SAW Components

SAW duplexer

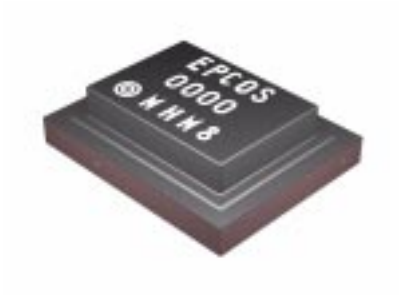
WCDMA Band VIII

Series/type:	**B7675**
Ordering code:	**B39941B7675P810**
Date:	February 12, 2010
Version:	2.0

© EPCOS AG 2010. Reproduction, publication and dissemination of this data sheet, enclosures hereto and the information contained therein without EPCOS' prior express consent is prohibited.

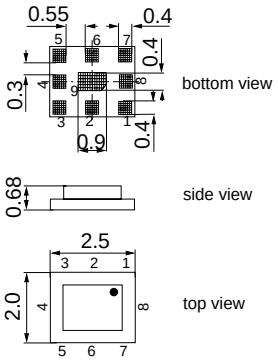
Application

- Low-loss SAW duplexer for mobile telephone WCDMA Band VIII systems
- Low insertion attenuation
- Low amplitude ripple
- Usable passband 35 MHz



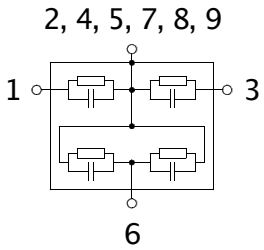
Features

- Package size 2.5 x 2.0 x 0.68 mm³
- RoHS compatible
- Approximate weight 0.013 g
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals
- **E**lectrostatic **S**ensitive **D**evice (**ESD**)
- MSL 3



Pin configuration

■	1	RX output, single ended
■	3	TX input, single ended
■	6	Antenna
■	2,4,5,7,8,9	Ground



Characteristics

Temperature range for specification: T = –15 ˚C to +80 ˚C
ANT terminating impedance: Z_{ANT} = 50 Ω || 9.2 nH
RX terminating impedance: Z_{RX} = 50Ω
TX terminating impedance: Z_{TX} = 50 Ω + 2.0 nH (series)*)

*) Integration of TX coil into a typical PA matching network should be possible without additional elements.

Characteristics TX-ANT			min.	typ. @ 25˚C	max.	
Center frequency	f_C		—	897.50	—	MHz
Maximum insertion attenuation						
@$f_{Carrier}$ 882.4 ... 912.6MHz	α_{WCDMA} 1)		—	1.8	2.7	dB
Amplitude ripple (p-p)						
@$f_{Carrier}$ 882.4 ... 912.6MHz	Δ_{WCDMA} 1)		—	0.9	1.8	dB
Error Vector Magnitude						
@$f_{Carrier}$ 882.4 ... 912.6MHz	EVM 2)		—	2.1	5.5	%
@$f_{Carrier}$ 882.4 ... 912.6MHz	EVM 2)		—	2.1	4.2 3)	%
VSWR						
TX port 880.0 ... 915.0MHz			—	1.7	2.1	
ANT port 880.0 ... 915.0MHz			—	1.6	2.0	
Attenuation	α					
0.3 ... 840.0MHz			25	33	—	dB
840.0 ... 865.0MHz			30	37	—	dB
@$f_{Carrier}$ 927.4 ... 957.6MHz	α_{WCDMA} 1)		41	47	—	dB
960.0 ... 1472.0MHz			25	34	—	dB
1472.0 ... 1477.0MHz			25	38	—	dB
1550.0 ... 1600.0MHz			35	40	—	dB
1760.0 ... 1830.0MHz			25	46	—	dB
1830.0 ... 2500.0MHz			25	37	—	dB
2500.0 ... 4000.0MHz			15	27	—	dB
4000.0 ... 5825.0MHz			15	25	—	dB

1) Attenuation of WCDMA signal (“Powertransferfunction”). Please refer to annotation on page (6).
2) Error Vector Magnitude (EVM) based on definition given in 3GPP TS 25.141.
3) T=0˚C to +55˚C

Characteristics

Temperature range for specification: T = –15 ˚C to +80 ˚C
ANT terminating impedance: Z_{ANT} = 50 Ω || 9.2 nH
RX terminating impedance: Z_{RX} = 50Ω
TX terminating impedance: Z_{TX} = 50 Ω + 2.0 nH (series)*)

*) Integration of TX coil into a typical PA matching network should be possible without additional elements.

