



SAW Components

SAW RX filter

GSM850 / WCDMA band V / Cellular

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



Data sheet



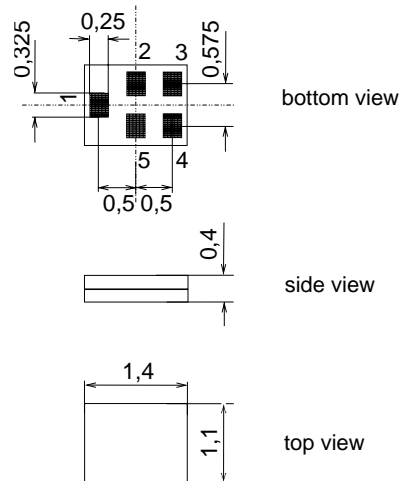
Application

- 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



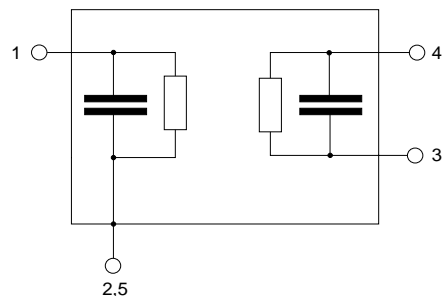
Features

- Package size 1.4 x 1.1 x 0.4 mm³
- Package code QCS51
- 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 °C to +85 °C
 Terminating source impedance: Z_S = 50 Ω (unbalanced)
 Terminating load impedance: Z_L = 100 Ω (balanced)

						B9456			
						min.	typ. @ 25 °C	max.	
Center frequency			f _C			—	881.5	—	MHz
Maximum insertion attenuation									
	869.0 ... 894.0	MHz	α _{max}			—	2.0	2.6	dB
@f _{Carrier Bd V RX}	871.4 ... 891.6	MHz	α _{WCDMA} ¹⁾			—	1.7	2.3	dB
Amplitude ripple (p-p)									
	869.0 ... 894.0	MHz	Δα			—	0.7	1.3	dB
Error Vector Magnitude²⁾									
@f _{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 (S₃₁/S₂₁)									
	869.0 ... 894.0	MHz				- 1	-0.5/0.3	+ 1	dB
Output phase balance (φ(S₃₁)-φ(S₂₁))+180°									
	869.0 ... 894.0	MHz				- 8	± 5	+ 8	°
Attenuation			α						
	DC ... 824.0	MHz				40	60	—	dB
	824.0 ... 849.0	MHz				50	57	—	dB
@f _{Carrier Bd V TX}	826.4 ... 846.6	MHz	α _{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

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

$f_{Carrier}$ 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)). $H_{RRC}(f)$ 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, 10 pulses
Input power	P _{IN}	19	dBm	10000h, 55°C

