SAW Components

SAW GPS Filter

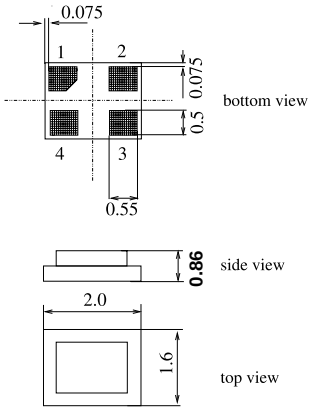
Series/type:	**B9080**
Ordering code:	**B39162B9080L310**
Date:	May 12, 2009
Version:	2.5

Application

- ESD robust low-loss RF GPS filter
- High ESD protection at the filter input
- Usable passband: 4 MHz
- Very low insertion attenuation
- Very high out of band selectivity
- Unbalanced to unbalanced operation
- No matching network required for operation at 50 Ω

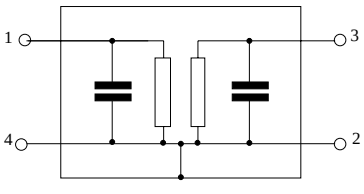
Features

- Package size 2.0 x 1.6 x 0.86. mm^3
- Package code DCS4M
- RoHS compatible
- Approximate weight 0.007 g
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals
- **E**lectrostatic **S**ensitive **D**evice (**ESD**)



Pin configuration

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



Characteristics of Filter

Temperature range for specification: T = –30 ˚C to +85˚C
Terminating source impedance: Z_S = 50 Ω
Terminating load impedance: Z_L = 50 Ω

		B9080			
		min.	**typ. @ 25 ˚C**	**max.**	
Center frequency	f_C	—	1575.42	—	MHz
Maximum insertion attenuation	α_{max}				
1573.42 ... 1577.42 MHz		—	1.2	1.5	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
1573.42 ... 1577.42 MHz		—	0.1	0.4	dB
VSWR (Input and Output)					
1573.42 ... 1577.42 MHz		—	1.35	1.8	
IIP2 (2nd order Input Intercept Point)					
2 tone (cw) method:					
P1@+22.5dBm @F1=824MHz..915MHz					
P2 @-0.5dBm @F2=F1+1575.42MHz		110.5	117.8	—	dBm
P1@+21dBm @F1=824MHz..915MHz					
P2 @+14dBm @F2=F1+1575.42MHz		98.0	115	—	dBm
P1@+20dBm @F1=1710MHz..1785MHz					
P2 @-13.3dBm @F2=F1+1575.42MHz		95	111	—	dBm
P1@+20dBm @F1=1850MHz..1910MHz					
P2 @-13.3dBm @F2=F1+1575.42MHz		95	110	—	dBm
IIP3 (3rd order Input Intercept Point)					
2 tone (cw) method:					
P1@+20dBm @F1=1710MHz..1785MHz					
P2 @+11dBm @F2=2*F1+1575.42MHz		95	110	—	dBm
P1@+21dBm @F1=824MHz..915MHz					
P2@-13.3dBm @F2=2*F1+1575.42MHz		90	105	—	dBm
P1@+20dBm @F1=2500MHz..2570MHz					
P2@-13.3dBm @F2=2*F1-1575.42MHz		85	100	—	dBm
Group delay ripple (p-p)	$\Delta\tau$				
1573.42 ... 1577.42 MHz		—	8	20	ns

				B9080			
				min.	typ. @ 25 ˚C	max.	
Attenuation			α				
0.1	...	824.0	MHz	48	57	—	dB
824.0	...	849.0	MHz	50	57	—	dB
849.0	...	915.0	MHz	50	56	—	dB
915.0	...	1400.0	MHz	48	55	—	dB
1611.0	...	1648.0	MHz	6	13	—	dB
1648.0	...	1710.0	MHz	45	61	—	dB
1710.0	...	1785.0	MHz	53	61	—	dB
1785.0	...	1850.0	MHz	46	61	—	dB
1850.0	...	1910.0	MHz	46	62	—	dB
1910.0	...	1980.0	MHz	46	61	—	dB
1980.0	...	2400.0	MHz	43	51	—	dB
2400.0	...	2484.0	MHz	43	50	—	dB
2484.0	...	2570.0	MHz	42	48	—	dB
2570.0	...	3900.0	MHz	33	41	—	dB
3900.0	...	4400.0	MHz	30	41	—	dB
4400.0	...	5150.0	MHz	15	27	—	dB
5150.0	...	5400.0	MHz	14	20	—	dB
5400.0	...	6000.0	MHz	10	15	—	dB
((824 - 849) + (2400 - 2484))/2			MHz	45	53.5	—	dB
((849 - 915) + (2400 - 2484))/2			MHz	45	53	—	dB

Maximum ratings of Filter

Operable temperature range	T	–30/+85	˚C	
Storage temperature range	T_{stg}	–40/+85	˚C	
DC voltage	V_{DC}	5	V	
ESD voltage @ Input				
Contact Discharge	V_{ESD}	± 8[1)]	kV	at input pin 1
Air Discharge	V_{ESD}	± 15[2)]	kV	at input pin 1
Machine Model	V_{ESD}	± 1000[3)]	V	at input pin 1
Machine Model	V_{ESD}	± 100[2)]	V	at output pin 3
Charge Device Model	V_{ESD}	± 500[4)]	V	at input and output (pin 1 and 3)
Human Body Model	V_{ESD}	± 200[5)]	V	at input and output (pin 1 and 3)
Input power				
WCDMA systems	P_{IN}	30	dBm	Average, cw
TDMA systems	P_{IN}	36	dBm	Peak, max. duty cycle 1:2

1) acc. to IEC61000-4-2 (Contact discharge, Rs = 330 R, Cs = 150 pF), 10 negative & 10 positive pulses.