Characteristics ANT-RX				**min.**	**typ. @ 25˚C**	**max.**	
Center frequency			f_C	—	942.5	—	MHz
Maximum insertion attenuation							
@$f_{Carrier}$	927.4	... 957.6MHz	α_{WCDMA} 1)	—	2.0	2.7	dB
Amplitude ripple (p-p)							
@$f_{Carrier}$	927.4	... 957.6MHz	Δ_{WCDMA} 1)	—	0.7	1.7	dB
Error Vector Magnitude							
@$f_{Carrier}$	927.4	... 957.6MHz	EVM 2)	—	2.2	4.7	%
VSWR							
RX port	925.0	... 960.0MHz		—	1.7	2.1	
ANT port	925.0	... 960.0MHz		—	1.6	2.0	

1) Attenuation of WCDMA signal (“Powertransferfunction”). Please refer to annotation on page (6).
2) Error Vector Magnitude (EVM) based on definition given in 3GPP TS 25.141.

Characteristics

Temperature range for specification: T = –15 ˚C to +80 ˚C
ANT terminating impedance: Z_{ANT} = 50 Ω || 9.2 nH
RX terminating impedance: Z_{RX} = 50 Ω
TX terminating impedance: Z_{TX} = 50 Ω + 2.0 nH (series)*)

*) Integration of TX coil into a typical PA matching network should be possible without additional elements.

Characteristics ANT-RX			min.	typ. @ 25˚C	max.	
Attenuation		α				
0.3 ... 835.0MHz			30	40	—	dB
835.0 ... 880.0MHz			38	43	—	dB
@$f_{Carrier}$ 882.4 ... 912.6MHz		α_{WCDMA} 1)	45	54	—	dB
980.0 ... 1805.0MHz			15	43	—	dB
1805.0 ... 1920.0MHz			30	56	—	dB
1920.0 ... 2400.0MHz			30	49	—	dB
2400.0 ... 2500.0MHz			30	48	—	dB
2500.0 ... 2880.0MHz			25	37	—	dB
2880.0 ... 4000.0MHz			25	40	—	dB
4000.0 ... 6000.0MHz			15	32	—	dB

1) Attenuation of WCDMA signal (“Powertransferfunction”). Please refer to annotation on page (6).

Characteristics TX-RX			min.	typ. @ 25˚C	max.	
Isolation between TX and RX						
@$f_{Carrier}$ 882.4 ... 912.6MHz		α_{WCDMA} 1)	52	56	—	dB
@$f_{Carrier}$ 927.4 ... 957.6MHz		α_{WCDMA} 1)	45	50	—	dB

1) Attenuation of WCDMA signal (“Powertransferfunction”). Please read annotation on page (6).

Maximum ratings

Operable temperature range	T	–30 / +85	°C	
Storage temperature range	T_{stg}	–40 / +85	°C	
DC voltage	V_{DC}	5	V	
ESD voltage	V_{ESD}	100[1)]	V	machine model, 10 pulses
Input Power at	P_{IN}			source and load impedance 50 Ω
880.0 ... 915.0 MHz		30	dBm	} continuous wave
elsewhere		10	dBm	} 55 °C, 10000 h

