



SAW Components

SAW Rx filter

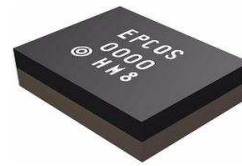
WCDMA Band V / GSM850

Series/type:	B9867
Ordering code:	B39881B9867P810
Date:	March 22, 2012
Version:	2.0



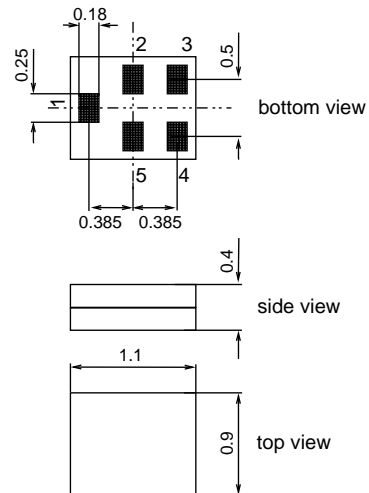
Application

- Low-loss RF filter for mobile telephone WCDMA Band V and GSM 850 systems, receive path (RX)
- Suitable for diversity applications
- Very high TX suppression
- Impedance transformation from 50 Ω to 100 Ω
- Unbalanced to balanced operation
- Usable passband 25 MHz
- Suitable for GPRS class 1 to 12



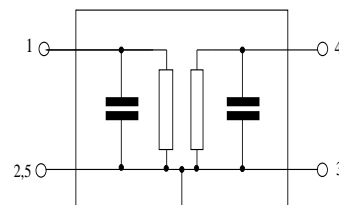
Features

- Package size 1.1 x 0.9 x 0.4 mm³
- RoHS compatible
- Approx. weight 0.001g
- Package for Surface Mount Technology (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





SAW Components	B9867
SAW Rx filter	881.5 MHz

Data sheet



Characteristics

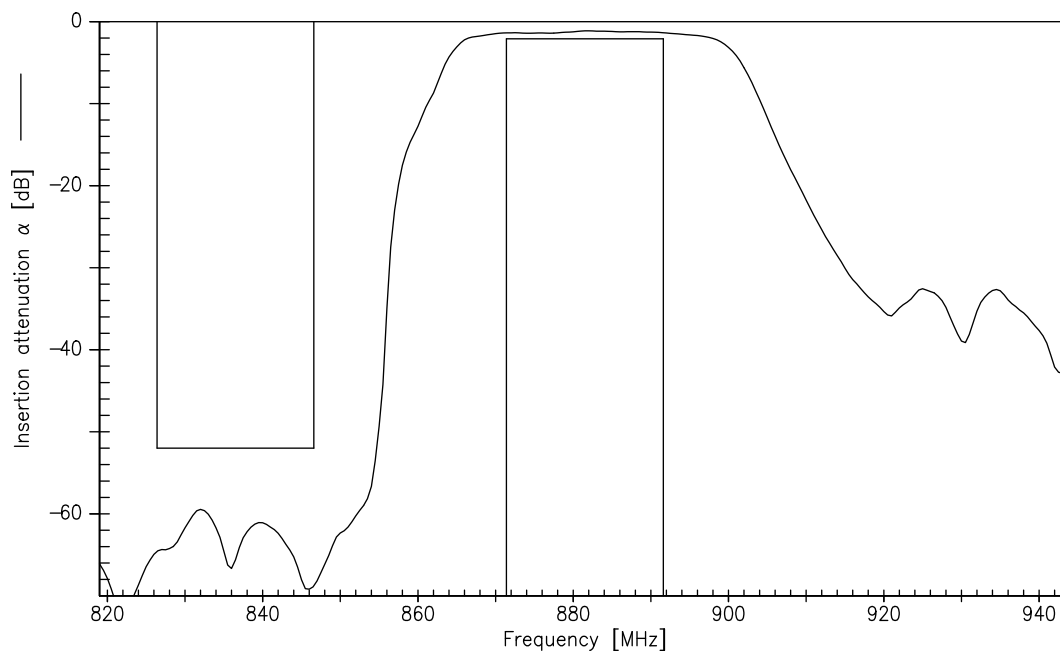
Temperature range for specification: T = -20 °C to +85 °C
 Terminating source impedance: Z_S = 50 Ω (unbalanced)
 Terminating load impedance: Z_L = 100 Ω (balanced)

