



SAW Components

SAW Rx 2in1 Input Diplex Filter

TD-SCDMA

Series/Type:	B9820
Ordering code:	B39202B9820P810
Date:	September 27, 2011
Version:	2.0

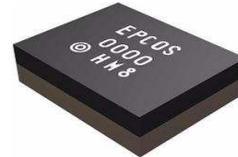


Data sheet



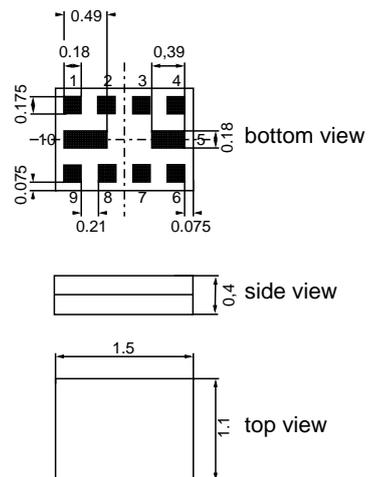
Application

- Low-loss 2in1 RF filter for mobile telephone TD-SCDMA systems
- Usable passband:
Filter 1 (TD-SCDMA 1900): 40 MHz
Filter 2 (TD-SCDMA 2017.5): 15 MHz
- Unbalanced to unbalanced operation for both filters
- Low amplitude ripple



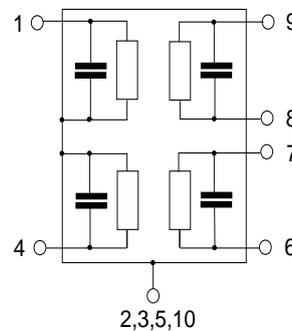
Features

- Package size 1.5 x 1.1 x 0.4 mm³
- RoHS compatible
- Approx. weight 0.003 g
- Package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- **Electrostatic Sensitive Device (ESD)**
- **Moisture Sensitive Level 3**



Pin configuration

- 1 Input [Diplex]
- 9 Output, unbalanced [Filter 1]
- 6 Output, unbalanced [Filter 2]
- 4,7,8 To be grounded
- 2,3,5,10 Case-ground





Data sheet



Characteristics of filter 1 (TD-SCDMA 1900)

Temperature range for specification: $T = -30\text{ °C to }+85\text{ °C}$
 Terminating source impedance: $Z_S = 50\ \Omega \parallel 4.7\text{nH (unbalanced)}$
 Terminating load impedance: $Z_L = 50\ \Omega$

		min.	typ. @ 25 °C	max.	
Center frequency	f_C	—	1900.0	—	MHz
Maximum insertion attenuation 1880.0 ... 1920.0 MHz	α_{\max}	—	1.9	2.2	dB
Amplitude ripple (p-p) 1880.0 ... 1920.0 MHz	$\Delta\alpha$	—	0.7	1.0	dB
Input VSWR 1880.0 ... 1920.0 MHz		—	1.8	2.0	
Output VSWR 1880.0 ... 1920.0 MHz		—	1.6	1.9	
Attenuation	α				
0.0 ... 925.0 MHz		30	39	—	dB
925.0 ... 960.0 MHz		30	38	—	dB
960.0 ... 1805.0 MHz		25	32	—	dB
1805.0 ... 1840.0 MHz		33	38	—	dB
1840.0 ... 1850.0 MHz		25	29	—	dB
1980.0 ... 2005.0 MHz		30	40	—	dB
2005.0 ... 2150.0 MHz		28	35	—	dB
2150.0 ... 3500.0 MHz		28	35	—	dB
3500.0 ... 4000.0 MHz		35	39	—	dB
4000.0 ... 6000.0 MHz		23	28	—	dB



SAW Components

B9820

SAW Rx 2in1 Input Duplex Filter

1900.0 / 2017.5

Data sheet



Maximum ratings of filter 1

Operable temperature range	T	-40/+85	°C	
Storage temperature range	T _{stg}	-40/+85	°C	
DC voltage	V _{DC}	5	V	
ESD voltage	V _{ESD}	50 ¹⁾	V	machine model, 1 pulse
Input Power at 1880.0 - 1920.0 MHz	P _{IN}	10	dBm	continuous wave

