

TBL-1411-245-LR THIN FILM BALUN

1. Feature:

1. Thin film high precision Balun for Nordic nRF51822-CEAA / nRF51422-CEAA chipset
2. For ISM Band BLE applications
3. Ultra Low Profile
4. Lead Free, RoHS compliance

2. Part Number

TBL — 1411 — 245 — LR — XX

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

Where (1) TBL : Thin Film Balun

(2) Size :

4 digits of number —1411 = 1.4× 1.1 mm

(3) Center Frequency :

245 = 2.45 GHz

(4) Type

Refer to Table 3-1

(5) XX

Internal Code

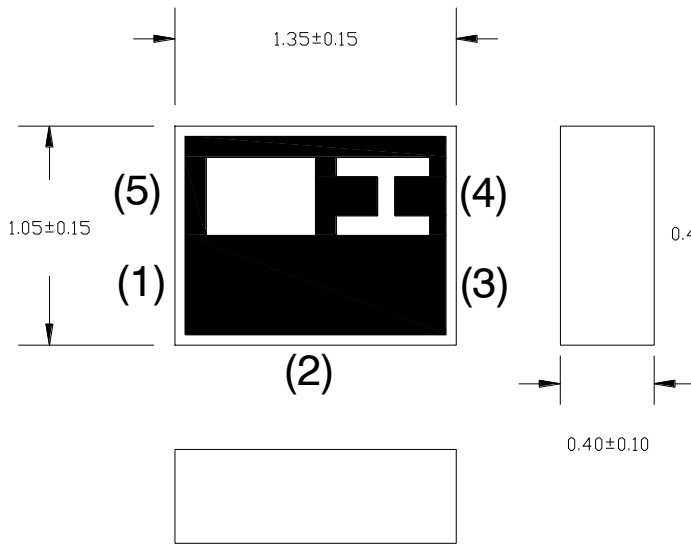
3. Ratings

3-1 Specifications

TBL-1411-245-LR					
No.	PARAMETER	FREQ(MHz)	Specification	Typical	UNIT
1	Insertion Loss	2400-2500	1.9max	1.7	dB
2	Attenuation	4800-5000	10min	12	dB
3	Attenuation	7200-7500	20min	22	dB
4	Phase Balance	2400-2500	0±2	0	dB
5	Amplitude Balance	2400-2500	180°±10°	8	deg
6	VSWR at Unbalance Port	2400-2500	2.0 Max	1.4	dB
7	Balance Port Impedance	2400-2500	Conjugate match to Nordic Semiconductor chipset nRF51822-CEAA / nRF51422-CEAA		
8	Power Capacity		0.5 Max		W
9	Operation Temperature		-40 to +85		degC
10	Storage Temperature		-40 to +85		degC

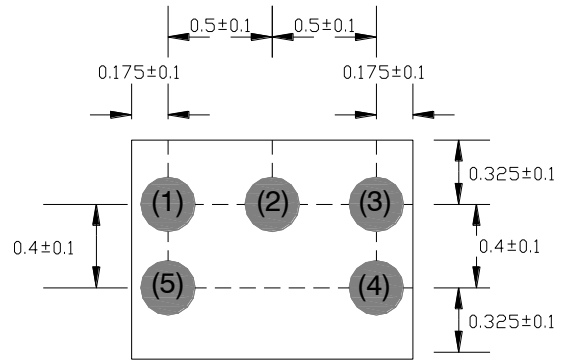
4. Outline Dimension

TopView



Unit:mm

BackView

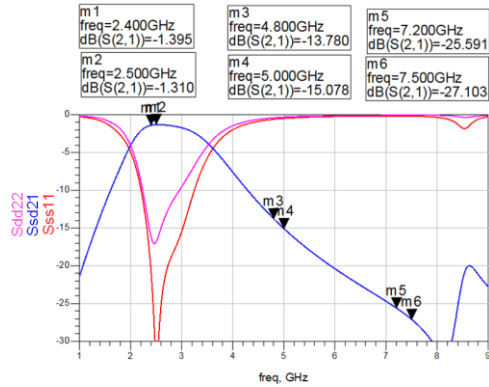


Terminal Configuration:

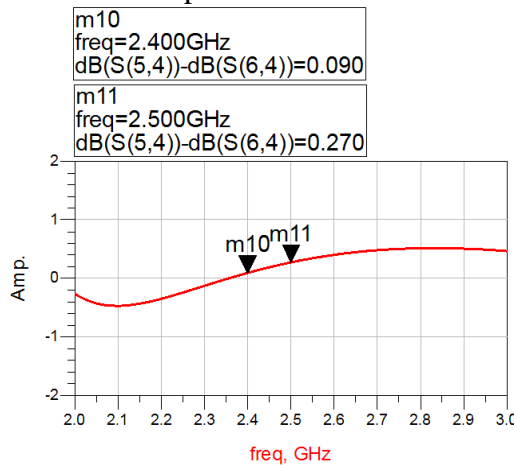
Terminal No.	Terminal Name
(1)	UnBalaunc port
(2)	DC feed or RF GND
(3)	Balance port
(4)	Balance port
(5)	GND

