Data Sheet
Band8 Duplexer 1814
SPT897MBDC1

5th Nov 2022
V1.1

Description:

The Spectron SPT897MBDC1 is a miniature B8 duplexer designed for applications in LTE-A, Cat 1, customer premise equipment, and mobile communication devices.

The SPT897MBDC1 provides +29 dBm power handling, low insertion loss and high out of band rejection.

The design and manufacturing of the SPT897MBDC1 exploit Spectron's exclusive TSAW technology to deliver competitive performance against state of the art at a low cost.

The SPT897MBDC1 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: 3.1dB Max for UL band
- In-band insertion loss: 3.6dB Max for DL band
- High out of band rejection
- High isolation between Tx and Rx: 50dB Min

Applications:

- LTE-A
- Cat 1
- 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	880.15 - 914.75	dB	-	2.5	3.1
Inband Ripple	880.15 - 914.75	dB	-	1.3	2.2
VSWR of Tx Port	880.15 - 914.75	-	-	1.6	2.0
VSWR of Ant Port	880.15 - 914.75	-	-	1.5	1.9
Absolute Attenuation	10.00 - 716.00	dB	20	30	-
	716.00 - 862.00	dB	20	30	-
	716.00 - 728.00	dB	20	30	-
	925.15 - 959.85	dB	40	52	-
	1559.00 - 1563.00	dB	25	35	-
	1565.42 - 1585.42	dB	28	36	-
	1597.55 - 1605.89	dB	28	36	-
	1680.00 - 1830.00	dB	33	37	-
	1805.00 - 1990.00	dB	30	39	-
	2110.00 - 2200.00	dB	35	43	-
	2400.00 - 2500.00	dB	35	47	-
	2620.00 - 2745.00	dB	35	51	-
	3520.00 - 3660.00	dB	30	45	-
	4400.00 - 4575.00	dB	30	43	-
	4900.00 - 5950.00	dB	15	25	-

Table 2 Electrical Specifications: Ant to Rx.

Ant to Rx		Specification			
Parameter	**Condition [MHz]**	**Unit**	**Minimum[1]**	**Typical[2]**	**Maximum[1]**
Insertion Loss	925.15 - 959.85	dB	-	2.8	3.6
Ripple Deviation	925.15 - 959.85	dB	-	1.2	1.9
VSWR of Rx Port	925.15 - 959.85	-	-	1.5	2.0
VSWR of Ant Port	925.15 - 959.85	-	-	1.5	2.0
Absolute Attenuation	10. 00 - 880. 00	dB	38	45	-
	880.15 - 914.85	dB	40	52	-
	1427.00 - 1448.00	dB	40	50	-
	1710.00 - 1980.00	dB	42	54	-
	2300.00 - 2690.00	dB	45	61	-
	2400.00 - 2500.00	dB	45	63	-
	4900.00 - 5950.00	dB	30	41	-

Table 3 Electrical Specifications: Tx to Rx.

Tx to Rx		Specification			
Parameters	**Conditions [MHz]**	**Unit**	**Minimum[1]**	**Typical[2]**	**Maximum[1]**
Isolation	880.15 - 914.75	dB	50	53	-
	925.15 - 959.85	dB	50	53	-

1. Min/Max specifications are guaranteed over the indicated temperature range (unless otherwise noted).
2. Typical values are based on average measurements at + 25 °C

Figure 1 Electrical Characteristics: Tx to Ant.

