



SAW Components
Data Sheet
CQTSF869M50.00

Customer's Approval Certificate	
Complies with Directive 2002/95/EC (RoHS)	
Please return this Page Via email as a certification of Your approval	
Checked & Approval by:	Date:

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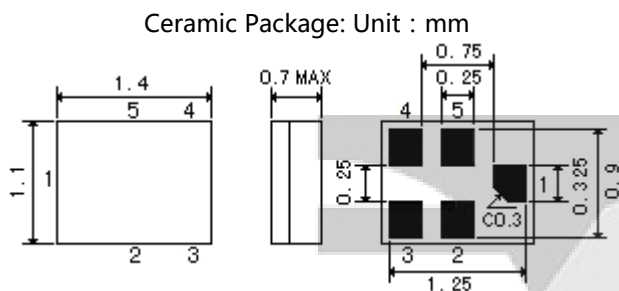
sales@csimc-freqcontrol.com

Features

SAW filter for 869.5MHz.

- 1 High stability and reliability with good performance and no adjustment.
- 2 Narrow and sharp pass band characteristics. RoHS compatible.
- 3 Low insertion loss and deep stop band attenuation for interference.
- 4 Low – loss SAW filter.
- 5 Narrow Bandwidth for +/-200KHz.
- 6 Package size 1.4*1.1
- 7 Electrostatic Sensitive Device (ESD)

Package Dimensions



Pin Configuration

1	Input
4	Output
2,3,5	Ground

Marking



Top View, Laser Marking

"XX": Part number "1": Terminal 1
 " * ": Dot marking, indicates input 1

The first " * ": Month Code (The code shown below varies in a 4-year-cycle)

CHINA QUARTZ TECHNOLOGY

Month	1	2	3	4	5	6	7	8	9	10	11	12
2016/2020	n	p	q	r	s	t	u	v	w	x	y	z
2017/2021	A	B	C	D	E	F	G	H	J	K	L	M
2018/2022	N	P	Q	R	S	T	U	V	W	X	Y	Z
2019/2023	a	b	c	d	e	f	g	h	i	j	k	m

The second " * ": Date Code

data	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	
code	A	B	C	D	E	F	G	H	J	K	
data	11th	12th	13th	14th	15th	16th	17th	18th	19th	20th	
code	L	M	N	P	Q	R	S	T	U	V	
data	21st	22nd	23rd	24th	25th	26th	27th	28th	29th	30th	31th
code	W	X	Y	Z	a	b	d	e	f	g	h


Maximum Ratings

Rating		Value	Unit
DC Voltage (between any Terminals)	V_{DC}	10	V
RF Power (in <i>BW</i>)	P	15	dBm
Operating Temperature Range	T_A	-40 ~ +85	°C
Storage Temperature Range	T_{stg}	-40 ~ +85	°C
ESD Voltage (HB)	VESD	150	V
Moisture Sensitivity Levels	MSL	2A	

