

SAW filters

Series/Type: B9104

The following products presented in this data sheet are being withdrawn.

Ordering Code	Substitute Product		Deadline Last Orders	Last Shipments
B39162B9104P810		2016-04-22	2016-12-31	2017-03-31

For further information please contact your nearest EPCOS sales office, which will also support you in selecting a suitable substitute. The addresses of our worldwide sales network are presented at www.epcos.com/sales.



B9104

SAW CELL / GPS / PCS Triplexer

859.0 / 1575.42 / 1920.0 MHz

Data Sheet



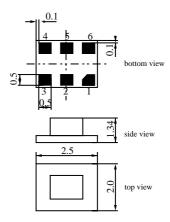
Application

- Low loss LTCC Triplexer for mobile phones covering Cellular, GPS and PCS band
- Usable passbands 70 MHz (CELL), 2 MHz (GPS), 140 MHz (PCS)
- Very low insertion attenuation in CELL, GPS and PCS band
- Integrated low loss GPS filter with single ended output 50 Ω
- Very low amplitude ripple in all bands
- No switches and control lines required
- External shunt inductor from ANT pin to ground used for ESD protection and matching



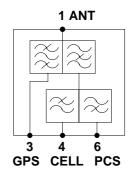
Features

- Package size 2.5 x 2.0 x 1.34 mm³
- RoHS compatible
- Approximate weight 0.022 g
- Package for Surface Mount Technology (SMT)
- Ni, gold-plated terminals
- Electrostatic Sensitive Device (ESD)



Pin configuration

- 1 ANT Input
- 3 GPS Output
- 4 CELL Output
- 6 PCS Output
- 2,5 Ground





B9104

SAW CELL / GPS / PCS Triplexer

859.0 / 1575.42 / 1920.0 MHz

Data Sheet



Characteristics

		B9104			
		min.	typ. @ 25 °C	max.	
ANT - CELL					
Center frequency	f_C		859.0		MHz
Maximum insertion attenuation	α_{max}				
	ИHz	_	0.65	0.9	dB
VSWR					
	ИHz		1.35	1.6	
ANT - PCS			4000.0		N 41 1-
Center frequency Maximum insertion attenuation	f _C		1920.0		MHz
	α _{max} MHz		0.65	0.9	dB
VSWR	VIITZ		0.05	0.9	uБ
_	ИНz		1.3	1.6	
Attenuation	α		1.5	1.0	
	мHz	9	13		dB
ANT - GPS	•				
Center frequency	f _C		1575.42		MHz
Maximum insertion attenuation	α_{max}				
1574.42 1576.42 N			0.9	1.5	dB
VSWR					
1574.42 1576.42 N	ИHz		1.3	1.8	
Attenuation	α				
824.0 849.0 N	ИHz	32	37		dB
	ИHz	25	32		dB
	ИHz	25	37		dB
	ИHz	35	40	_	dB
	ИHz	32	40	_	dB
	ИHz	21	26		dB
CELL - GPS					1
Attenuation 4570.40 A	α	20	04		40
1574.42 1576.42 M 824.0 849.0 M	viHz viHz	20 32	34 37		dB dB
824.0 849.0 N	VI□Z	32	31	_	ив
Attenuation	α				1
1574.42 1576.42 N		12	21		dB
	vii iz MHz	37	50		dB
10.0161 1310.01	VII 14	J 31	50		uD



B9104

SAW CELL / GPS / PCS Triplexer

859.0 / 1575.42 / 1920.0 MHz

Data Sheet



Maximum ratings

Operable temperature range	Т	-30/+85	°C	
Storage temperature range	T_{stg}	-40/+85	°C	
DC voltage	V_{DC}	5	V	at GPS port
ESD voltage	V_{ESD}	50 ¹⁾	V	machine model, 10 pulses
Input power at				
CELL port				effective power in the on-state
824 849 MHz	P_{IN}	31	dBm	continuous wave signal
PCS port				
1850 1910 MHz	P_{IN}	31	dBm	

