



SAW Components

SAW RX filter

GSM850 / WCDMA band V / Cellular

Series/type:	B9456
Ordering code:	B39881B9456P810
Date:	December 07, 2009
Version:	2.0



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881.5 MHz

Data sheet



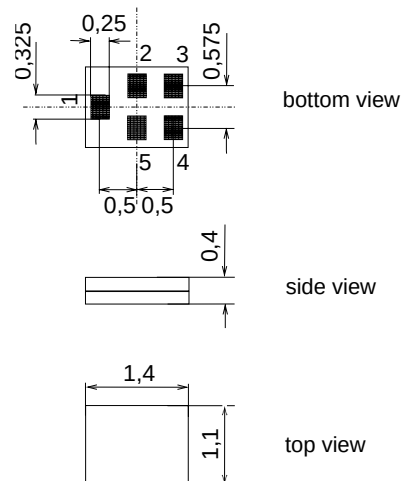
Application

- Low-loss RF filter for mobile telephone GSM850, Cellular and WCDMA band V systems, receive path (RX)
- Suitable for diversity applications
- Very high TX suppression
- Useable passband 25 MHz
- Unbalanced to balanced operation
- Impedance transformation from 50 Ω to 100 Ω
- Suitable to GPRS class 1 to 12



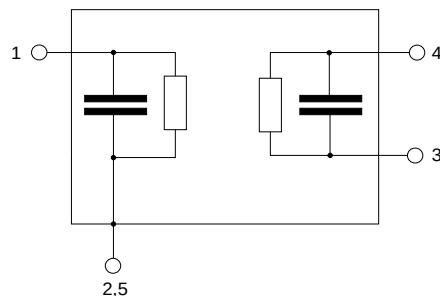
Features

- Package size 1.4 x 1.1 x 0.4 mm³
- Package code QCS5I
- RoHS compatible
- Approximate weight 0.003 g
- Package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- **Electrostatic Sensitive Device (ESD)**



Pin configuration

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





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Characteristics

Temperature range for specification: $T = -30\text{ °C to }+85\text{ °C}$
 Terminating source impedance: $Z_S = 50\ \Omega$ (unbalanced)
 Terminating load impedance: $Z_L = 100\ \Omega$ (balanced)

						B9456			
						min.	typ. @ 25 °C	max.	
Center frequency		f_C				—	881.5	—	MHz
Maximum insertion attenuation									
	869.0 ... 894.0	MHz	$\alpha_{\max}$			—	2.0	2.6	dB
@ $f_{\text{Carrier Bd V RX}}$	871.4 ... 891.6	MHz	$\alpha_{\text{WCDMA}}^{1)}$			—	1.7	2.3	dB
Amplitude ripple (p-p)									
	869.0 ... 894.0	MHz	$\Delta\alpha$			—	0.7	1.3	dB
Error Vector Magnitude²⁾									
@ $f_{\text{Carrier Bd V RX}}$	871.4 ... 891.6	MHz	EVM			—	2.0	3.2	%
Input VSWR									
	869.0 ... 894.0	MHz				—	1.6	2.0	
Output VSWR									
	869.0 ... 894.0	MHz				—	1.6	2.0	
Output amplitude balance (S_{31}/S_{21})									
	869.0 ... 894.0	MHz				- 1	-0.5/0.3	+ 1	dB
Output phase balance ($\phi(S_{31})-\phi(S_{21}))+180^\circ$									
	869.0 ... 894.0	MHz				- 8	± 5	+ 8	°
Attenuation									
	DC ... 824.0	MHz	α			40	60	—	dB
	824.0 ... 849.0	MHz				50	57	—	dB
@ $f_{\text{Carrier Bd V TX}}$	826.4 ... 846.6	MHz	$\alpha_{\text{WCDMA}}^{1)}$			55	59	—	dB
	849.0 ... 854.0	MHz				10	55	—	dB
	914.0 ... 954.0	MHz				24 ³⁾	29	—	dB
	954.0 ... 979.0	MHz				28	55	—	dB
	979.0 ... 1693.0	MHz				35	48	—	dB
	1693.0 ... 2607.0	MHz				40	60	—	dB
	1850.0 ... 1910.0	MHz				50	60	—	dB
	2607.0 ... 2682.0	MHz				45	50	—	dB
	2682.0 ... 4345.0	MHz				40	60	—	dB
	4345.0 ... 6000.0	MHz				45	60	—	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.