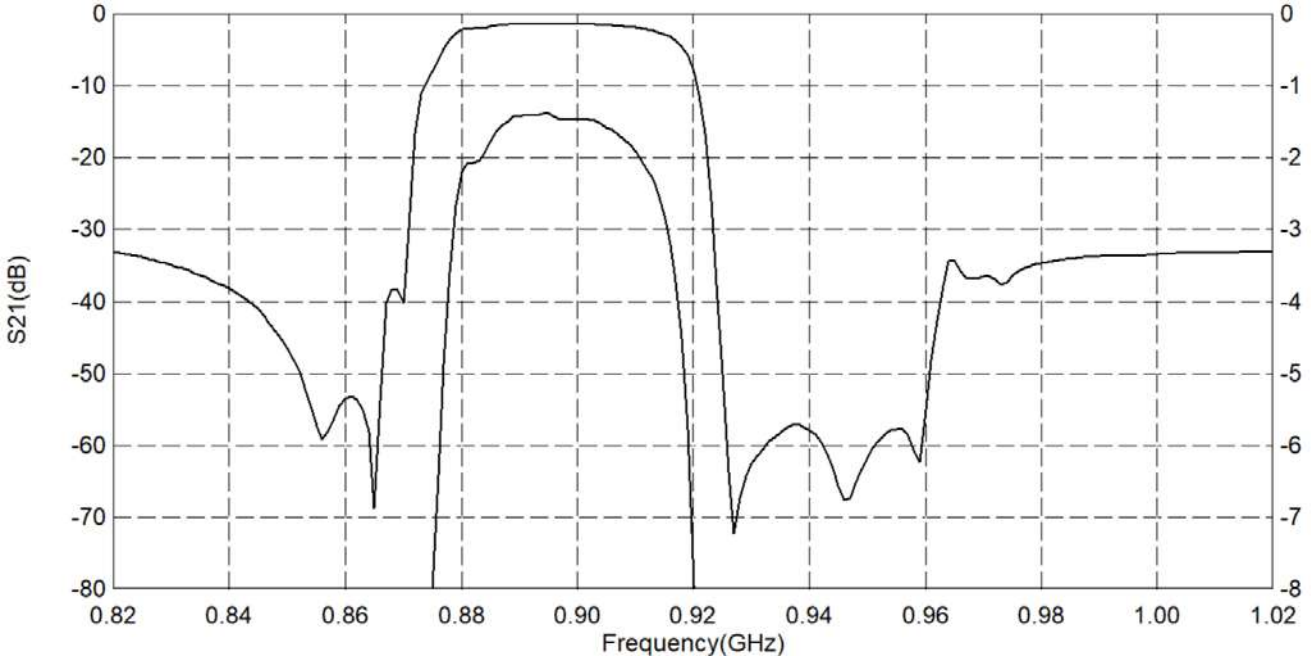


Figure 2 Electrical Characteristics: Tx to Ant.

