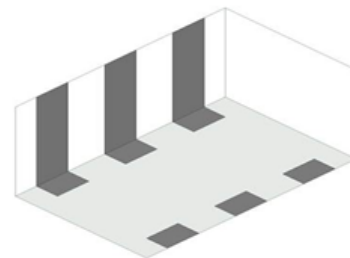
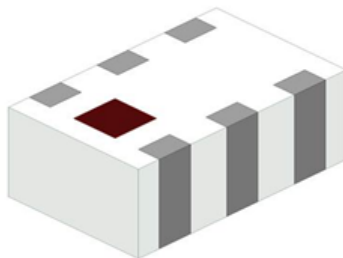




2.4 GHz Filter, Impedance-matched Balun and Filter for Nordic Semiconductor nRF51 Series QFN Chipsets

- 2400 - 2500 MHz passband
- Designed for Nordic Semiconductor chipsets:
 - nRF51822-QFAA
 - nRF51422-QFAA
 - nRF51822-QFAB
 - nRF51422-QFAB
 - nRF51822-QFAC
 - nRF51422-QFAC
 - nRF51802-QFAA
- For 2.4GHz applications such as WiFi, Bluetooth, Zigbee, etc.
- EIA 0603 SMD (1.6mm x 0.8mm x 0.6mm)
- Operation up to 105°C (Non-automotive)



General Specifications¹

		Impedance match for:		
Balanced Impedance, Transceiver Side (Ω)		2400 - 2500 MHz	nRF51822-QFAA nRF51422-QFAA nRF51822-QFAB nRF51422-QFAB nRF51822-QFAC nRF51422-QFAC nRF51802-QFAA	
Unbalanced Impedance, Antenna Side (Ω)	2400 - 2500 MHz		50	
Insertion Loss (dB)	2400 - 2500 MHz	2.1 Typ.		2.5 Max. (+85°C) 3.0 Max. (+105°C)
Return Loss (dB)	2400 - 2500 MHz	15 Typ.	9.5 Min.	
Phase Difference (Deg)	2400 - 2500 MHz		150 $\pm$ 15	
Amplitude Difference (dB)	2400 - 2500 MHz			2 Max.
Attenuation (dB)	800 - 928 MHz	15 Typ.	10 Min.	
	1200 - 1500 MHz	14 Typ.	10 Min.	
	4800 - 5000 MHz	35 Typ.	20 Min.	
	7200 - 7500 MHz	21 Typ.	18 Min.	
Attenuation, Common mode (dB)	4800 - 5000 MHz	44 Typ.	22 Min.	

¹ Typical value represents average measurement at 25°C. Min./Max. values represent measurements over specified operating temperature.

Maximum Ratings

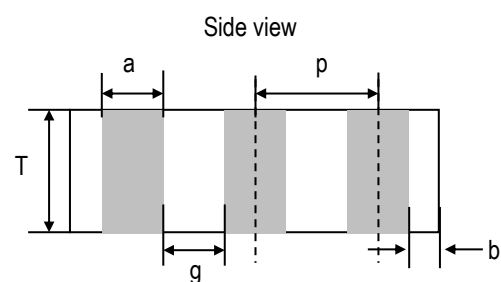
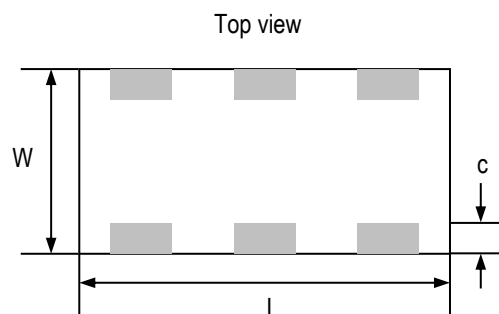
Power Capacity (W)	1 Max. (CW)
Operating Temperature (°C)	-40 to +105
Recommended Storage Conditions Post-installation (°C)	-40 to +85
Recommended Storage Conditions and Period for Unused T&R Product ²	45% - 75% RH +5 to +35 °C 18 Months Max.