³⁾ -20/85 °C

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**Annotation for characteristics section**

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

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

f_{Carrier} according to 3GPP TS 25.101 (e.g. for band V RX passband, f_{Carrier} ranges from 871.4 MHz (lowest RX channel) to 891.6 MHz (highest RX channel)). $H_{\text{RRC}}(f)$ is the transfer function of the root-raised cosine transmit pulse shaping filter according to 3GPP TS 25.101 with the following normalization:

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

Maximum ratings

Operable temperature range	T	-40/+85	°C	machine model, 10 pulses 10000h, 55°C
Storage temperature range	T _{stg}	-40/+85	°C	
DC voltage	V _{DC}	5	V	
ESD voltage	V _{ESD}	100 ¹⁾	V	
Input power	P _{IN}	19	dBm	

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



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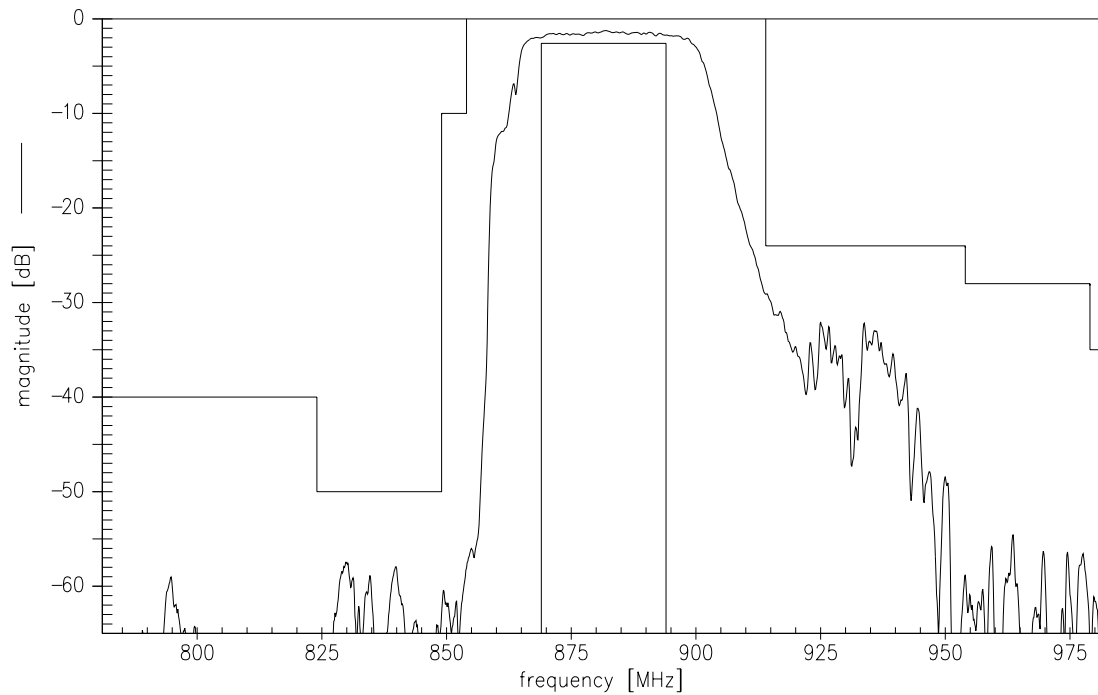
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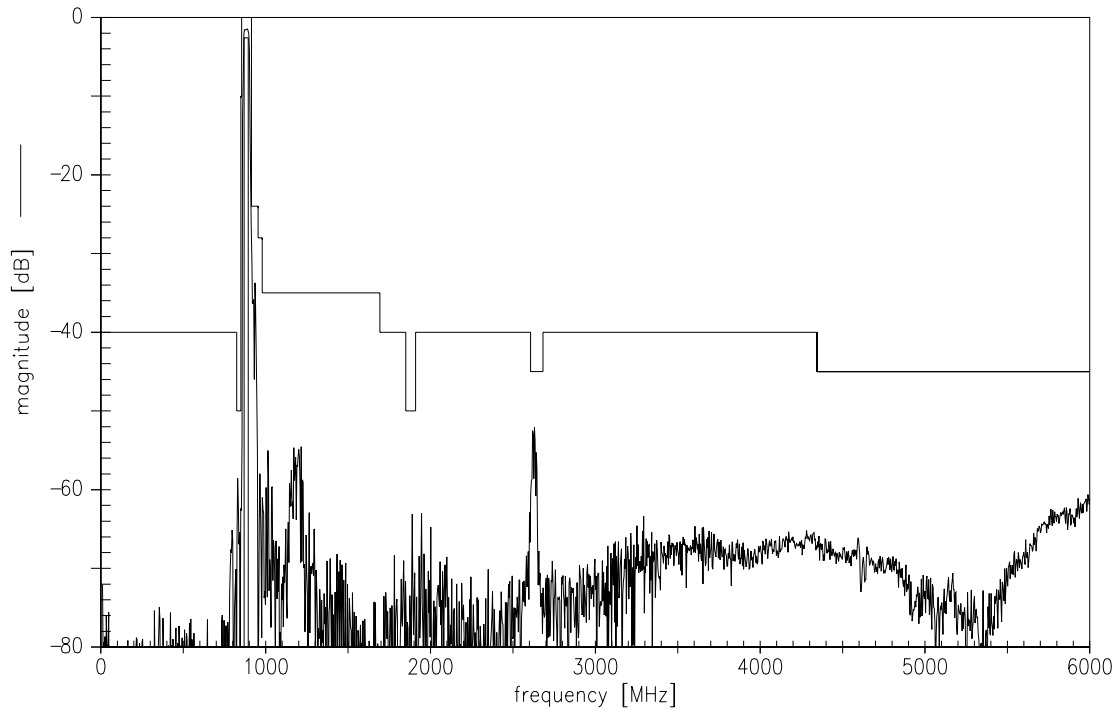
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Transfer function



