SAW Components

SAW Rx filter

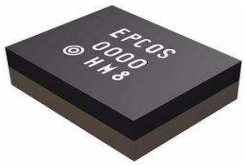
WCDMA Band V / GSM850

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

EPCOS AG is a TDK Group Company.

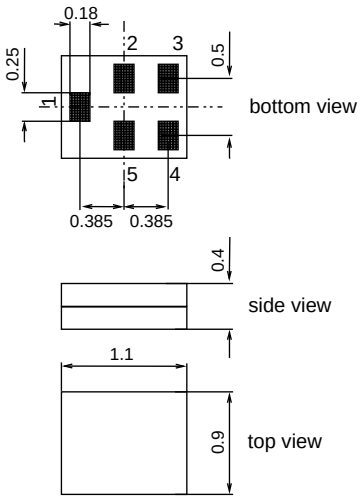
Application

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



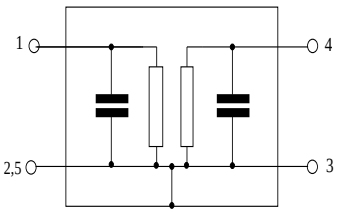
Features

- Package size 1.1 x0.9 x 0.4 mm^3
- 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



Data sheet SMD

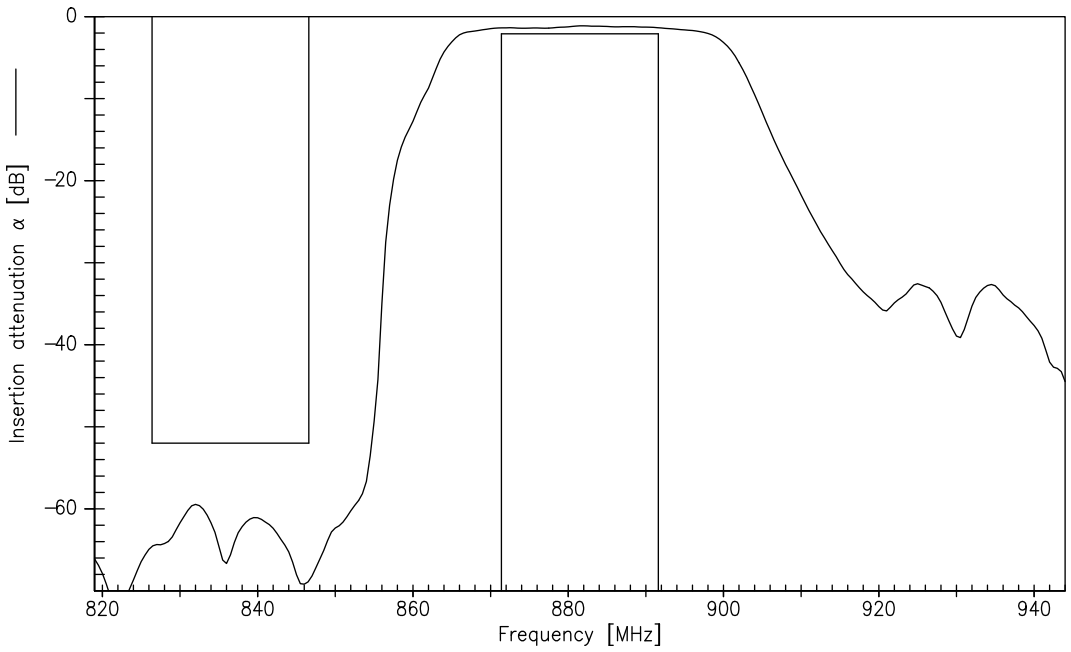
Characteristics

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	$\Delta\alpha$	—	0.8	1.3	dB
Error Vector Magnitude [2]									
	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 ($\lvert S_{21}-S_{31}\rvert$ / $\lvert S_{21}+S_{31}\rvert$)									
	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)



