Spectron® Technologies

Data Sheet
Band3 Duplexer 1814
SPT1G74ADC2

2022/6/15
V1.1

Description:

The Spectron SPT1G74ADC2 is a miniature B3 duplexer designed for applications in LTE-A, 5G NR, customer premise equipment, and mobile communication devices.

The SPT1G74ADC2 provides +29 dBm power handling, low insertion loss and high out of band rejection.

The design and manufacturing of the SPT1G74ADC2 exploit Spectron's exclusive PSAW technology to deliver competitive performance against state of the art at a competive cost.

The SPT1G74ADC2 is compatible with high volume, lead-free SMT soldering processes.

Features:

- Single-Ended Input and Output
- Terminating Impedance： 50 Ω
- Compact miniature size
  - 1.8 mm × 1.4 mm footprint
  - 0.65 mm max-height
- Environmental
  - RoHS 6 Compliant

Specifications:

- Performance specified from -20°C to +85°C
- In-band insertion loss: 2.5 dB Max for UL band
- In-band insertion loss: 3.5 dB Max for DL band
- High out of band rejection
- High isolation between Tx and Rx

Applications:

- LTE-A
- 5G NR
- Communication Devices

Electrical Specifications

Table 1 Electrical Specifications: Tx to Ant.

Tx to Ant			Specification		
Parameter	**Condition [MHz]**	**Unit**	**Minimum[1]**	**Typical[2]**	**Maximum[1]**
Insertion Loss	1710.00 ~ 1785.00	dB	-	1.5	2.5
Inband Ripple	1710.00 ~ 1785.00	dB	-	0.4	1.0
VSWR of Tx Port	1710.00 ~ 1785.00	-	-	1.3	1.5
VSWR of Ant Port	1710.00 ~ 1785.00	-	-	1.3	1.5
Absolute Attenuation	10.00 ~ 1565.42	dB	30	45	-
	703.00 ~ 748.00	dB	40	45	-
	716.00 ~ 756.00	dB	40	45	-
	814.00 ~ 849.00	dB	38	43	-
	832.00 ~ 862.00	dB	38	42	-
	880.00 ~ 915.00	dB	35	40	-
	925.00 ~ 960.00	dB	33	39	-
	1226.00 ~ 1250.00	dB	28	33	-
	1496.00 ~ 1511.00	dB	30	36	-
	1559.00 ~ 1563.00	dB	35	40	
	1565.42 ~ 1573.37	dB	40	43	
	1573.37 ~ 1577.47	dB	40	43	
	1577.47 ~ 1585.42	dB	40	44	
	1597.55 ~ 1605.89	dB	42	48	-
	1605.89 ~ 1680.00	dB	8	40	-
	1805.00 ~ 1880.00	dB	43	53	-
	1920.00 ~ 1980.00	dB	33	38	
	2110.00 ~ 2170.00	dB	36	40	-
	2400.00 ~ 2500.00	dB	42	46	-
	2620.00 ~ 2690.00	dB	36	40	-
	3420.00 ~ 3570.00	dB	30	34	-
	4900.00 ~ 5850.00	dB	15	17	-
					-
					-
					-
					-
					-

Table 2 Electrical Specifications: Ant to Rx.

Ant to Rx			Specification		
Parameter	**Condition [MHz]**	**Unit**	**Minimum[1]**	**Typical[2]**	**Maximum[1]**
Insertion Loss	1805.00 ~ 1880.00	dB	-	1.8	3.5
Ripple Deviation	1805.00 ~ 1880.00	dB	-	0.5	1.0
VSWR of Rx Port	1805.00 ~ 1880.00	-	-	1.6	1.9
VSWR of Ant Port	1805.00 ~ 1880.00	-	-	1.6	1.9
Absolute Attenuation	1.00 ~ 1710.00	dB	25	50	-
	718.00 ~ 748.00	dB	45	55	-
	814.00 ~ 849.00	dB	43	53	-
	832.00 ~ 862.00	dB	42	50	-
	880.00 ~ 915.00	dB	42	50	-
	1447.00 ~ 1463.00	dB	34	40	-
	1615.00 ~ 1690.00	dB	35	40	-
	1710.00 ~ 1785.00	dB	43	60	-
	1785.00 ~ 1790.00	dB	22	40	-
	1920.00 ~ 6000.00	dB	30	45	-
	2400.00 ~ 2500.00	dB	44	50	-
	2500.00 ~ 2570.00	dB	47	51	-
	2570.00 ~ 3515.00	dB	50	55	-
	3515.00 ~ 3760.00	dB	50	53	-
	4900.00 ~ 5950.00	dB	31	39	-
	5205.00 ~ 5660.00	dB	32	36	-

