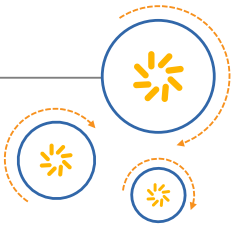
RF360 Europe GmbH

A Qualcomm – TDK Joint Venture



SAW Components

SAW RF filter

Short range devices

Series/type:	B3588
Ordering code:	B39921B3588U410
Date:	December 17, 2014
Version:	2.5

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RF360 Europe GmbH, Anzinger Str. 13, München, Germany

SAW Components

SAW RF filter

Short range devices

Series/type:	**B3588**
Ordering code:	**B39921B3588U410**
Date:	December 17, 2014
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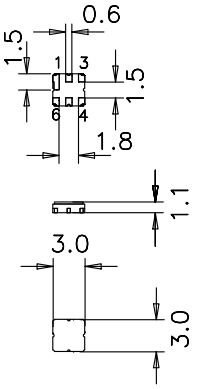
Data sheet SMD

Application

- Low-loss RF filter for remote control receivers
- No matching network required for operation at 50 Ω

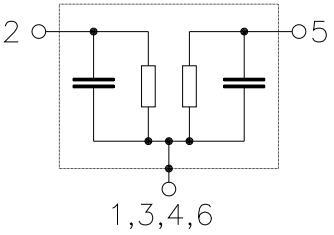
Features

- Package size 3.0 x 3.0 x 1.1 mm³
- Package code DCC6C
- RoHS compatible
- Approximate weight 0.037 g
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals
- Lead free soldering compatible with J - STD20C
- AEC-Q200 qualified component family
- **E**lectrostatic **S**ensitive **D**evice (**ESD**)



Pin configuration

- 2 Input
- 5 Output
- 1, 3, 4, 6 To be ground



SAW Components **B3588**

SAW RF filter **915.0 MHz**

Data sheet SMD

Characteristics

Temperature range for specification: T = 0 ˚C to +70 ˚C
Terminating source impedance: Z_S = 50 Ω
Terminating load impedance: Z_L = 50 Ω

		min.	typ. @ 25 ˚C	max.	
Center frequency	f_C	—	915.0	—	MHz
Maximum insertion attenuation	α_{max}				
902.00 ... 928.00 MHz		—	2.9	3.3	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
902.00 ... 928.00 MHz		—	0.9	1.5	dB
VSWR					
902.00 ... 928.00 MHz		—	1.8:1	2.3:1	
Relative attenuation (relative to α_{max})	α_{rel}				
10.00 ... 800.00 MHz		50	55	—	dB
800.00 ... 845.00 MHz		45	50	—	dB
845.00 ... 880.00 MHz		35	43	—	dB
947.00 ... 992.00 MHz		15	22	—	dB
992.00 ... 1020.00 MHz		35	45	—	dB
1020.00 ... 1200.00 MHz		45	50	—	dB

SAW Components **B3588**

SAW RF filter **915.0 MHz**

Data sheet SMD

Characteristics

Temperature range for specification: T = –40 ˚C to +85 ˚C
Terminating source impedance: Z_S = 50 Ω
Terminating load impedance: Z_L = 50 Ω

		min.	typ. @ 25 ˚C	max.	
Center frequency	f_C	—	915.0	—	MHz
Maximum insertion attenuation	α_{max}				
902.00 ... 928.00 MHz		—	2.9	3.5	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
902.00 ... 928.00 MHz		—	0.9	1.8	dB
VSWR					
902.00 ... 928.00 MHz		—	1.8:1	2.4:1	
Relative attenuation (relative to α_{max})	α_{rel}				
10.00 ... 800.00 MHz		50	55	—	dB
800.00 ... 845.00 MHz		45	50	—	dB
845.00 ... 880.00 MHz		33	43	—	dB
947.00 ... 992.00 MHz		13	22	—	dB
992.00 ... 1020.00 MHz		35	45	—	dB
1020.00 ... 1200.00 MHz		45	50	—	dB

Maximum ratings

Operable temperature range	T	–45/+125	˚C	
Storage temperature range	T_{stg}	–45/+125	˚C	
DC voltage	V_{DC}	6	V	
Source power	P_S	15	dBm	source impedance 50 Ω
Source power 902.00 ... 928.00 MHz	P_S	18	dBm	duty cycle 1:10, -40 ˚C to +85 ˚C

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.

