

SAW Components

SAW RF filter

Short range devices

Series/type: B3588

Ordering code: B39921B3588U410

Date: April 23, 2013

Version: 2.4

© EPCOS AG 2013. Reproduction, publication and dissemination of this data sheet, enclosures hereto and the information contained therein without EPCOS' prior express consent is prohibited.



SAW Components
B3588

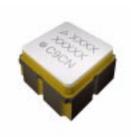
SAW RF filter 915.00 MHz

Data sheet



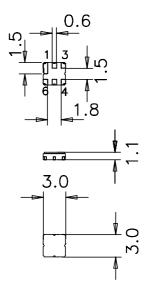
Application

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



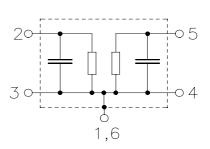
Features

- Package size 3.0 x 3.0 x 1.1 mm³
- Package code DCC6C
- RoHS compatible
- Approximate weight 0.037 g
- Package for Surface Mount Technology (SMT)
- Ni, gold-plated terminals
- Lead free soldering compatible with J STD20C
- AEC-Q200 qualified component family
- Electrostatic Sensitive Device (ESD)



Pin configuration

- 2 Input
- 5 Output
- 1,3,4,6 Ground





SAW Components B3588

SAW RF filter 915.00 MHz

Data sheet

Characteristics

Temperature range for specification: $T = 0 \,^{\circ}C$ to +70 $^{\circ}C$

Terminating source impedance: $Z_S = 50 \Omega$ Terminating load impedance: $Z_L = 50 \Omega$

		min.	typ. @ 25 °C	max.	
Center frequency	f _C	_	915.00	_	MHz
Maximum insertion attenuation	α_{max}				
902.00 928.00 MHz		_	2.9	3.3	dB
Amplitude ripple (p-p)	Δα				
902.00 928.00 MHz		_	0.9	1.5	dB
Attenuation (relative to α_{max})	$lpha_{rel}$				
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	<u> </u>	dB
Temperature coefficient of frequency	TC _f	_	-30	<u> </u>	ppm/K



SAW Components

B3588

SAW RF filter 915.00 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.	max.	
October for succession	•		@ 25 °C		N 41 1-
Center frequency	f _C		915.00		MHz
Maximum insertion attenuation	α_{max}				
902.00 928.00 MHz	max	_	2.9	3.5	dB
Amplitude ripple (p-p)	Δα				
902.00 928.00 MHz			0.9	1.8	dB
Attenuation (relative to α_{max})	$lpha_{ m rel}$				
10.00 800.00 MHz	∽rei	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
Temperature coefficient of frequency	TC _f	_	-30	_	ppm/K

Maximum ratings

Operable temperature range	Т	-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 MHz to 928 MHz	P_S	18	dBm	duty cycle 1:10, -40 °C to +85 °C

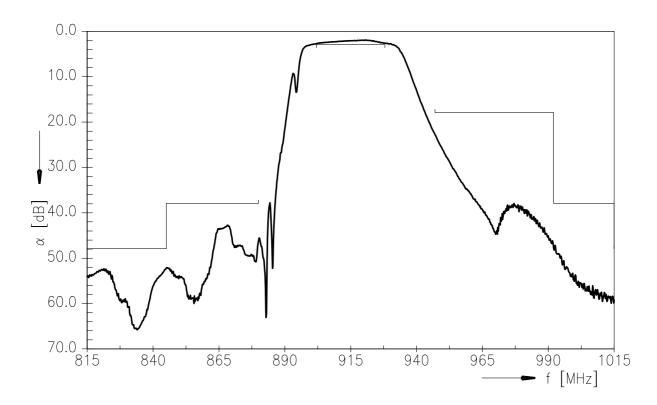


SAW Components B3588
SAW RF filter 915.00 MHz

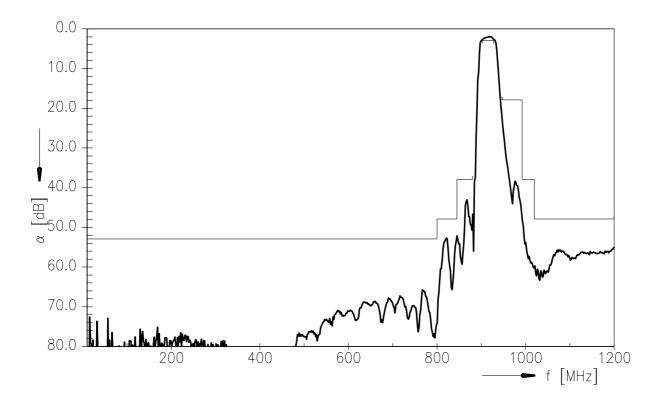
Data sheet



Transfer function



Transfer function (wideband)





SAW Components B3588

SAW RF filter 915.00 MHz

Data sheet



ESD protection of SAW filters

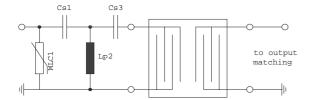
SAW filters are **E**lectro **S**tatic **D**ischarge sensitive devices. To reduce the probability of damages caused by ESD, special matching topologies have to be applied.

