

# SAW Components

## SAW RF filter

Short range devices

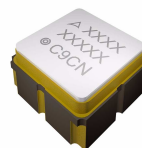
<b>Series/type:</b>	<b>B3407</b>
<b>Ordering code:</b>	<b>B39921B3407U410</b>
<b>Date:</b>	<b>June 03, 2014</b>
<b>Version:</b>	<b>2.0</b>

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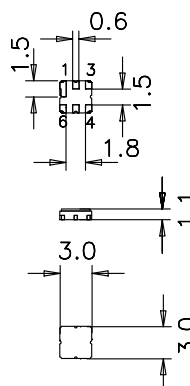
### Application

- Low-loss RF filter for ISM band
- Low amplitude ripple
- Usable passband 5.0 MHz



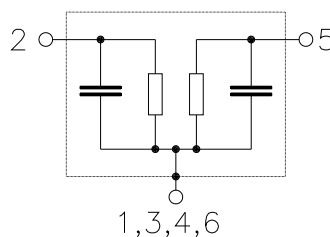
### Features

- Package size 3.0 x 3.0 x 1.1 mm<sup>3</sup>
- Package code DCC6C
- RoHS compatible
- Approximate weight 0.037 g
- Package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- Lead free soldering compatible with J - STD20C
- Passivation layer Elpas
- AEC-Q200 qualified component family
- **Electrostatic Sensitive Device (ESD)**



### Pin configuration

- 2 Input
- 5 Output
- 1, 3, 4, 6 Case ground



<b>SAW Components</b>	<b>B3407</b>
<b>SAW RF filter</b>	<b>922.5 MHz</b>

Data sheet



### Characteristics

Temperature range for specification:	$T = -40\text{ }^{\circ}\text{C to } +85\text{ }^{\circ}\text{C}$
Terminating source impedance:	$Z_S = 50\ \Omega$
Terminating load impedance:	$Z_L = 50\ \Omega$

		min.	typ. @ 25 °C	max.	
<b>Center frequency</b>	$f_C$	—	922.5	—	MHz
<b>Maximum insertion attenuation</b>	$\alpha_{\max}$	—	1.5	2.0	dB
920.00 ... 925.00 MHz		—	1.5	2.0	dB
<b>Amplitude ripple (p-p)</b>	$\Delta\alpha$	—	0.3	1.0	dB
920.00 ... 925.00 MHz		—	0.3	1.0	dB
<b>VSWR</b>		—	1.3:1	1.9:1	
920.00 ... 925.00 MHz		—	1.3:1	1.9:1	
<b>Absolute attenuation</b>	$\alpha_{\text{abs}}$				
500.00 ... 847.50 MHz		40	45	—	dB
847.50 ... 891.50 MHz		45	48	—	dB
952.50 ... 1000.00 MHz		45	50	—	dB
1000.00 ... 1600.00 MHz		40	47	—	dB
1600.00 ... 2000.00 MHz		35	40	—	dB

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### Maximum ratings

Operable temperature range	T	−45/+125	°C	
Storage temperature range	T <sub>stg</sub>	−45/+125	°C	
DC voltage	V <sub>DC</sub>	6	V	
Source power	P <sub>S</sub>	10	dBm	source impedance 50 Ω

### ESD protection of SAW filters

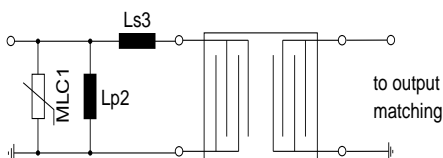
SAW filters are **E**lectro **S**tatic **D**ischarge sensitive devices. To reduce the probability of damages caused by ESD, special matching topologies have to be applied.

In general, “ESD matching” has to be ensured at that filter port, where electrostatic discharge is expected.

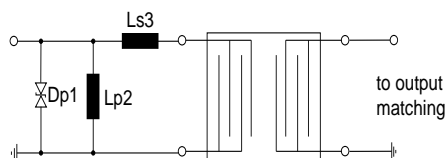
Electrostatic discharges predominantly appear at the antenna input of RF receivers. Therefore only the input matching of the SAW filter has to be designed to short circuit or to block the ESD pulse.

Below two figures show recommended “ESD matching” topologies.

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.

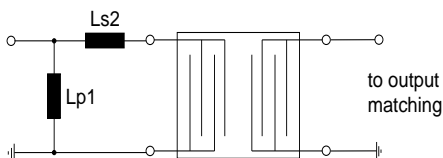


**Fig. 1 MLC varistor plus ESD matching**

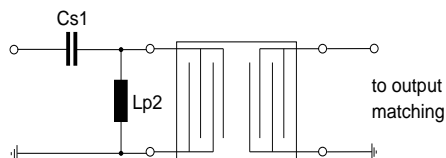


**Fig. 2 Suppressor diode plus ESD matching**

In cases where minor ESD occur, following simplified “ESD matching” topologies can be used alternatively.



