TMX DT03

SAW Filter datasheet

3.0 x 3.0 mm, SMD

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Issue: Rev 5, 26 June 2023

Specifications are subject to change without notice

TMX DT03

SAW Bandpass Filters | Wireless Communications

Features

Features

- 433.92 MHz center frequency
- Ceramic package for Surface Mounted Technology
- RF SAW Filter
- Bandwidth: 1.6 MHz
- 50 Ω Single Configuration

Applications

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

3.0 x 3.0 mm

Maximum Ratings

Parameter	Min.	Typ.	Max.	Unit
Storage temperature range (T_{stg})	-40		85	°C
Operating temperature range (T_A)	-40		85	°C
DC voltage (V_{DC})			3	V
RF Power Dissipation			16	dBm

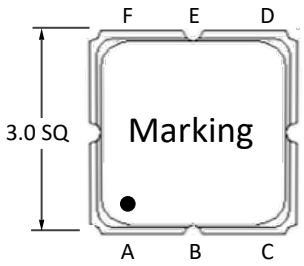
Frequency and Electrical Characteristics (Reference temperature @ 25°C)

Parameter	Min.	Typ.[1]	Max.	Unit
Source impedance[2] (Single ended)		50		Ω
Load impedance[2] (Single ended)		50		Ω
Center frequency (fc)		433.92		MHz
Absolute Attenuation (reference from 0 dB)				dB
From 10.000 to 380.00 MHz		58	61	
From 380.00 to 423.42 MHz		46	50	
From 443.42 to 453.42 MHz		25	30	
From 453.42 to 460.00 MHz		35	40	
From 460.00 to 700.00 MHz		50	54	
From 700.00 to 1000.0 MHz		42	46	
Insertion Loss (IL, 433.12 – 434.72 MHz)		2.2	2.9	dB
Amplitude ripple (433.12 – 434.72 MHz)		0.4	1.0	dB
VSWR (S11 S22)		1.6	2.0	

[1] Typical values are nominal performances at room temperature
[2] Not external matching circuit is required

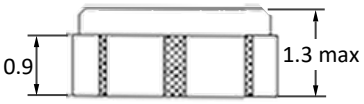
Model Outline, Pin Connection and Marking

TOP VIEW

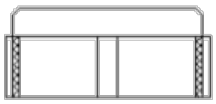


Marking		Note
Line 1	DT03	Reference to RakonXpress part number with only the last 4 digits
Line 2	BYWWZZ	B = Partner identifier Y = Last digit of the year WW = Number of week in the year ZZ = Lot number in the week (from AA to ZZ)
Line 3	•	• = Identify black dot