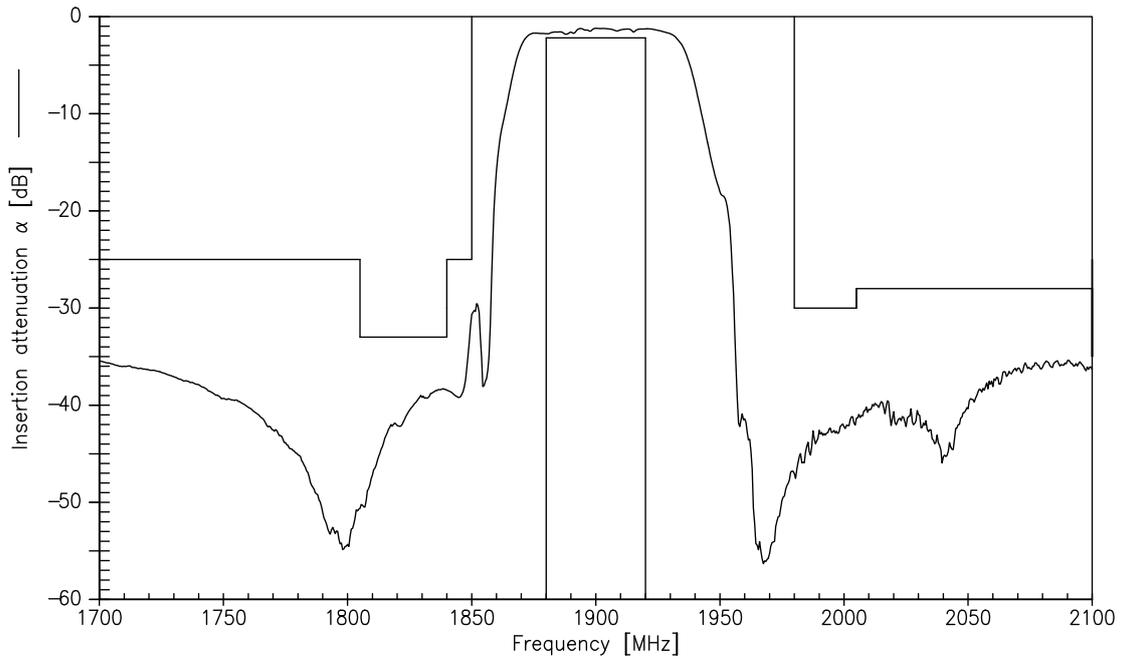
¹⁾ acc. to JESD22-A115A (machine model), 1 negative & 1 positive pulses.



