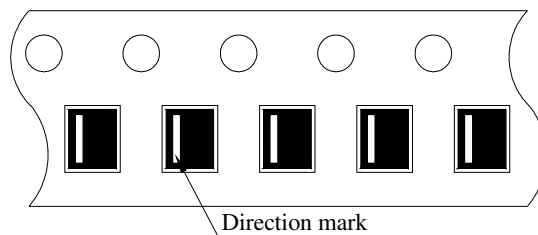
Cover Material : Polyethylene

Tape Material : Paper

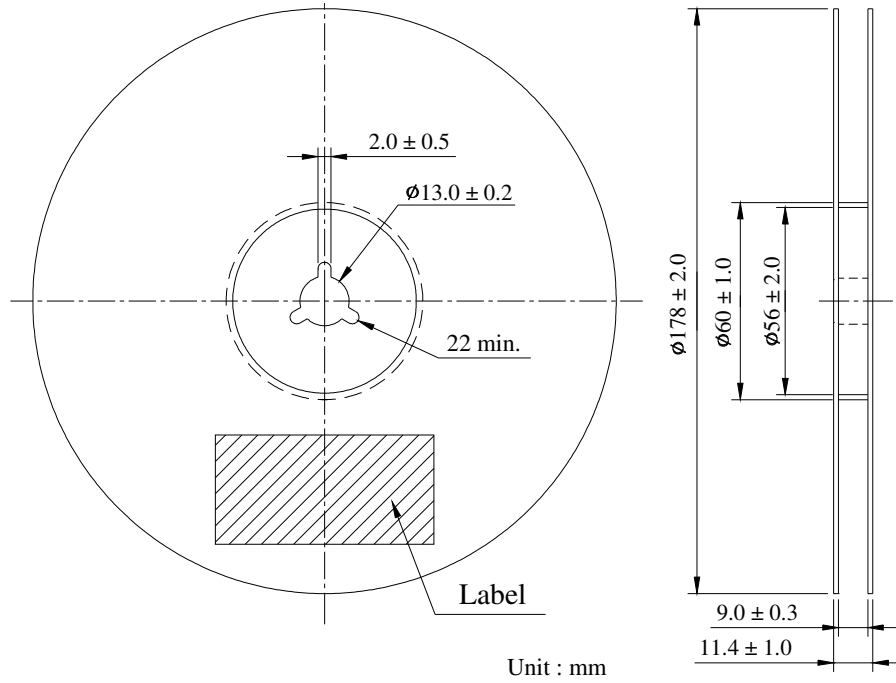


Code	Dimensions (mm)
A	1.10 ±0.10
B	1.90 ±0.10
C	1.75 ±0.1
D	3.5 ±0.05
W	8.0 ±0.3
P	4.0 ±0.1
P1	2.0 ±0.05
T	0.65 ±0.10
t	0.6 ±0.10
D0	φ 1.5 ^{+0.1} _{-0.0}

9-1-2 Setting Direction



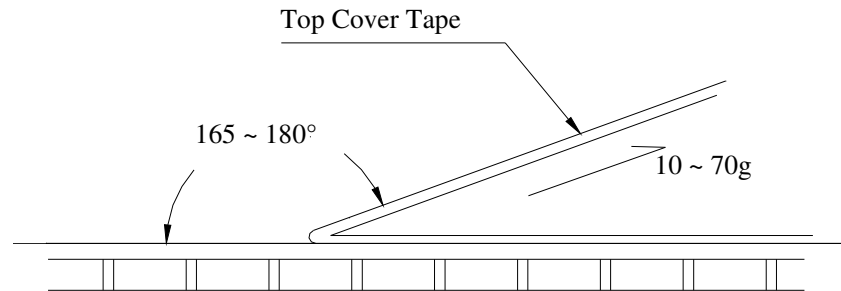
9-1-3 Reel dimensions(Material : Polystyrene)



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