



# SAW Components

## SAW GPS + GLONASS filter

<b>Series/type:</b>	<b>B8802</b>
<b>Ordering code:</b>	<b>B39162-B8802-P810</b>
<b>Date:</b>	<b>July 10, 2013</b>
<b>Version:</b>	<b>2.1</b>

© EPCOS AG 2015. Reproduction, publication and dissemination of this publication, enclosures hereto and the information contained therein without EPCOS' prior express consent is prohibited.

EPCOS AG is a TDK Group Company.

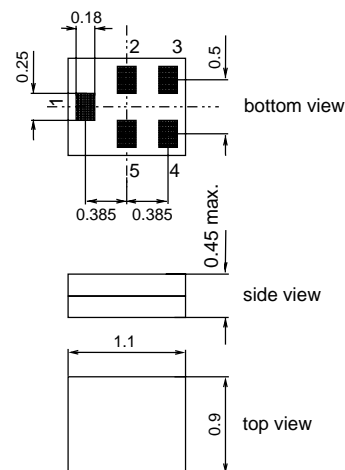
**Data Sheet**

**Application**

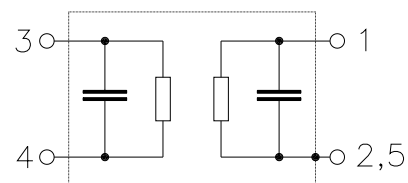
- Low-loss RF GPS+Glonass filter
- Simultaneous usage of GPS band and Glonass band
- Usable passbands: 2.0 MHz for GPS and 8.34 MHz for Glonass
- Very low insertion attenuation
- Impedance transformation from 50 Ω to 100 Ω
- Unbalanced to balanced operation
- No matching network required for operation at 50 Ω


**Features**

- Package size 1.1 x 0.9 mm<sup>2</sup>  
package height 0.45 mm max.
- RoHS compatible
- Approximate weight 0.0012 g
- Package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- **Electrostatic Sensitive Device (ESD)**
- **Moisture Sensitivity Level 3 (MSL3)**


**Pin configuration**

- 1 Input unbalanced
- 3,4 Output balanced
- 2,5 To be grounded



**SAW Components**
**B8802**
**SAW GPS + GLONASS filter**
**1585.655 MHz**
**Data Sheet**

**Characteristics of Filter**

Temperature range for specification:	T = -30 °C to +85 °C
Terminating source impedance:	Z <sub>S</sub> = 50 Ω
Terminating load impedance:	Z <sub>L</sub> = 100 Ω

		B8802			
		min.	typ. @ 25 °C	max.	
<b>Center frequency</b>	f <sub>C</sub>	—	1585.655	—	MHz
<b>Maximum insertion attenuation</b>	α <sub>max</sub>				
1574.42 ... 1576.42 MHz		—	1.0	1.6	dB
1565.42 ... 1585.42 MHz		—	1.3	2.0	dB
1597.55 ... 1605.89 MHz		—	1.2	2.0	dB
<b>VSWR Input</b>					
1574.42 ... 1576.42 MHz		—	1.3	2.0	
1597.55 ... 1605.89 MHz		—	1.5	2.0	
<b>VSWR Output</b>					
1574.42 ... 1576.42 MHz		—	1.3	2.0	
1597.55 ... 1605.89 MHz		—	1.5	2.0	
<b>Group delay ripple<sup>1)</sup> (p-p)</b>	Δτ				
1597.55 ... 1605.89 MHz		—	5	15	ns
<b>Output amplitude balance ( S<sub>31</sub>/S<sub>21</sub> )</b>					
1574.42 ... 1576.42 MHz		-1.5	-0.4	1.5	dB
1597.55 ... 1605.89 MHz		-1.5	-0.8	1.5	dB
<b>Output phase balance (φ(S<sub>31</sub>)-φ(S<sub>21</sub>)+180°)</b>					
1574.42 ... 1576.42 MHz		-10	-2	10	°
1597.55 ... 1605.89 MHz		-10	-5	10	°
<b>Attenuation</b>	α				
0.1 ... 725.0 MHz		56	64	—	dB
725.0 ... 925.0 MHz		52	62	—	dB
925.0 ... 1427.0 MHz		35	50	—	dB
1427.0 ... 1463.0 MHz		35	51	—	dB
1463.0 ... 1525.0 MHz		20	40	—	dB
1675.0 ... 1710.0 MHz		20	34	—	dB
1710.0 ... 1785.0 MHz		35	39	—	dB
1850.0 ... 1980.0 MHz		37	46	—	dB
1980.0 ... 2400.0 MHz		32	42	—	dB
2400.0 ... 2500.0 MHz		45	58	—	dB
2500.0 ... 2570.0 MHz		40	62	—	dB