² The termination type is Nickel Tin. Go to: <https://www.johansontechnology.com/ipcsoldering-profile> for Typical Soldering Profile.



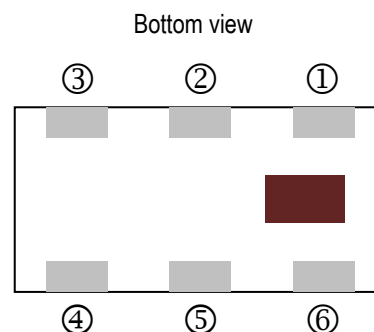
Mechanical Dimensions

	Inches			Millimeters		
L	0.063	±	0.004	1.60	±	0.10
W	0.031	±	0.004	0.80	±	0.10
T	0.024	±	0.004	0.60	±	0.10
a	0.008	±	0.002	0.20	±	0.05
b	0.008	+0.004/-0.006		0.20	+0.1/-0.15	
c	0.006	±	0.004	0.15	±	0.1
g	0.012	±	0.004	0.30	±	0.1
p	0.020	±	0.002	0.50	±	0.05



Terminal Configuration³

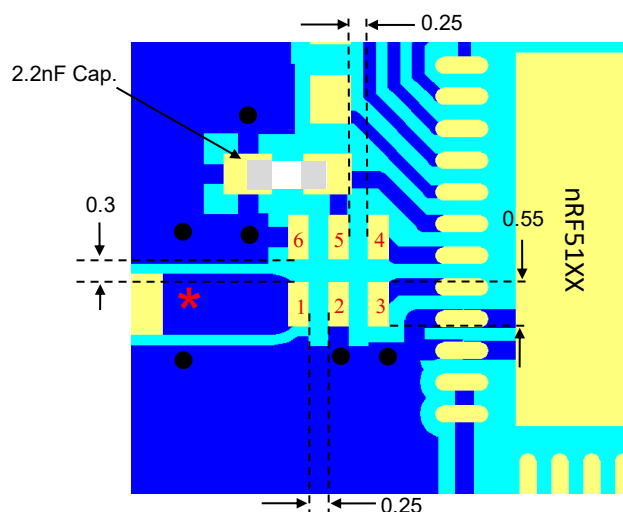
Pin Number	Function
1	Unbalanced Port
2	GND
3	Balanced Port
4	Balanced Port
5	DC Feed
6	GND



³ The termination type is Nickel Tin. Go to: <https://www.johansontechnology.com/ipcsoldering-profile> for Typical Soldering Profile.

Recommended PCB Layout

Note: Mount device with colored mark facing up.



Units in mm

 Solder Resist

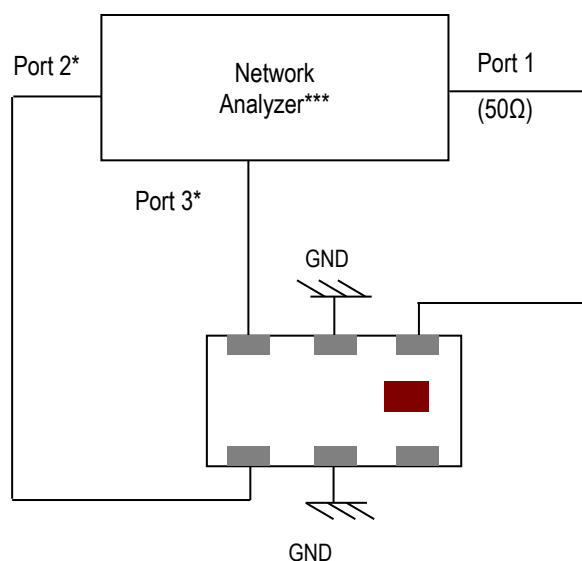
 Land

 Through-hole ($\phi 0.35$)

* Transmission line width should be designed to match 50 Ω characteristic impedance, depending on PCB material and thickness.

