

RF360 Europe GmbH

A Qualcomm – TDK Joint Venture

SAW Components

SAW Duplexer for Smallcell

Band 1 (3G/LTE)

Series/type:B8092Ordering code:B39212B8092P810

Date:February 25, 2015Version:2.2

RF360 products mentioned within this document are offered by RF360 Europe GmbH and other subsidiaries of RF360 Holdings Singapore Pte. Ltd. (collectively, the "RF360 Subsidiaries"). RF360 Holdings Singapore Pte. Ltd. is a joint venture of Qualcomm Global Trading Pte. Ltd. and EPCOS AG. References in this documentation to EPCOS AG should properly reference, and shall be read to reference, the RF360 Subsidiaries.

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

© 2016 RF360 Europe GmbH and/or its affiliated companies. All rights reserved.

These materials, including the information contained herein, may be used only for informational purposes by the customer. The RF360 Subsidiaries assume no responsibility for errors or omissions in these materials or the information contained herein. The RF360 Subsidiaries reserve the right to make changes to the product(s) or information contained herein without notice. The materials and information are provided on an AS IS basis, and the RF360 Subsidiaries assume no liability and make no warranty or representation, either expressed or implied, with respect to the materials, or any output or results based on the use, application, or evaluation of such materials, including, without limitation, with respect to the non-infringement of trademarks, patents, copyrights or any other intellectual property rights or other rights of third parties.

No use of this documentation or any information contained herein grants any license, whether express, implied, by estoppel or otherwise, to any intellectual property rights, including, without limitation, to any patents owned by QUALCOMM Incorporated or any of its subsidiaries.

Not to be used, copied, reproduced, or modified in whole or in part, nor its contents revealed in any manner to others without the express written permission of RF360 Europe GmbH.

Qualcomm and Qualcomm RF360 are trademarks of Qualcomm Incorporated, registered in the United States and other countries. RF360 is a trademark of Qualcomm Incorporated. Other product and brand names may be trademarks or registered trademarks of their respective owners.

This technical data may be subject to U.S. and international export, re-export, or transfer ("export") laws. Diversion contrary to U.S. and international law is strictly prohibited.



SAW Components

SAW Duplexer for Smallcell Band 1 (3G/LTE)

Series/type: Ordering code:

B8092 B39212B8092P810

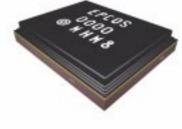
Date: Version: February 25, 2015 2.2

© 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.

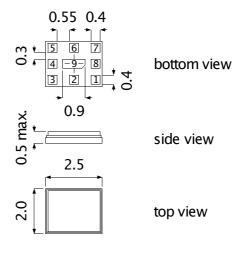
		0000
SAW Components SAW Duplexer for Smallcell		88092 MHz
DataSheet	SMD	
Application		
 Low-loss SAW duplexer for 3G/LTE tems (Band 1) 	smallcell sys-	
 Low insertion attenuation Low amplitude ripple Lossbla passband 60 MUz 	@ 000005 * 4000	

- Usable passband 60 MHz
- High power durability
- Industrial qualification
- Rx = uplink = 1920-1980 MHz
- Tx = downlink = 2110-2170 MHz



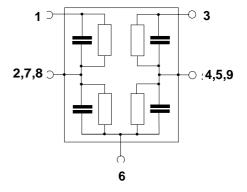
Features

- Package size 2.5 * 2.0 mm²
- max. Package height 0.5 mm
- RoHS compatible
- Package for Surface Mount Technology (SMT)
- Ni, Au-plated terminals
- Electrostatic Sensitive Device (ESD)
- Moisture Sensitivity Level 3



