

TMX IT04

SAW Filter datasheet

1.4 x 1.1 mm, SMD

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SAW Bandpass Filters | GNSS Receiver



Features

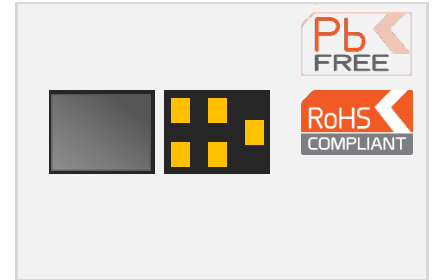
Features

- 1580 MHz center frequency
- Miniature ceramic package (1.4 x 1.1) for Surface Mounted Technology
- Low Insertion Loss: 1.3 dB typical value within PassBand Width 1574.42 to 1576.42 MHz
- Narrow and sharp Passband characteristics
- No matching network required for operation at 50 Ω

Applications

- GNSS Receiver

1.1 x 1.4 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 (between any terminals)			10	V
RF Power (in Band Width)			13	dBm

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

Parameter	Min.	Typ. ¹	Max.	Unit
Center frequency (fc)		1580		MHz
Bandwidth (BW, passband width)	2.00			MHz
Insertion Loss (IL)	From 1559.09 to 1563.09 MHz	1.8	2.1	dB
	From 1574.42 to 1576.42 MHz	1.3	1.6	
	From 1597.55 to 1605.89 MHz	1.8	2.1	
Passband ripple	From 1559.09 to 1563.09 MHz	0.2	0.5	dB
	From 1574.42 to 1576.42 MHz	0.2	0.4	
	From 1597.55 to 1605.89 MHz	0.3	0.6	
Absolute attenuation	From D.C to 925.00 MHz	45	50	dB
	From 925.00 to 960.00 MHz	43	50	
	From 1427.00 to 1453.00 MHz	41	47	
	From 1453.00 to 1470.00 MHz	40	45	
	From 1470.00 to 1530.00 MHz	30	35	
	From 1530.00 to 1541.00 MHz	7	13	
	From 1626.00 to 1635.00 MHz	10	17	
	From 1635.00 to 1700.00 MHz	33	37	
	From 1710.00 to 1785.00 MHz	45	50	
	From 1850.00 to 1910.00 MHz	43	48	
From 1920.00 to 1980.00 MHz	42	48		

¹ Typical values are nominal performances at room temperature

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	From 2110.00 to 2170.00 MHz	40	45		
	From 2300.00 to 2400.00 MHz	40	44		
	From 2400.00 to 2500.00 MHz	39	43		
	From 2500.00 to 2570.00 MHz	38	42		
	From 2570.00 to 3000.00 MHz	33	39		
VSWR	From 1559.09 to 1563.09 MHz		1.6		1.9
	From 1574.42 to 1576.42 MHz		1.2		1.6
	From 1597.55 to 1605.89 MHz		1.3		1.8
Group delay ripple	From 1559.09 to 1563.09 MHz		2		7
	From 1574.42 to 1576.42 MHz		2		7
	From 1597.55 to 1605.89 MHz		2		8
Input / Output Impedance (Nominal)			50		Ω

Model Outline, Pin Connection and Marking

TOP VIEW

FRONT VIEW

BOTTOM VIEW

Marking	Note	
Line 1	I4	RakonXpress designation (TMX IT04)
Line 2	DC	DC = Date code (see the table below)

Pin	Connections
1	Input
4	Output
2, 3, 5	To be grounded

Unit: mm

Date Code (1 st digit)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2015	a	b	c	d	e	f	g	h	i	j	k	M
2016	n	p	q	r	s	t	u	v	w	X	y	Z
2017	A	B	C	D	E	F	G	H	I	K	L	M
2018	N	P	Q	R	S	T	U	V	W	X	Y	Z

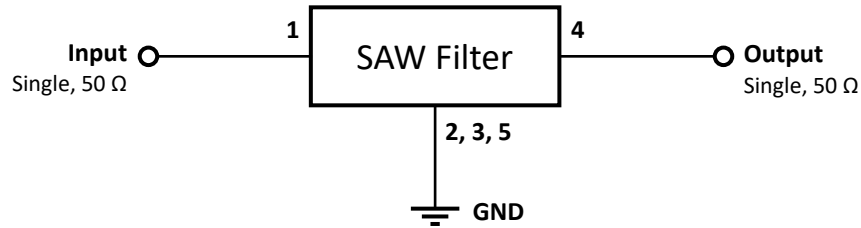
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Test Circuit