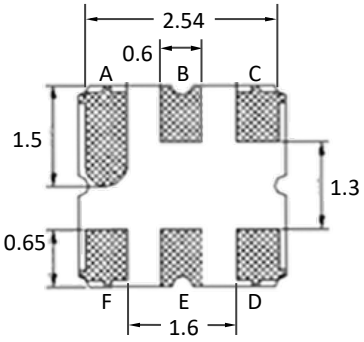
FRONT VIEW



SIDE VIEW

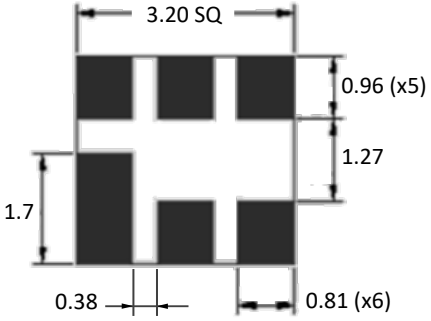


BOTTOM VIEW



RECOMMENDED PAD LAYOUT

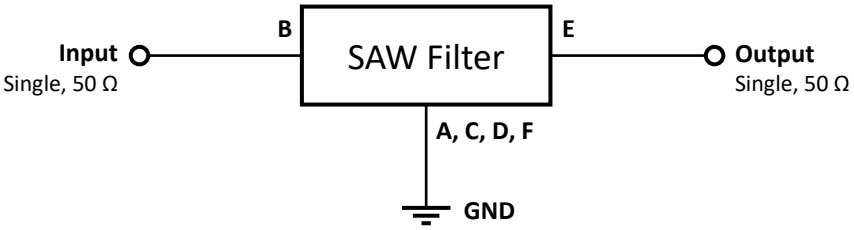
TOP VIEW



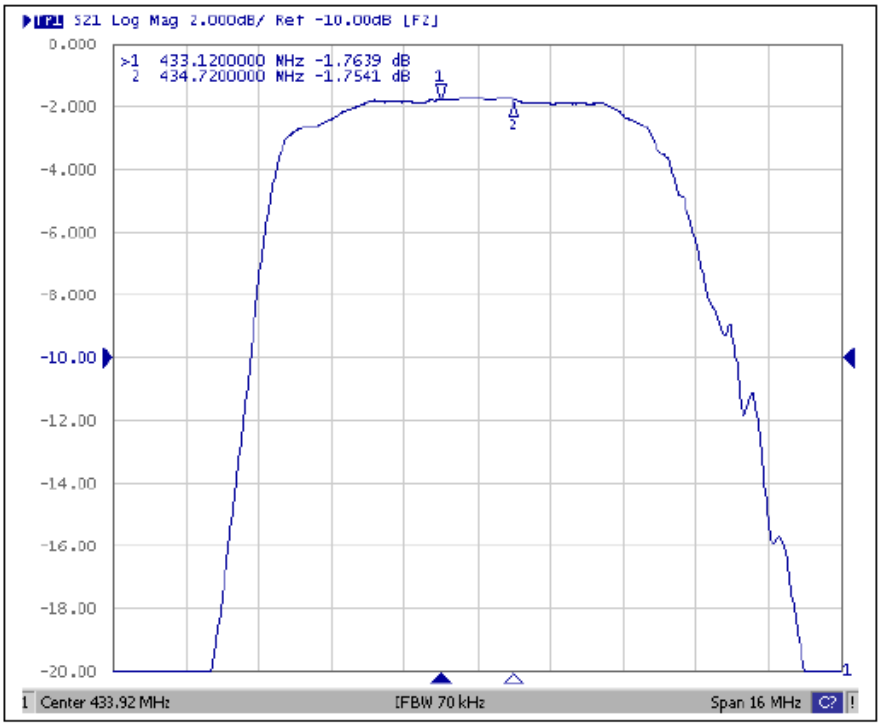
Pin	Connections
B	Input
E	Output
A, C, D, F	Case Ground

