

# SPT433M5050A

V1.0

### **Description:**

The Spectron SPT433M5050A is a SAW filter that work frequency ranges from 433 to 434.71MHz.It is designed for applications in remote controls, IOT equipments and Information& Communications filed.

The SPT433M5050A provides +15 dBm power handling, low insertion loss and high out of band rejection.

The design and manufacturing of the SPT433M5050A exploit Spectron's exclusive TSAWtechnology to deliver competitive performance against state of the art at a low cost.

The SPT433M5050A is compatible with highvolume, lead-free SMT soldering processes.

#### Features:

- Single-Ended Input and Output •
- Terminating Impedance: 50 Ω
- Environmental
  - **RoHS** Compliant

#### Specifications:

- Operation Temperature:-40°C to +85°C
- Compact miniature size •
  - 5.0 mm × 5.0 mm footprint
  - 1.5 mm max-height

#### **Applications:**

- **Remote controls**
- **IOT** equipments •
- Information& Communications Devices

# **Electrical Specifications**

 Table 1 Electrical Specifications.

Test Temperature: 25  $^\circ\!\mathrm{C}\,{\pm}\,2^\circ\!\mathrm{C}$ 

Item		Minimum	Typical	Maximum	Unit
Center Frequency	fc		433.92		MHz
Insertion Loss(min)	IL		1.8	2.0	dB
Insertion Loss 433.00– 434.71MHz	IL		2.0	2.5	dB
Amplitude Ripple (p-p) 433.00– 434.71MHz	Δα		0.5	1.0	dB
3dB bandwidth	BW3dB		7.0	7.5	MHz
Group Delay Ripple 433.00– 434.71MHz	GDR		20.0	50.0	ns
Absolute Attenuation	a				
DC - 380.00MHz		55.0	60.0		dB
380.00 - 413.50MHz		50.0	55.0		dB
413.50 - 424.00MHz		43.0	48.0		dB
443.75 - 454.00MHz		35.0	40.0		dB
454.00 - 470.00MHz		45.0	50.0		dB
470.00 - 650.00MHz		50.0	55.0		dB
650.00 -1000.00MHz		45.0	50.0		dB
Input VSWR 433.00– 434.71MHz			1.8:1	2.0:1	/
Output VSWR 433.00– 434.71MHz			1.8:1	2.0:1	/

#### Figure 1 Electrical Characteristics: Frequency response.

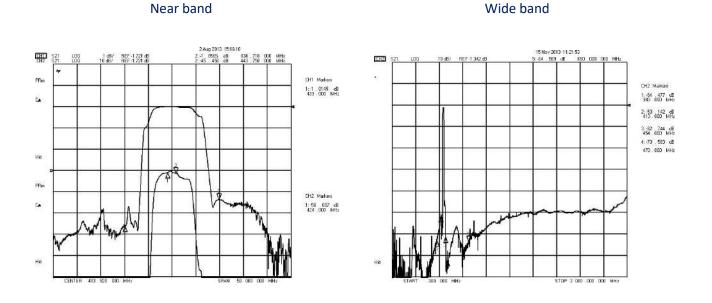
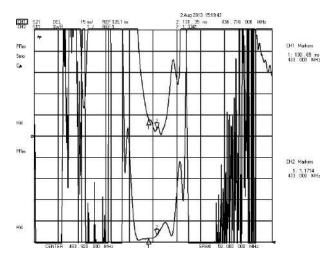


Figure 2 Electrical Characteristics: Delay Ripple & Phase Linearity& VSWR.

#### Delay Ripple & S11 VSWR



#### Phase Linearity &S22 VSWR

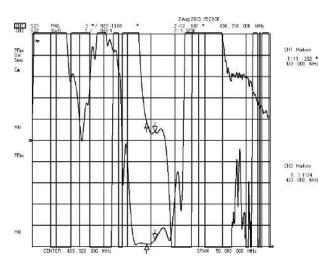
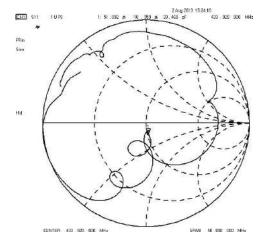
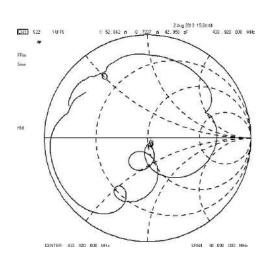


Figure 3 Electrical Characteristics: Delay Ripple & Phase Linearity& VSWR.

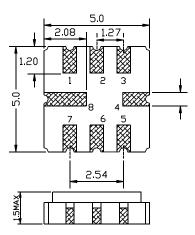
## S11 Smith Chart





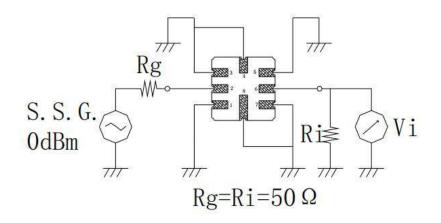
S22 Smith Chart

## Package & Dimensions



Pin No.	Description	
2	Input	
6	Output	
1,3,4,5,7,8	Ground	

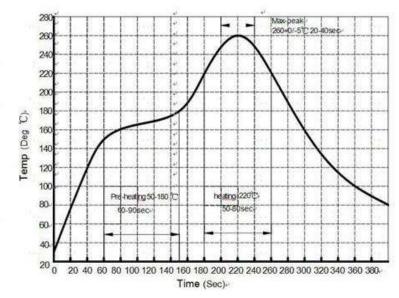
## Test circuit



#### **Maximum Ratings**

Item		Value	Unit
DC Voltage	VDC	3	V
Operation Temperature	т	-40 ~ +85	°C
Storage Temperature	Tstg	-55 ~ +125	°C
RF Power Dissipation	Р	15	dBm

#### **Recommended SMT Solder Profile**



## **Ordering Information**

Part Number	Number of Devices	Container
SPT433M5050A	1000pcs	Tape and Reel

## Reliability

No.	Test item	Test condition		
1	Temperature Storage	Temperature: $85^{\circ}C\pm 2^{\circ}C$ , Duration: 250h, Recovery time: 2h±0.5h (2) Temperature: $-55^{\circ}C\pm 3^{\circ}C$ , Duration: 250h, Recovery time: 2h±0.5h		
2	Humidity Test	Conditions: 60°C±2°C ,90~95% RH Duration: 250h		
3	Thermal Shock	Heat cycle conditions: TA=-55°C±3°C, TB=85°C±2°C, t1=t2=30min, Switch time: ≤3min, Cycle time: 100 times, Recovery time: 2h±0.5h.		
4	Vibration Fatigue	Frequency of vibration: 10~55HzAmplitude:1.5mmDirections: X,Y and ZDuration: 2h		
5	Drop Test	Cycle time: 10 times Height: 1.0m		
6	Solder Ability Test	Temperature: 245°C±5°CDuration: 3.0s5.0sDepth: DIP2/3 , SMD1/5		
7	Resistance to Soldering Heat	<ul> <li>(1) Thickness of PCB:1mm , Solder condition: 260°C±5°C , Duration: 10±1s</li> <li>(2) Temperature of Soldering Iron: 350°C±10°C, Duration: 3~4s, Recovery time : 2 ± 0.5h</li> </ul>		

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