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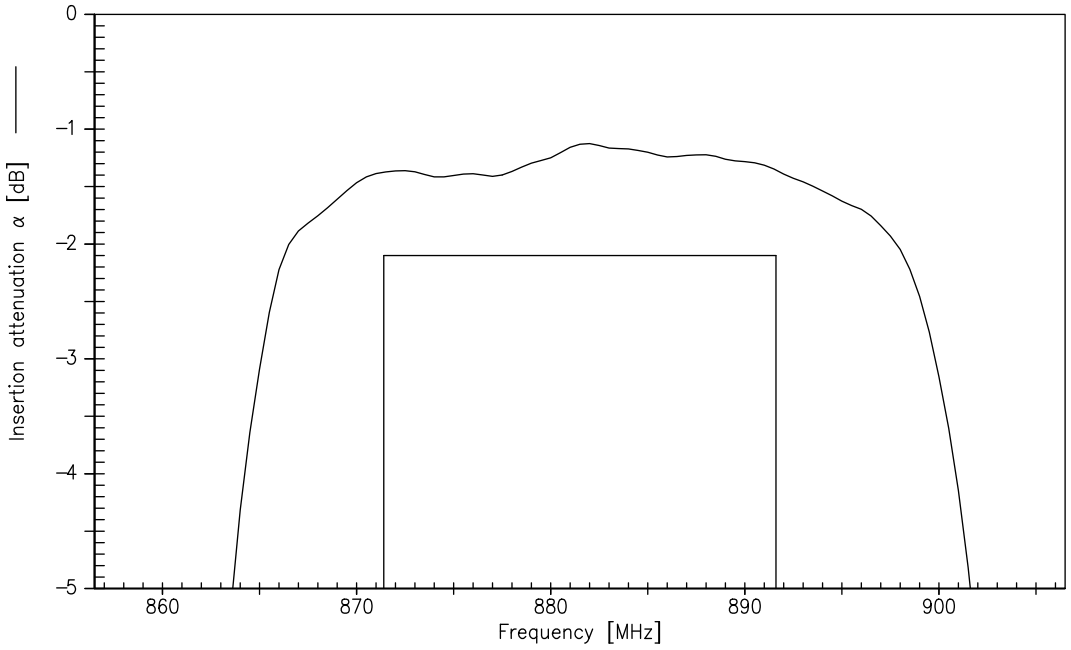
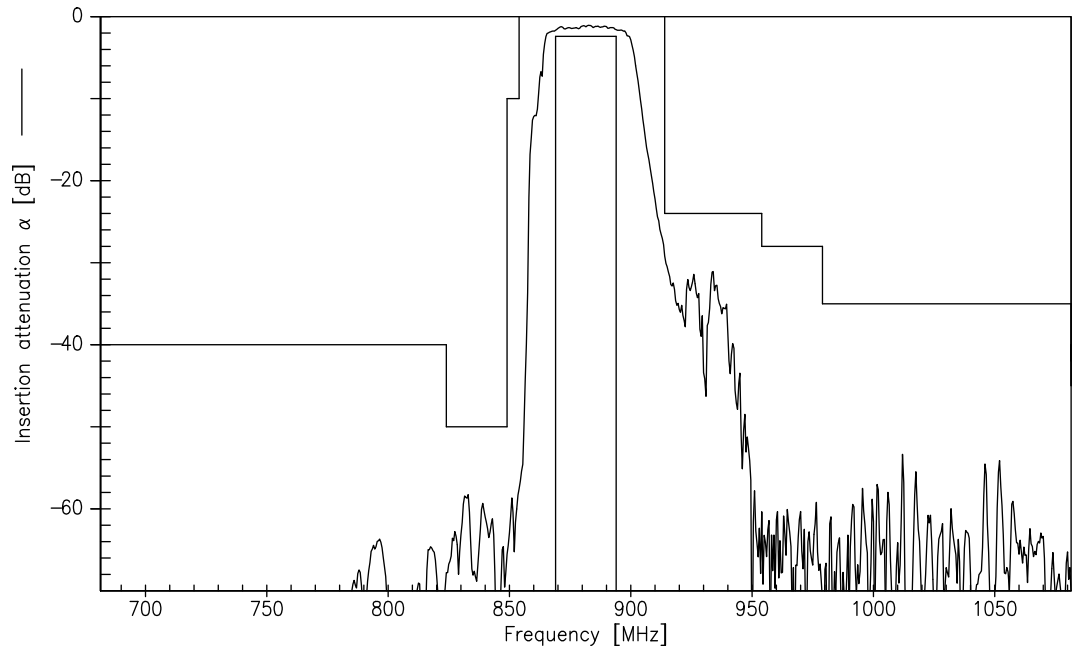
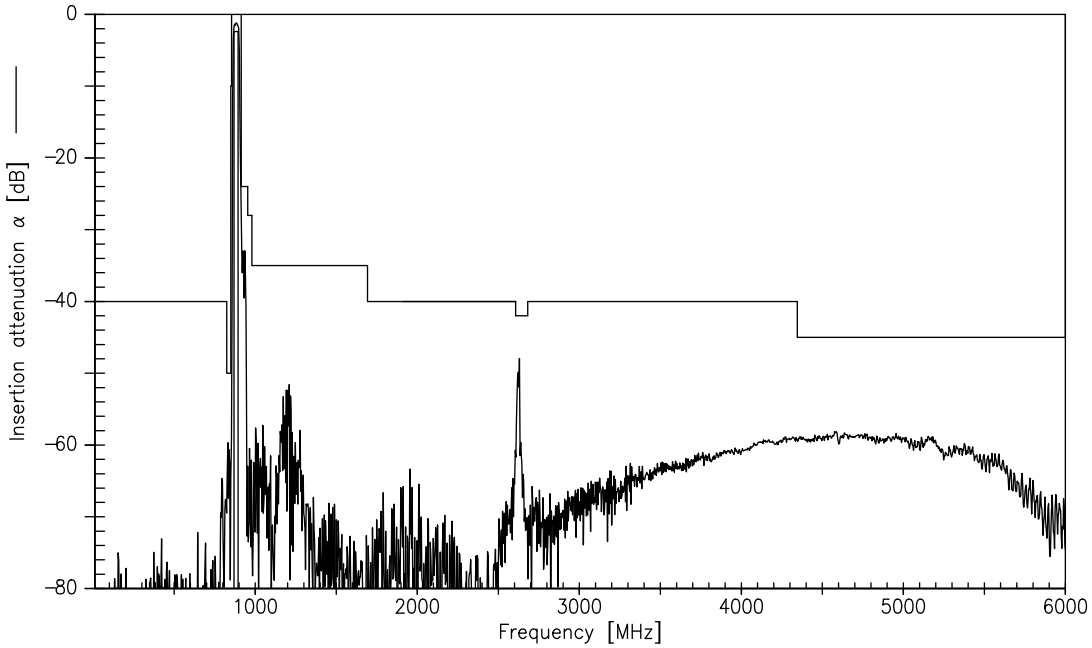