	min.	typ. @ 25 °C	max.	
Center frequency f _C	—	881.5	—	MHz
Maximum insertion attenuation				
869.0... 894.0 MHz α _{max}	—	1.9	2.4	dB
@f _{Carrier Bd 5 RX} 871.4 ... 891.6 MHz α _{WCDMA} ¹⁾	—	1.6	2.1	dB
Amplitude ripple (p-p)				
869.0 ... 894.0 MHz Δα	—	0.8	1.3	dB
Error Vector Magnitude²⁾				
871.4 ... 891.6 MHz EVM	—	2.6 ²⁾	3.2	%
Input VSWR				
869.0 ... 894.0 MHz	—	1.7	2.0	
Output VSWR				
869.0 ... 894.0 MHz	—	1.8	2.1	
CMRR (S₂₁-S₃₁ / S₂₁+S₃₁)				
869.0 ... 894.0 MHz	21	25	—	dB
Attenuation α				
DC ... 824.0 MHz	40	69	—	dB
824.0 ... 849.0 MHz	50	55	—	dB
@f _{Carrier Bd 5 TX} 826.4 ... 846.6 MHz α _{WCDMA} ¹⁾	52	57	—	dB
849.0 ... 854.0 MHz	10	56	—	dB
914.0 ... 954.0 MHz	24	28	—	dB
954.0 ... 979.0 MHz	28	54	—	dB
979.0 ... 1693.0 MHz	35	49	—	dB
1693.0 ... 2607.0 MHz	40	60	—	dB
2607.0 ... 2682.0 MHz	42	47	—	dB
2682.0 ... 4345.0 MHz	40	54	—	dB
4345.0 ... 6000.0 MHz	45	54	—	dB

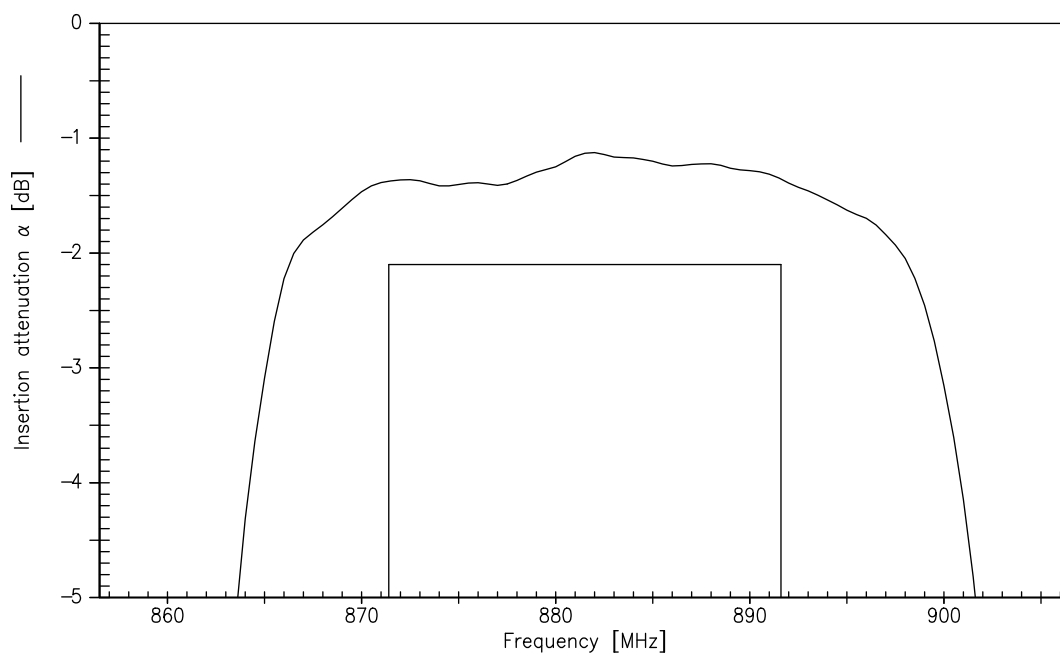
¹⁾ Attenuation of WCDMA signal ("Powertransferfunction").
²⁾ Error Vector Magnitude (EVM) based on definition given in 3GPP TS 25.141.