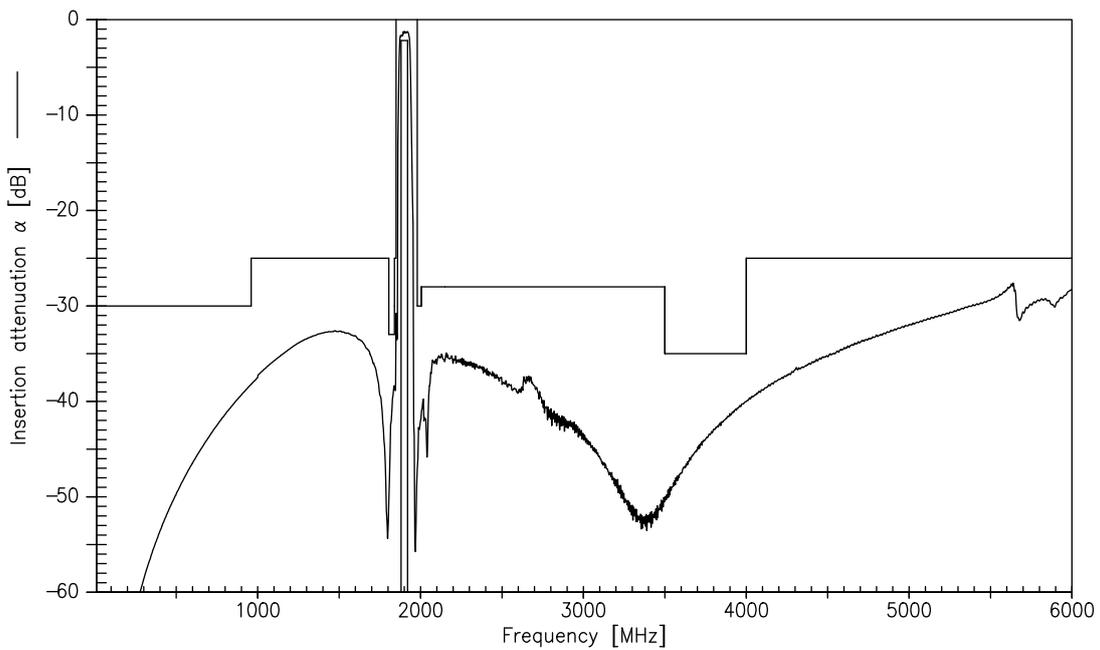
Data sheet



Transfer function (narrow band)

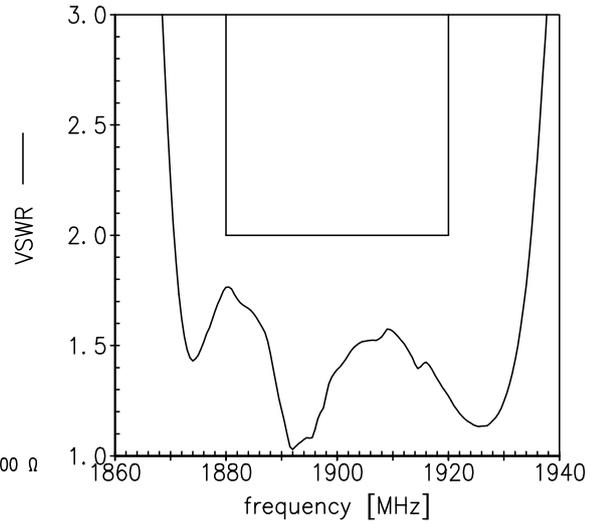
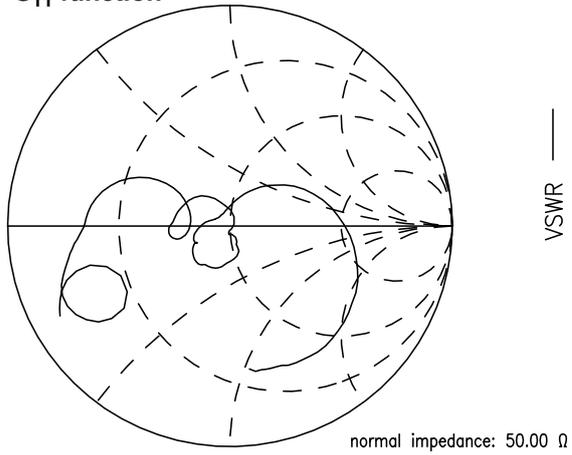


Transfer function (wide band)

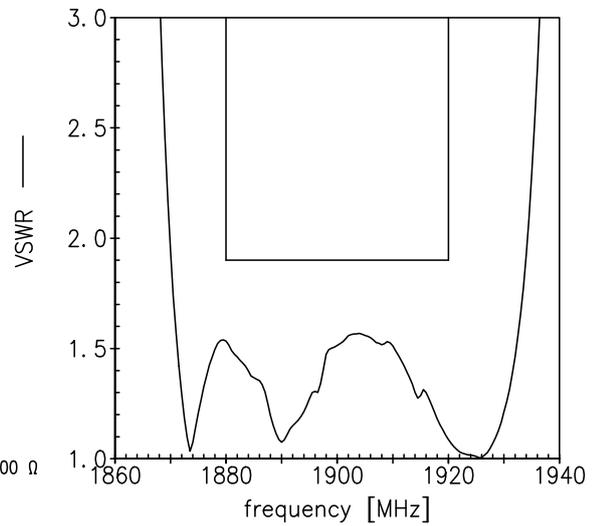
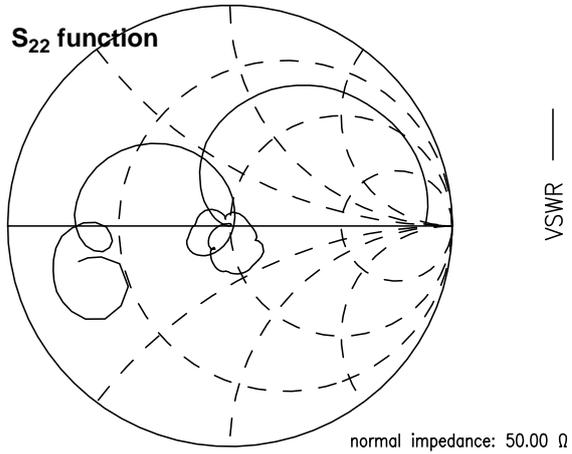