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



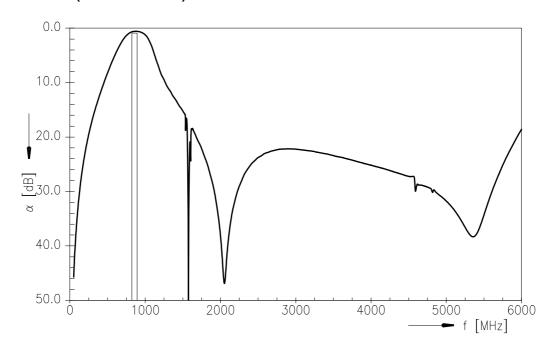
SAW CELL / GPS / PCS Triplexer

859.0 / 1575.42 / 1920.0 MHz

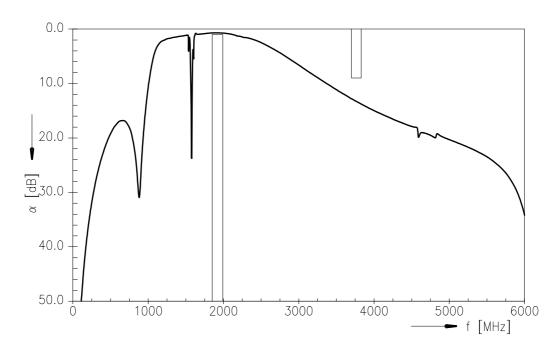
Data Sheet



ANT - CELL (transfer function):



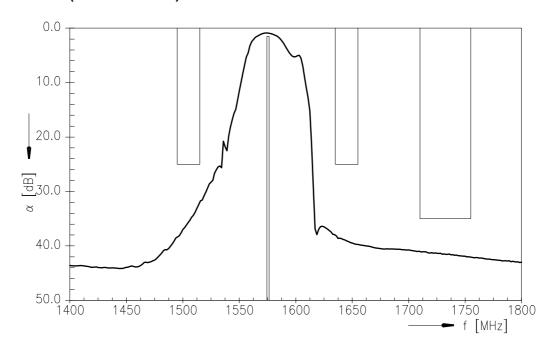
ANT - PCS (transfer function):



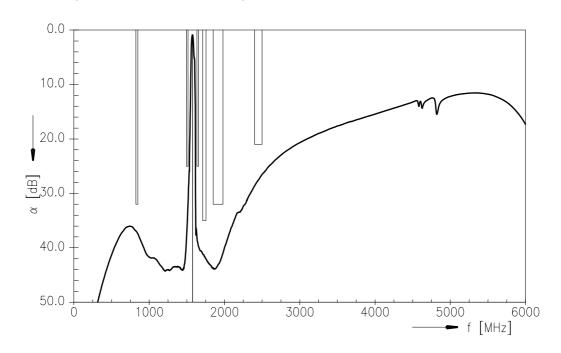




ANT - GPS (transfer function):



ANT - GPS (transfer function wideband):



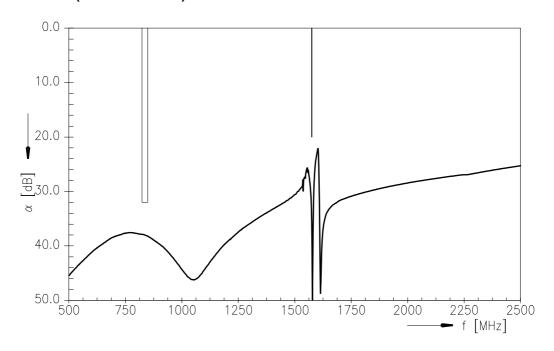


 SAW Components
 B9104

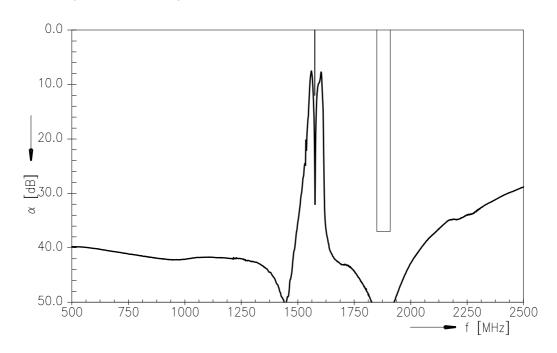
 SAW CELL / GPS / PCS Triplexer
 859.0 / 1575.42 / 1920.0 MHz

