SAW Components

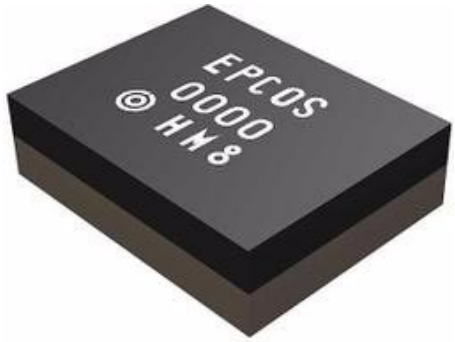
SAW Rx filter

Cellular / WCDMA Band V

Series/type:	**B9439**
Ordering code:	**B39881B9439M410**
Date:	August 20, 2014
Version:	2.1

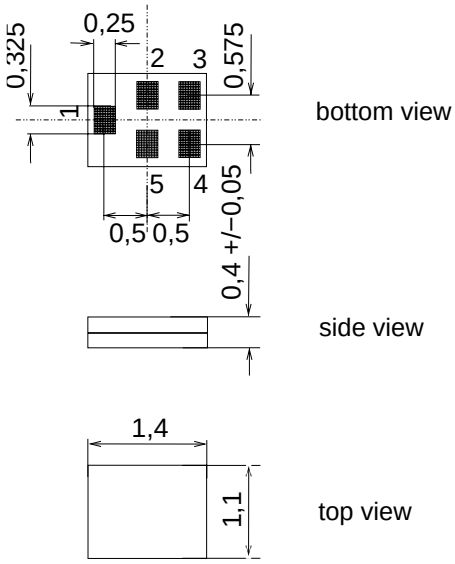
Application

- Low-loss RF filter for mobile telephone Cellular systems, receive path (RX)
- Suitable for diversity applications
- Impedance 50 Ω input and output
- Unbalanced / unbalanced operation
- Very high TX suppression
- Usable passband 25 MHz



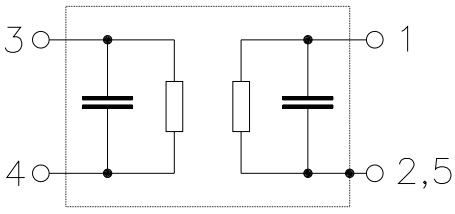
Features

- Package size 1.4 x 1.1 x 0.4 mm³
- Package code QCS5I
- RoHS compatible
- Approximate weight 0.003 g
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals
- **E**lectrostatic **S**ensitive **D**evice (**ESD**)



Pin configuration

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



Data sheet SMD

Characteristics

Temperature range for specification: T = –30 ˚C to +85 ˚C
Terminating source impedance: Z_S = 50 Ω
Terminating load impedance: Z_L = 50 Ω

						min.	typ. @ 25 ˚C	max.	
Center frequency					f_C	—	881.5	—	MHz
Maximum insertion attenuation					α_{max}				
	869.0	...	894.0	MHz		—	2.1	2.5	dB
@$f_{Carrier}$	871.4	...	891.6	MHz	α_{WCDMA} [1)]	—	1.9	2.2	dB
Amplitude ripple (p-p)					$\Delta\alpha$				
	869.0	...	894.0	MHz		—	0.8	1.2	dB
Error Vector Magnitude [2)]					EVM				
@$f_{Carrier}$	871.4	...	891.6	MHz		—	1.9	2.5	%
Input VSWR									
	869.0	...	894.0	MHz		—	1.7	2.0	
Output VSWR									
	869.0	...	894.0	MHz		—	1.7	2.0	
Attenuation					α				
	0.0	...	849.0	MHz		46	49	—	dB
@$f_{Carrier}$	826.4	...	846.6	MHz	α_{WCDMA} [1)]	46	52	—	dB
	910.0	...	914.0	MHz		18	26	—	dB
	914.0	...	950.0	MHz		25	32	—	dB
	950.0	...	1850.0	MHz		40	52	—	dB
	1850.0	...	2000.0	MHz		46	56	—	dB
	2000.0	...	3500.0	MHz		35	38	—	dB
	3500.0	...	4000.0	MHz		28	33	—	dB
	4000.0	...	4500.0	MHz		20	23	—	dB
	4500.0	...	5200.0	MHz		17	23	—	dB
	5200.0	...	6000.0	MHz		13	23	—	dB

1) Attenuation of WCDMA signal (“Powertransferfunction”). Please refer to annotation on page (4).
2) Error Vector Magnitude (EVM) based on definition given in 3GPP TS 25.141.