Please read *cautions and warnings* and *important notes* at the end of this document.

S₁₁ function



S₂₂ function





Data sheet



Characteristics of filter 2 (TD-SCDMA 2017.5)

Temperature range for specification: $T = -30\text{ °C to }+85\text{ °C}$
 Terminating source impedance: $Z_S = 50\ \Omega \parallel 4.7\text{nH (unbalanced)}$
 Terminating load impedance: $Z_L = 50\ \Omega$

		min.	typ. @ 25 °C	max.	
Center frequency	f_C	—	2017.5	—	MHz
Maximum insertion attenuation	α_{max}	—	1.8	2.3	dB
2010.0 ... 2025.0 MHz					
Amplitude ripple (p-p)	$\Delta\alpha$	—	0.5	1.0	dB
2010.0 ... 2025.0 MHz					
Input VSWR		—	1.5	1.8	
2010.0 ... 2025.0 MHz					
Output VSWR		—	1.4	1.8	
2010.0 ... 2025.0 MHz					
Attenuation	α				
0.0 ... 1000.0 MHz		35	42	—	dB
1000.0 ... 1850.0 MHz		30	36	—	dB
1850.0 ... 1930.0 MHz		35	40	—	dB
1930.0 ... 1950.0 MHz		30	37	—	dB
1950.0 ... 1980.0 MHz		10	18	—	dB
2050.0 ... 2075.0 MHz		3.0	10	—	dB
2075.0 ... 2085.0 MHz		27	50	—	dB
2085.0 ... 2500.0 MHz		30	40	—	dB
2500.0 ... 4500.0 MHz		30	40	—	dB
4500.0 ... 6000.0 MHz		30	38	—	dB



SAW Components

B9820

SAW Rx 2in1 Input Duplex Filter

1900.0 / 2017.5

Data sheet



Maximum ratings of filter 2

Operable temperature range	T	-40/+85	°C	
Storage temperature range	T _{stg}	-40/+85	°C	
DC voltage	V _{DC}	3	V	
ESD voltage	V _{ESD}	50 ¹⁾	V	machine model, 1 pulse
Input power at 2010.0 - 2025.0 MHz	P _{IN}	10	dBm	effective power in the on-state

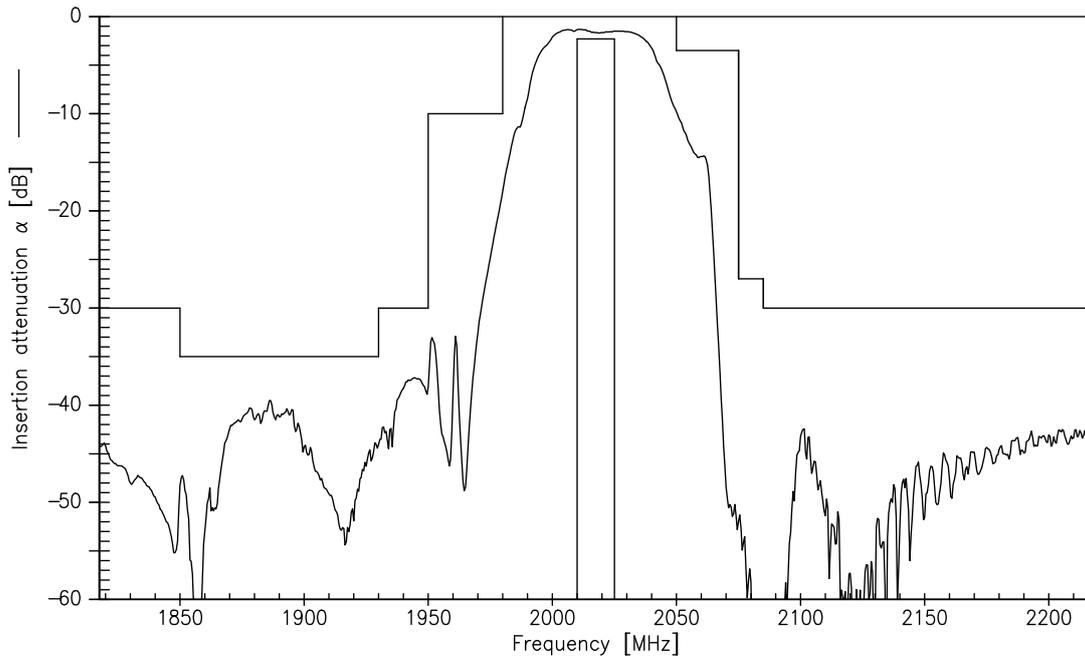
¹⁾ acc. to JESD22-A115A (machine model), 1 negative & 1 positive pulses.