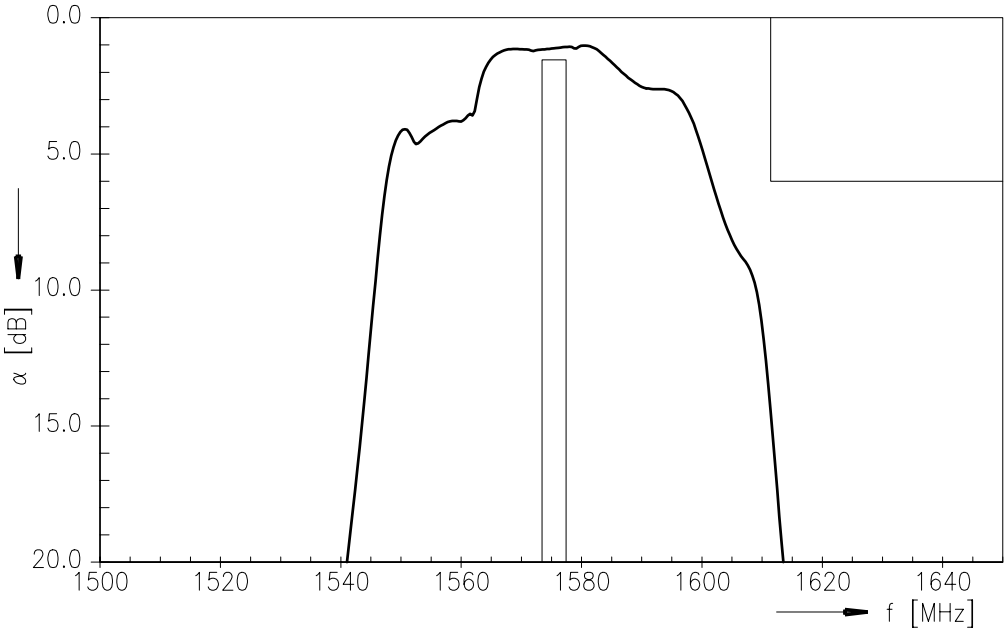
2) acc. to IEC61000-4-2 (Air discharge, Rs = 330 R, Cs = 150 pF), 10 negative & 10 positive pulses.

3) acc. to JESD22-A115A (Machine model, Rs = 0 R, Cs = 200 pF), 10 negative & 10 positive pulses.

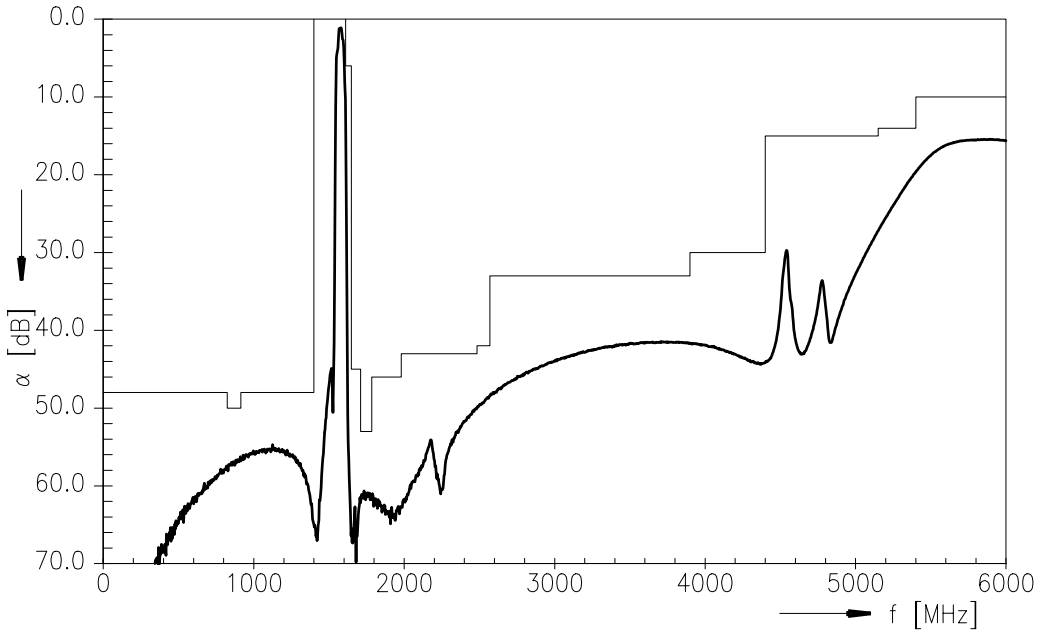
4) acc. to JESD22-C101 (Charge device model)

5) acc. to JESD22-A114 (Human body model, Rs = 1500 R, Cs = 100 pF), 1 negative & 1 positive pulse.