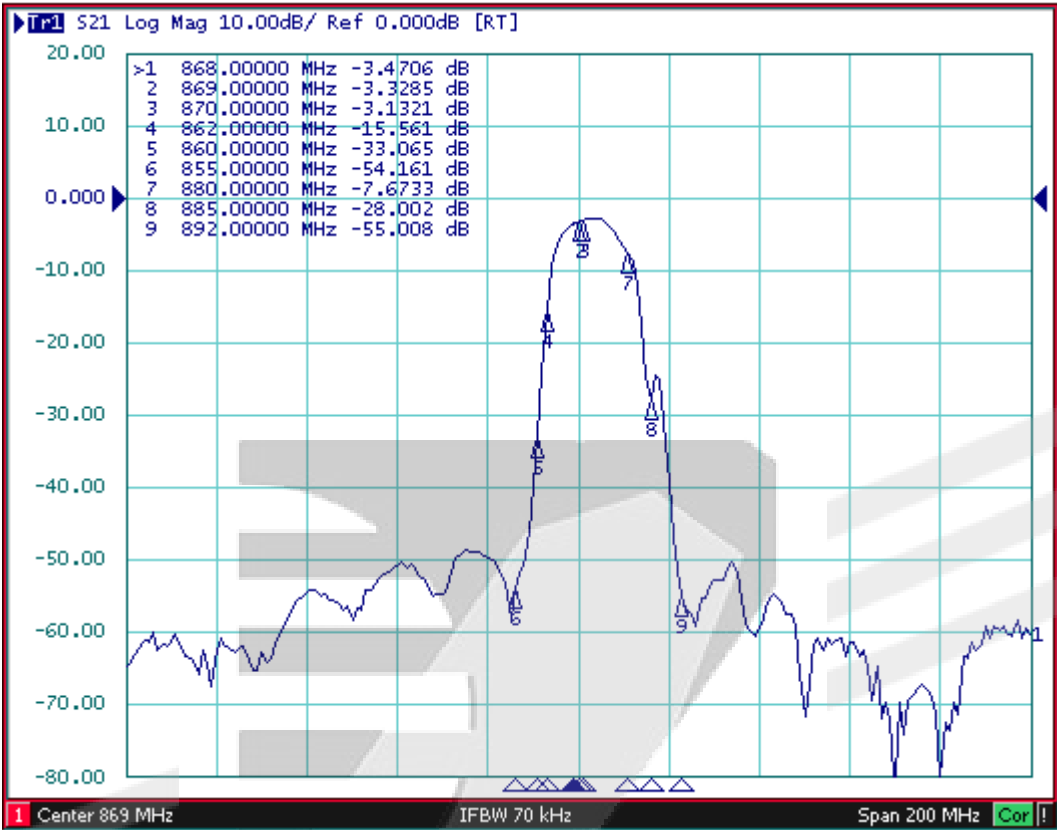
Electrical Characteristics: (50 ohm single ended)

Item		Minimum	Typical	Maximum	Unit
Center Frequency	f_c	-	869.5	-	MHz
Insertion Loss in 869.2– 869.7MHz	IL	-	3.2	4.5	dB
Amplitude Variation in 869.2– 869.7MHz			0.2	1.0	dB
1 dB Bandwidth		6	8		MHz
Absolute Attenuation	α				
0 ... 780.0MHz		55	60	-	dB
780.0 ... 850.0 MHz		42	47	-	dB
850.0 ... 858.8MHz		25	37		dB
885.0 ... 892.0MHz		10	25		dB
892.0 ... 950.0MHz		45	50		dB
950.0 ... 1200.0 MHz		40	45	--	dB
120.0 ... 2000.0 MHz		30	40	--	dB
VSWR in 869.2– 869.7MHz		-	1.7	2.0	

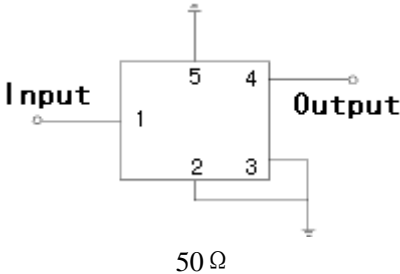
 **RoHS Compliant**

 **Electrostatic Sensitive Device**

Typical Frequency Response
S21 (Narrow Band)