Annotation for characteristics section

(1) 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 Passband, $f_{Carrier}$ ranges from 871.4 MHz (lowest Tx channel) to 891.6 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:

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

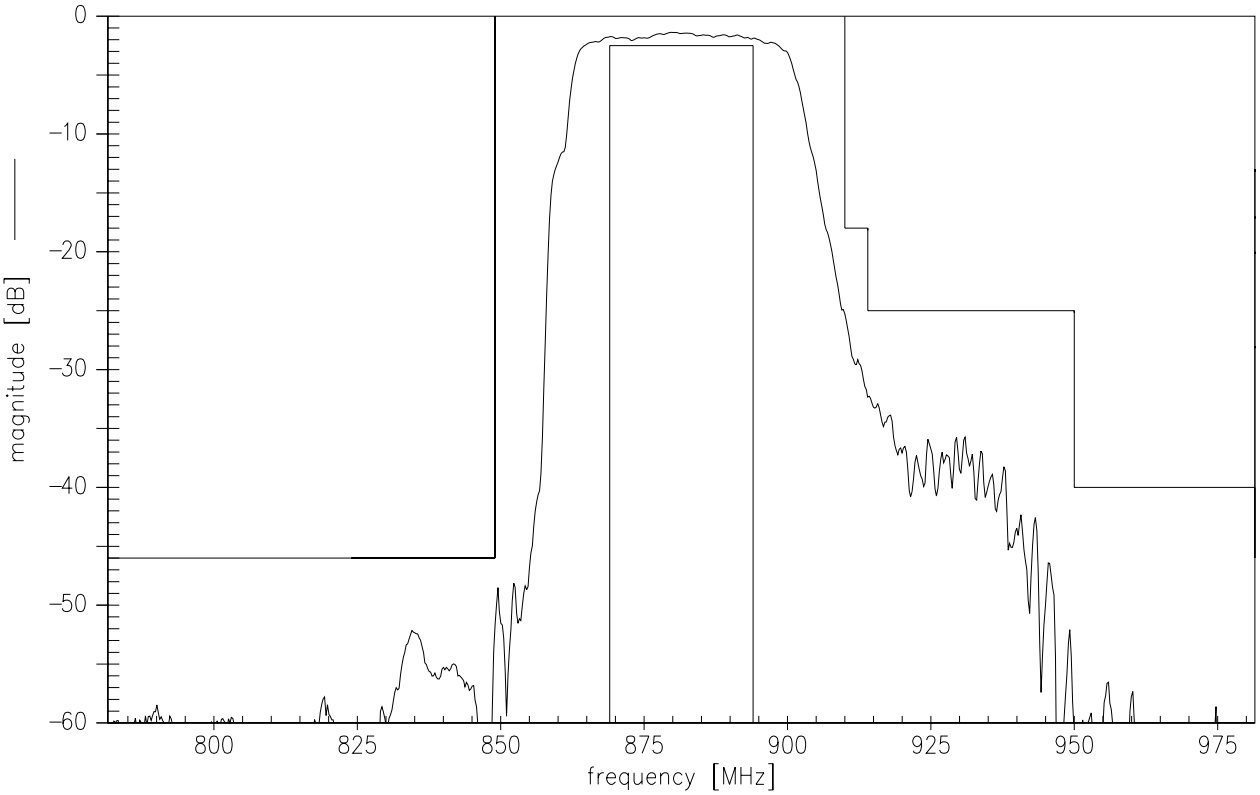
Maximum ratings

Storage temperature range	T_{stg}	–40/+85	°C	
DC voltage	V_{DC}	5[1)]	V	
ESD voltage	V_{ESD}	100[2)]	V	Machine Model
Input power	P_{IN}	15	dBm	

