TMX IT02

SAW Filter datasheet

3.0 x 3.0 x 1.3 mm, SMD

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Issue: Rev 2, 10 January 2023

TMX IT02

SAW Bandpass Filters | Wireless Communications

Features

Features

- 915 MHz center frequency
- Ceramic package for Surface Mounted Technology
- Low Loss: 2.3 dB typical value within PassBand Width 902 to 928 MHz

Applications

- Remote control - RF
- Wireless applications:
  - Home appliances
  - Security systems

3.0 x 3.0 x 1.3 mm

Maximum Ratings

Parameter	Min.	Typ.	Max.	Unit
Storage temperature range (T_{stg})	-45		125	°C
Operating temperature range (T_A)	-40		85	°C
DC voltage (V_{DC})			12	V
Maximum pulse input power			20	dBm

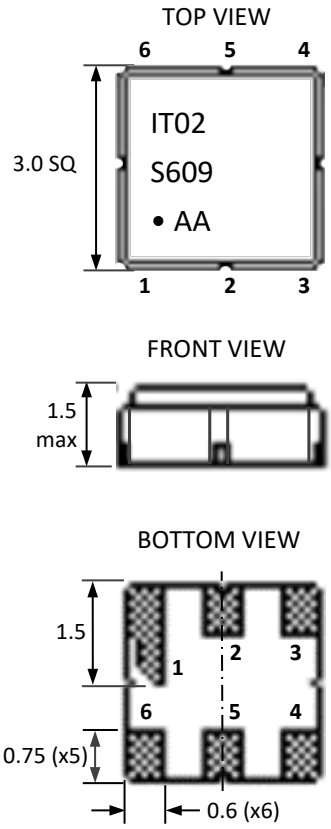
Frequency and Electrical Characteristics (Reference temperature @ 25°C)

Parameter	Min.	Typ.[1]	Max.	Unit
Center frequency (f_C)		915.0		MHz
Bandwidth (BW, passband width)	26.00			MHz
Insertion loss (IL, 433.13 – 434.71 MHz)		2.3	3.2	dB
Amplitude ripple (433.13 – 434.71 MHz)		0.5	1.2	dB
Relative attenuation (relative to IL)				
From DC to 800.00 MHz	52	60		dB
From 800.00 to 845.00 MHz	45	55		
From 845.00 to 879.00 MHz	45	50		
From 950.00 to 990.00 MHz	25	32		
From 990.00 to 1200.00 MHz	50	60		
From 1500.00 to 2000.00 MHz	32	40		
VSWR (902 – 928 MHz)		1.4		
Input impedance[2] (Single ended)		50		Ω
Output impedance[2] (Single ended)		100		Ω

[1] Typical values are nominal performances at room temperature

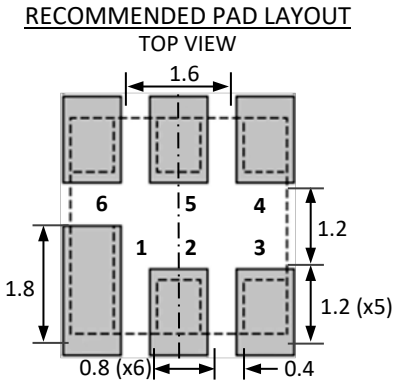
[2] No external matching is required

Model Outline, Pin Connection and Marking



Marking		Note
Line 1	IT02	RakonXpress designation
Line 2	S609	S = Production code 6 = The last digit of year 2016 09 = Week 09 of the year
Line 3	•AA	• = Identify black dot AA = Internal Code (Wafer Batch)

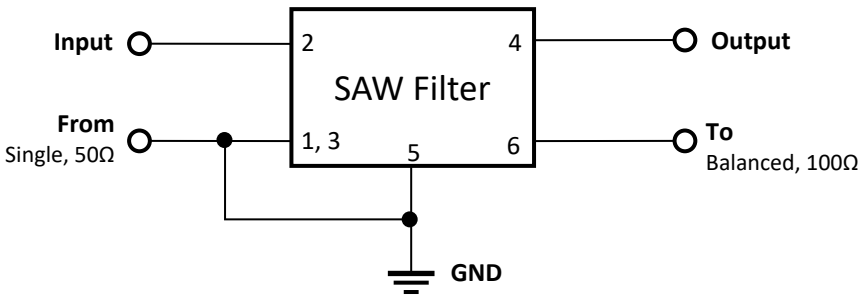
Pin	Connections
2	Input
4, 6	Output
1, 3	Case Ground
1, 3, 5	To be Grounded



