SAW Components

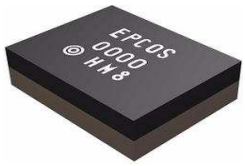
SAW Rx filter

WCDMA Band 8 / GSM900

Series/type:	**B9862**
Ordering code:	**B39941B9862P810**
Date:	March 22, 2012
Version:	2.0

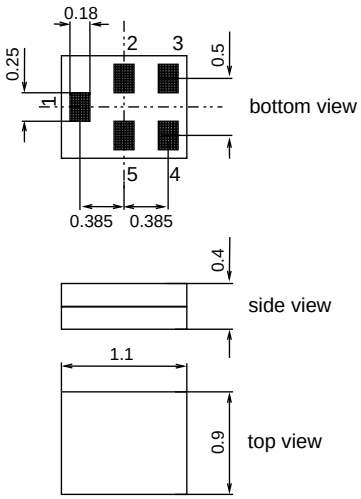
Application

- Low-loss RF filter for mobile telephone WCDMA Band VIII and GSM 900 systems, receive path (RX)
- Very high TX supression - suitable for diversity applications
- Useable passband 35 MHz
- Impedance transformation from 50 Ω to 100 Ω
- Unbalanced to balanced operation
- Suitable for GPRS class 1 to 12



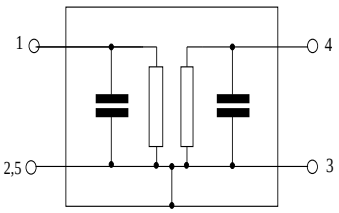
Features

- Package size 1.1 x0.9 x 0.4 mm³
- RoHS compatible
- Approx. weight 0.001g
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals
- **E**lectrostatic **S**ensitive **D**evice (**ESD**)
- **M**oisture **S**ensitive **L**evel 3



Pin configuration

■	1	Input, unbalanced
■	3,4	Output, balanced
■	2,5	To be grounded



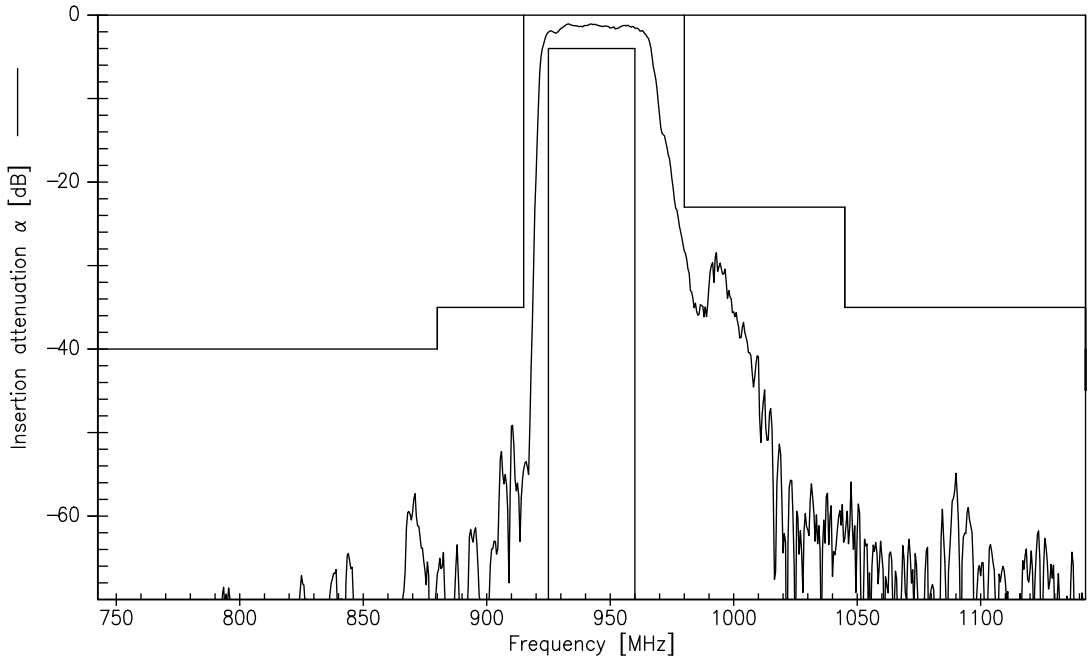
Characteristics

Temperature range for specification: T = –20 ˚C to +85 ˚C
Terminating source impedance: Z_S = 50 Ω (unbalanced)
Terminating load impedance: Z_L = 100 Ω (balanced)