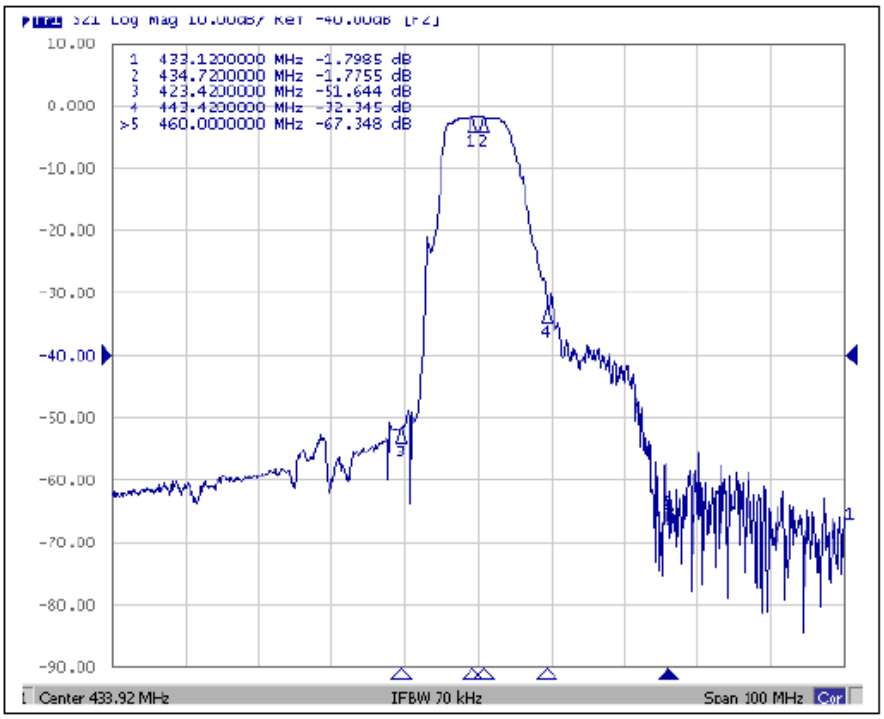
Test Circuit

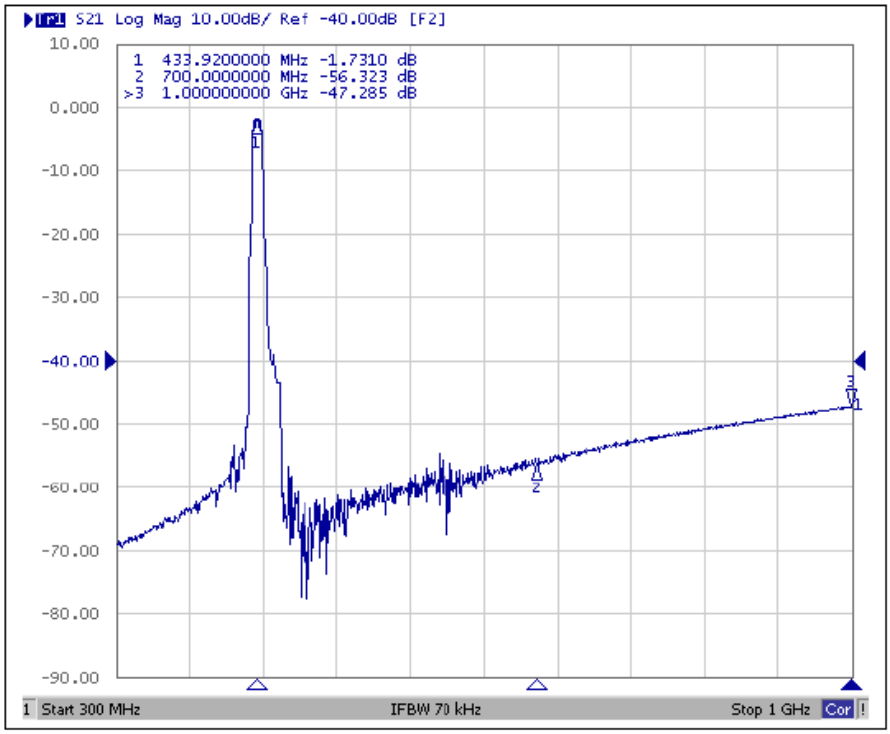
50 Ω / 50 Ω Configuration

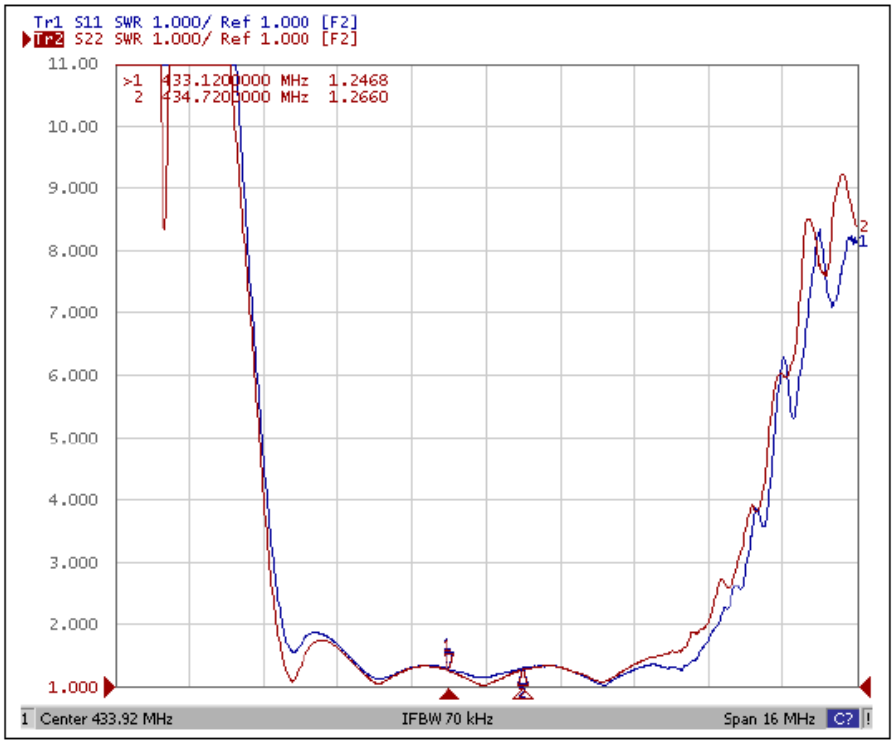


Frequency Characteristics

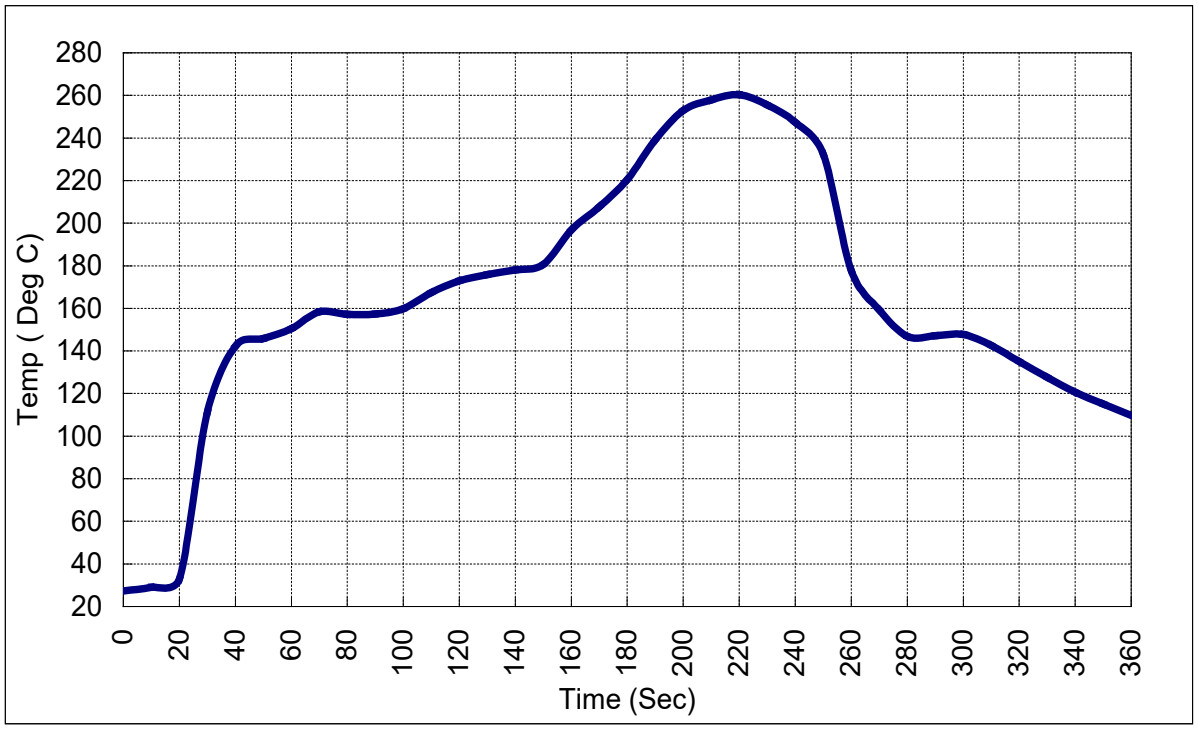








Recommended reflow soldering profile

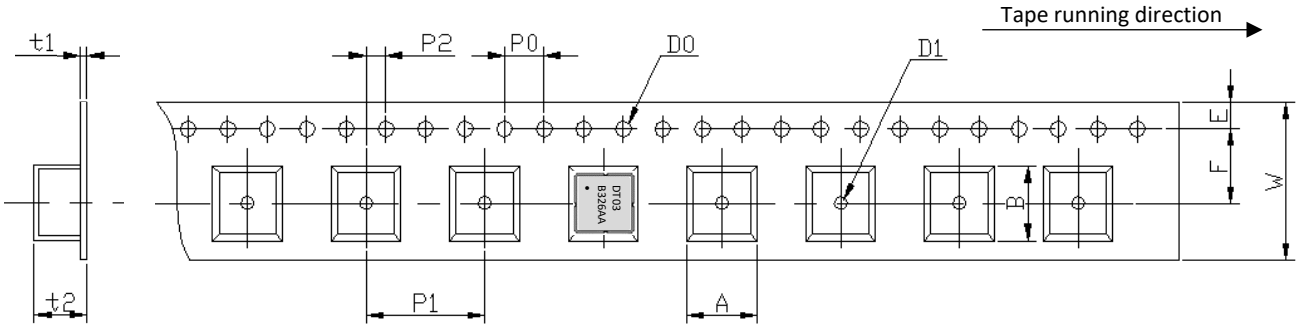


NOTE:

- 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 ±0.5h.
- Ultrasonic cleaning may cause deterioration and destruction of the component. Please avoid ultrasonic cleaning.