**SAW Components**
**B8802**
**SAW GPS + GLONASS filter**
**1585.655 MHz**
**Data Sheet**


				<b>B8802</b>			
				<b>min.</b>	<b>typ. @ 25 °C</b>	<b>max.</b>	
2570.0	...	3155.0	MHz	40	58	—	dB
3155.0	...	4000.0	MHz	35	50	—	dB
4000.0	...	6000.0	MHz	33	45	—	dB
<b>Common mode suppression</b>			$S_{cs21}$				
0.1	...	925.0	MHz	43	46	—	dB
925.0	...	960.0	MHz	43	46	—	dB
1427.0	...	1463.0	MHz	33	42	—	dB
1710.0	...	1785.0	MHz	35	40	—	dB
1850.0	...	1910.0	MHz	39	43	—	dB
1920.0	...	1980.0	MHz	38	43	—	dB
2401.0	...	2483.0	MHz	32	38	—	dB
2500.0	...	2570.0	MHz	31	37	—	dB

1) Measured with an aperture of 2 MHz

**SAW Components**
**B8802**
**SAW GPS + GLONASS filter**
**1585.655 MHz**
**Data Sheet**

**Maximum ratings of Filter**

Operable temperature range	T	-30/+85	°C	
Storage temperature range	T <sub>stg</sub>	-40/+85	°C	
DC voltage	V <sub>DC</sub>	5 <sup>1)</sup>	V	
ESD voltage				
Machine Model	V <sub>ESD</sub>	100 <sup>2)</sup>	V	
Human Body Model	V <sub>ESD</sub>	275 <sup>3)</sup>	V	
Input power (5000 h, 50°C)				
@ 915 MHz	P <sub>IN</sub>	23	dBm	1/8 duty cycle
@ 1710 MHz	P <sub>IN</sub>	15	dBm	cw
@ 1453 MHz	P <sub>IN</sub>	15	dBm	cw

<sup>1)</sup> 168h Damp Heat Steady State acc. to IEC60068-2-67 Cy

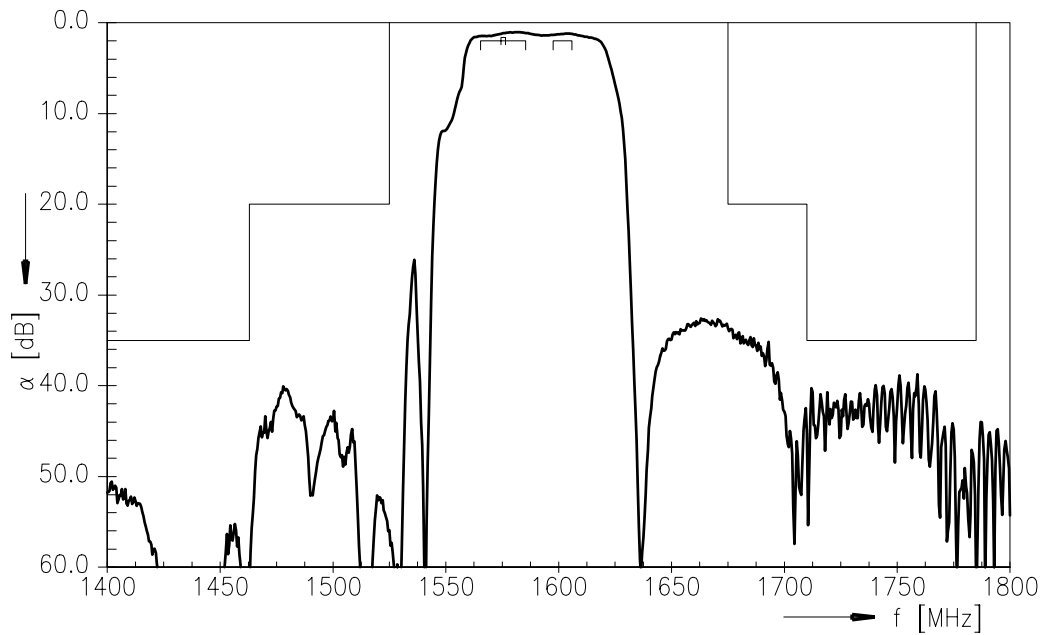
<sup>2)</sup> acc. to JESD22-A115B (MM - Machine Model), 10 negative & 10 positive pulses