Test Circuit



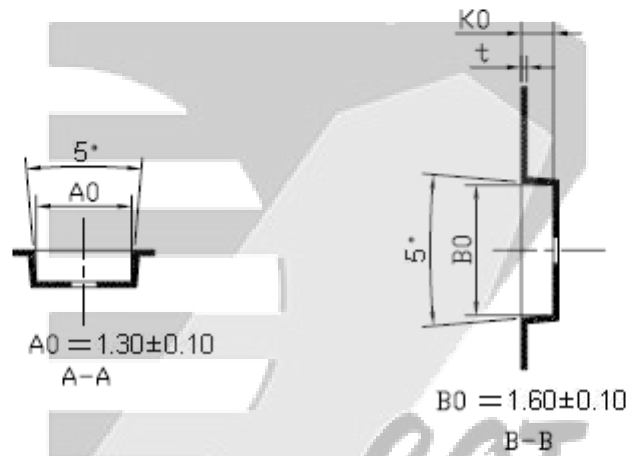
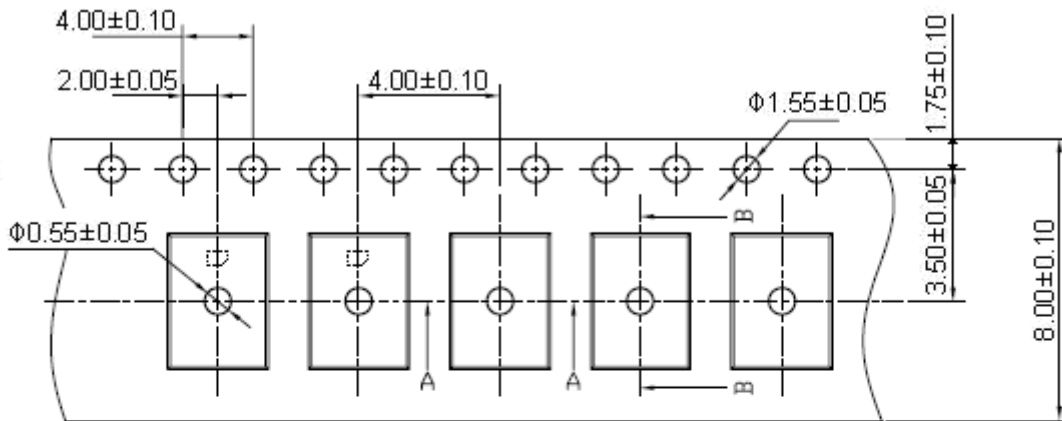
Stability Characteristics

Item No.	Test Item	STD Reference	Test Conditions	per lot
	Preconditioning	JESD22-A113	1) Temperature Cycling, 5 cycles -40°C to 85°C 2) Bake, 24 hrs @125±5°C; 3) Reflow, 3 reflow cycles using profiles per IPC/JEDEC J-STD-020, SnPb or Pb-free profile based on device end use process 4) Drying, Room ambient temperature	211
1	Temperature Cycling	JESD22-A104	-40°C / +85°C,40min dwell,<1 min transfer time,500cycles	23
2	High Temperature Storage	JESD22-A103	85°C,240hr	23
3	Low Temperature Storage	JESD22-A119	-40°C, 240hr	23
4	High Temp. High Humidity Storage	JESD22-A106B	85°C , 85%RH, 240hr	23
5	High Temperature Operating	JESD22-A102C	+121°C 100%RH 96hr	23
6	Human Body Mode ESD	JESD22-A114	Measure to get the ESD limits level or margin beyond specification	5
7	Drop Test	IEC 68-2-32	100 cm 3times Steel floor JIG(110g~150g)	6
8	Solder ability	JESD22-B102	Characterization per JESD22-B102	5
9	Vibration, Variable Frequency	JESD22-B103	20 Hz to 2 kHz (log variation) in > 4 minutes, 4X in each orientation, 50g peak acceleration	23
10	Mechanical Shock	JESD22-B104	Y1 plane only, 5 pulses, 0.5 ms duration, 1500 g peak acceleration	23
11	Solder Heat Resistance	IEC 68-2-21 Ue3	±250V,C=100pF,R=1.5kΩ,1times	11
12	Static marginal test	JESD22-A114F	C=100pF,R=1.5kΩ,1times (demand of customer)	11
13	Power capacity Margin Limits	/	Power margin tests beyond input power specification: CW signal , 85°C , highest in-band frequency,2 hours dwell time for each step, repeat the tests until DUT abnormal	12