- Only leads of component may be soldered. Please avoid soldering another part of component.

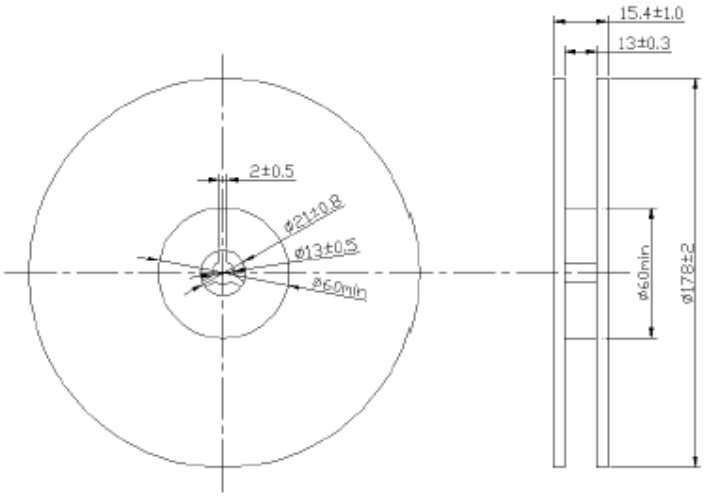
Tape and reel specifications

TAPE DETAILS:



Parameter	Code	Dimension	Tolerance
Height of component hole	A	3.35 max	
Width of component hole	B	3.35 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	8.0	± 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/s2 , 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.