<sup>3)</sup> acc. to JESD22-A114F (HBM - Human Body Model), 1 negative & 1 positive pulses

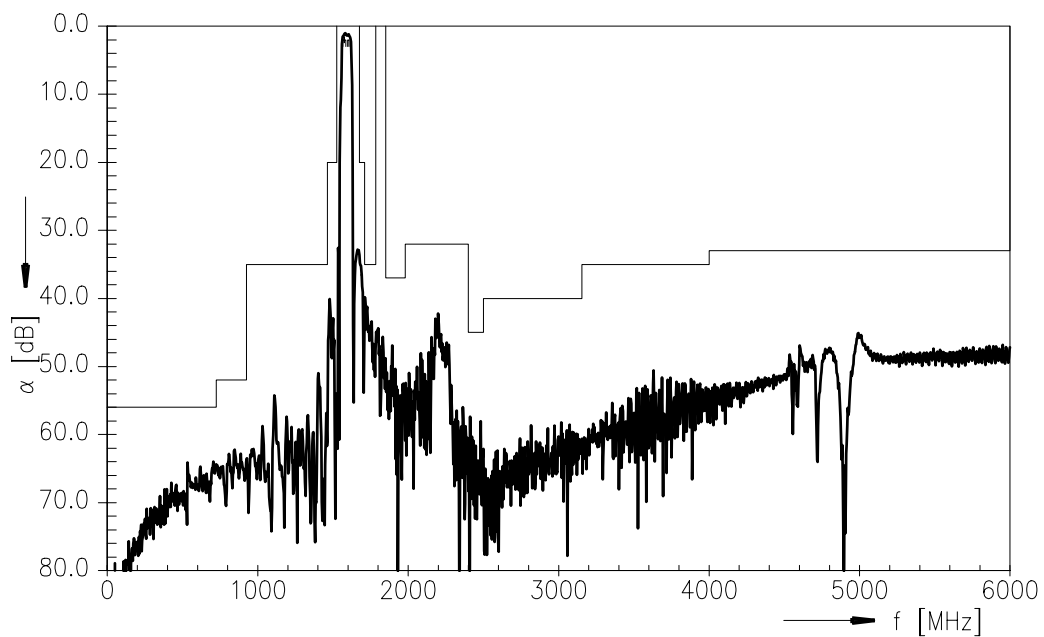
Data Sheet



Transfer function (passband, differential mode,  $S_{ds21}$ )