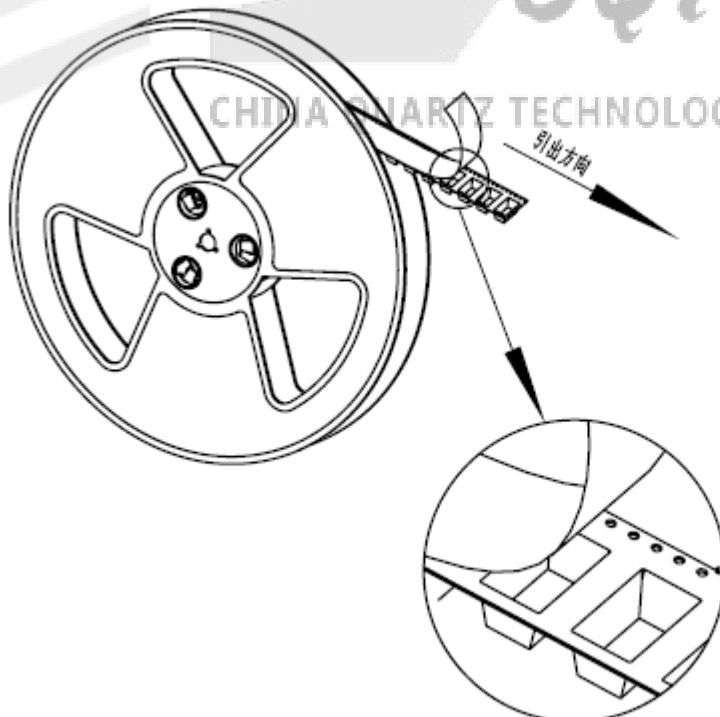
Requirements: The SAW filer shall remain within the electrical specifications after tests.

Packing Information

UCarrier Tape



UReel Dimensions



Material	PS
Unit	mm
Tolerance	± 0.20 mm
Quantity	3000/reel

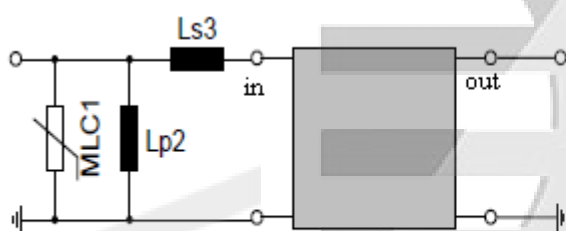
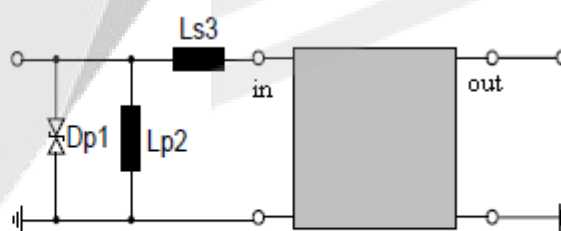
Remarks

- 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.
- Do not operate outside the recommended operating temperature range of components.
- Sudden change of temperature shall be avoided, deterioration of the characteristics can occur.
- 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.

ESD protection

This product is electrostatic sensitive device. When you install or measure it, you should be careful not to add antistatic electricity or high voltage. Please be advised that you had better check anti surge voltage.

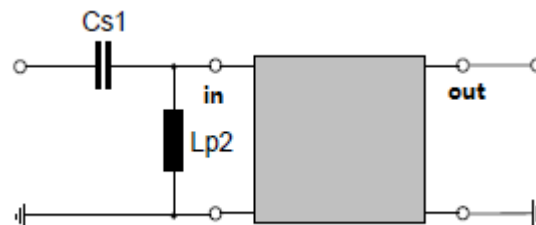
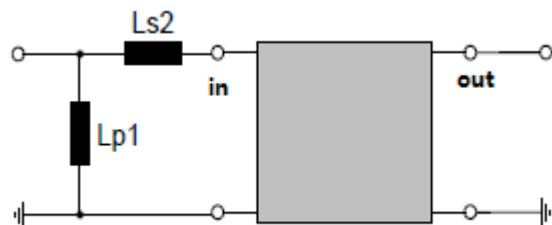
To reduce the probability of damages caused by ESD, the following matching topologies should be applied.

**MLC varistor + ESD matching****Suppressor diode + ESD matching**

"ESD matching" should be added to the filter port, where electrostatic discharge is expected. It predominantly appears at the antenna input of RF receivers. Therefore "ESD matching" should be designed to short circuit or block the ESD pulse.

Depending on the input impedance of the SAW filter and the source impedance, the needed component values have to be determined from case to case.

In cases where ESD is minor, the following simplified "ESD matching" topologies can be used.



Effectiveness of the applied ESD protection has to be checked according to relevant industry standards or customer specific requirements.

Recommended Soldering Profile