Table 3 Electrical Specifications: Tx to Rx.

Tx to Rx			Specification		
Parameters	Conditions [MHz]	Unit	Minimum[1]	Typical[2]	Maximum[1]
Isolation	1710.00 ~ 1785.00	dB	50	60	-
	1805.00 ~ 1880.00	dB	50	58	-

1. Min/Max specifications are guaranteed at the indicated temperature (unless otherwise noted).
2. Typical data is the average value (arithmetic mean) of the parameter over the indicated band at +25°C

Figure 1 Electrical Characteristics: Tx to Ant.

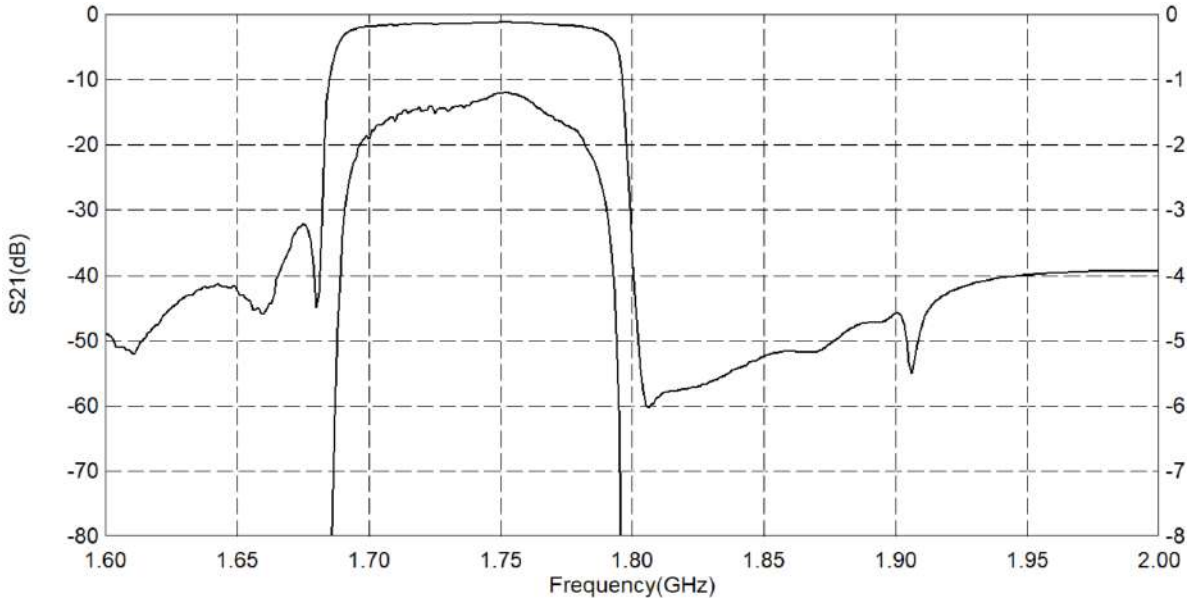


Figure 2 Electrical Characteristics: Tx to Ant.

