



**RF360
Europe GmbH**

SAW Components

SAW filter

Short range devices

Series/type: B3512
Ordering code: B39941B3512U410

Date: December 18, 2013
Version: 2.1

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SAW Components

SAW filter

Short range devices

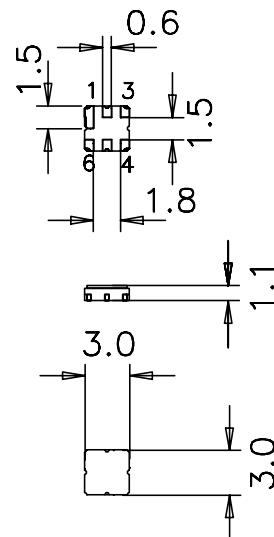
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**Application**

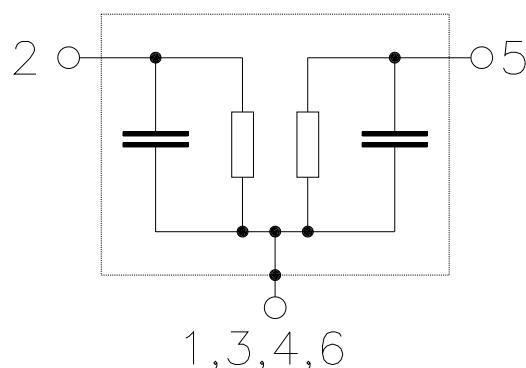
- Low-loss RF filter for remote control receivers
- Usable passband 35 MHz

Features

- Package size 3.0 x 3.0 x 1.1 mm³
- 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
- Electrostatic Sensitive Device (ESD)

**Pin configuration**

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



SAW Components
B3512
SAW filter
942.50 MHz
Data sheet

Characteristics

 Temperature range for specification: $T = -40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$

 Terminating source impedance: $Z_S = 50\Omega$

 Terminating load impedance: $Z_L = 50\Omega$

		min.	typ. @ 25 °C	max.	
Center frequency	f_C	—	942.50	—	MHz
Maximum insertion attenuation	α_{\max}	—	3.8	5.0	dB
925.00 ... 960.00 MHz					
Amplitude ripple (p-p)	$\Delta\alpha$	—	2.0	3.4	dB
925.00 ... 960.00 MHz					
VSWR					
Input	925.00 ... 960.00 MHz		2.3	2.5	
Output	925.00 ... 960.00 MHz		2.3	2.5	
Attenuation	α				
0.00 ... 800.00 MHz		50	60	—	dB
800.00 ... 880.00 MHz		40	52	—	dB
880.00 ... 905.00 MHz		30	38	—	dB
905.00 ... 915.00 MHz		15	28	—	dB
980.00 ... 982.00 MHz		20	22	—	dB
982.00 ... 1005.00 MHz		23	26	—	dB
1005.00 ... 1025.00 MHz		30	42	—	dB
1025.00 ... 1760.00 MHz		40	50	—	dB
1760.00 ... 2500.00 MHz		30	40	—	dB
2500.00 ... 3120.00 MHz		20	27	—	dB
3120.00 ... 4000.00 MHz		18	25	—	dB
4000.00 ... 6000.00 MHz		—	8	—	dB