Transfer function for CW signals (narrowband)

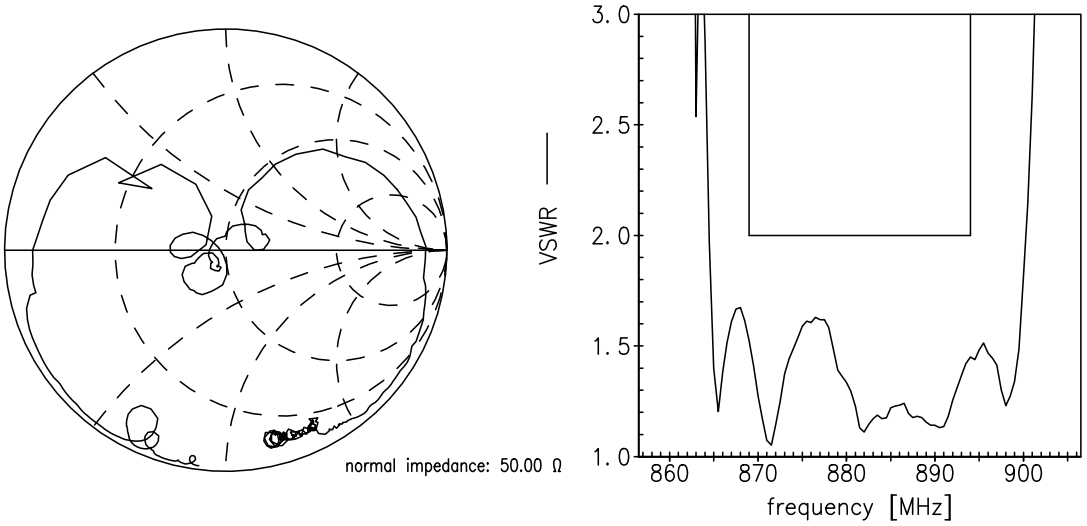


Transfer function for CW signals (wideband)

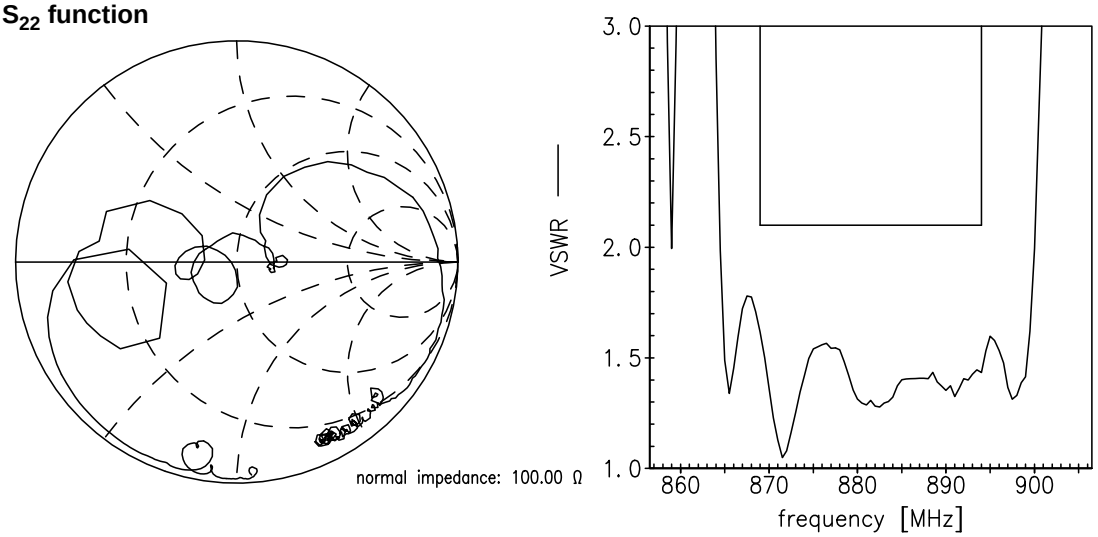


Smith charts

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}	19	dBm	10000h @ 55°C

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

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."
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