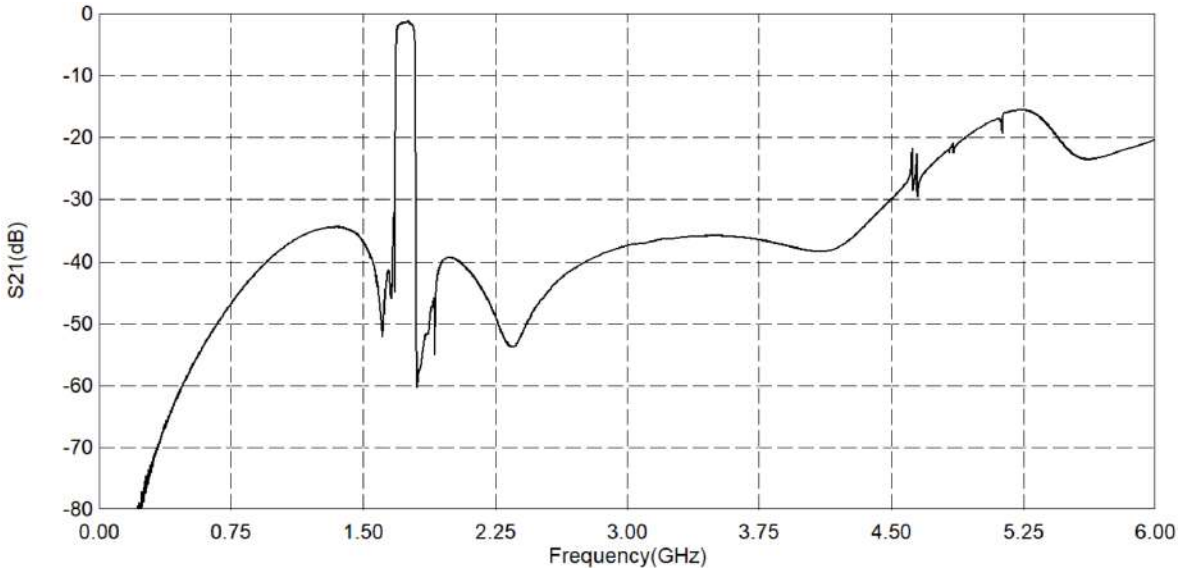


Figure 3 Electrical Characteristics: Ant to Rx.