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

Annotation for characteristics section

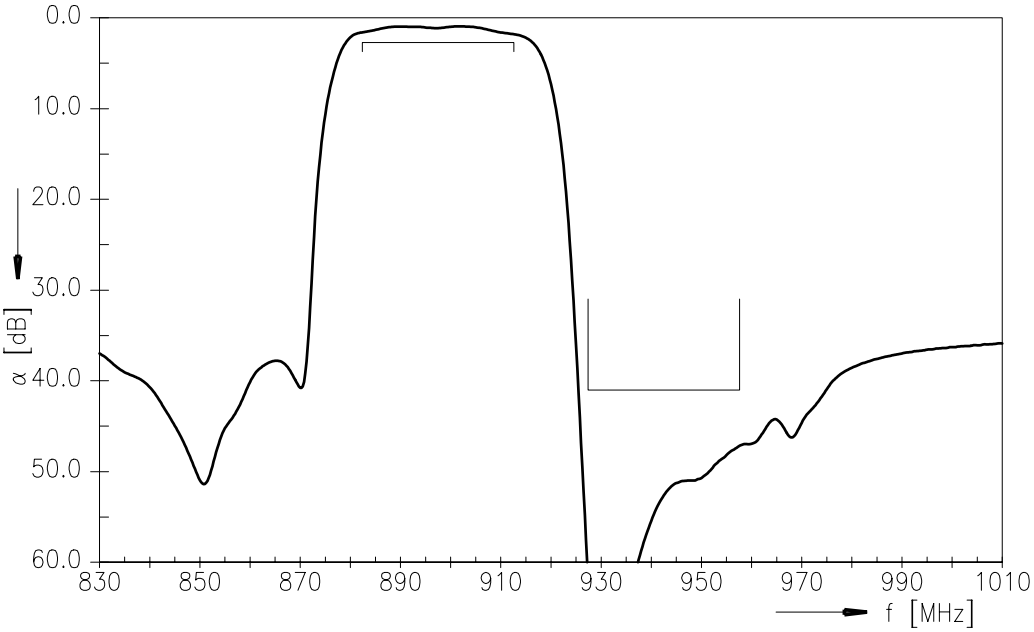
Attenuation of WCDMA signal ("Powertransferfunction", α_{WCDMA}) is determined by

$$\int_{\infty}^{\infty} \left| S_{ds21}(f) H_{RRC}(f - f_{Carrier}) \right|^2 df$$

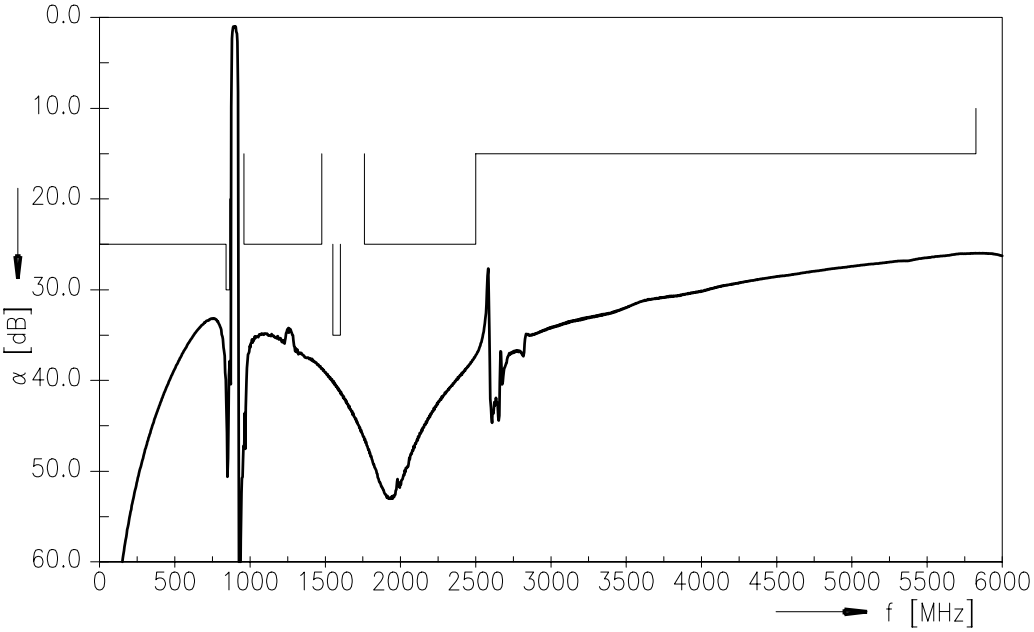
$f_{Carrier}$ according to 3GPP TS 25.101 (e.g. for UMTS-Passband, $f_{Carrier}$ ranges from 882.4 MHz (lowest Tx channel) to 912.6 MHz (highest Tx channel)). $H_{RRC}(f)$ is the transfer function of the root-raised cosine transmit pulse shaping filter according to 3GPP TS 25.101 with the following normalization:

$$\int_{\infty}^{\infty} \left| H_{RRC}(f) \right|^2 df = 1$$

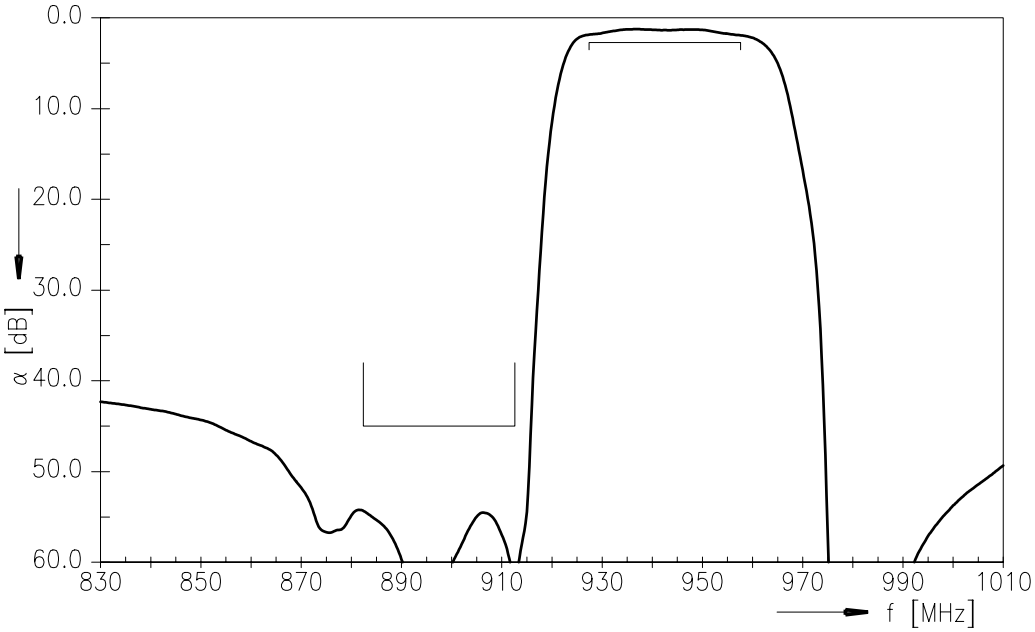
Frequency Response TX-ANT (Powertransferfunction)



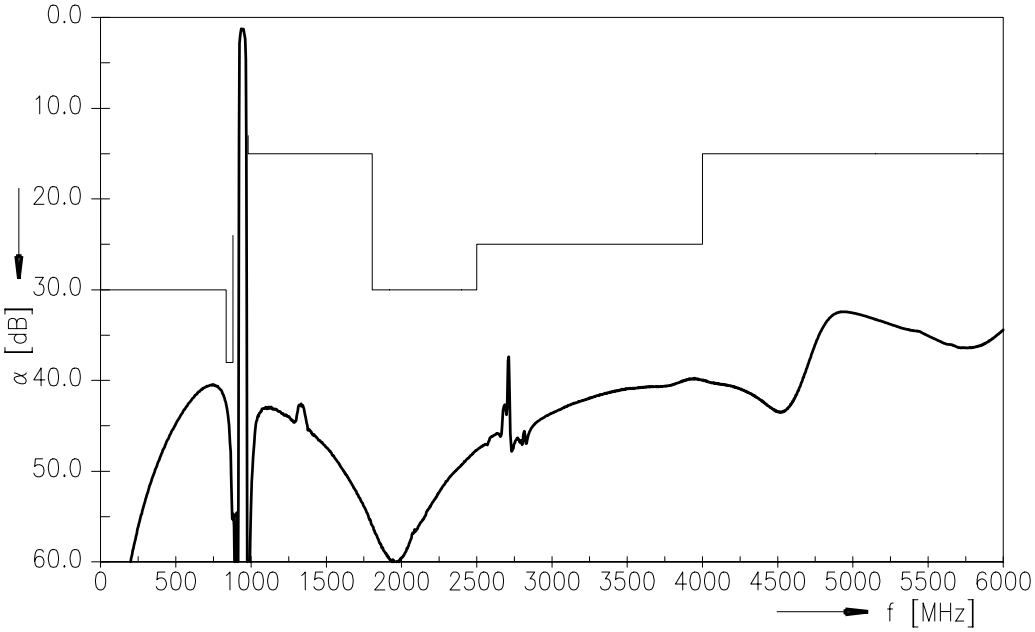
Frequency Response TX-ANT (wideband)