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



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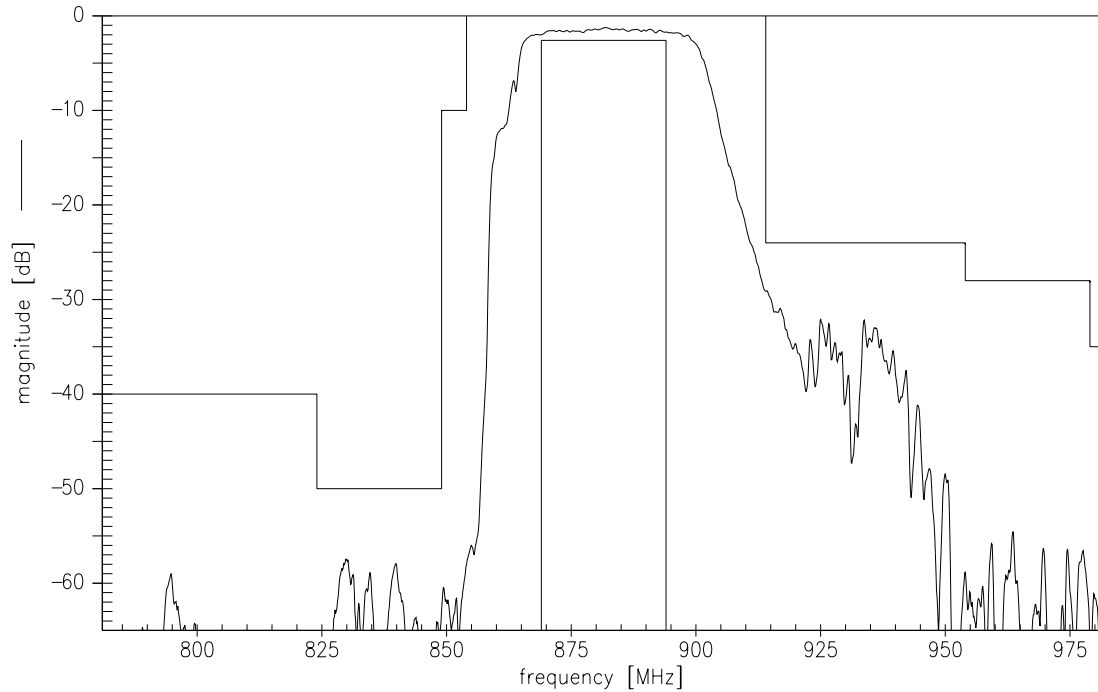
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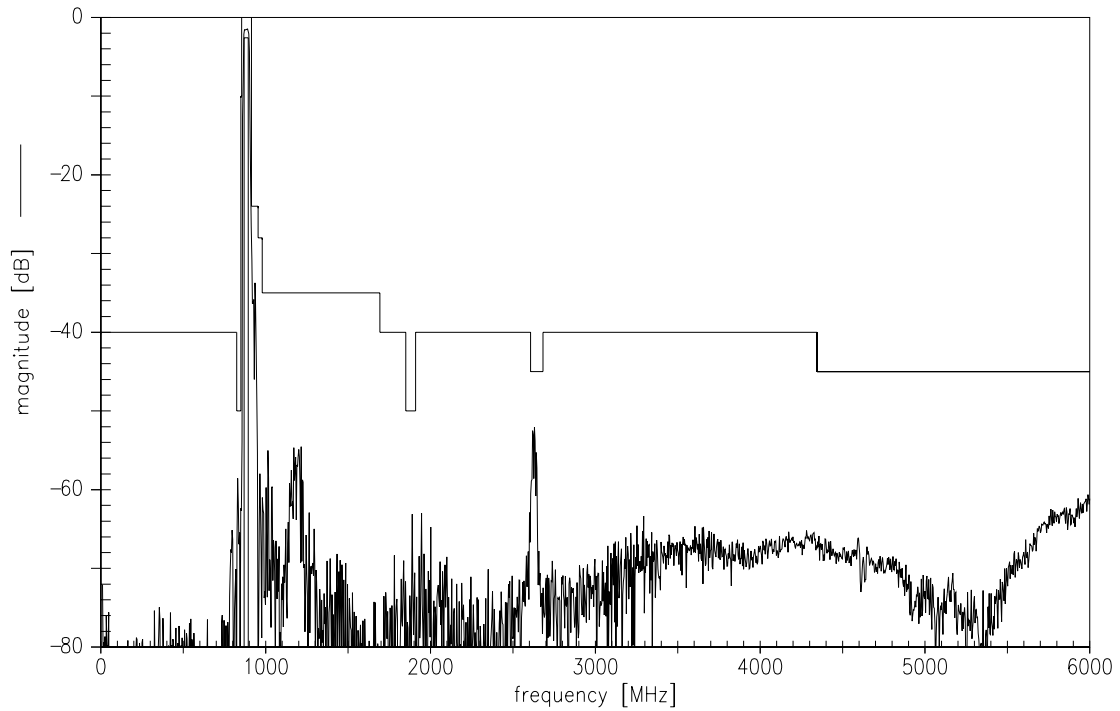
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Transfer function



Transfer function (wideband)