Transfer function (passband)

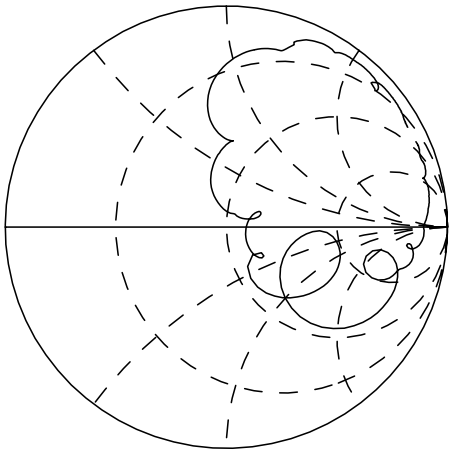


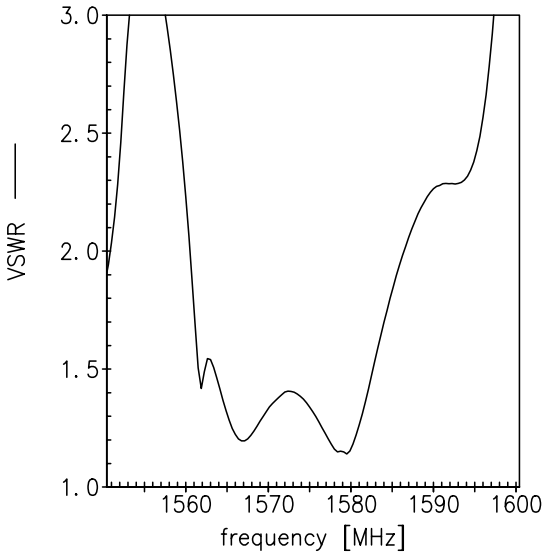
Transfer function



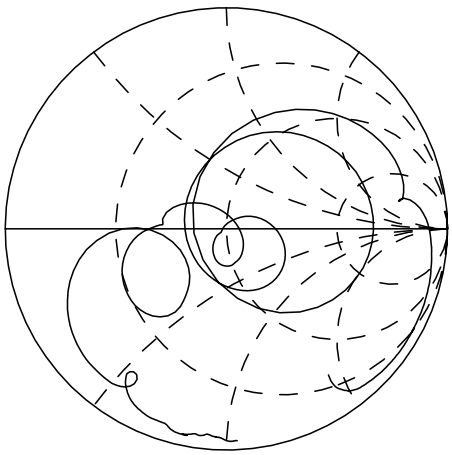
Smith chart / VSWR

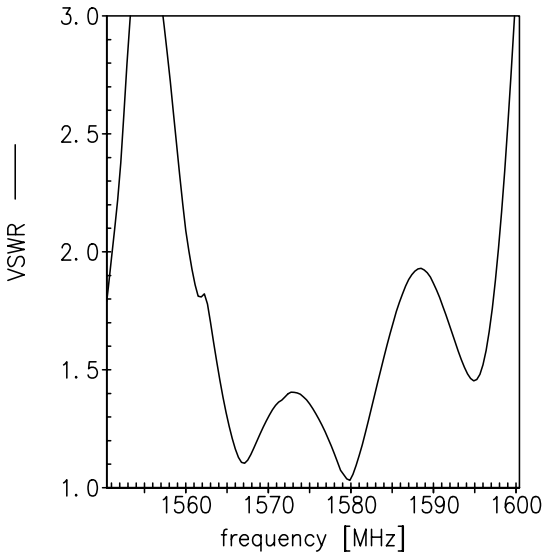
S_{11} function





S_{22} function





References

Type	B9080
Ordering code	B39162B9080L310
Marking and package	C61157-A7-A151
Packaging	F61074-V8224-Z000
Date codes	L_1126
S-parameters	B9080_NB.s2p, B9080_WB.s2p
Soldering profile	S_6001
RoHS compatible	defined as compatible with the following documents: "DIRECTIVE 2002/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment. 2005/618/EC from April 18th, 2005, amending Directive 2002/95/EC of the European Parliament and of the Council for the purposes of establishing the maximum concentration values for certain hazardous substances in electrical and electronic equipment."
Moldability	Before using in overmolding environment, please contact your EPCOS sales office.

For further information please contact your local EPCOS sales office or visit our webpage at www.epcos.com .

Published by EPCOS AG
Surface Acoustic Wave Components Division
P.O. Box 80 17 09, 81617 Munich, GERMANY

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). 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, CSSP, CTVS, DSSP, MiniBlue, MKK, MLSC, MotorCap, PCC, PhaseCap, PhaseMod, SIFERRIT, SIFI, SIKOREL, SilverCap, SIMDAD, 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.