If you'd like the CAD PCB layout or have any questions, contact our application engineers at <https://www.johansontechnology.com/ask-a-question>

Measuring Diagram



Port 1: Unbalanced Port

Ports 2 and 3: Balanced Port

$$IL = S_{ds21}$$

$$RL = S_{ss11}$$

$$\text{Amp_balance} = \text{dB}(S(2,1)/S(3,1))$$

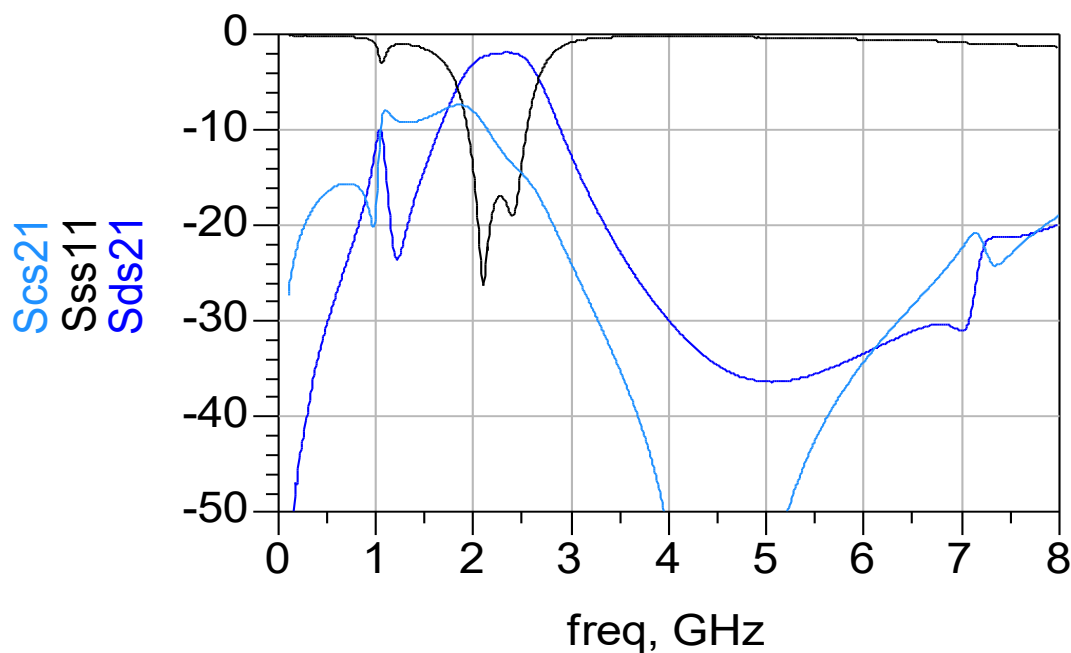
$$\text{Phase_balance} = \text{Phase}(S(2,1)/S(3,1))$$