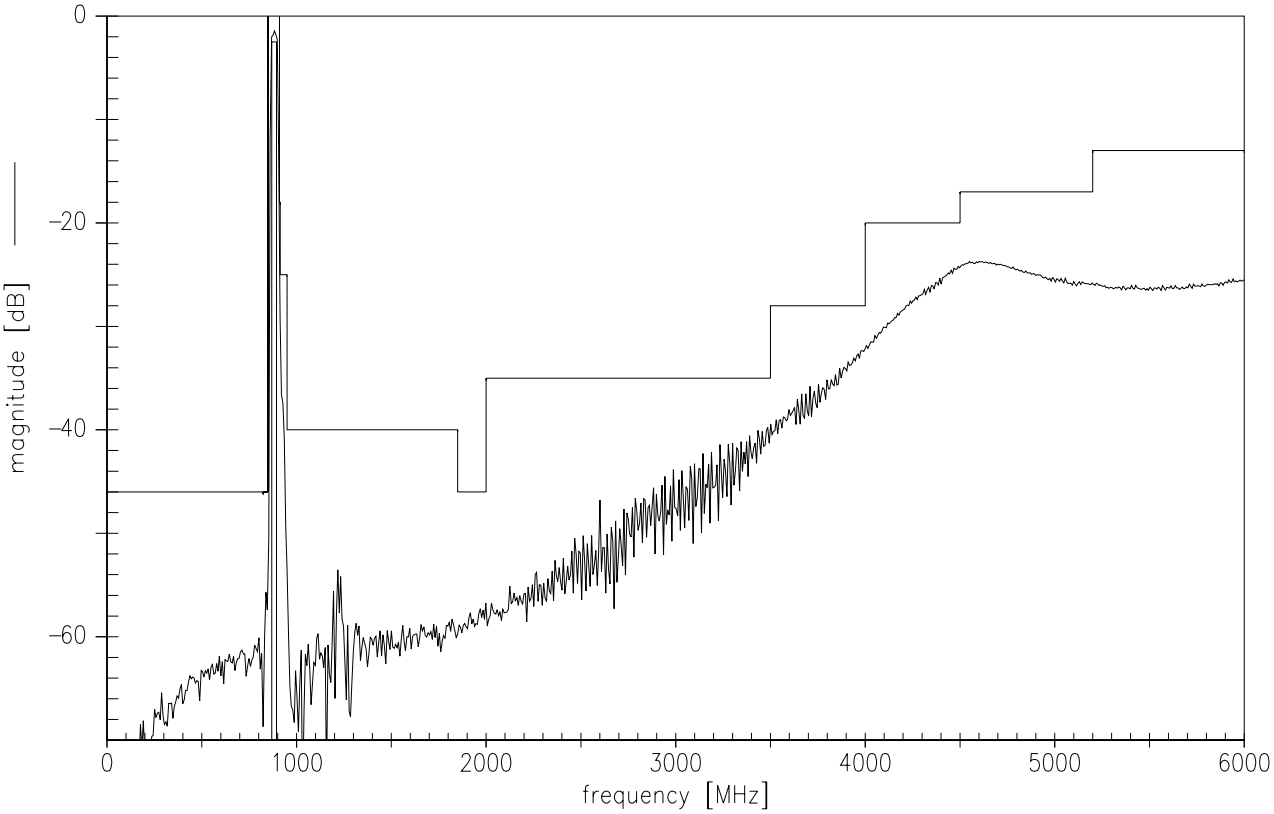
1) 168h Damp Heat Steady State acc. to IEC 60068-2-67 Cy.

2) acc. to JESD22-A115B (MM - Machine Model), 10 negative and 10 positive pulses.