Transfer function (wideband)



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



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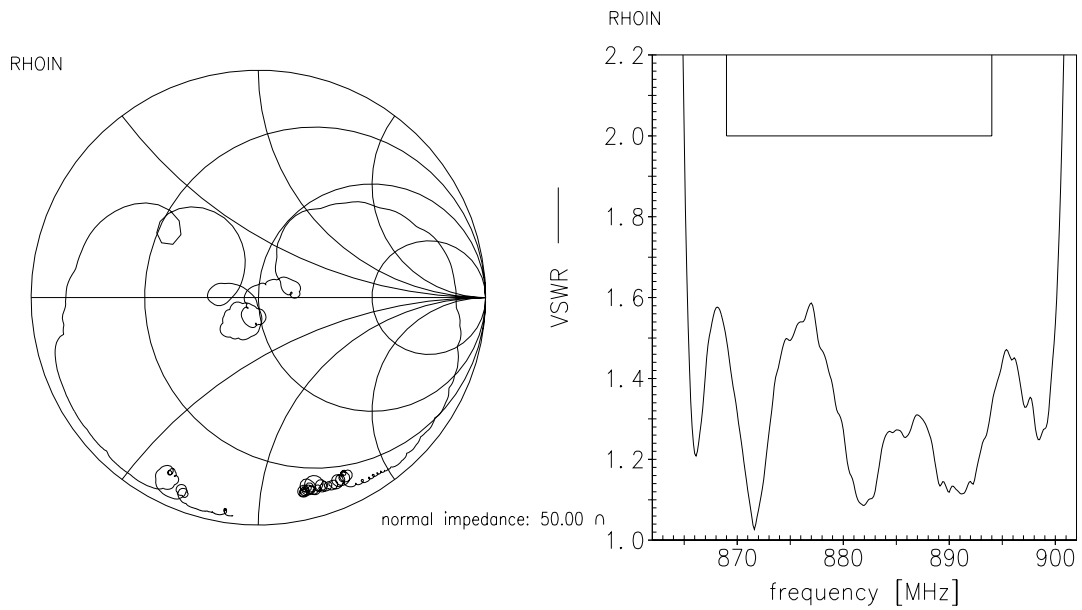
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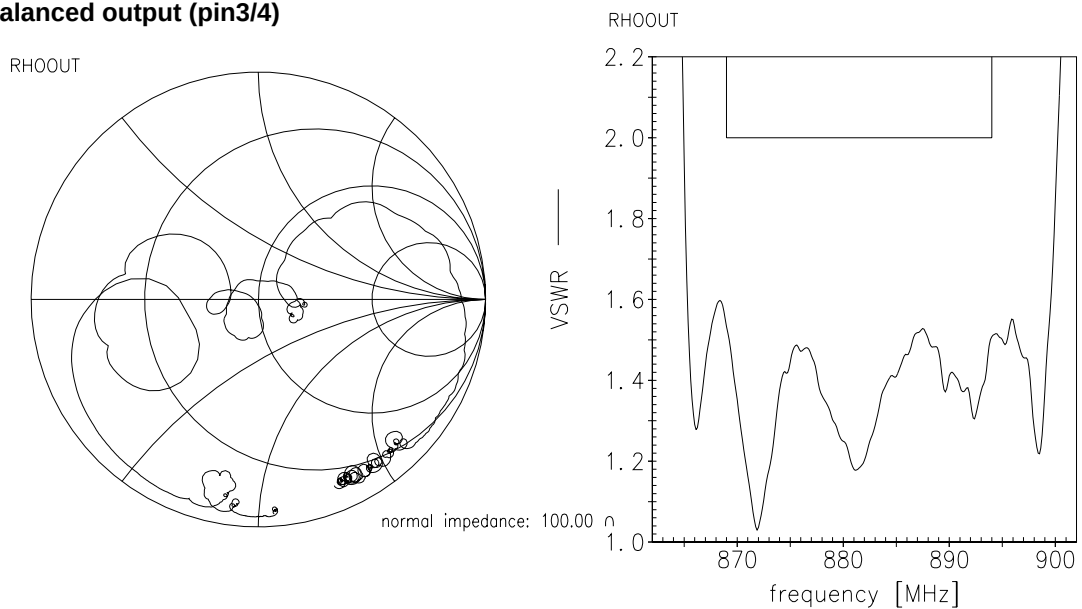


Smith charts

Unbalanced input (pin1)



Balanced output (pin3/4)



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**References**

Type	B9456
Ordering code	B39881B9456P810
Marking and package	C61157-A8-A3
Packaging	F61074-V8237-Z000
Date codes	L_1126
S-parameters	B9456_NB.s2p B9456_WB.s2p 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."

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

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