TMX CT05

SAW Filter datasheet

3.0 x 3.0 x 1.3 mm, SMD

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Issue: Rev 4, 9 Jnanuary 2023

TMX CT05

SAW Bandpass Filters | Wireless Communications

Features

Features

- 866.5 MHz center frequency
- Ceramic package for Surface Mounted Technology
- Low-loss RF SAW Filter
- Wide Passband Width ± 3.5 MHz
- Low amplitude ripple
- 50 Ω Single Configuration. No matching network required

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		125	°C
ESD Voltage (HB)			150	V
DC permissive voltage			12	V
Maximum RF Power			15	dBm

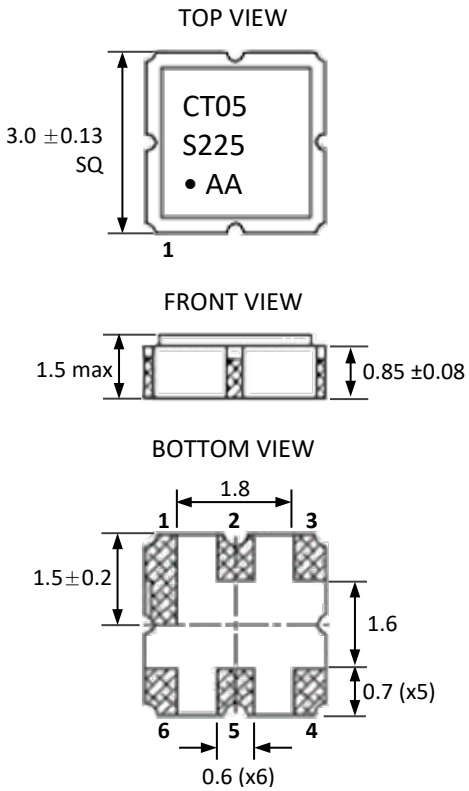
Frequency and Electrical Characteristics (Reference temperature @ 25°C)

Parameter	Min.	Typ.[1]	Max.	Unit
Center frequency (fc)		866.5		MHz
Bandwidth (BW, passband width)	7.00			MHz
Insertion Loss (IL, 863.0 – 870.0 MHz)		2.4	3.2	dB
Amplitude ripple (863.0 – 870.0 MHz)		0.3	1.0	dB
Absolute Attenuation				
From DC to 800.0 MHz	52	57		
From 800.0 to 830.0 MHz	45	50		
From 830.0 to 850.0 MHz	30	35		dB
From 885.0 to 905.0 MHz	25	30		
From 905.0 to 1500 MHz	47	54		
From 1500 to 2000 MHz	40	45		
VSWR (863.0 – 870.0 MHz)		1.5	2.0	
Source impedance[2] (Single ended)		50		Ω
Load impedance[2] (Single ended)		50		Ω

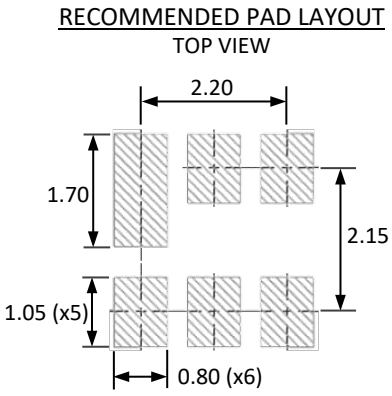
[1] Typical values are nominal performances at room temperature

[2] No external matching is required

Model Outline, Pin Connection and Marking



Marking		Note
Line 1	CT05	RakonXpress designation
Line 2	S225	S = Production Code 2 = Year 2022 25 = Week 25
Line 3	• AA	• = Identify black dot AA = Internal code (Wafer Batch)