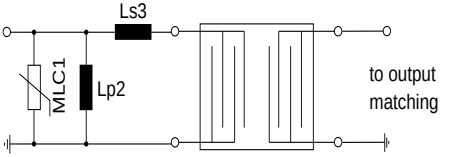


Fig. 1 MLC varistor plus ESD matching

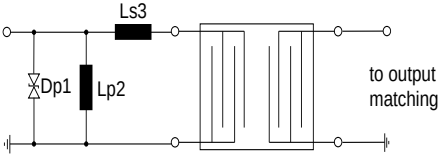


Fig. 2 Suppressor diode plus ESD matching

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

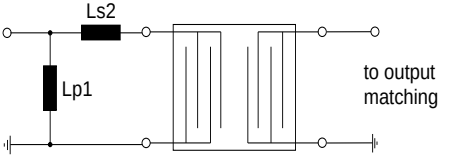


Fig. 3 shunt L – series L matching

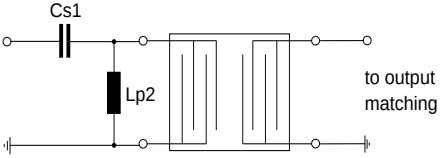
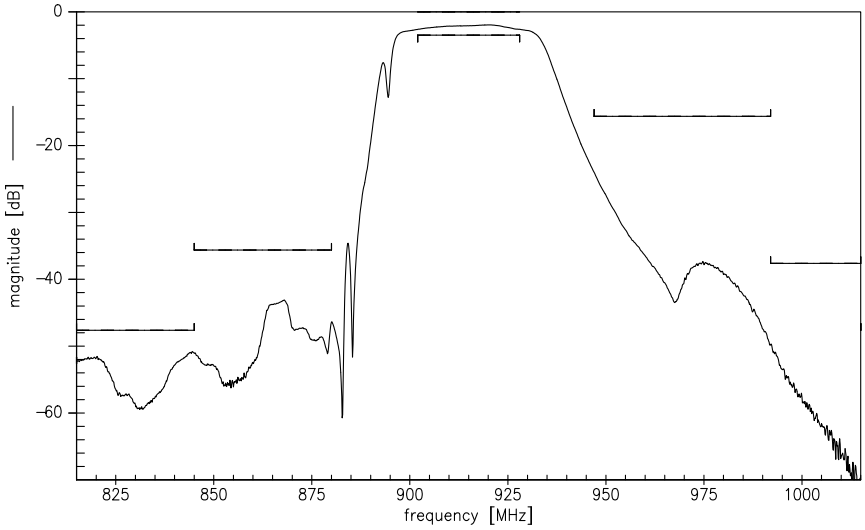


Fig. 4 series C – shunt L matching

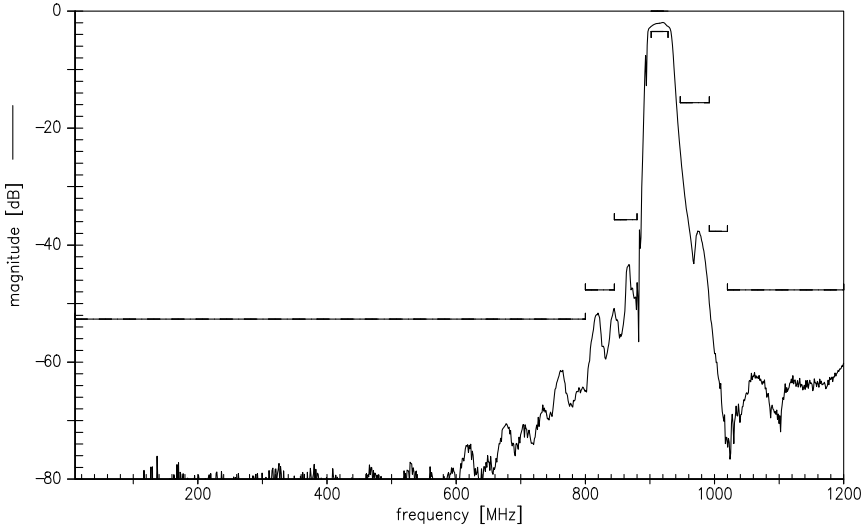
Effectiveness of the applied ESD protection has to be checked according to relevant industry standards or customer specific requirements.