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 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.



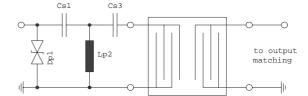


Fig. 1 MLC varistor plus ESD matching

Fig. 2 Suppressor diode plus ESD matching

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

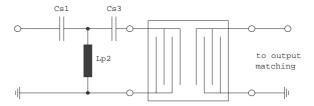


Fig. 3 3rd order high-pass structure for basic ESD protection

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".



SAW Components B3588
SAW RF filter 915.00 MHz

Data sheet



References

Туре	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 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	

For further information please contact your local EPCOS sales office or visit our webpage at $\underline{www.epcos.com}$.

Published by EPCOS AG Systems, Acoustics, Waves Business Group P.O. Box 80 17 09, 81617 Munich, GERMANY

© EPCOS AG 2013. This brochure replaces the previous edition.

For questions on technology, prices and delivery please contact the Sales Offices of EPCOS AG or the international Representatives.

Due to technical requirements components may contain dangerous substances. For information on the type in question please also contact one of our Sales Offices.



The following applies to all products named in this publication:

- Some parts of this publication contain statements about the suitability of our products for certain areas of application. These statements are based on our knowledge of typical requirements that are often placed on our products in the areas of application concerned. We nevertheless expressly point out that such statements cannot be regarded as binding statements about the suitability of our products for a particular customer application. As a rule, EPCOS is either unfamiliar with individual customer applications or less familiar with them than the customers themselves. For these reasons, it is always ultimately incumbent on the customer to check and decide whether an EPCOS product with the properties described in the product specification is suitable for use in a particular customer application.
- 2. We also point out that in individual cases, a malfunction of electronic components or failure before the end of their usual service life cannot be completely ruled out in the current state of the art, even if they are operated as specified. In customer applications requiring a very high level of operational safety and especially in customer applications in which the malfunction or failure of an electronic component could endanger human life or health (e.g. in accident prevention or life-saving systems), it must therefore be ensured by means of suitable design of the customer application or other action taken by the customer (e.g. installation of protective circuitry or redundancy) that no injury or damage is sustained by third parties in the event of malfunction or failure of an electronic component.
- 3. The warnings, cautions and product-specific notes must be observed.
- 4. In order to satisfy certain technical requirements, some of the products described in this publication may contain substances subject to restrictions in certain jurisdictions (e.g. because they are classed as hazardous). Useful information on this will be found in our Material Data Sheets on the Internet (www.epcos.com/material). Should you have any more detailed questions, please contact our sales offices.
- 5. We constantly strive to improve our products. Consequently, the products described in this publication may change from time to time. The same is true of the corresponding product specifications. Please check therefore to what extent product descriptions and specifications contained in this publication are still applicable before or when you place an order. We also reserve the right to discontinue production and delivery of products. Conse
 - quently, we cannot guarantee that all products named in this publication will always be available. The aforementioned does not apply in the case of individual agreements deviating from the foregoing for customer-specific products.
- 6. Unless otherwise agreed in individual contracts, all orders are subject to the current version of the "General Terms of Delivery for Products and Services in the Electrical Industry" published by the German Electrical and Electronics Industry Association (ZVEI).
- 7. The trade names EPCOS, BAOKE, Alu-X, CeraDiode, CeraLink, CSMP, CSSP, CTVS, DeltaCap, DigiSiMic, DSSP, FilterCap, FormFit, MiniBlue, MiniCell, MKD, MKK, MLSC, MotorCap, PCC, PhaseCap, PhaseCube, PhaseMod, PhiCap, SIFERRIT, SIFI, SIKOREL, SilverCap, SIMDAD, SiMic, SIMID, SineFormer, SIOV, SIP5D, SIP5K, ThermoFuse, WindCap are trademarks registered or pending in Europe and in other countries. Further information will be found on the Internet at www.epcos.com/trademarks.