Pin configuration

- 3 Rx output
- 1 Tx input
- 6 Antenna
- 2, 4, 5, 7, 8, 9 To be grounded



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

February 25, 2015

SAW Components SAW Duplexer for Smallcell				195	0.0 / 214	10.0 MH
DataSheet				100		
Characteristics						
Temperature range for specification: Antenna terminating impedance: RX terminating impedance: TX terminating impedance:	:	$Z_{RX} = 50$)°C to +8)Ω // 2.2)Ω)Ω			
Characterisitcs TX - ANT			min.	typ. @ 25 °C	max.	
Center frequency		f _C		2140.0		MHz
Maximum insertion attenuation 2110.0 2170.0	MHz	α_{max}	-	2.0	2.5	dB
Amplitude ripple (p-p) 2110.0 2170.0	MHz	Δα	_	0.8	1.6	dB
Error Vector Magnitude 2112.5 2167.5	MHz	EVM ¹⁾	_	0.5	1.5	%
Input VSWR (TX port) 2110.0 2170.0	MHz					/0
Output VSWR (ANT port)			-	1.7	2.0	
2110.0 2170.0	MHz		-	1.5	2.0	
Attenuation		α				
10.0 1574.0	MHz		30	34	-	dB
843.0 894.0	MHz		30	40	-	dB
1574.0 1606.0	MHz		30	34	-	dB
1606.0 1880.0 1805.0 1880.0	MHz MHz		30	34 40	-	dB dB
1920.0 1980.0	MHz		30 37	40	_	dВ
2250.0 2400.0	MHz		30	43	-	dB
2400.0 2500.0	MHz		30	48	_	dB
2500.0 2700.0	MHz		30	37	-	dB
2700.0 3000.0	MHz		30	37	-	dB
2620.0 2690.0	MHz		30	42	-	dB
3000.0 3800.0	MHz		28	32	-	dB
3800.0 4220.0	MHz		15	20	-	dB
4220.0 4340.0	MHz		10	15	-	dB
4340.0 5000.0	MHz		7	18	-	dB
5000.0 6000.0	MHz		3	7	-	dB

¹⁾ Error Vector Magnitude (EVM) based on definition given in 3GPP TS 25.141

SAW Components					B8092
SAW Duplexer for Smallcell			195	50.0 / 214	0.0 MHz
DataSheet	SMD				
Characteristics					
Temperature range for specification: Antenna terminating impedance: RX terminating impedance: TX terminating impedance:	Z _{ANT} = 5 Z _{RX} = 5	0 °C to +8 0 Ω // 2.2 n 0 Ω 0 Ω			
Characterisitcs ANT - RX		min.	typ. @ 25 °C	max.	
Center frequency	f _C		1950.0		MHz
Maximum insertion attenuation 1920.0 1980.0	α _{max} MHz	-	2.3	3.7	dB
Amplitude ripple (p-p) 1920.0 1980.0	$\Delta lpha$ MHz	-	0.9	2.2	dB
	EVM ¹⁾ MHz	-	1.5	3.0	%
	MHz	-	1.9	2.2	
Output VSWR (RX port) 1920.0 1980.0	MHz	-	2.0	2.3	
1785.01880.01880.01900.02000.02110.02110.02170.02255.02400.02400.02500.0	α MHz MHz MHz MHz MHz MHz MHz	30 20 5 2.5 43 30 25	36 31 15 12 48 33 30	- - - - -	dB dB dB dB dB dB dB dB
3840.0 3960.0 3960.0 5000.0 5000.0 5760.0	MHz MHz MHz MHz MHz	15 20 20 15 15	20 24 25 30 30	- - - -	dB dB dB dB dB

¹⁾ Error Vector Magnitude (EVM) based on definition given in 3GPP TS 25.141

SAW Components				E	38092
SAW Duplexer for Smallcell			1950.	0 / 2140.0) MHz
DataSheet	SMD				
Characteristics					
Temperature range for specification: TX terminating impedance: ANT terminating impedance: RX teminating impedance:	T = -10 °C $Z_{Tx} = 50 \Omega$ $Z_{Ant} = 50 \Omega$ $Z_{Rx} = 50 \Omega$				
Characteristics Rx-Tx		min.	typ. @ 25 °C	max.	

						@ 25 °C		
Attenuation				α				
	1920.0	1980.0	MHz		42	48	-	dB
	2110.0	2170.0	MHz		47	52	-	dB

Maximum Ratings

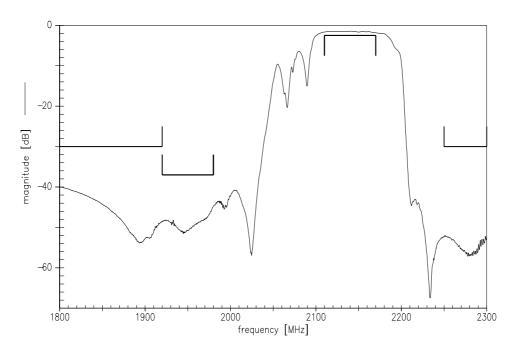
Storage temperature range	T _{stg}	-40/+85	°C	
DC voltage	V _{DC}	0	V	
ESD voltage	V _{ESD}	50 ¹⁾	V	machine model, 1 pulse
Input power at pin 1				source and load impedance 50 Ω
2110.02170.0 MHz	P _{in}	28 ²⁾	dBm	Pin 28dBm average - 39 dBm peak LTE 5 MHz downlink T = 55°C, 100.000 h
elsewhere	P _{in}	10	dBm	
Operating lifetime with Output power at antenna				source and load impedance 50 $\boldsymbol{\Omega}$
2110.02170.0 MHz	Pout	24 ³⁾	dBm	Continuous wave T=55 °C, 100khrs

According to JESD22-A115A (machine model), 1 negative and 1 positive pulses.
 Time to failure (TTDF) according to accelerated power durability tests, and wear out models.
 according to accelerated High Temperature Operating Life (HTOL) test.