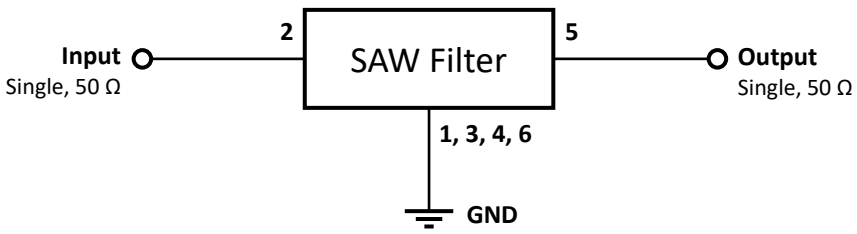


Pin	Connections
2	Input
5	Output
1, 3, 4, 6	Ground

Unit: mm

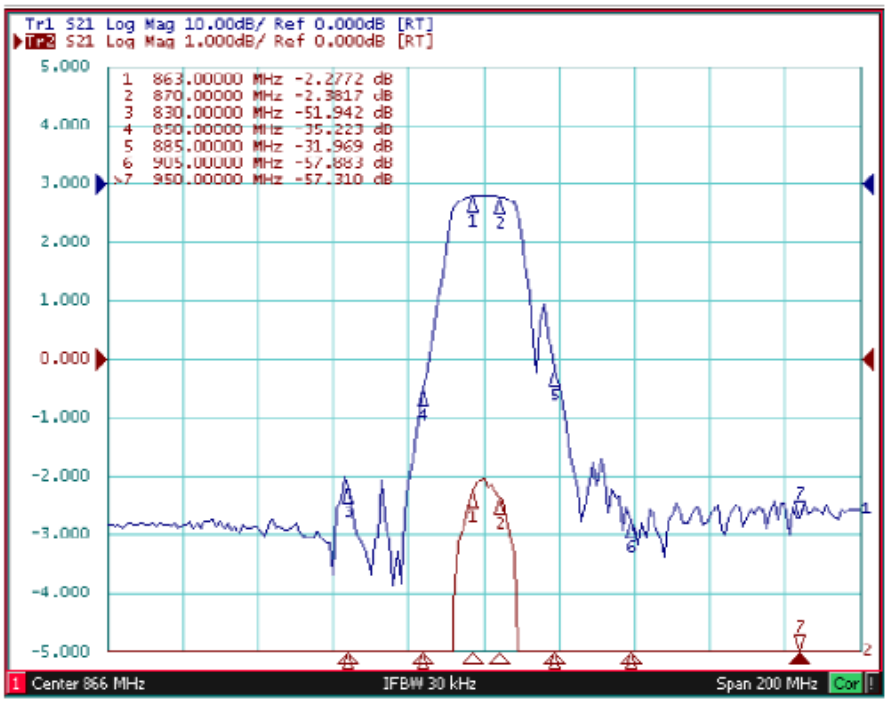
Test Circuit

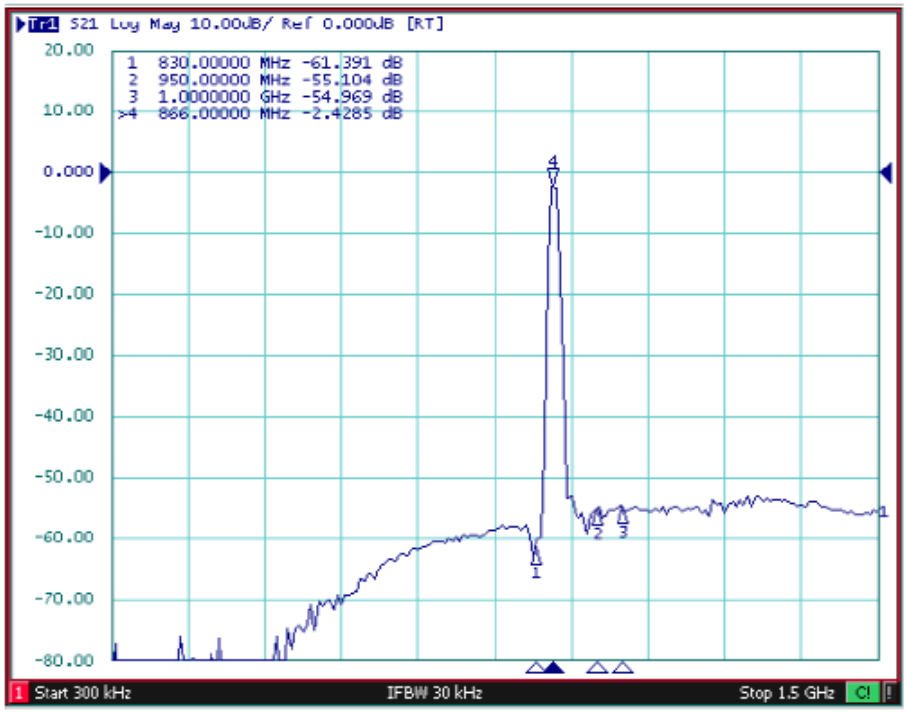
50 Ω / 50 Ω Configuration



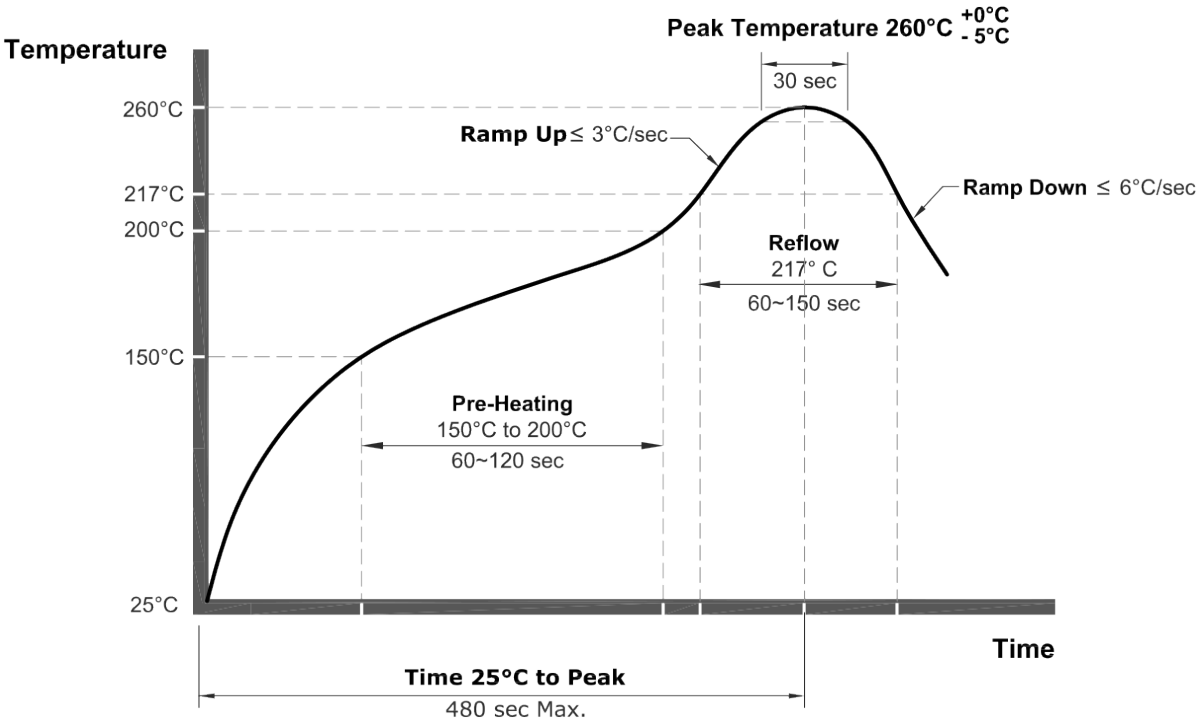
Frequency Characteristics

TYPICAL S21 RESPONSE