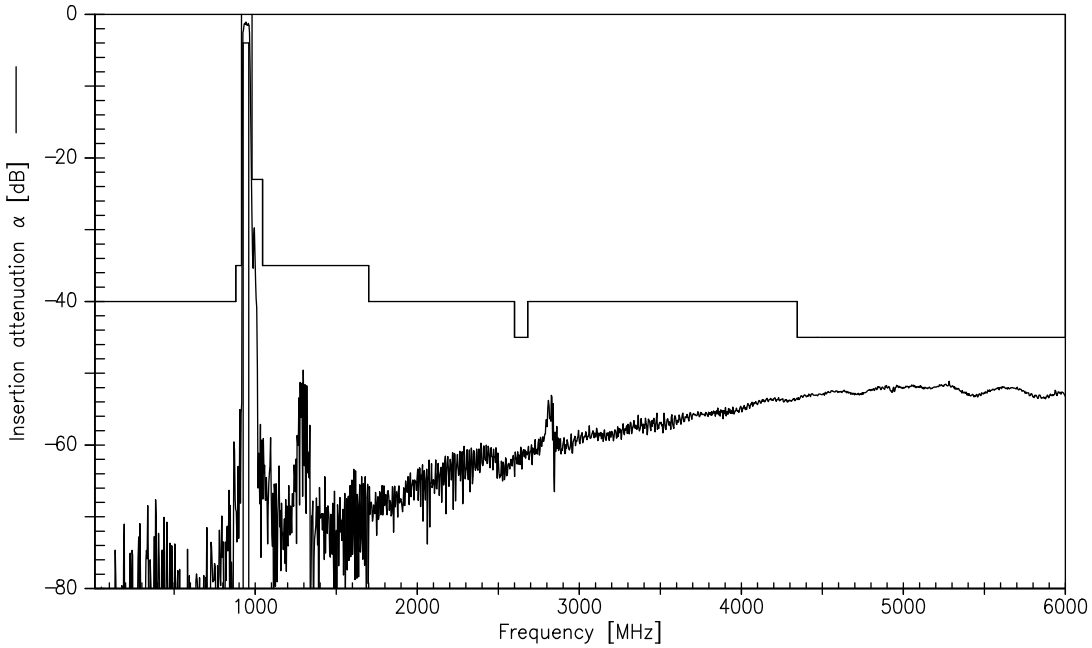
						min.	typ. @ 25 ˚C	max.	
Center frequency					f_C	—	942.5	—	MHz
Maximum insertion attenuation									
@$f_{Carrier\ Bd\ 8\ RX}$	927.4	...	957.6	MHz	α_{WCDMA} [1]	—	2.3	2.8	dB
	925.0	...	960.0	MHz	α_{GSM}	—	2.3	4.0	dB
Amplitude ripple (p-p)									
	925.0	...	960.0	MHz	$\Delta\alpha$	—	1.0	2.7	dB
Error Vector Magnitude [2]									
@$f_{Carrier\ Bd\ 8\ RX}$	927.4	...	957.6	MHz	EVM	—	3.3	6.0	%
Input VSWR									
	925.0	...	960.0	MHz		—	1.9	2.3	
Output VSWR									
	925.0	...	960.0	MHz		—	2.0	2.4	
CMRR ($\lvert S_{21}-S_{31}\rvert$ / $\lvert S_{21}+S_{31}\rvert$)									
	925.0	...	960.0	MHz		20	23 [3]	—	dB
Attenuation					α			—	
	DC	...	880.0	MHz		40	58	—	dB
@$f_{Carrier\ Bd\ 8\ TX}$	882.4	...	912.6	MHz	α_{WCDMA} [2]	49	54	—	dB
	880.0	...	915.0	MHz	α_{GSM}	35	50	—	dB
	980.0	...	1045.0	MHz		23	28	—	dB
	1045.0	...	1700.0	MHz		35	51	—	dB
	1700.0	...	2600.0	MHz		40	60	—	dB
	2600.0	...	2682.0	MHz		45	60	—	dB
	2682.0	...	4345.0	MHz		40	53	—	dB
	4345.0	...	4470.0	MHz		45	53	—	dB
	4470.0	...	6000.0	MHz		45	52	—	dB

[1] Attenuation of WCDMA signal (“Powertransferfunction”). Please refer to annotation on page (5).
[2] Error Vector Magnitude (EVM) based on definition given in 3GPP TS 25.141.
[3] A CMRR of 22.8 dB corresponds to a phase balance of 5˚ togeher an amplitude balance of 1.0 dB

Transfer function (narrowband)