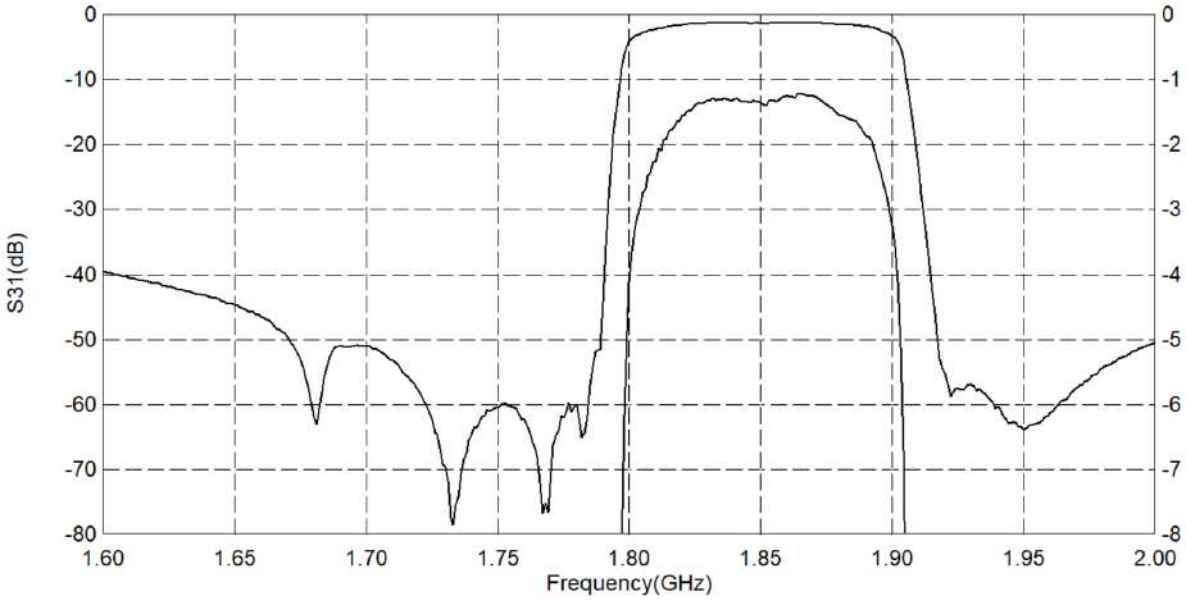


Figure 4 Electrical Characteristics: Ant to Rx.

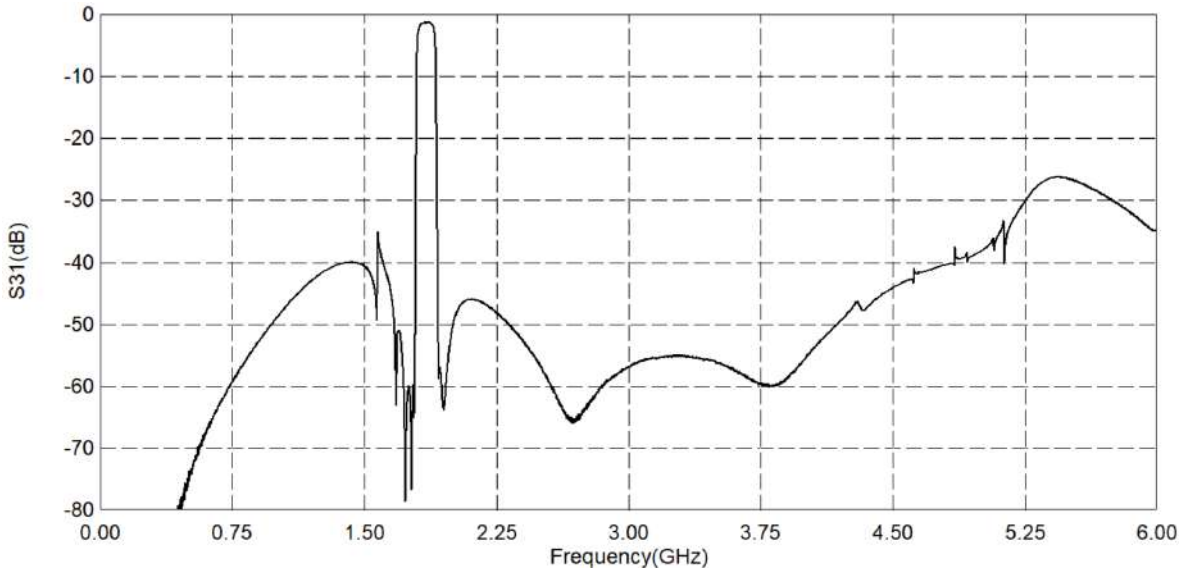


Figure 5 Electrical Characteristics: Tx to Rx.