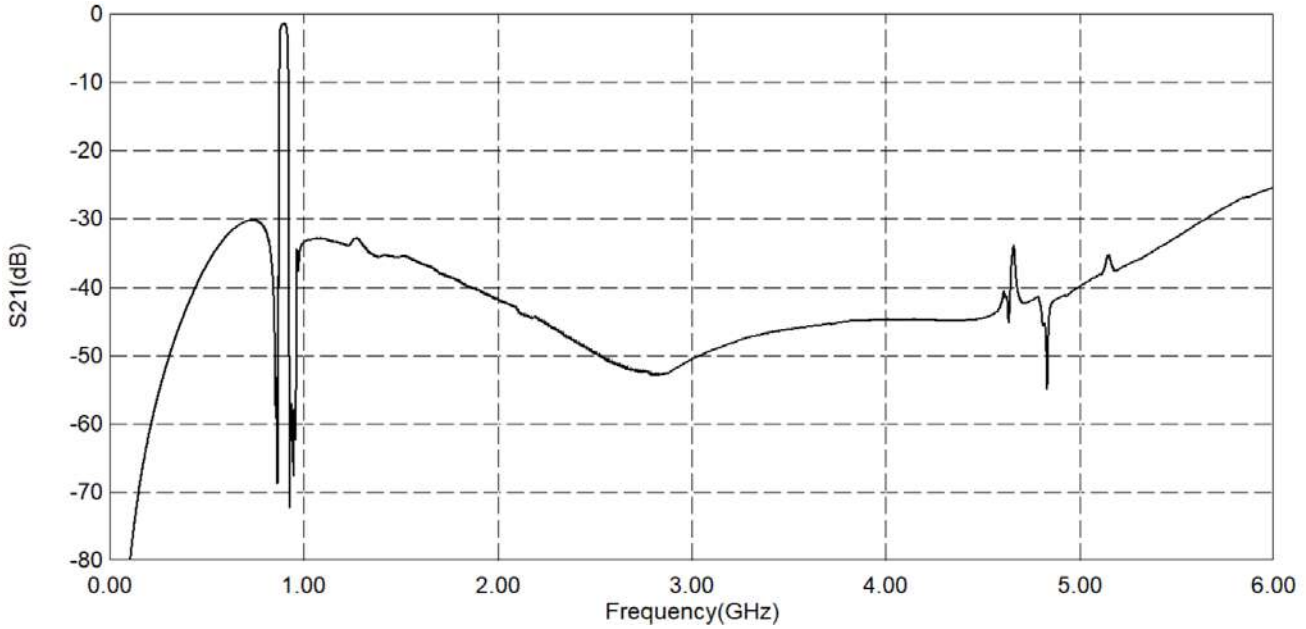


Figure 3 Electrical Characteristics: Ant to Rx.

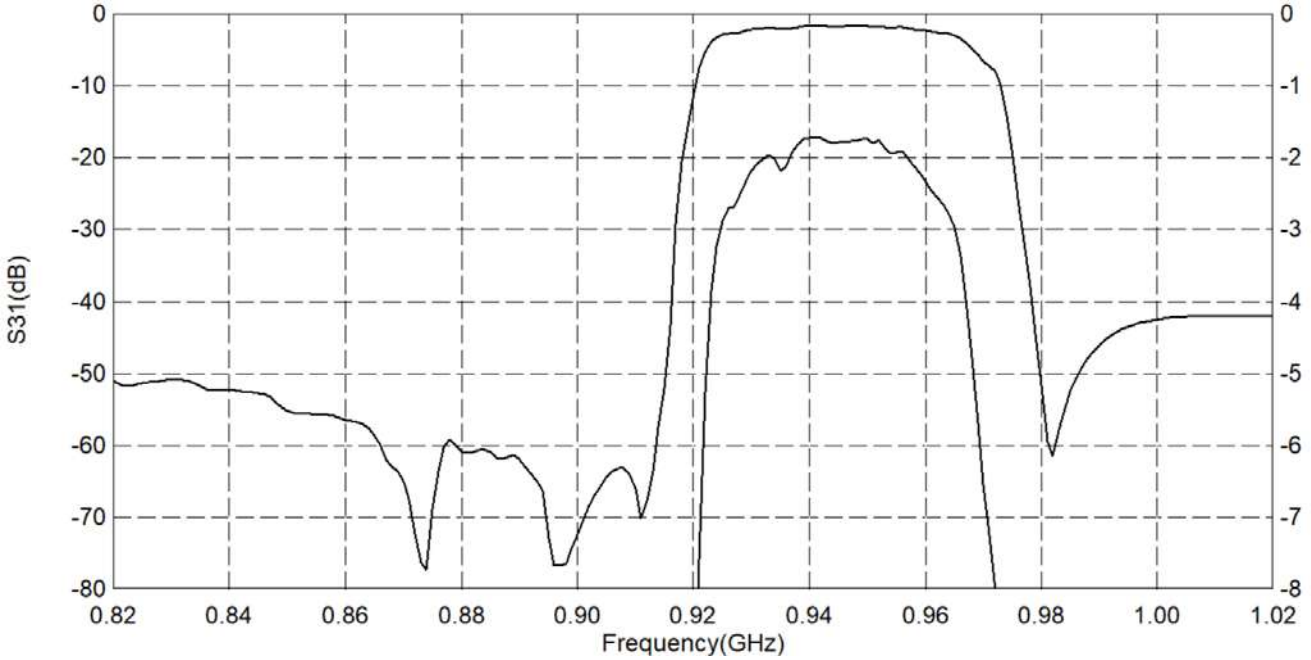


Figure 4 Electrical Characteristics: Ant to Rx.