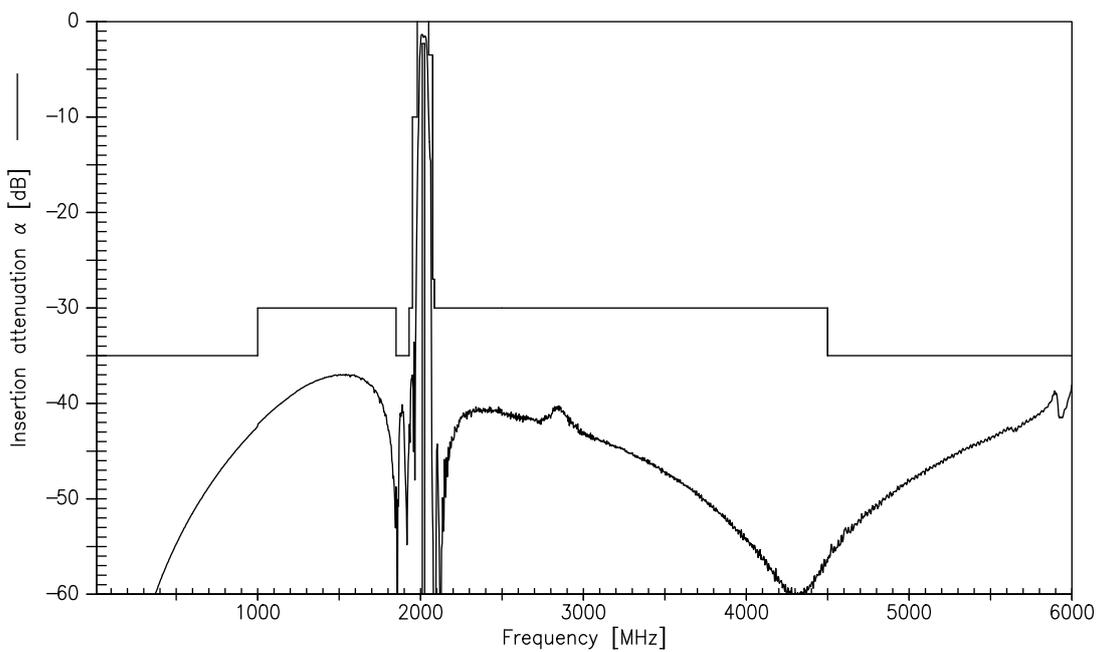
Data sheet



Transfer function (narrow band)