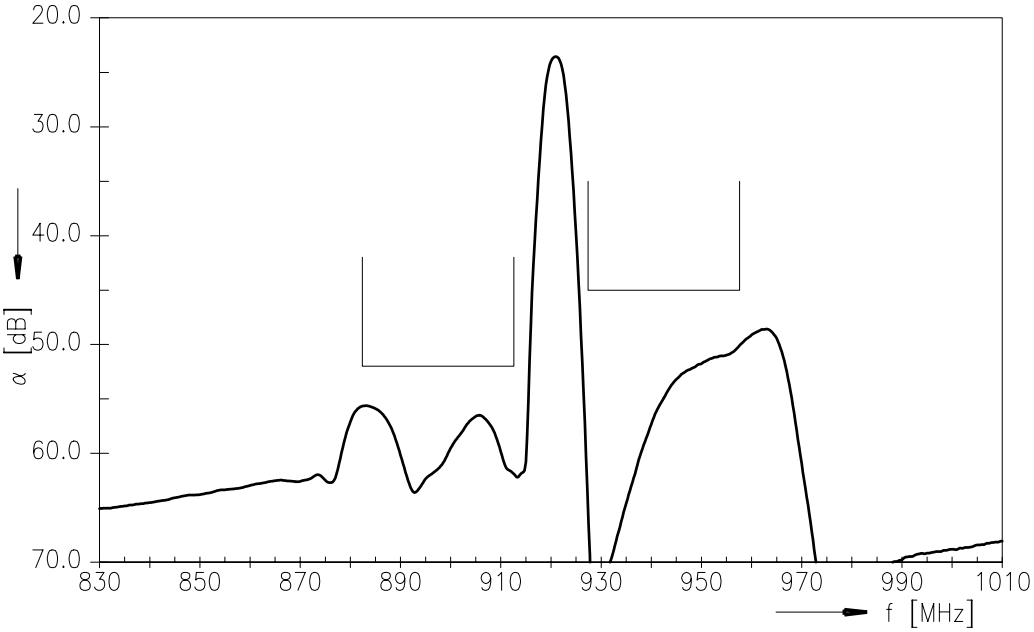
Frequency Response RX-ANT (Powertransferfunction)



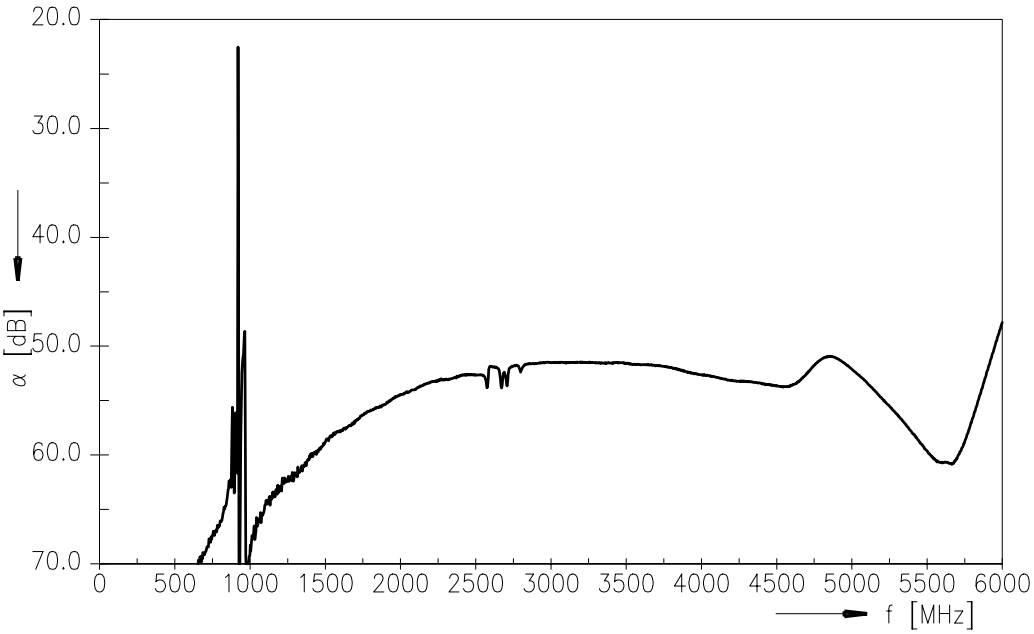
Frequency Response RX-ANT (wideband)



Frequency Response TX-RX (Powertransferfunction)



Frequency Response TX-RX (wideband)



References

Type	B7675
Ordering code	B39941B7675P810
Marking and Package	C61157-A3-A54
Packaging	F61074-V8153-Z000
Date Codes	L_1126
S-Parameters	B7675_NB.s3p B7675_WB.s3p See file header for pin/port assignment.
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."

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

© 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:

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, MiniBlue, MiniCell, 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.