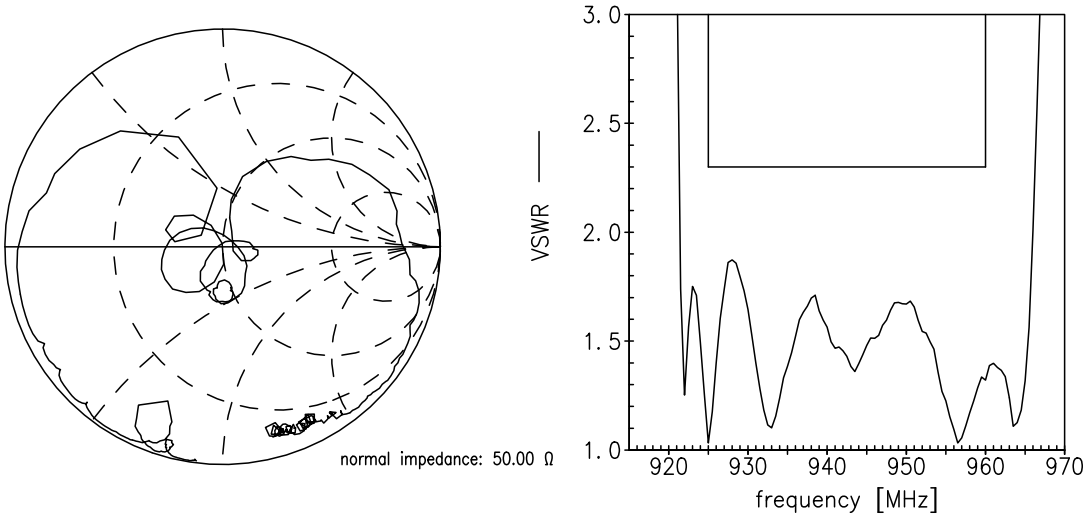


Transfer function (wideband)

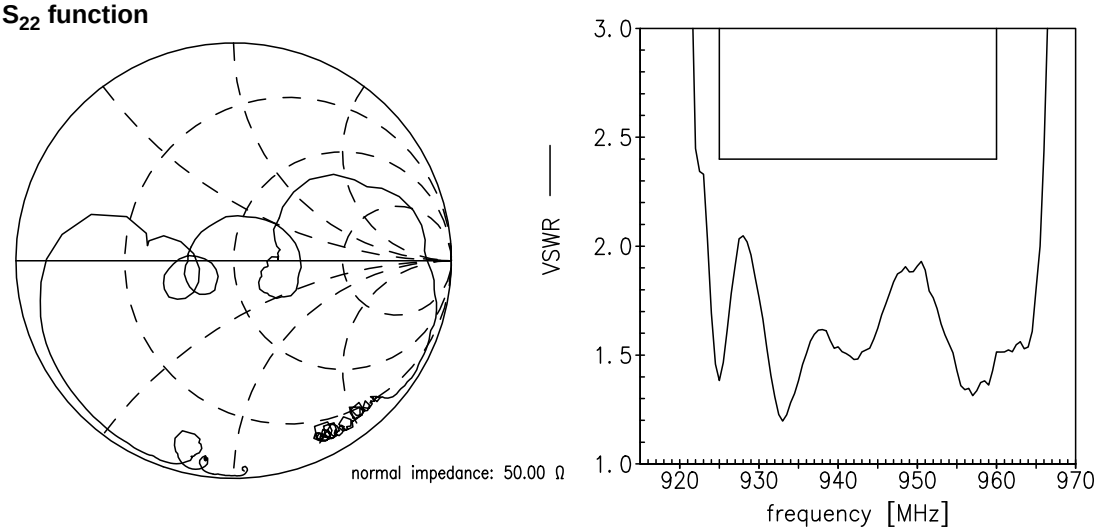


Smith charts

S_{11} function



S_{22} function



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 band VIII RX passband, $f_{Carrier}$ ranges from 927.4 MHz (lowest Rx channel) to 957.6 MHz (highest Rx 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:

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

Maximum ratings

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}	100[1)]	V	machine model, 1 pulse
Input power at Tx band	P_{IN}	17	dBm	2000h @ 55˚C

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

References

Type	B9862
Ordering code	B39941B9862P810
Marking and package	C61157-A8-A56
Packaging	F61074-V8255-Z000
Date codes	L_1126
S-parameters	B9862_NB.s3p B9862_WB.s3p 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 maximum 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 Inductor pdf-catalog http://www.tdk.co.jp/tefe02/coil.htm#aname1 and Data Library for circuit simulation http://www.tdk.co.jp/etvcl/index.htm

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