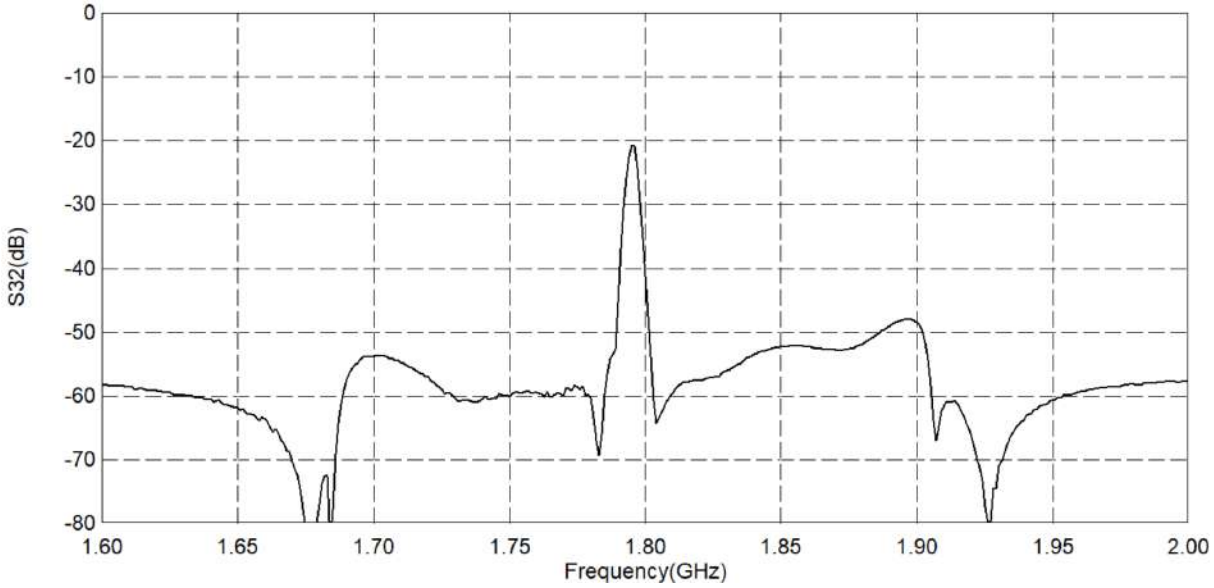


Figure 6 Electrical Characteristics: Tx to Rx.

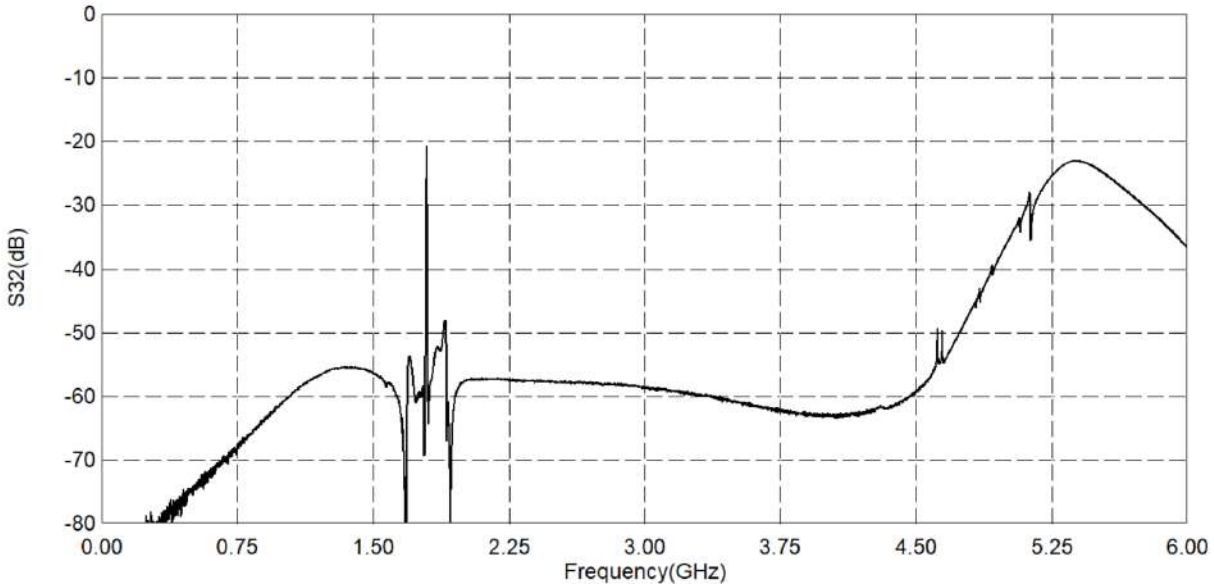
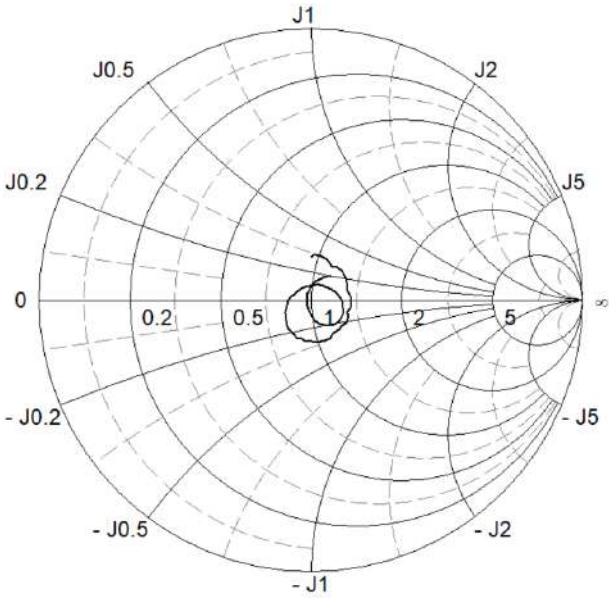
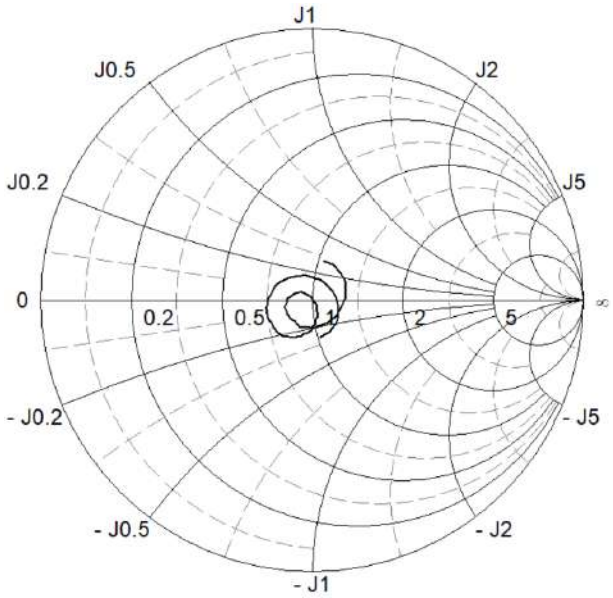