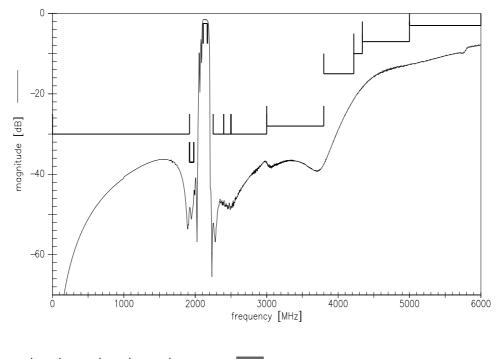
SAW ComponentsB8092SAW Duplexer for Smallcell1950.0 / 2140.0 MHzData Sheet1950.0 / 2140.0 MHz

DataSheet

Frequency Response TX-ANT



Frequency Response TX-ANT



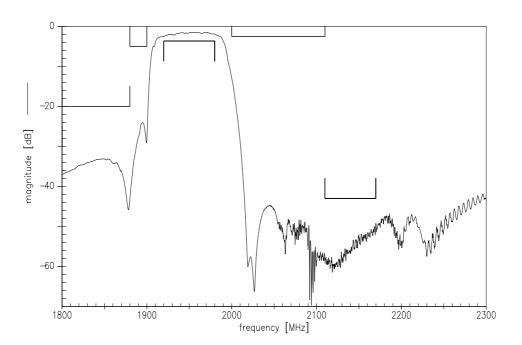
6

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

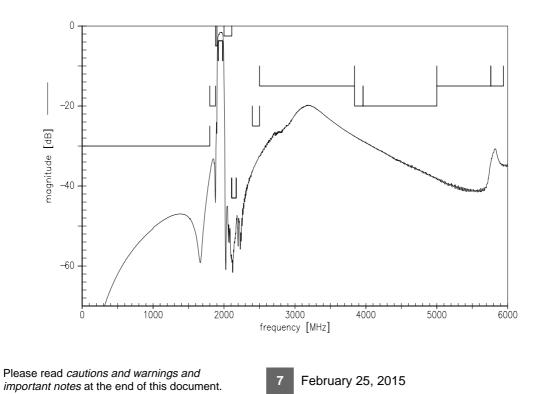
February 25, 2015

SAW ComponentsB8092SAW Duplexer for Smallcell1950.0 / 2140.0 MHzDataSheetImage: Component State State

Frequency Response ANT-RX



Frequency Response ANT-RX

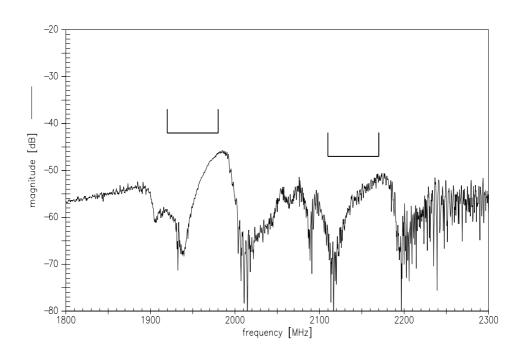


B8092

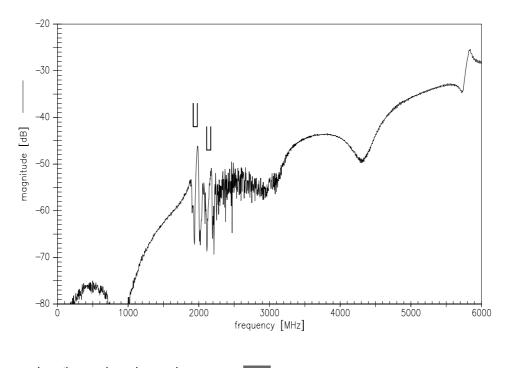
SAW Components **SAW Duplexer for Smallcell** 1950.0 / 2140.0 MHz SMD