Transfer function for WCDMA signals (Power transfer function vs. carrier frequency)



Transfer function for WCDMA signals (Power transfer function vs. carrier frequency)





SAW Components

B9867

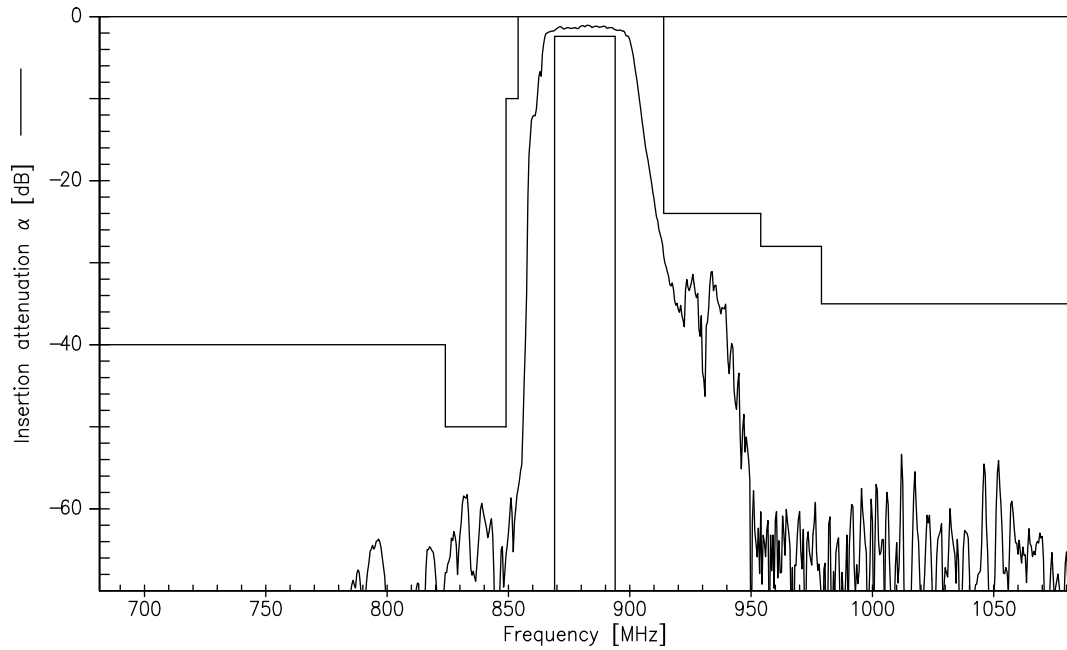
SAW Rx filter

881.5 MHz

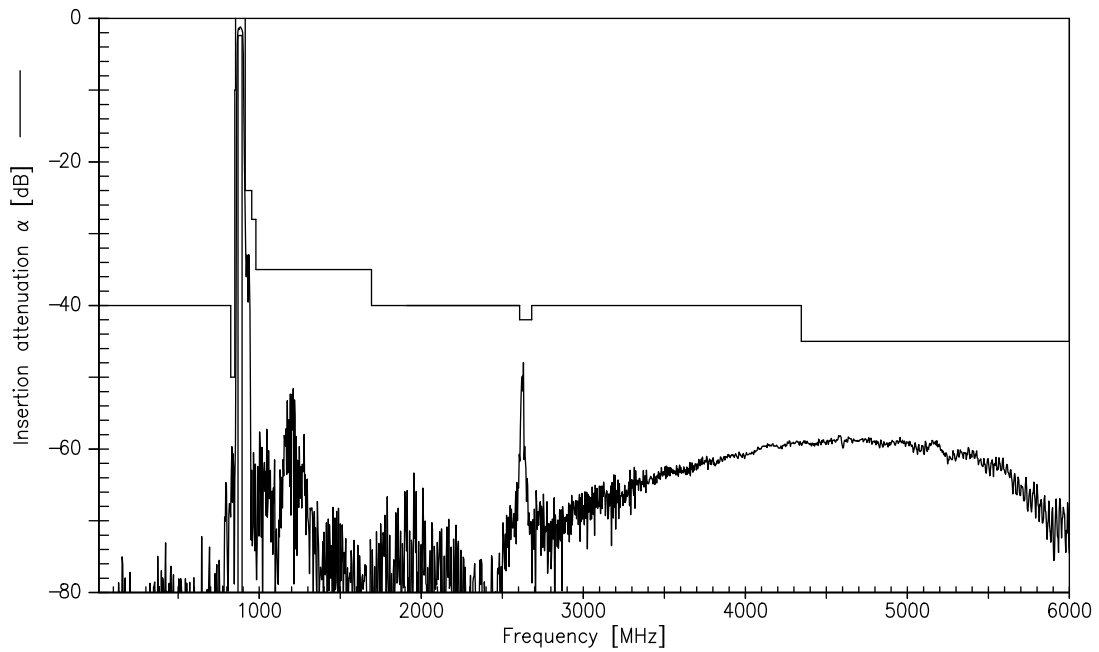
Data sheet



Transfer function for CW signals (narrowband)