Figure 7 Input Impedances.

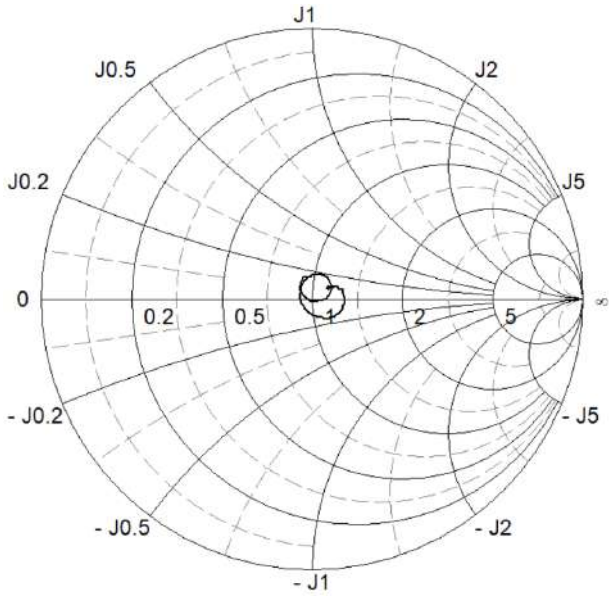
Tx Input Impedance
(1710MHz to 1755MHz)