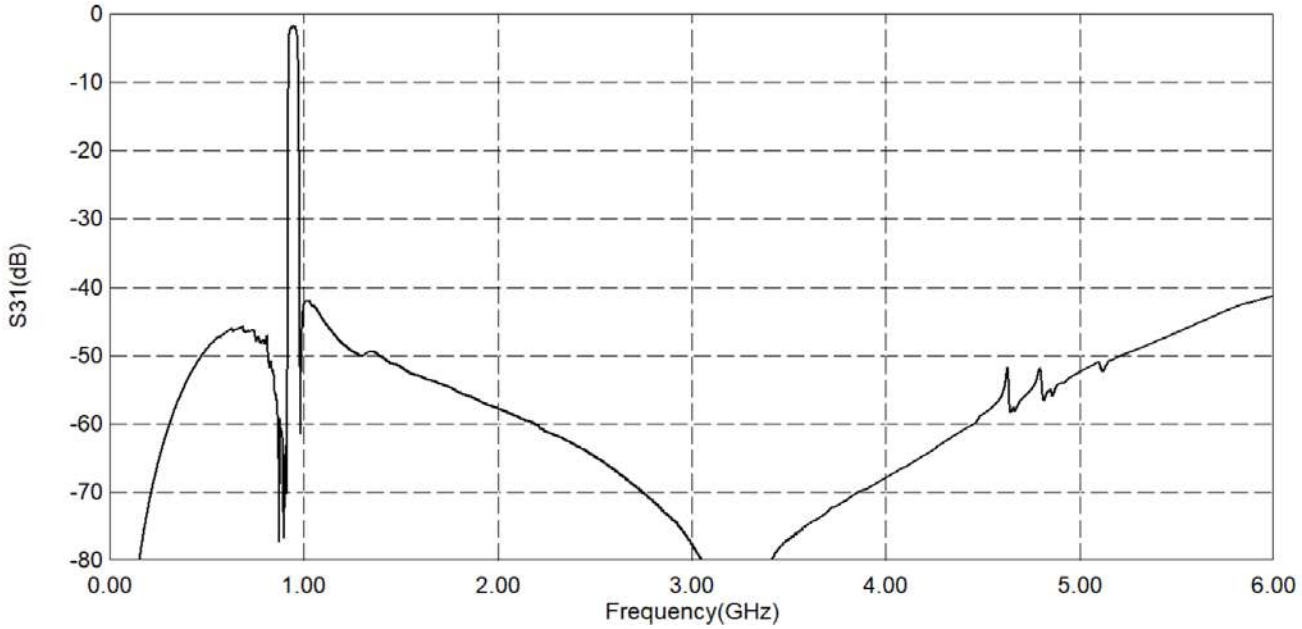


Figure 5 Electrical Characteristics: Tx to Rx.