For further information, please refer to EPCOS Application report:
“**ESD protection for SAW filters**”. This report can be found under www.epcos.com/rke. Click on “data sheets” and then “Applications” under category “Further information”.

Transfer function (narrowband)

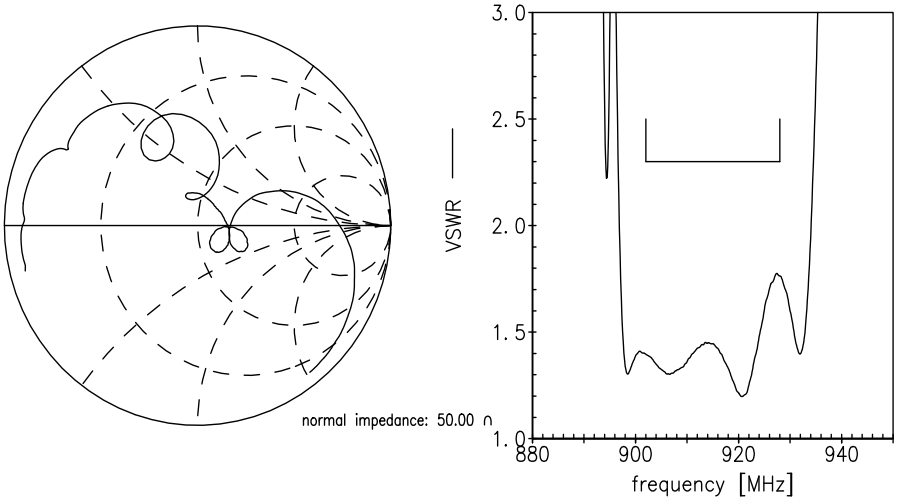


Transfer function (wideband)

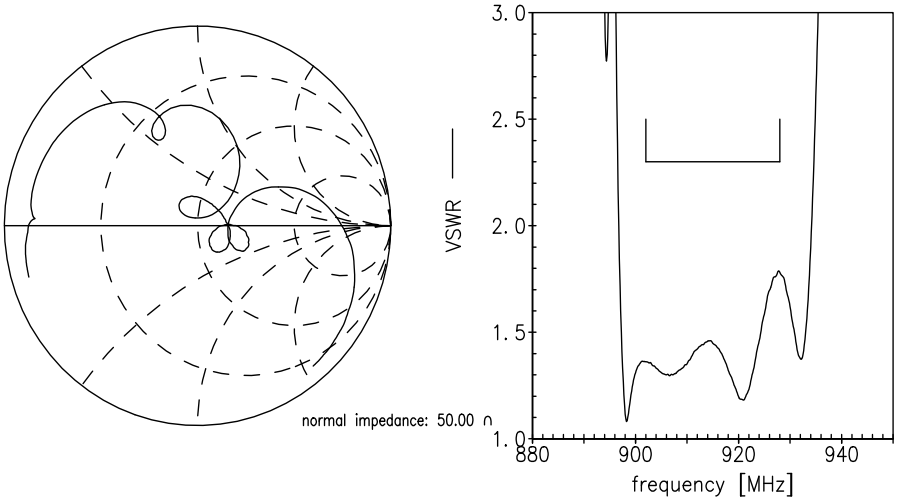


Smith charts

S_{11} function



S_{22} function



References

Type	B3588
Ordering code	B39921B3588U410
Marking and package	C61157-A7-A67
Packaging	F61074-V8168-Z000
Date codes	L_1126
S-parameters	B3588_NB.s2p, B3588_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 8th, 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 for a large variety of matching coils.

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