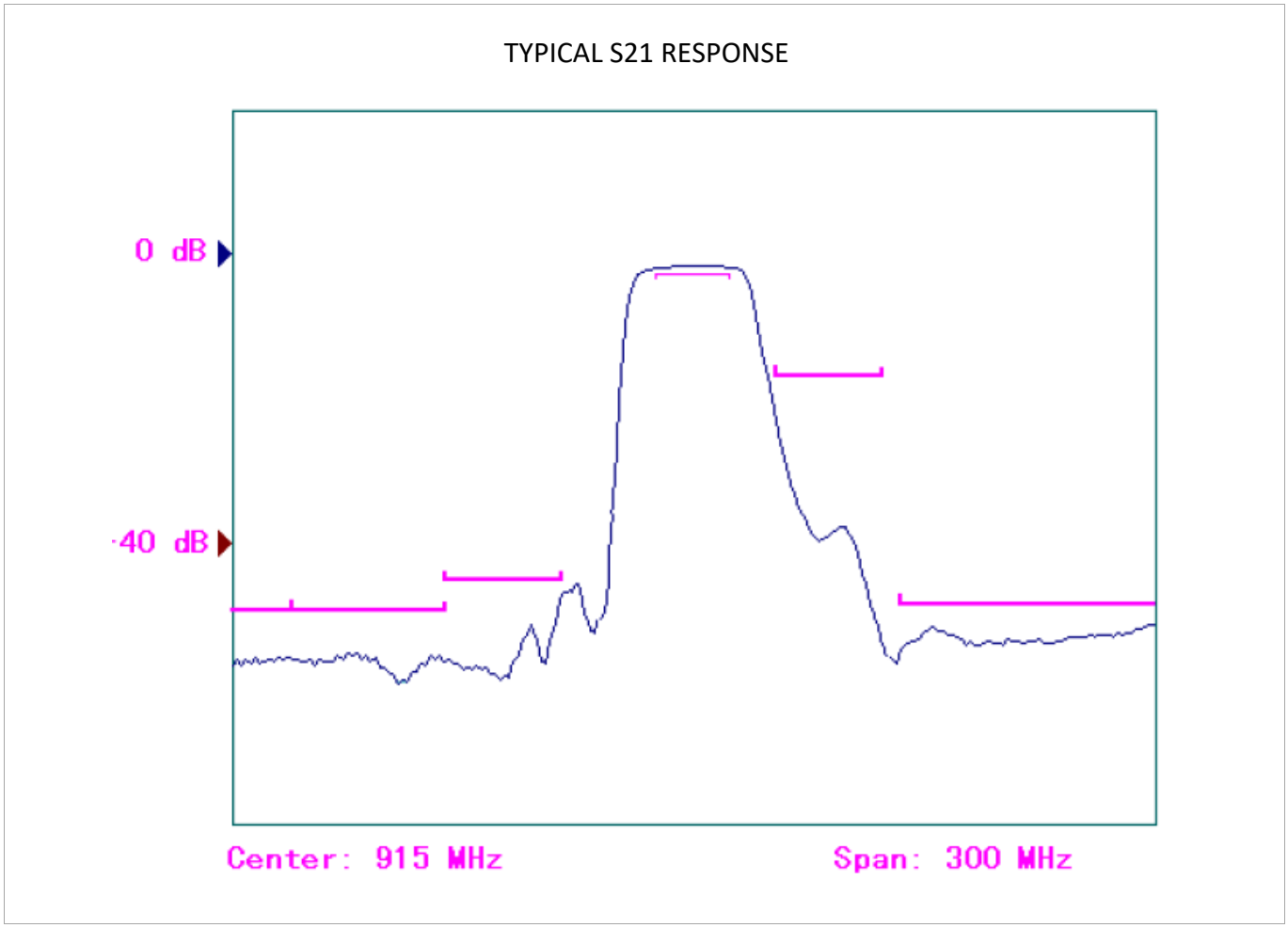
Unit: mm

Test Circuit

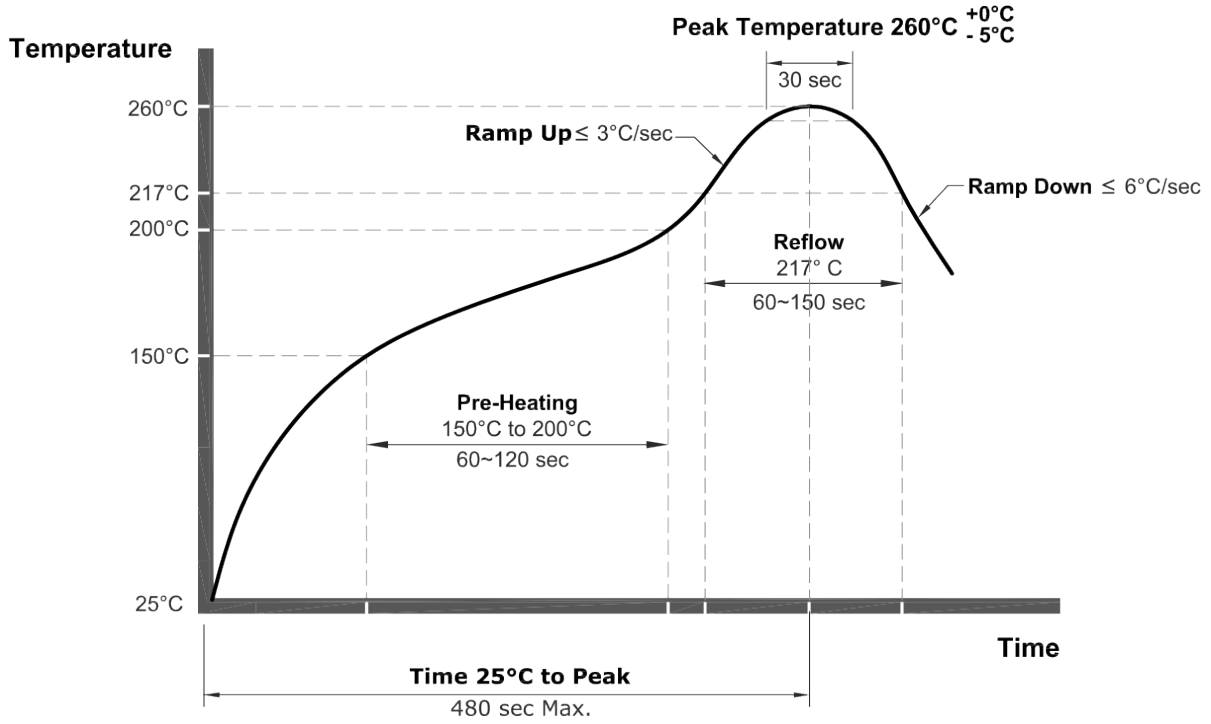
50 Ω / 100 Ω Configuration



Frequency Characteristics



Recommended Reflow Soldering Profile

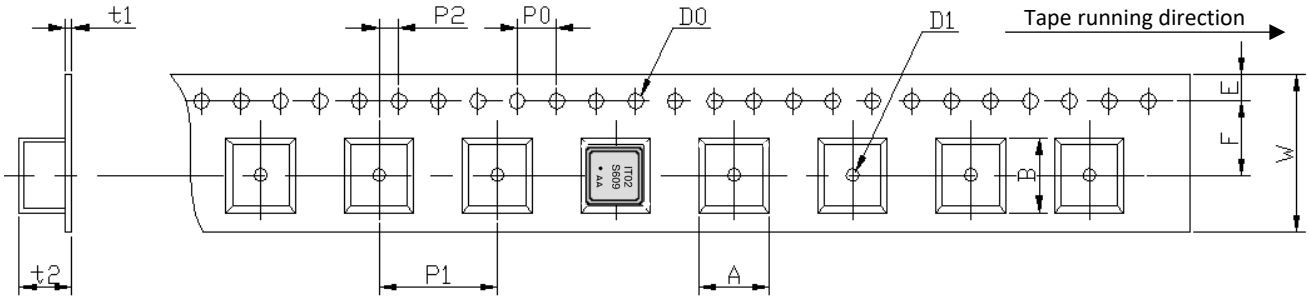


NOTE:

- The components shall remain within the electrical specifications after it soldered on the 1mm thickness PCB board and dipped in the solder at 260 ± 5°C during 10 ± 1 seconds.
- The components shall remain within the electrical specifications after it soldered by electric iron, solder at 350 ± 10 °C during 3~4 seconds. Recovery time: 2 ± 0.5 hour.
- Ultrasonic cleaning may cause deterioration and destruction of the component. Please avoid ultrasonic cleaning.
- Only leads of components may be soldered. Please avoid soldering another part of the component.