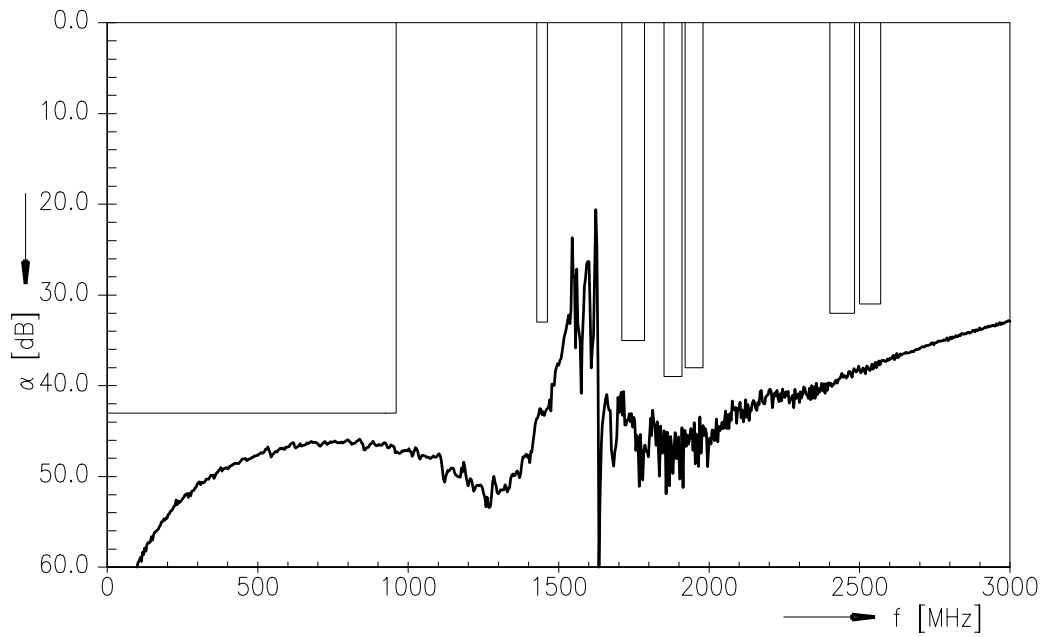


Transfer function (wideband, differential mode,  $S_{ds21}$ )





Transfer function (common mode,  $S_{cs21}$ )

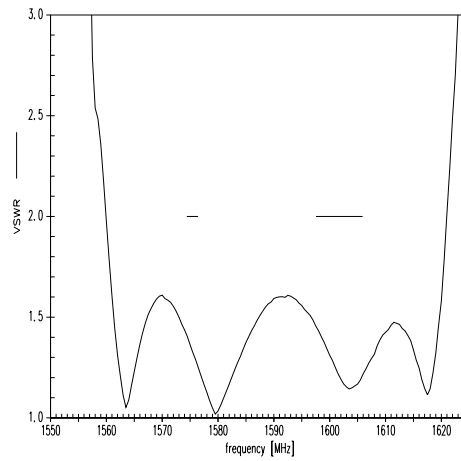
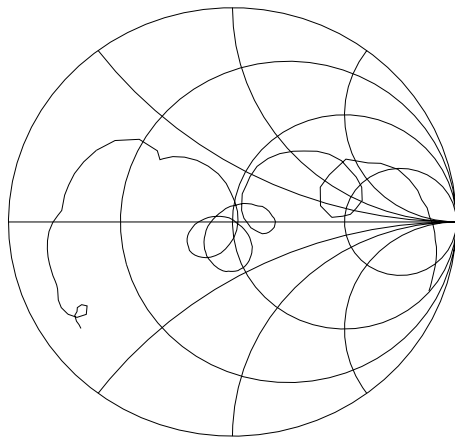


Data Sheet

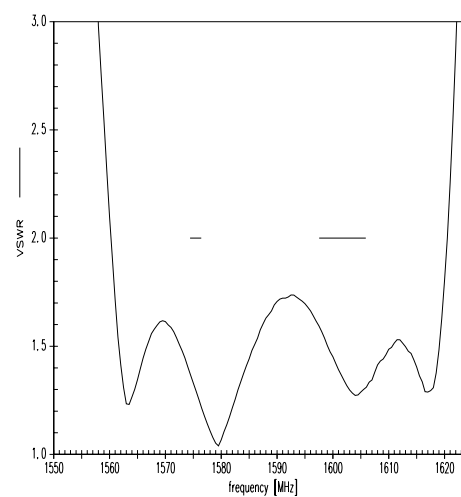
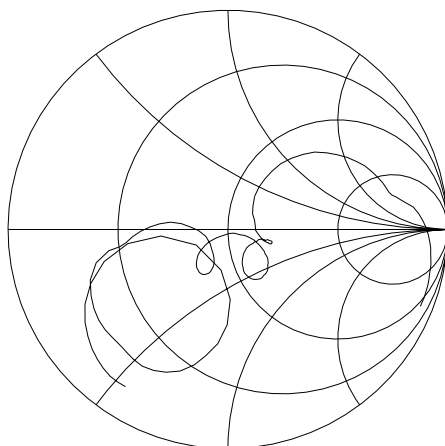


Smith chart / VSWR

**S<sub>11</sub> function**



**S<sub>22</sub> function**



Please read *cautions and warnings and important notes* at the end of this document.



<b>Type</b>	B8802
<b>Ordering code</b>	B39162-B8802-P810
<b>Marking and package</b>	C61157-A8-A30
<b>Packaging</b>	F61074-V8255-Z000
<b>Date codes</b>	L_1126
<b>S-parameters</b>	B8802_NB.s3p 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>Moldability</b>	Before using in overmolding environment, please contact your EPCOS sales office.
<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 further information please contact your local EPCOS sales office or visit our webpage at [www.epcos.com](http://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.

## Important notes

The following applies to all products named in this publication:

1. 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](http://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**. Consequently, 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](http://www.epcos.com/trademarks).