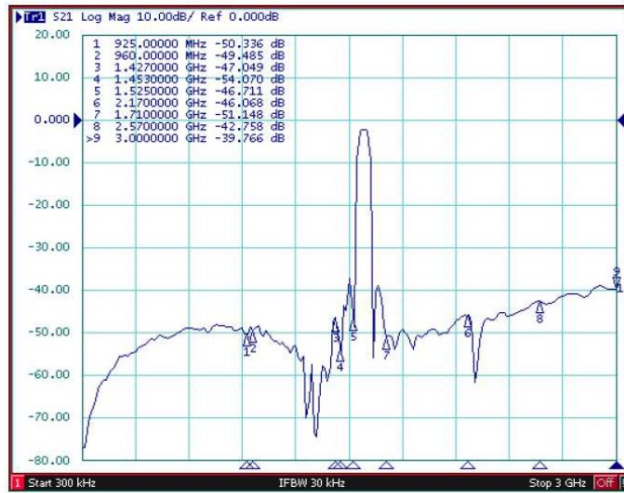
50 Ω / 50 Ω Configuration



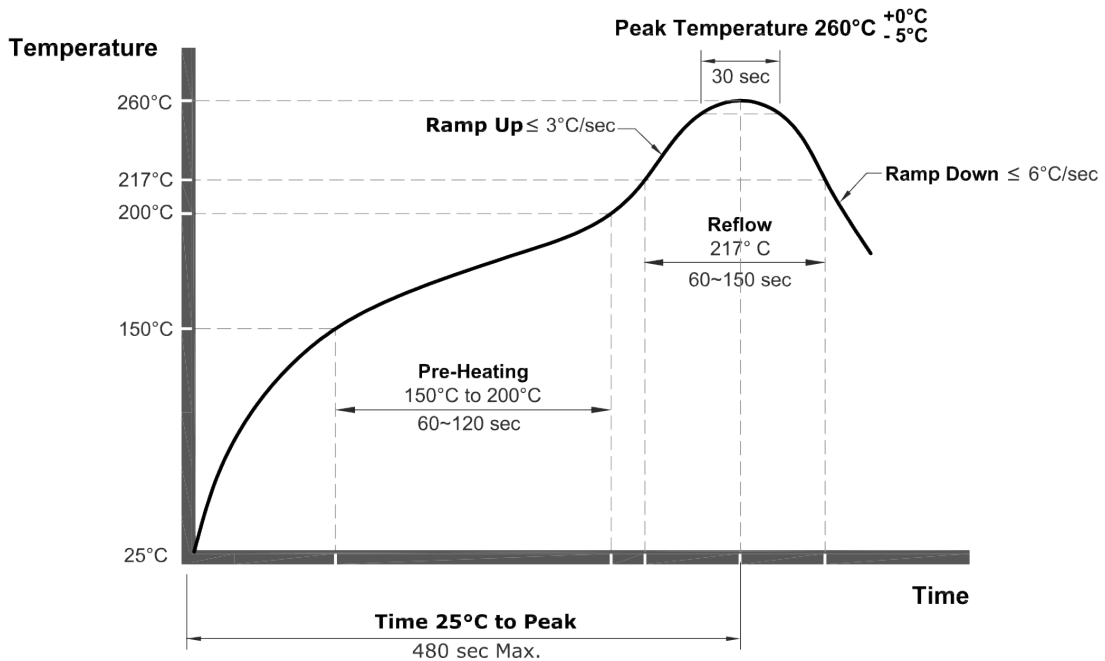
Frequency Characteristics

Parameters	Graphs
Typical S21 response	
S11 group delay	

Far side



Recommended Reflow Soldering Profile

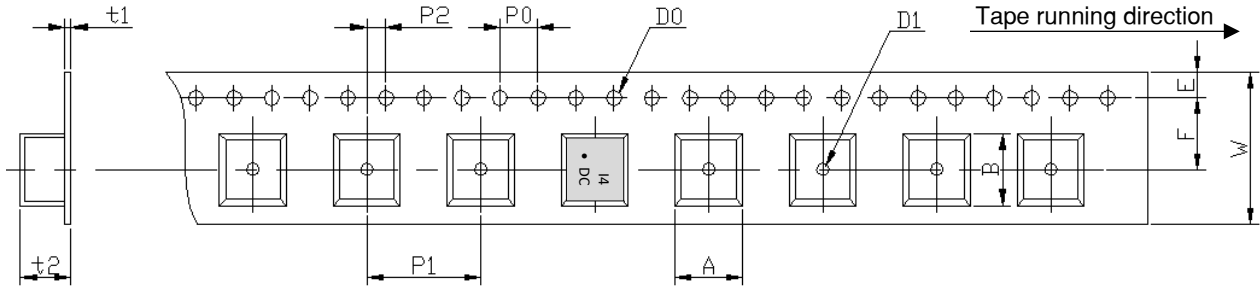


NOTE:

- SAW devices should not be used in any type of fluid such as water, oil, organic solvent, etc.
- Be certain not to apply voltage exceeding the rated voltage of components.
- Be careful of soldering temperature and duration of components when soldering.
- Do not place soldering iron on the body of components
- Be careful not to subject the terminals or leads of components to excessive force
- SAW devices are electrostatic sensitive. Please avoid static voltage during operation and storage.
- Ultrasonic cleaning shall be avoided. Ultrasonic vibration may cause destruction of components.

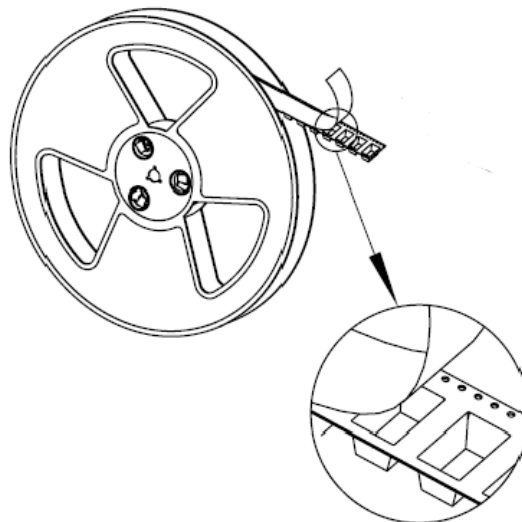
Tape and Reel Specifications

TAPE DETAILS:



Parameter	Code	Dimension	Tolerance
Height of component hole	A	1.4 max	
Width of component hole	B	1.7 max	
Diameter of sprocket hole	D ₀	Φ 1.5	± 0.1
Diameter of feed hole	D ₁	Φ 0.5	± 0.1