Transfer function for CW signals (wideband)



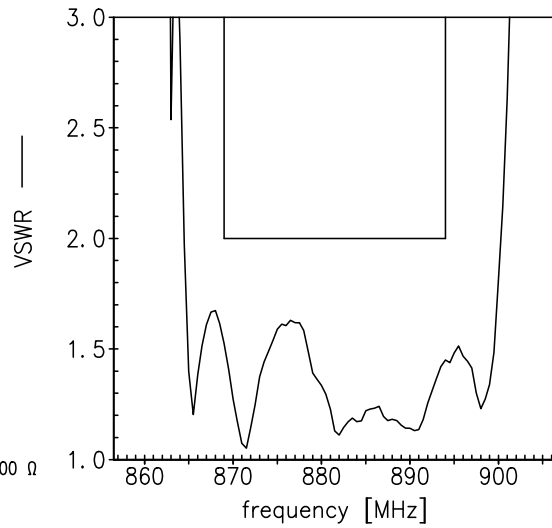
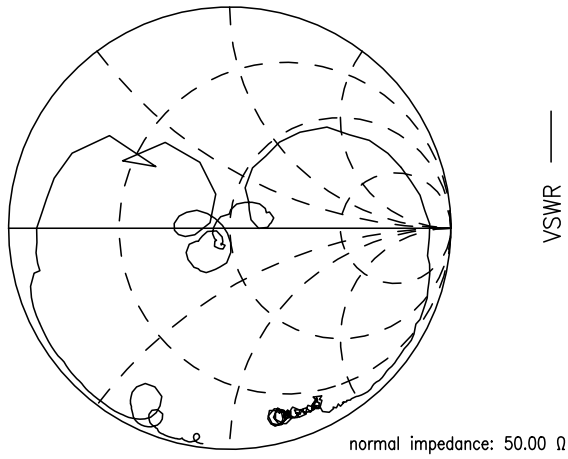
Please read *cautions and warnings* and *important notes* at the end of this document.

Data sheet

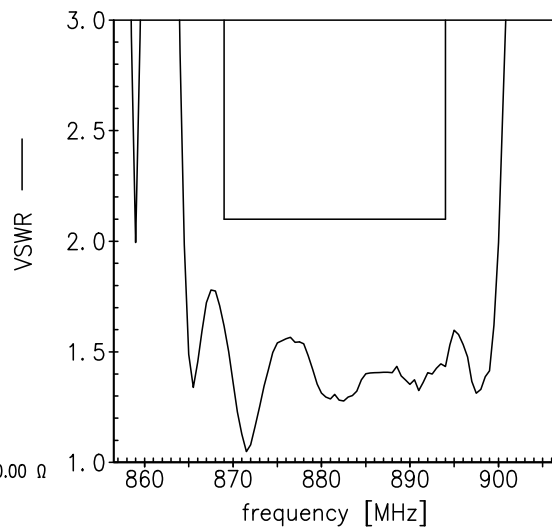
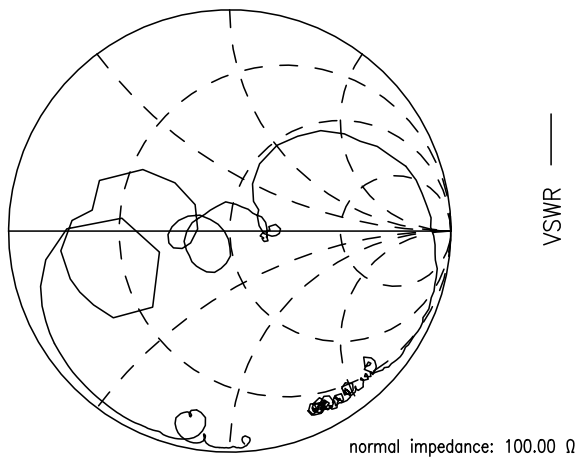
SMD

Smith charts

S₁₁ function



S₂₂ function





SAW Components **B9867**

SAW Rx filter **881.5 MHz**

Data sheet **SMD**

Annotation for characteristics section

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

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

$f_{Carrier}$ 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:

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

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}	19	dBm	10000h @ 55°C

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



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Data sheet



References

Type	B9867
Ordering code	B39881B9867P810
Marking and package	C61157-A8-A56
Packaging	F61074-V8255-Z000
Date codes	L_1126
S-parameters	B9867_NB.s3p B9867_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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