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

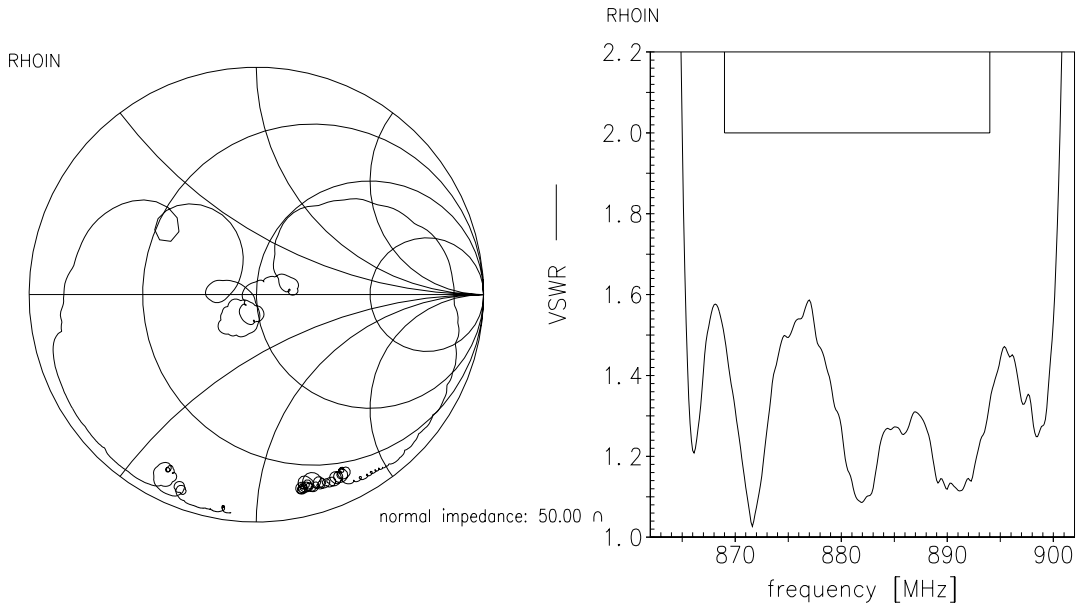


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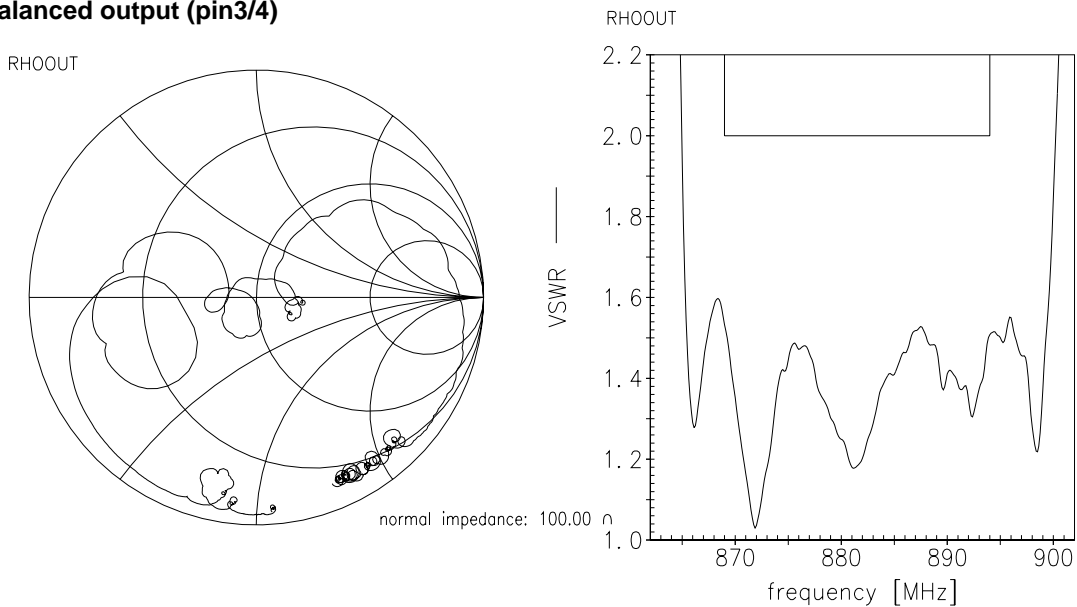


Smith charts

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."

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