Recommended Reflow Soldering Profile

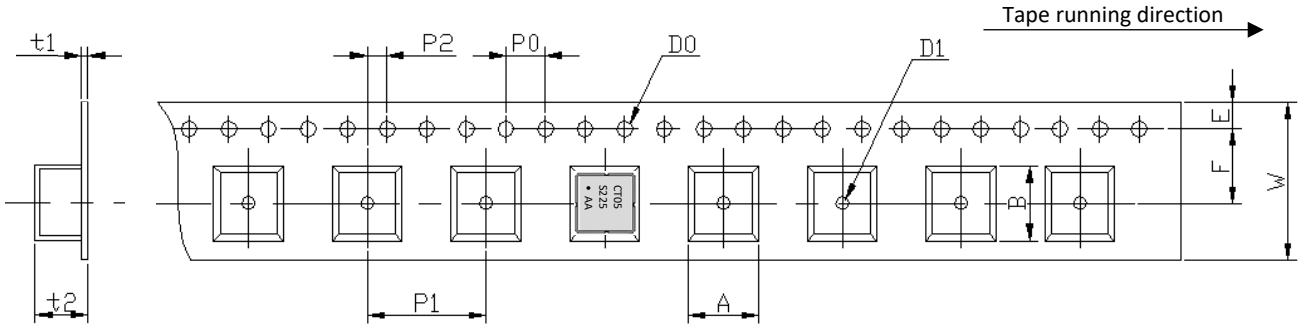


NOTE:

- 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.

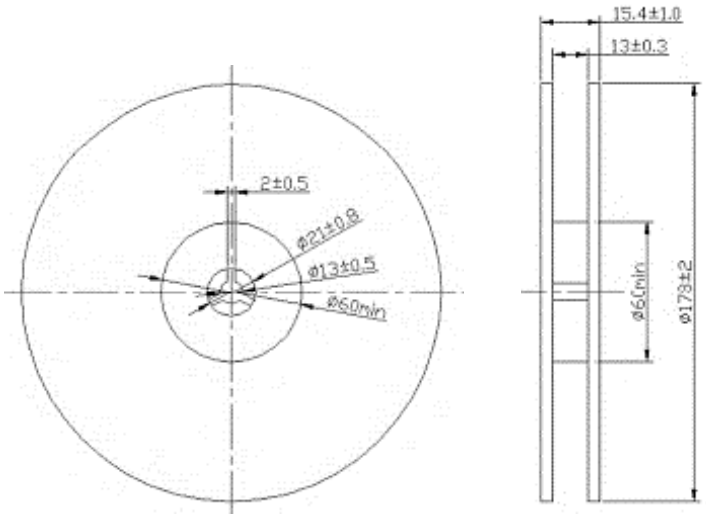
Tape and Reel Specifications

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	± 0.1
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.