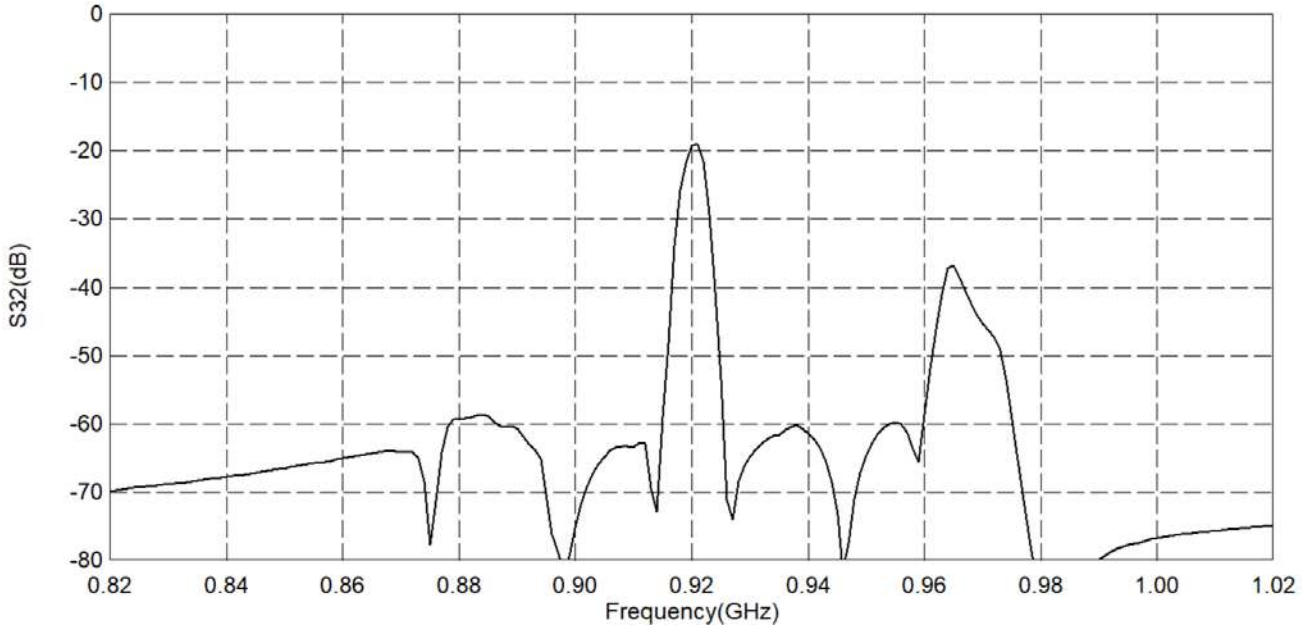


Figure 6 Electrical Characteristics: Tx to Rx.