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	± 0.05
Width of carrier tape	W	8.0	± 0.1
Width of adhesive tape	F	3.5	± 0.5
Gap of hold down tape and carrier tape	E	1.75	± 0.1
Thickness of Embossed tape sheet	t ₁	0.25 max	
Thickness of Embossed tape	t ₂	1.0 max	

REEL DETAILS:



NOTE:

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

Reliability Test

Parameter	Test condition / Description	
Mechanical shock	(a) Drops: 3 times on concrete floor (b) Height: 1.0 m	
Vibration resistance	(a) Frequency of vibration: 10~55Hz (b) Amplitude: 1.5 mm	(c) Directions: X,Y and Z (d) Duration: 2 hours
Moisture resistance	(a) Condition: 40°C ± 2°C, 93+2 -3% RH (b) Duration: 96 hours	(c) Wait 4 hours before measurement
Climatic sequence	(a) +70°C for 16 hours (b) +55°C for 24 hours, 90~95% RH (c) -25°C for 2 hours	(d) +40°C for 24 hours, 90~95% RH (e) Wait 4 hours before measurement
High temperature exposure	(a) Temperature: 85°C (b) Duration: 250 hours	(c) Wait 4 hours before measurement
Temperature cycling	(a) +85°C for 30 minutes ↔ -40°C for 30 minutes repeated 120 times (b) Wait 4 hours before measurement	
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.	