SAW Components

B3512

SAW filter

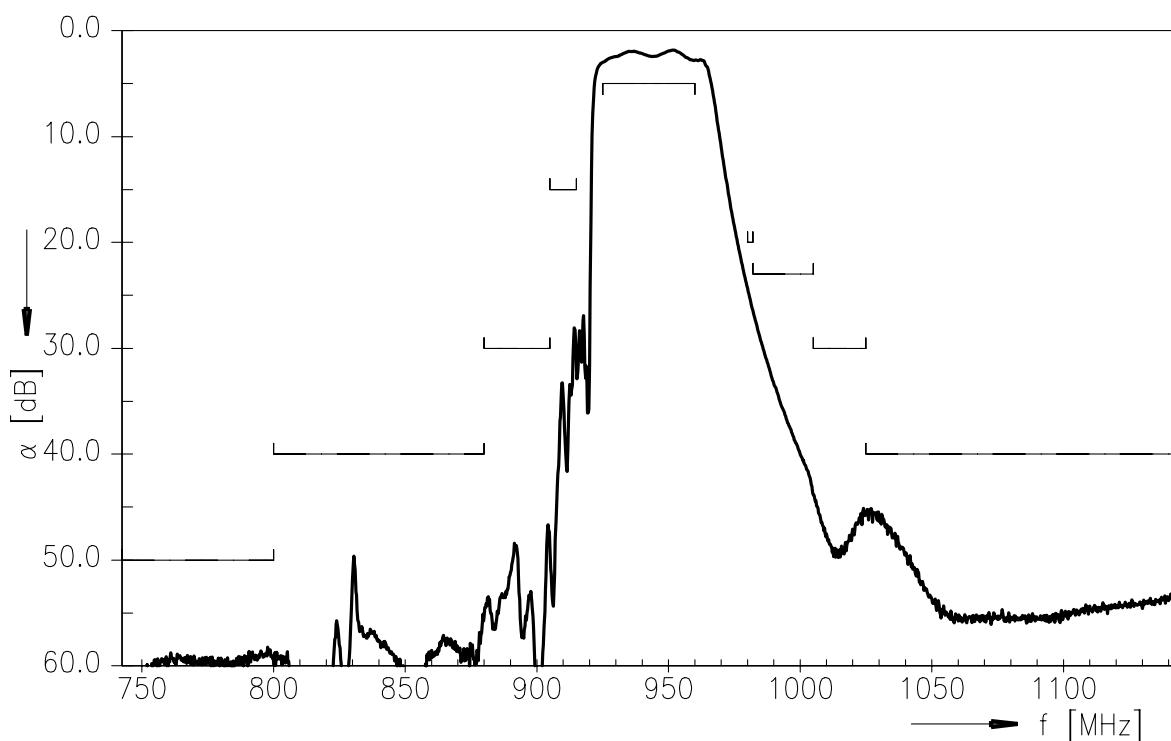
942.50 MHz

Data sheet

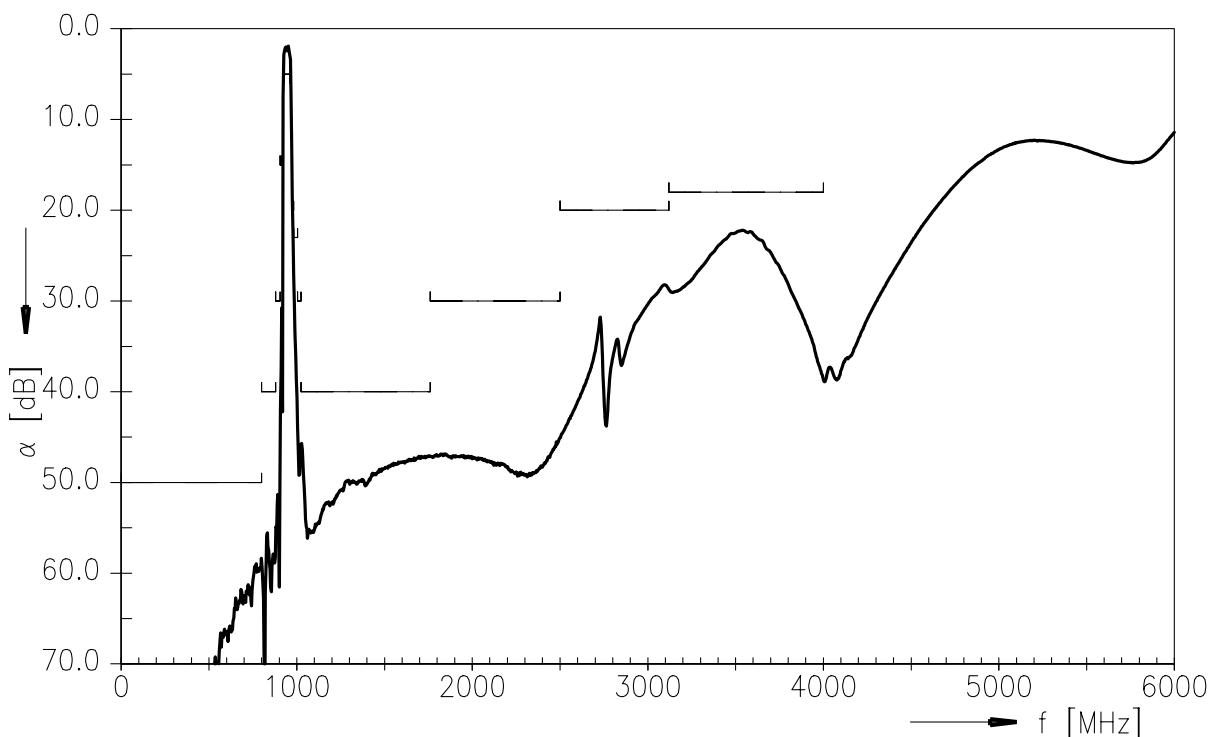
**Maximum ratings**

Operable temperature range	T	–45/+125	°C	
Storage temperature range	T _{stg}	–45/+125	°C	
DC voltage	V _{DC}	6	V	
ESD voltage	V _{ESD}	100 ¹⁾	V	machine model, 10 pulses
Input power max.				source and load impedance 50 Ω
925.00 ... 960.00 MHz	P _{IN}	15	dBm	continuous wave, 85 °C

¹⁾ acc. to JESD22-A115A (machine model), 10 negative & 10 positive pulses.



Transfer function (wideband)



ESD protection of SAW filters

SAW filters are **Electro Static Discharge** 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 three figures show recommended “ESD matching” topologies.

For wideband filters the high-pass ESD matching structure needs to be at least of 3rd order to ensure a proper matching for any impedance value of antenna and SAW filter input. The required component values have to be determined from case to case.

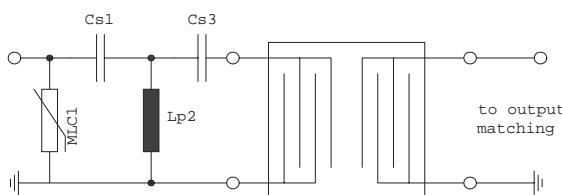


Fig. 1 MLC varistor plus ESD matching

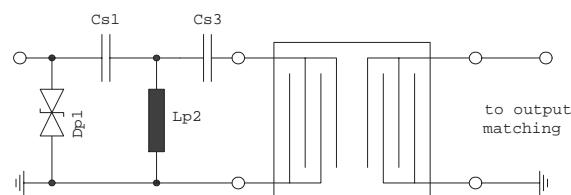


Fig. 2 Suppressor diode plus ESD matching

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

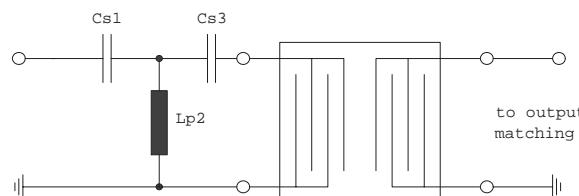


Fig. 3 3rd order high-pass structure for basic ESD protection

In all three figures the shunt inductor Lp2 could be replaced by a shorted microstrip with proper length and width. If this configuration is possible depends on the operating frequency and available pcb space.

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. Click on “Applications Notes”.

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SAW filter	942.50 MHz
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References

Type	B3512
Ordering code	B39941B3512U410
Marking and package	C61157-A7-A67
Packaging	F61074-V8168-Z000
Date codes	L_1126
S-parameters	B3512_NB.s2p B3512_WB.s2p See file header for port/pin assignment table.
Soldering profile	S_6001
RoHS compatible	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 th , 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.
Matching coils	See Inductor pdf-catalog http://www.tdk.co.jp/tefe02/coil.htm#aname1 and Data Library for circuit simulation http://www.tdk.co.jp/etvcl/index.htm

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