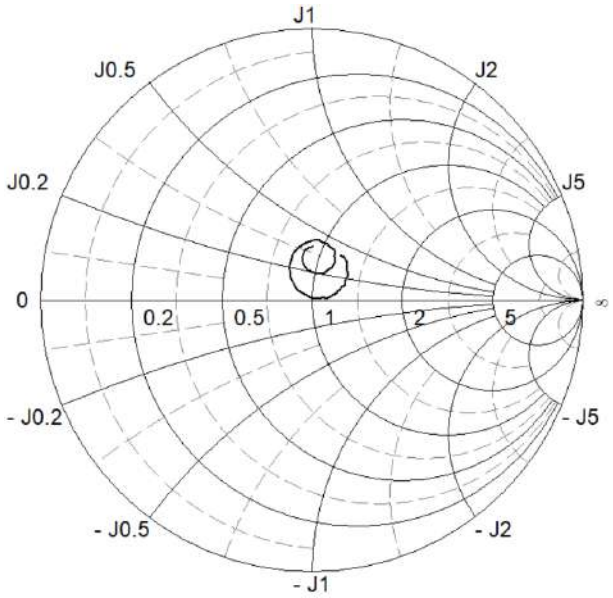
Rx Input Impedance
(2110MHz to 2155MHz)



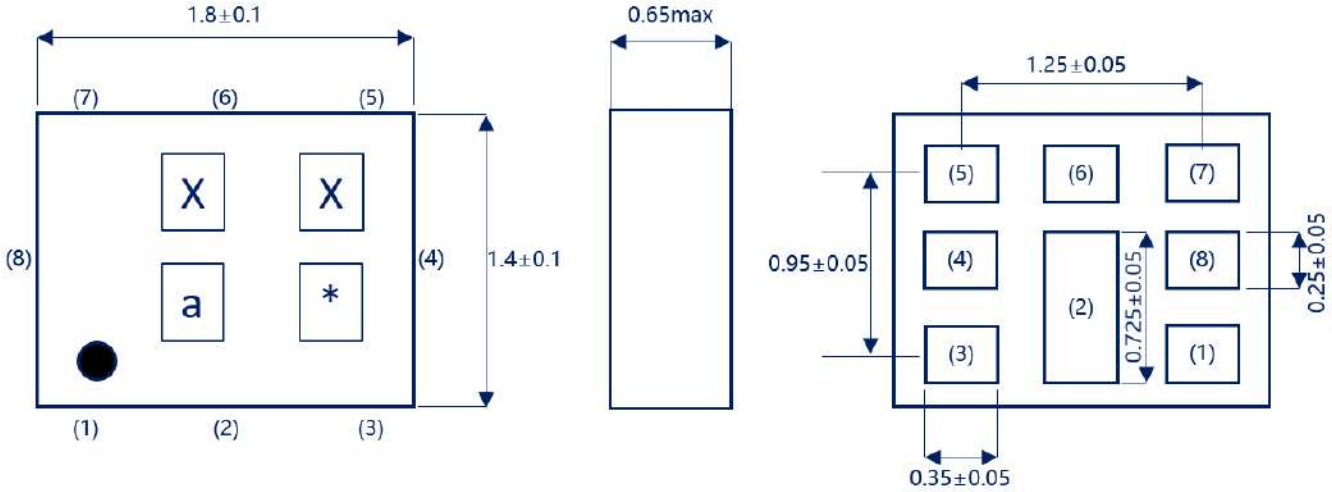
Ant Input Impedance (Tx Band)



Ant Input Impedance (Rx Band)



Package & Dimensions[1]

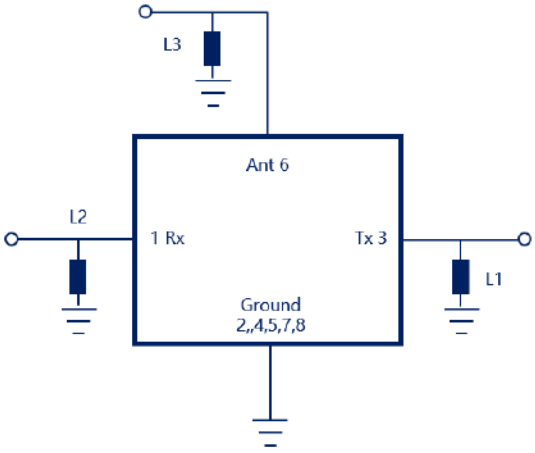


Marking Description	
XX	Band Code
#	Month Code
*	Date Code

Pin Configuration	
3	Tx
1	Rx
6	Antenna
2,4,5,7,8	Ground

1. All dimensions are in millimeters. Angles are in degrees.

Matching



Port	Matching Component[1]
Tx	L1 : 7.5 nH (Ideal indcutor)
Rx	L2 : 5.1 nH (Ideal indcutor)
Ant	L3 : 3.0 nH (Ideal indcutor)