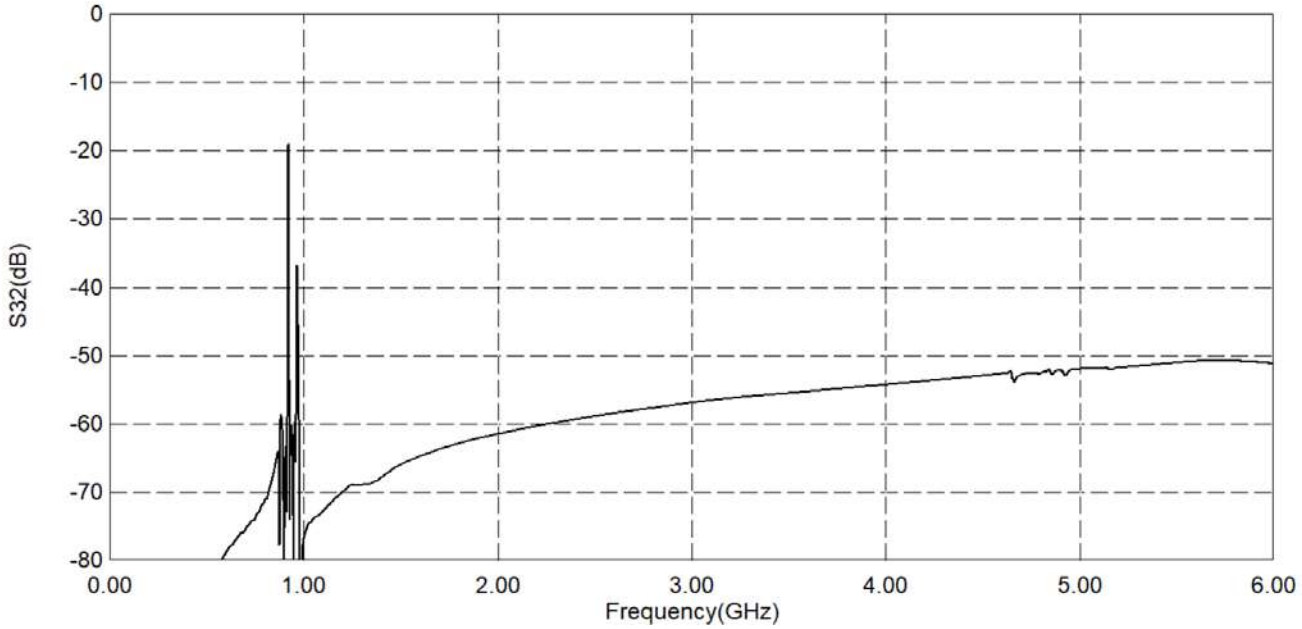
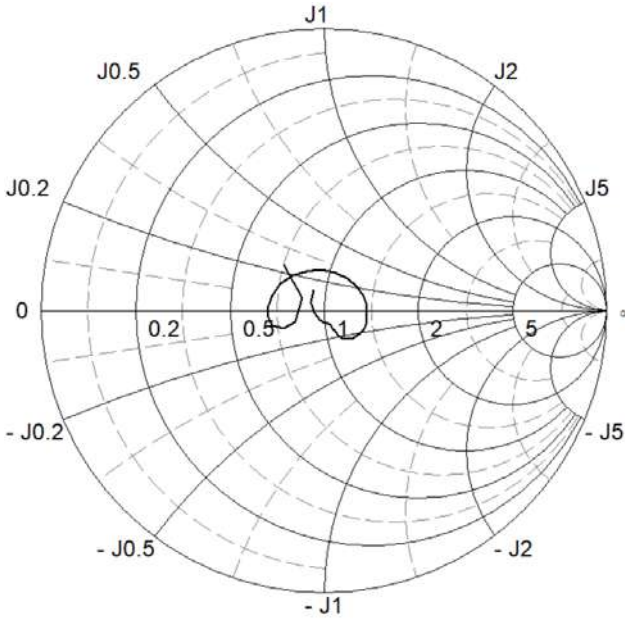
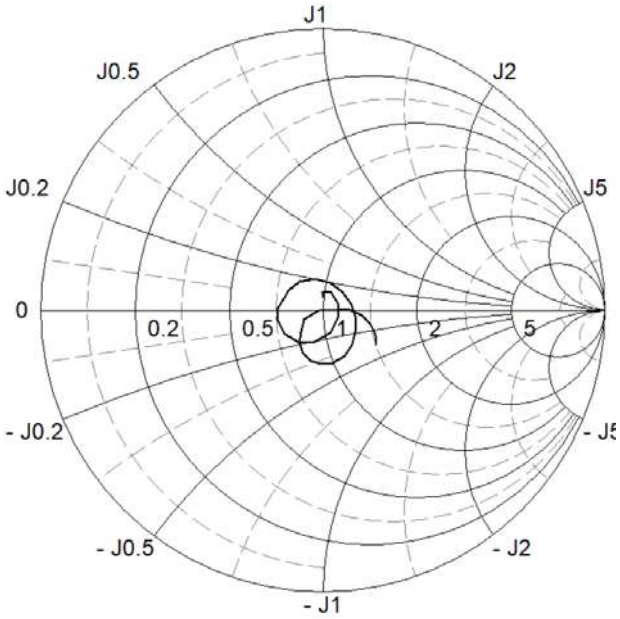


Figure 7 Smith Chart.

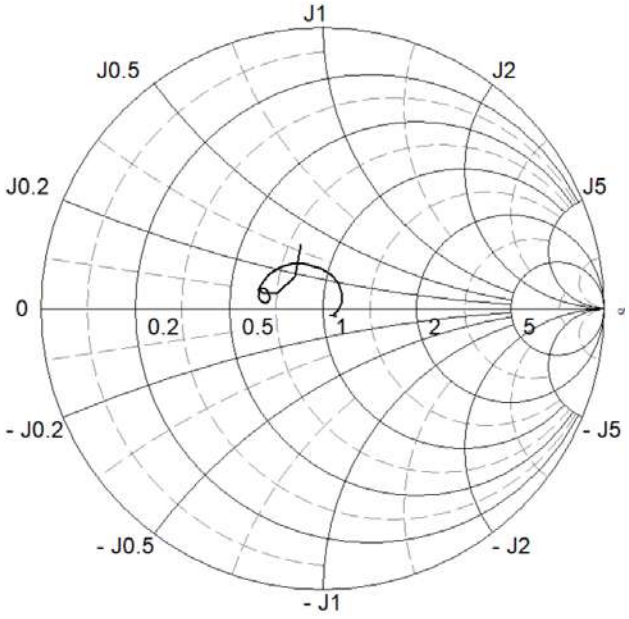
Tx Input Impedance
(880MHz to 915MHz)