Transfer function

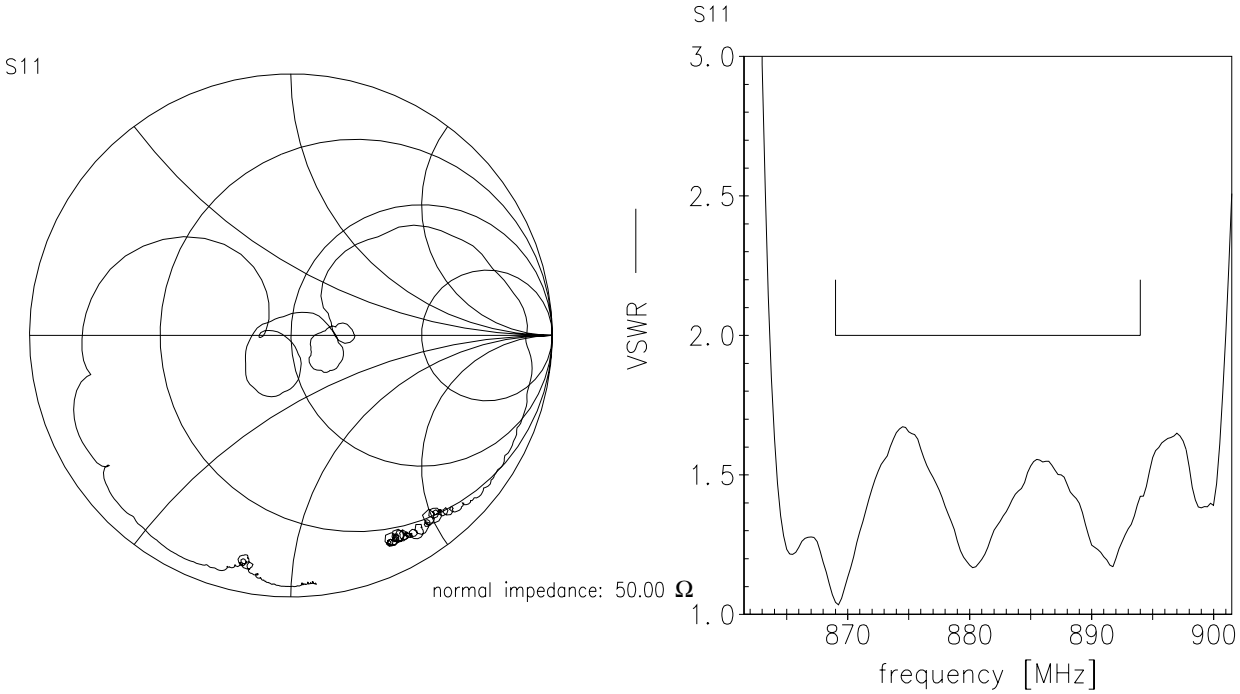


Transfer function (wideband)

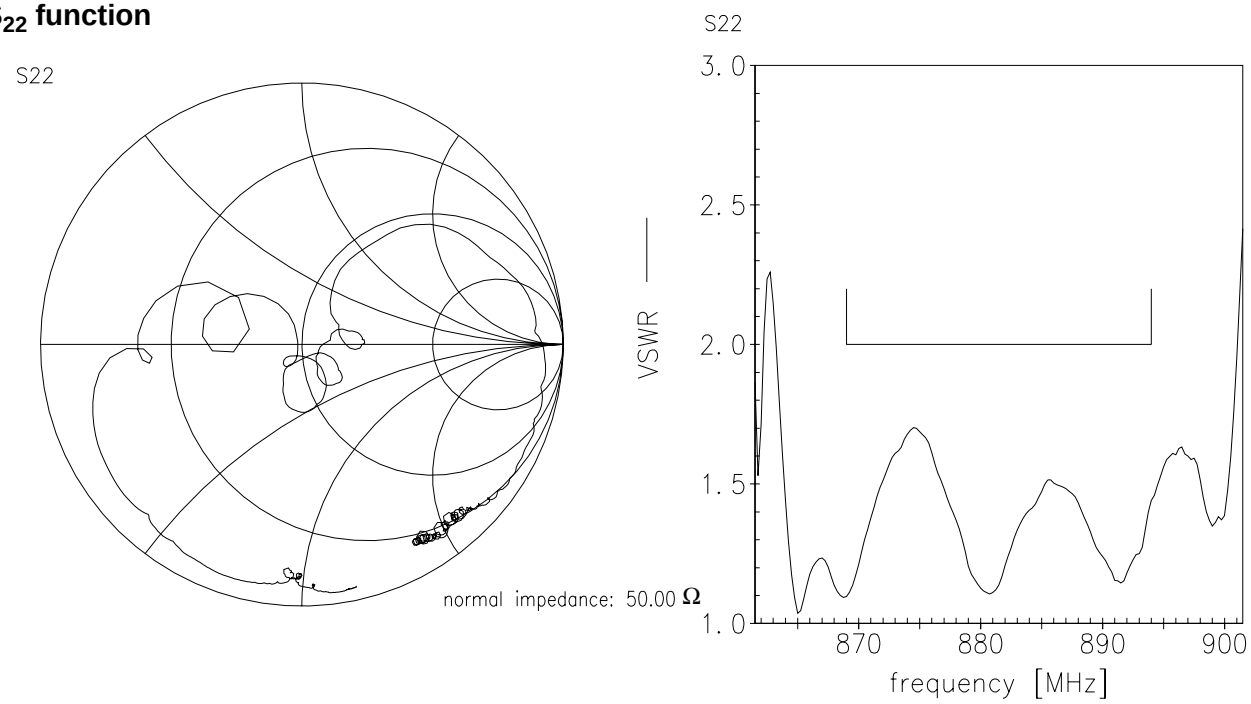


Smith charts

S_{11} function



S_{22} function



References

Type	B9439
Ordering code	B39881B9439M410
Marking and package	C61157-A8-A3
Packaging	F61074-V8237-Z000
Date codes	L_1126
S-parameters	B9439_NB.s2p, B9439_WB.s2p see file header for port/pin assignment table
Soldering profile	S_6001
RoHS compatible	RoHS-compatible means that products are compatible with the requirements according to Art. 4 (substance restrictions) of Directive 2011/65/EU of the European Parliament and of the Council of June 8th, 2011, on the restriction of the use of certain hazardous substances in electrical and electronic equipment ("Directive") with due regard to the application of exemptions as per Annex III of the Directive in certain cases.
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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