**Fig. 3 shunt L – series L matching**



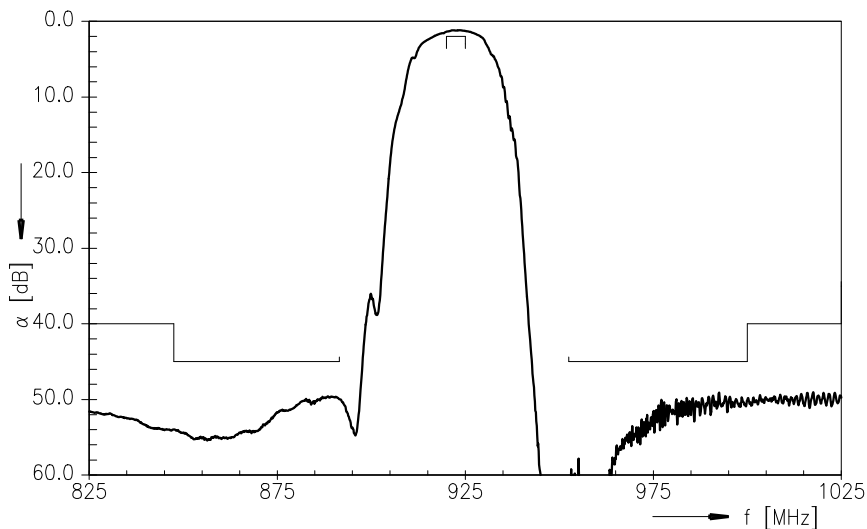
**Fig. 4 series C – shunt L matching**

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

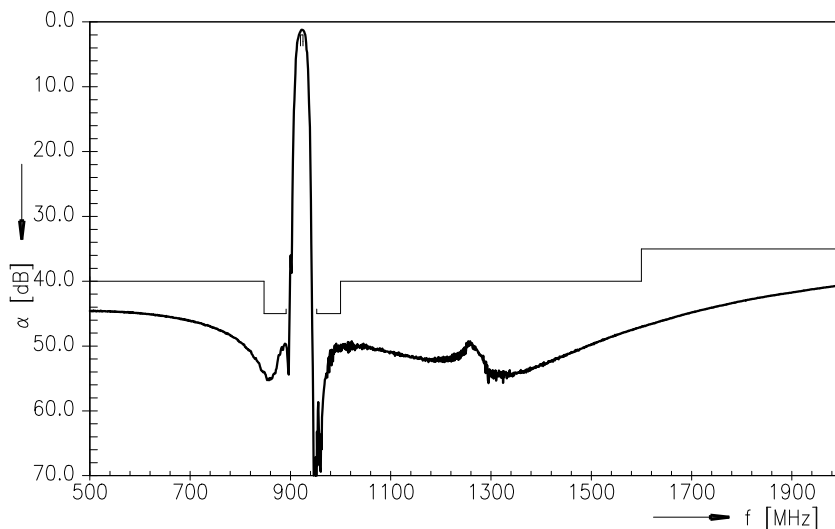
For further information, please refer to EPCOS Application report:

**“ESD protection for SAW filters”**. This report can be found under [www.epcos.com/rke](http://www.epcos.com/rke). Click on “data sheets” and then “Applications” under category “Further information”.

**Transfer function**



**Transfer function (wideband)**



<b>SAW Components</b>	<b>B3407</b>
<b>SAW RF filter</b>	<b>922.5 MHz</b>

Data sheet



## References

<b>Type</b>	B3407
<b>Ordering code</b>	B39921B3407U410
<b>Marking and package</b>	C61157-A7-A67
<b>Packaging</b>	F61074-V8228-Z000
<b>Date codes</b>	L_1126
<b>S-parameters</b>	B3407_NB.s2p, B3407_WB.s2p See file header for port/pin assignment table.
<b>Soldering profile</b>	S_6001
<b>RoHS compatible</b>	RoHS-compatible means that products are compatible with the requirements according to Art. 4 (substance restrictions) of Directive 2011/65/EU of the European Parliament and of the Council of June 8 <sup>th</sup> , 2011, on the restriction of the use of certain hazardous substances in electrical and electronic equipment ("Directive") with due regard to the application of exemptions as per Annex III of the Directive in certain cases.
<b>Matching coils</b>	See Inductor pdf-catalog <a href="http://www.tdk.co.jp/tefe02/coil.htm#aname1">http://www.tdk.co.jp/tefe02/coil.htm#aname1</a> and Data Library for circuit simulation <a href="http://www.tdk.co.jp/etvcl/index.htm">http://www.tdk.co.jp/etvcl/index.htm</a> for a large variety of matching coils.

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