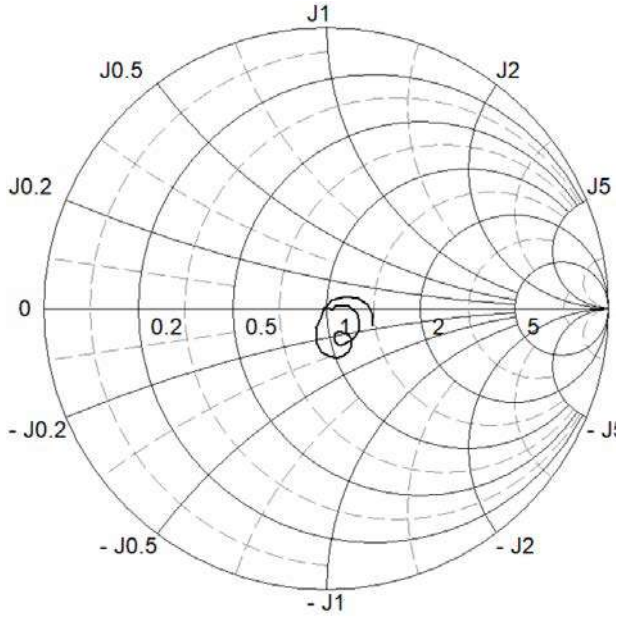
Rx Input Impedance
(925MHz to 960MHz)



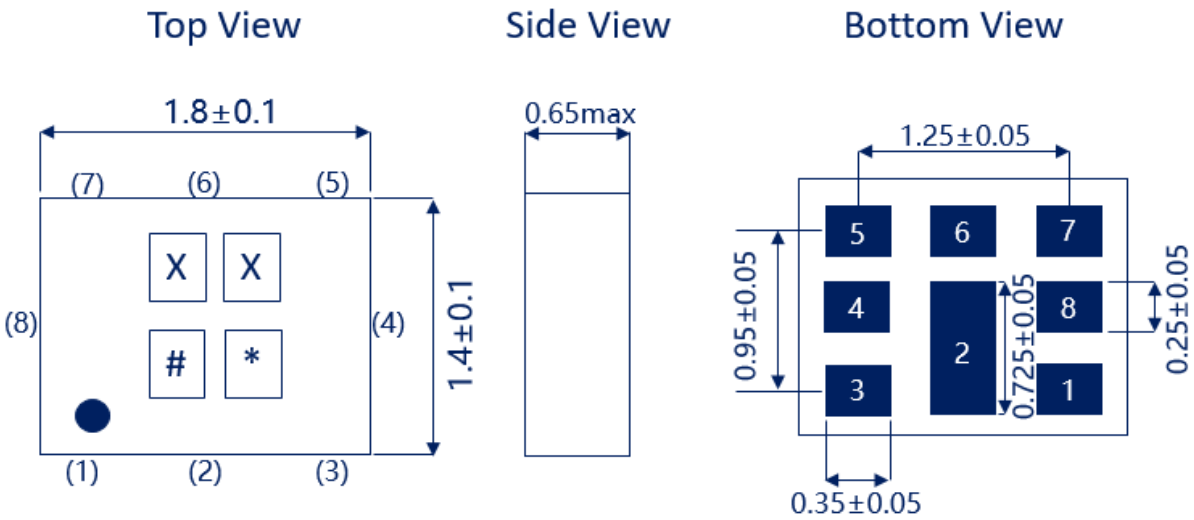
Ant Input Impedance (Tx Band)



Ant Input Impedance (Rx Band)



Package & Dimensions[1]