*Impedance for ports 2 and 3

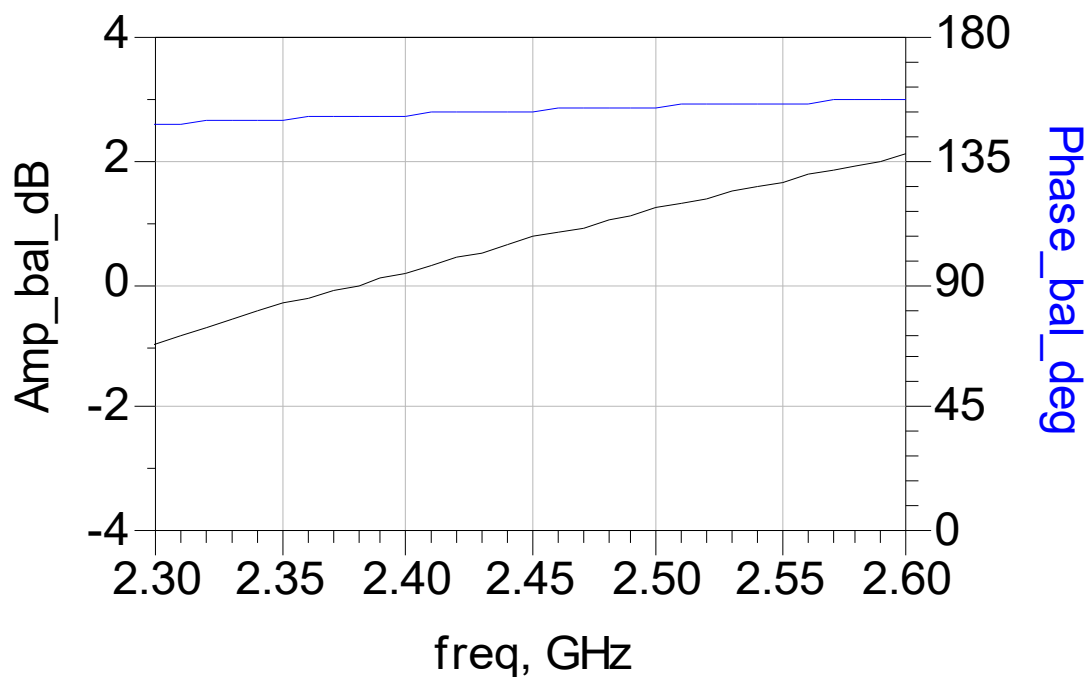
= Conjugate to Balanced Impedance/2

RF Measurement (T = 25°C)

Insertion Loss, Return Loss, Attenuation, Common-mode Rejection



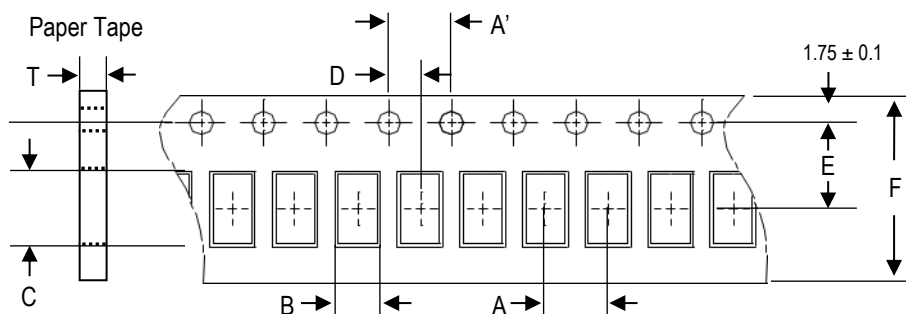
Phase Balance and Amplitude Difference



S-parameter and layout file available upon request. Please contact us at <https://www.johansontechnology.com/ask-a-question>.