Data Sheet

CELL - GPS (transfer function):



PCS - GPS (transfer function):





B9104

SAW CELL / GPS / PCS Triplexer

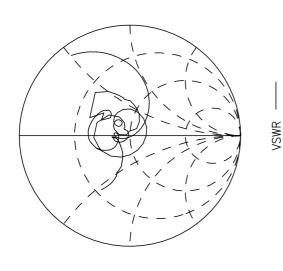
859.0 / 1575.42 / 1920.0 MHz

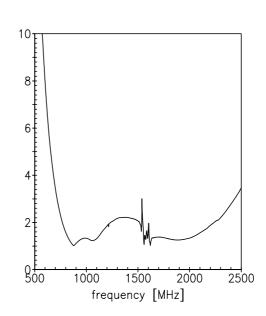
Data Sheet



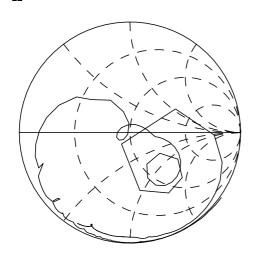
Smith charts / VSWR

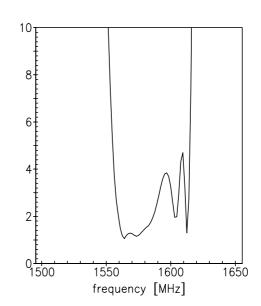
S₁₁ Antenna (matched with shunt inductor)





S₂₂ GPS





VSWR



B9104

SAW CELL / GPS / PCS Triplexer

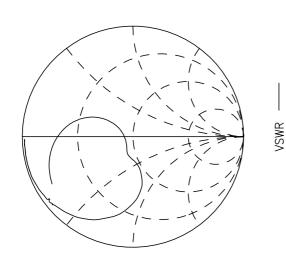
859.0 / 1575.42 / 1920.0 MHz

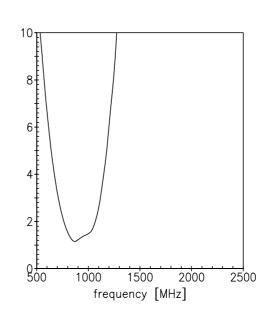
Data Sheet



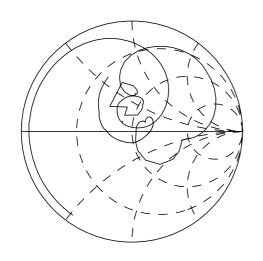
Smith charts / VSWR

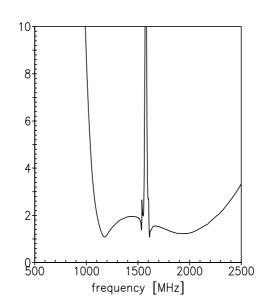
S₃₃ CELL





S₄₄ PCS





VSWR



SAW CELL / GPS / PCS Triplexer

859.0 / 1575.42 / 1920.0 MHz

Data Sheet



References

Туре	B9104
Ordering code	B39162B9104P810
Marking and package	C61157-A3-A30
Packaging	F61074-V8225-Z000
Date codes	L_1126
S-parameters (6.8 nH ANT)	B9104_NB.s4p, B9104_WB.s4p
Soldering profile	S_6001
RoHS compatible	defined as compatible with the following documents: "DIRECTIVE 2002/95/EC OF THE EUROPEAN PARLIA- MENT AND OF THE COUNCIL of 27 January 2003 on the re- striction of the use of certain hazardous substances in electri- cal and electronic equipment. 2005/618/EC from April 18th, 2005, amending Directive 2002/95/EC of the European Par- liament and of the Council for the purposes of establishing the maximum concentration values for certain hazardous sub- stances in electrical and electronic equipment."
Moldability	Before using in overmolding environment, please contact your EPCOS sales office.
Matching coils	See http://www.tdk.co.jp/tefe02/coil.htm#aname1 http://www.tdk.co.jp/etvcl/index.htm for a large variety of matching coils.

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

 $\ensuremath{\texttt{©}}$ EPCOS AG 2010. 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:

- 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.
- 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, CSMP, CSSP, CTVS, DeltaCap, DigiSiMic, DSSP, 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.