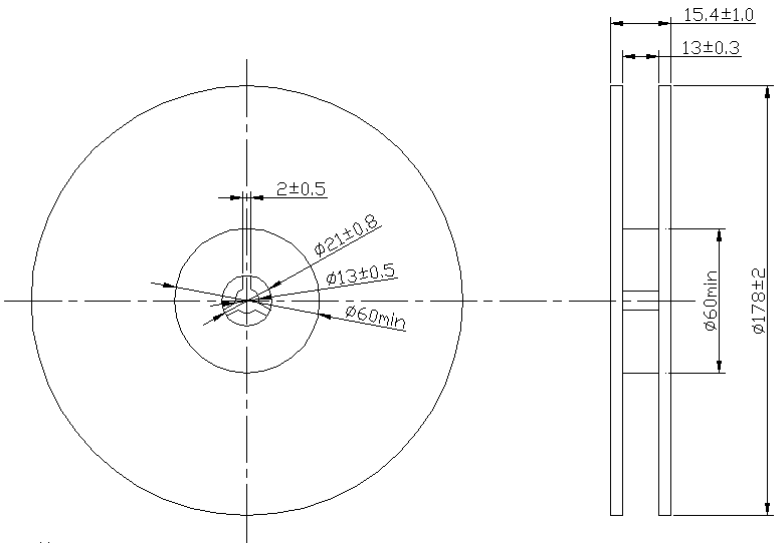
Tape and Reel Specifications

TAPE DETAILS:



Parameter	Code	Dimension	Tolerance
Height of component hole	A	3.3 max	
Width of component hole	B	3.3 max	
Diameter of sprocket hole	D_0	Φ 1.5	± 0.1
Diameter of feed hole	D_1	Φ 1.5	± 0.25
Pitch of sprocket hole	P_0	4.0	± 0.2
Length from hole center to component center	P_1	4.0	± 0.1
Length from Pocket hole center to sprocket hole center	P_2	2.0	± 0.2
Width of carrier tape	W	12.0	± 0.3
Width of adhesive tape	F	5.5	± 0.3
Gap of hold down tape and carrier tape	E	1.75	± 0.1
Thickness of Ebossed tape sheet	t1	0.31 max	
Thickness of Ebossed tape	t2	1.7 max	

REEL DETAILS:



NOTE:
- Unit: mm
- Standard Packing Quantity (SPQ) is 3000 pieces/ reel

Reliability Test

Parameter	Test condition / Description
Thermal Shock	The components shall remain within the electrical specifications after being kept at the condition of heat cycle conditions: TA=-40°C ±3°C, TB=85°C ±2°C, t1=t2=30min, switch time ≤3min & cycle time: 100 times, recovery time: 2h±0.5h.
Temperature Storage	High Temperature Storage: The components shall remain within the electrical specifications after being kept at the 85°C ±2°C for 500 hours, recovery time: 2h ±0.5h. Low Temperature Storage: The components shall remain within the electrical specifications after being kept at the -40°C ±3°C for 500 hours, recovery time: 2h ±0.5h.
Humidity test	The components shall remain within the electrical specifications after being kept at the condition of ambient temperature 60°C ±2°C, and 90~95% RH for 500 hours.
Drop test	The components shall remain within the electrical specifications after random free drops 10 times from height of 1.0 meter onto concrete floor, and the specimens shall meet the electrical specifications.
Vibration Fatigue	The components shall remain within the electrical specifications after loaded vibration at 10~55Hz, amplitude 1.5mm, X, Y, Z, direction, during 2 hours.
Mechanical Shock	The components shall remain within the electrical specifications after 1000 shocks, acceleration 392 m/s^2 , duration 6ms.
Note	As a result of the particularity of inner structure of SAW products, the components can easily be breakdown by electrostatic shock; so it's mandatory to pay attention to ESD protect during the tests.