DataSheet

Frequency Response TX-RX



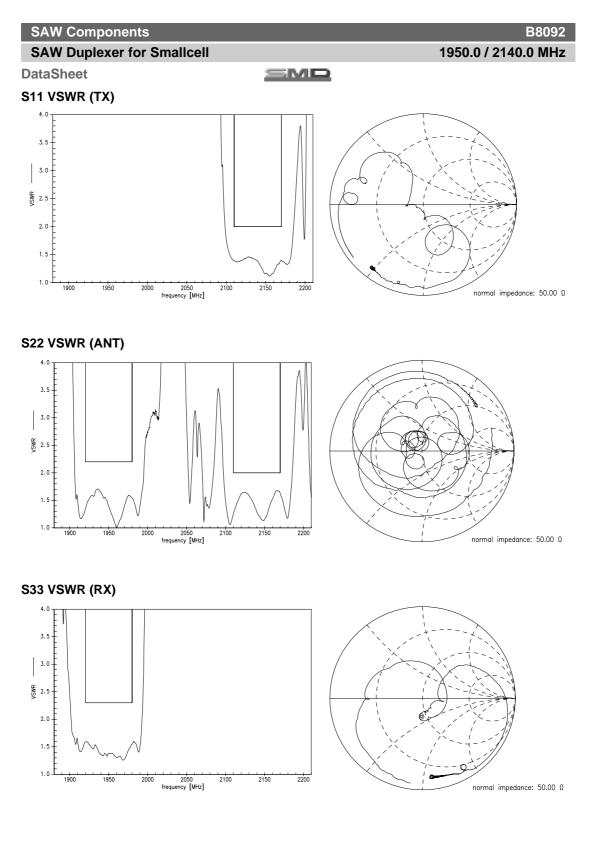
Frequency Response TX-RX



8

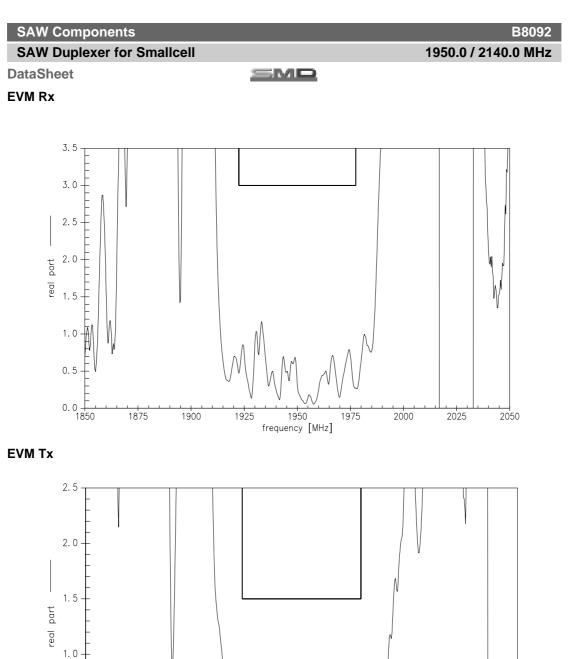
Please read *cautions and warnings and important notes* at the end of this document.

February 25, 2015



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

February 25, 2015



Λſ

2125

2100

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

2050

2075

0.5

0.0

February 25, 2015 10

2150 frequency [MHz] 2175

2200

SAW Components

B8092

SAW Duplexer for Smallcell

1950.0 / 2140.0 MHz

DataSheet

References

Туре	B8092
Ordering code	B39212B8092P810
Marking and package	C61157-A8-A61
Packaging	F61074-V8232-Z000
Date codes	L_1126
S-parameters	B8092_NB.s3p, B8092_WB.s3p see file header for port/pin assignement table
Soldering profile	S_6001
RoHS compatible	RoHS-compatible means that products are compatible with the requirements according to Art. 4 (substance restrictions) of Di- rective 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.
Moldability	Before using in overmolding environment, please contact your EPCOS sales office.
Matching coils	See Inductor pdf-catalog <u>http://www.tdk.co.jp/tefe02/coil.htm#aname1</u> and Data Library for circuit simulation <u>http://www.tdk.co.jp/etvcl/index.htm</u>

SMD

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

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

© EPCOS AG 2015. 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.

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





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, Alu-X, CeraDiode, CeraLink, CeraPad, CeraPlas, CSMP, CSSP, CTVS, DeltaCap, DigiSiMic, DSSP, ExoCore, FilterCap, FormFit, LeaXield, MiniBlue, MiniCell, MKD, MKK, MotorCap, PCC, PhaseCap, PhaseCube, PhaseMod, PhiCap, PQSine, SIFERRIT, SIFI, SIKOREL, SilverCap, SIMDAD, SiMic, SIMID, SineFormer, SIOV, SIP5D, SIP5K, TFAP, 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.