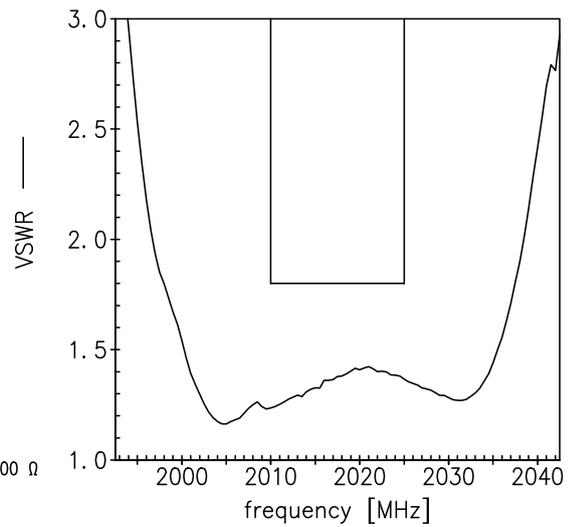
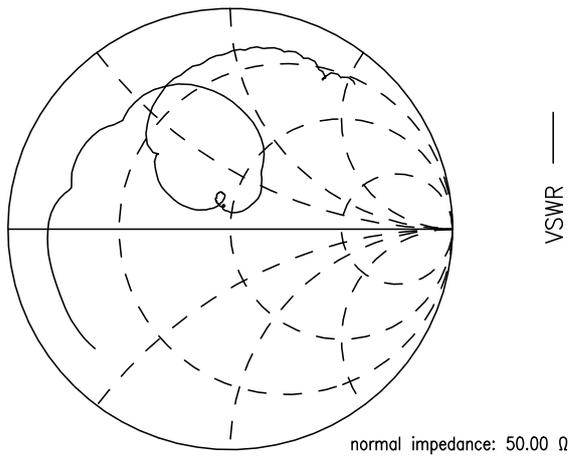


Transfer function (wide band)

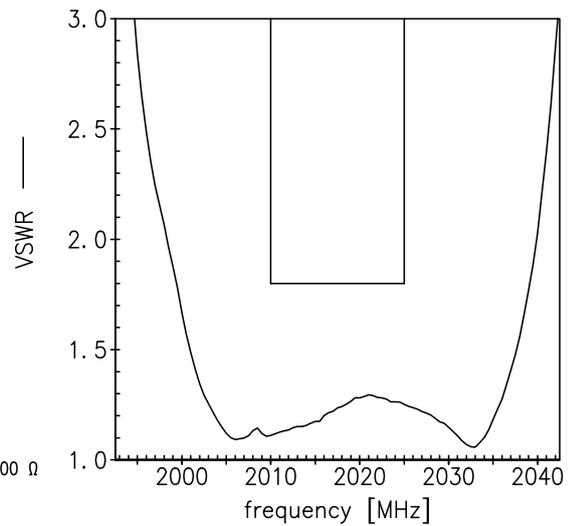
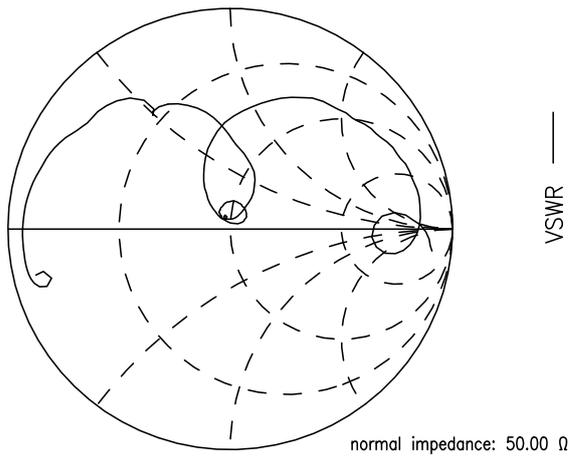


Please read *cautions and warnings* and *important notes* at the end of this document.

S₁₁ function



S₂₂ function





SAW Components	B9820
SAW Rx 2in1 Input Duplex Filter	1900.0 / 2017.5

Data sheet



References

Type	B9820
Ordering code	B39202B9820P810
Marking and package	C61157-A8-A19
Packaging	F61074-V8227-Z000
Date codes	L_1126
S-parameters	B9820_LB_NB.s2p, B9820_LB_WB.s2p, B9820_UB_NB.s2p, B9820_UB_WB.s2p See file header for port/pin assignment table.
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 maxi- mum concentration values for certain hazardous substances 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
Systems, Acoustics, Waves Business Group
P.O. Box 80 17 09, 81617 Munich, GERMANY

© EPCOS AG 2011. 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.



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, 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.