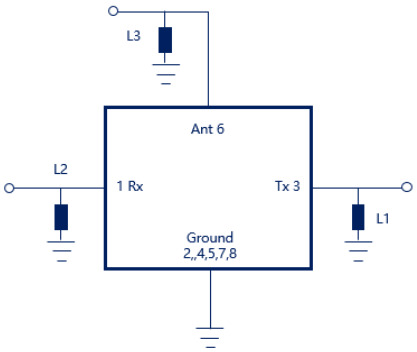


Marking Description	
XX	Band Code
#	Month Code
*	Date Code

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 : 13.0 nH (Ideal inductor)
Ant	L2 : 23.0 nH (Ideal inductor)
Ant	L3 : 10.0 nH (Ideal inductor)

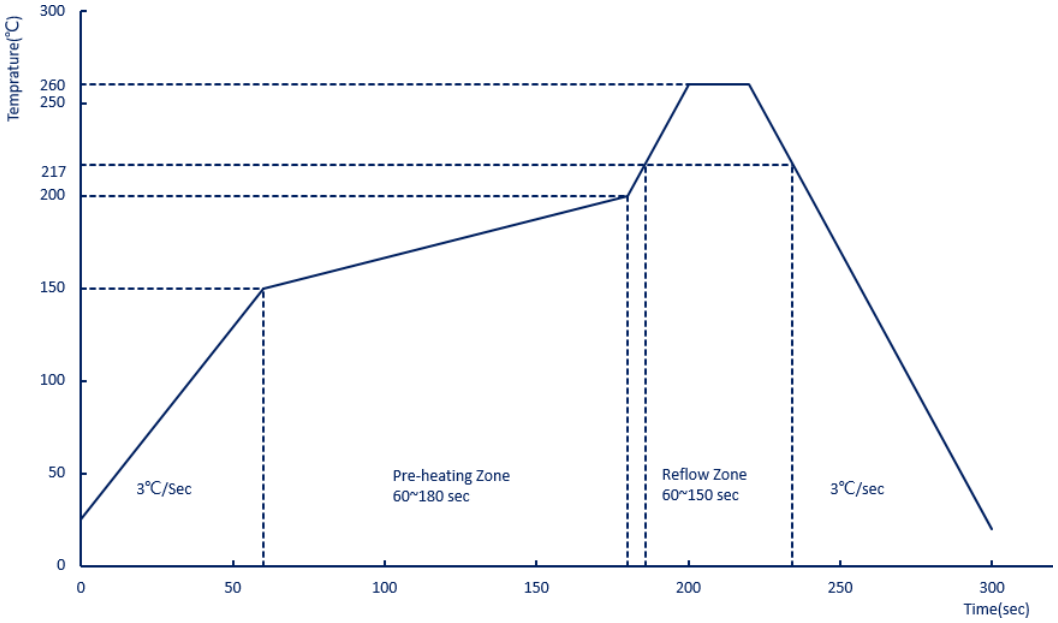
1. Matching component values shown are recommended based on the Spectron evaluation board. Value adjustment may be required on the end-user's circuit boards for the selected component manufacturer andPCB material.

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 SPT897MBDC1 (Pin 3).
5. The DC resistance from Pin 1 and 3 (Tx/Rx) and Pin 6 (Ant) to ground (2,4,5,7,8) of this device is typically hundredsof kΩ to MΩ.

Recommended SMT Solder Profile



Ordering Information

Part Number	Number of Devices	Container
SPT897MBDC1	4000pcs	Tape and Reel

Important Notice

Spectron Technologies, Spectron Microsystems, and the Spectron logo are among the trademarks of Spectron and/or its affiliates in the People's Republic of China, certain other countries, and/or the EU.

The term "Spectron" refers to Specton (Shenzhen) Technologies Co. Ltd and its subsidiaries.

Information furnished by Spectron is believed to be accurate and reliable. Spectron reserves the right to make changes without further notice to any products or data herein to improve reliability, function, or design. However, Spectron does not assume any liability arising from the application or use of this information nor the application or use of any product or circuit described herein. Neither does Spectron convey any license under its patent rights nor the rights of others.