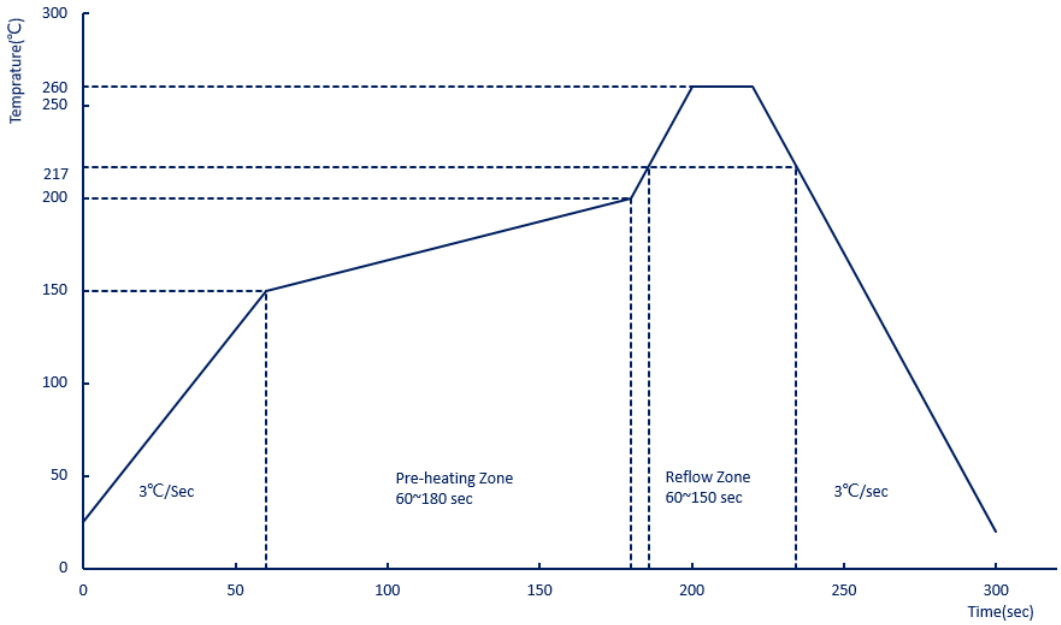
1. Matching component values shown are recommended based on Spectron evaluation board. Value adjustment may be required on the end-user's circuit boards for the selected component manufacturer and PCB material.

Maximum Ratings[1]

Characteristic	Rating	Unit
Operating Temperature[2]	-20 ~ +85	℃
Storage Temperature	-40 ~ +85	℃
Maximum Input Power[3,4]	+29	dBm
DC Voltage Between The Terminals[5]	3	V
ESD Voltage (HBM)	> 100	V
ESD Voltage (CDM)	> 100	V
Moisture Sensitivity Levels	3	/

1. Operation exceeding any one of these conditions may result in permanent damage to the device.
2. The device will function over the recommended range without degradation in reliability or permanent change in performance but is not guaranteed to meet electrical specifications.
3. LTE modulation. Applies over a temperature range of TC = –20° to +85°C.
4. Maximum input power is only specified for input power to Tx port of SPT1G74ADC2 (Pin 3).
5. The DC resistance from Pin 1 and 3 (Tx/Rx) and Pin 6 (Ant) to ground (2-7) of this device is typically hundreds of kΩ to MΩ.

Recommended SMT Solder Profile



Ordering Information

Part Number	Number of Devices	Container
SPT1G74ADC2	4000pcs	Tape and Reel