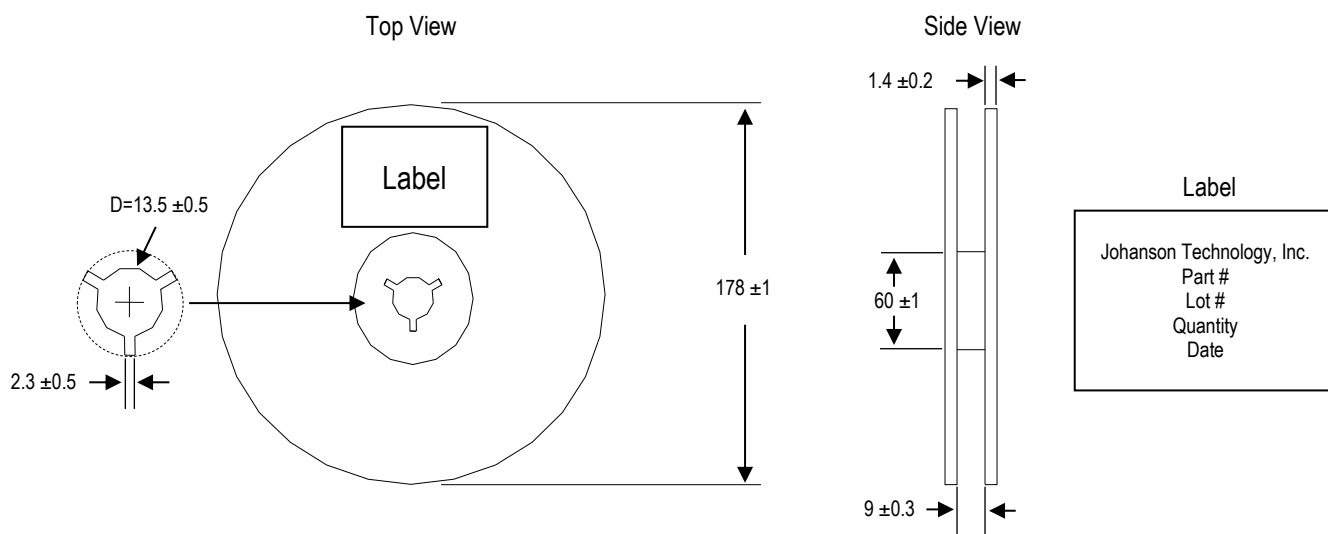
Tape and Reel Specification (Units in mm)

Tape Dimensions

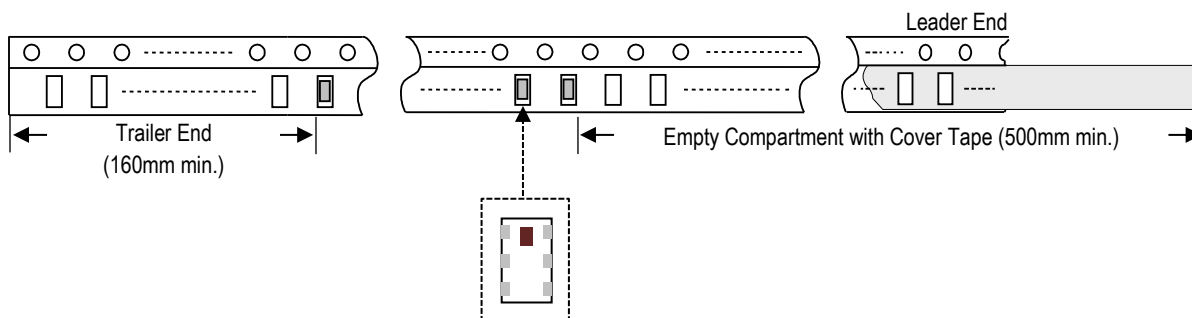


A	A'	B	C	D	E	F	T	Quantity/reel	Tape material
4.0 ±0.1	4.0 ±0.1	1.1 ±0.1	1.92 ±0.1	2.0 ±0.1	3.5 ±0.1	8.0 ±0.1	0.75 ±0.05	4,000pcs	Paper

Reel Dimensions



Leader and Trailer Dimensions



Orderable Part Number

Packaging Style	Part Number	Termination
Bulk (loose pcs.)	2450BM14E0003001B	Nickel Tin
T & R (7" Reel Paper Tape)	2450BM14E0003001T (Qty: 4,000 pcs/reel)	

Important Links[2450BM14E0003001T Product Page](#)[More Nordic Semiconductor Reference Designs](#)[2.4GHz Antennas](#)[Antenna Tuning, Optimization, and Validation Services](#)[Soldering Information](#)[MSL Information](#)[Packaging Information](#)[Recommended Storage Condition and Max Shelf Life](#)[RoHS Compliance](#)

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