5. Electrical Performance

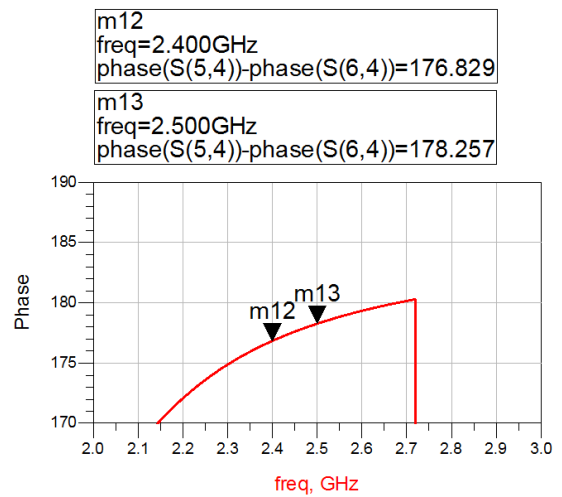
Insertion Loss and Return Loss



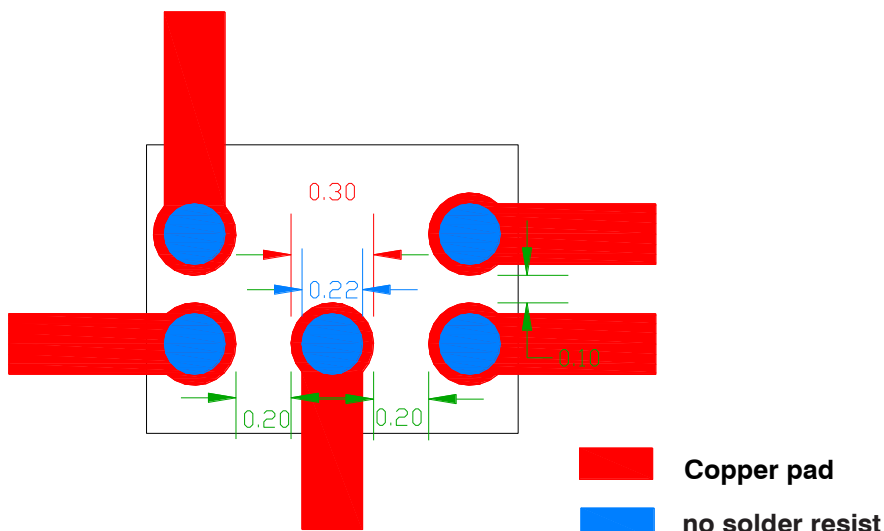
Amplitude Balance



Phase Balance



6. Recommended Land Pattern



Unit:mm

7. Reliability Test

7-1 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

7-2 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 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

7-3 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.

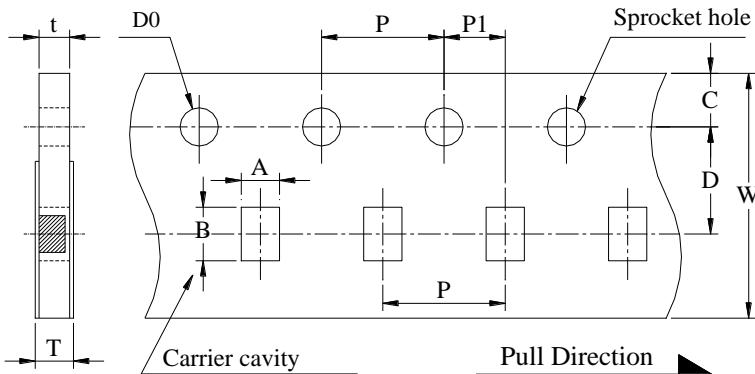
8. Packaging

8-1 Dimensions

8-1-1 Tape packaging dimensions

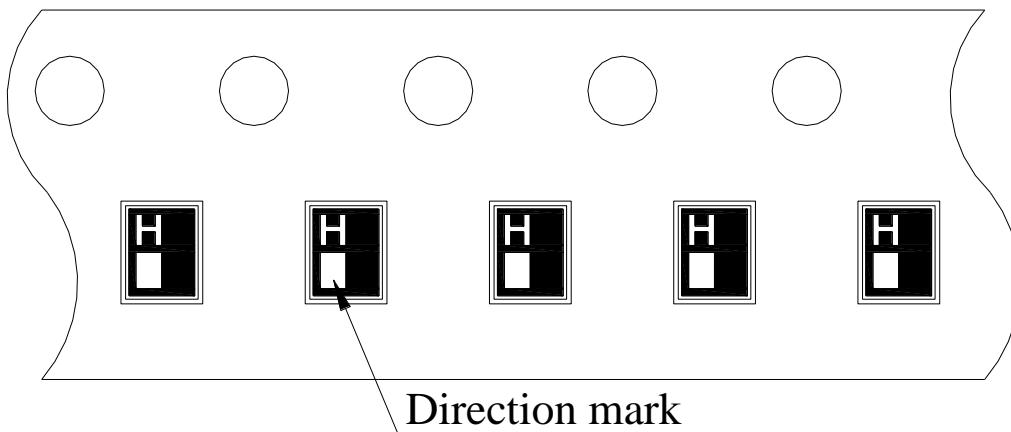
Cover Material : Polyethylene

Tape Material : Paper

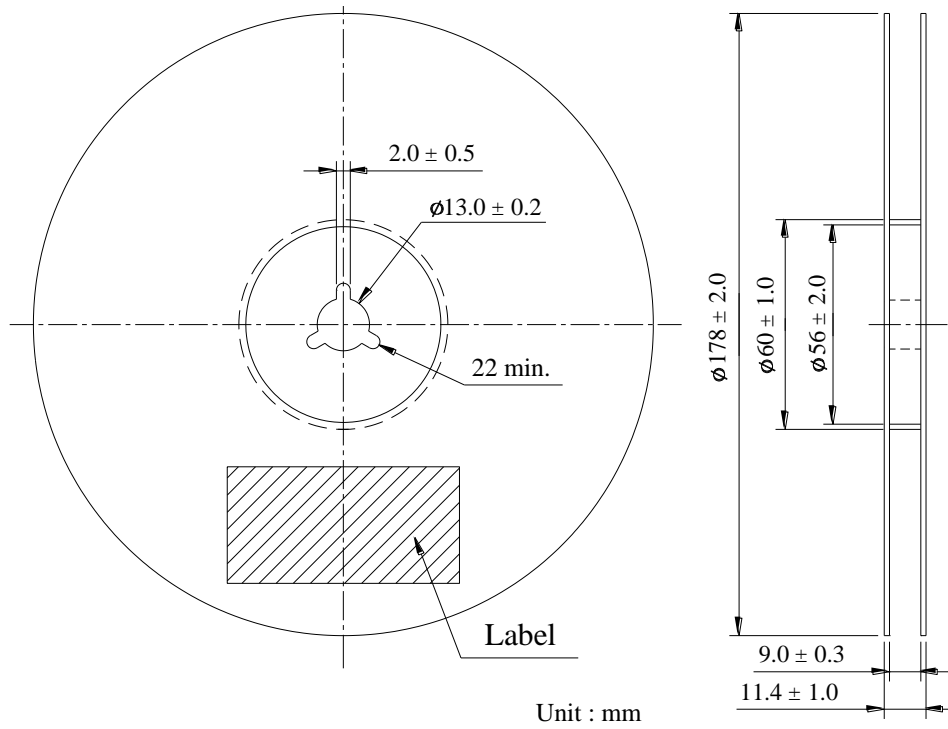


Code	Dimensions (mm)
A	1.40 ±0.05
B	1.60 ±0.05
C	1.75 ±0.1
D	3.5 ±0.05
W	8.0 ±0.3
P	4.0 ±0.1
P1	2.0 ±0.05
T	0.65 ±0.10
t	0.6 ±0.10
D0	φ 1.55 ±0.05

8-1-2 Setting Direction



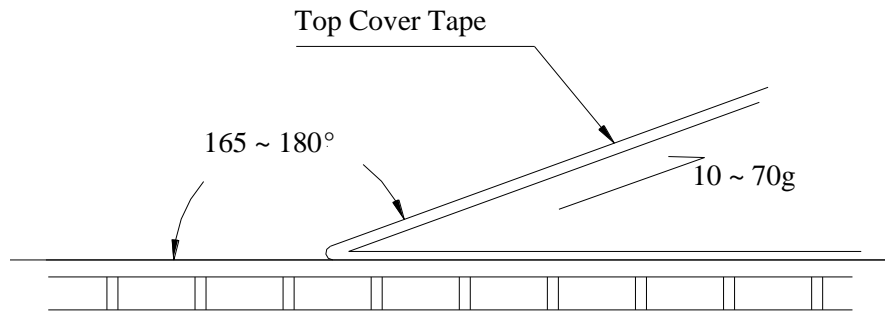
8-1-3 Reel dimensions(Material : Polystyrene)



8-2 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



8-3 Numbers of taping

4,000 pieces/reel

8-4 Label marking

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

8-4-1 Production Label

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

8-4-2 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