



SAW Components

SAW Filter for smallcells

Band II Uplink

Series/type:	B9611
Ordering code:	B39192B9611P810
Date:	May 20, 2014
Version:	2.0

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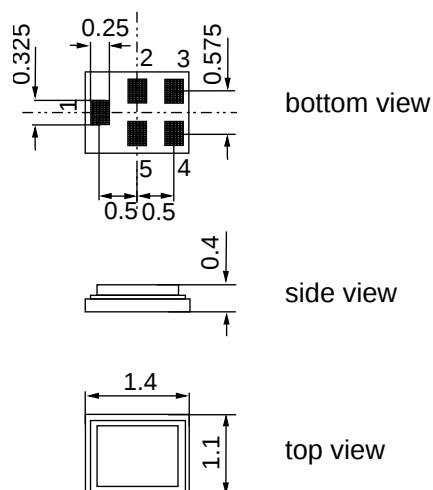
Application

- Low-loss RF filter for smallcells
- Usable passband 58.75 MHz
- No matching network required for operation at 50 Ω
- Unbalanced to unbalanced operation



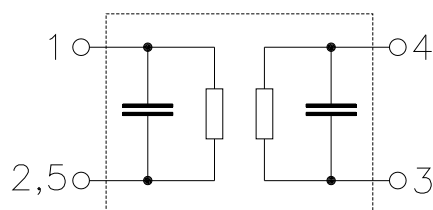
Features

- Package size 1.4 x 1.1 mm²
- Max Package height 0.4 mm
- Package code QCS5M
- RoHS compatible
- Approximate weight 0.003 g
- Package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- **Electrostatic Sensitive Device (ESD)**
- **Moisture Sensitivity Level 3**



Pin configuration

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



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Characteristics

 Temperature range for specification: $T = -10\text{ }^{\circ}\text{C to }+85\text{ }^{\circ}\text{C}$

 Terminating source impedance: $Z_S = 50\Omega$

 Terminating load impedance: $Z_L = 50\Omega$

		min.	typ. @ 25 °C	max.	
Center frequency	f_C	—	1880.00	—	MHz
Maximum insertion attenuation					
	1850.625 ... 1909.375 MHz $\alpha_{\max}$	—	2.5	3.8	dB
@ f_{Carrier}	1853.025 ... 1906.975 MHz $\alpha_{\text{WCDMA}}^{1)}$	—	2.5	3.8	dB
Amplitude ripple (p-p)					
	1850.625 ... 1909.375 MHz $\Delta\alpha$	—	1.3	3.3	dB
Error Vector Magnitude					
@ f_{Carrier}	1853.025 ... 1906.975 MHz $\text{EVM}^{2)}$	—	2.3	4.5	%
Input VSWR					
	1850.625 ... 1909.375 MHz	—	2.0	2.5	
Output VSWR					
	1850.625 ... 1909.375 MHz	—	2.1	2.5	
Attenuation	α				
	10.0 ... 1550.0 MHz	32	38	—	dB
	1550.0 ... 1580.0 MHz	35	40	—	dB
	1580.0 ... 1770.0 MHz	30	40	—	dB
	1770.0 ... 1830.0 MHz	14	26	—	dB
	1930.625 ... 1990.0 MHz	25	35	—	dB
@ f_{Carrier}	1933.025 ... 1987.6 MHz α_{WCDMA}	25	35	—	dB
	1990.0 ... 2032.0 MHz	35	39	—	dB
	2032.0 ... 2500.0 MHz	35	39	—	dB
	2500.0 ... 3700.0 MHz	30	37	—	dB
	3700.0 ... 3820.0 MHz	35	55	—	dB
	3820.0 ... 6000.0 MHz	25	37	—	dB

¹⁾ Attenuation of WCDMA signal ("Powertransferfunction"). Please refer to annotation on page 5.

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

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

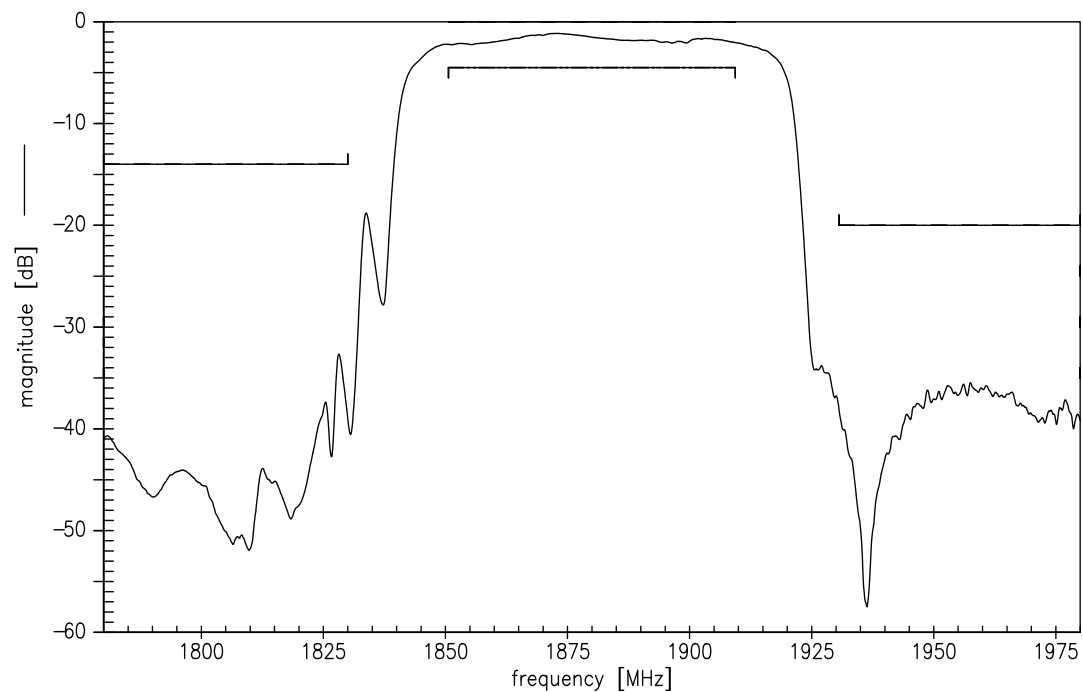
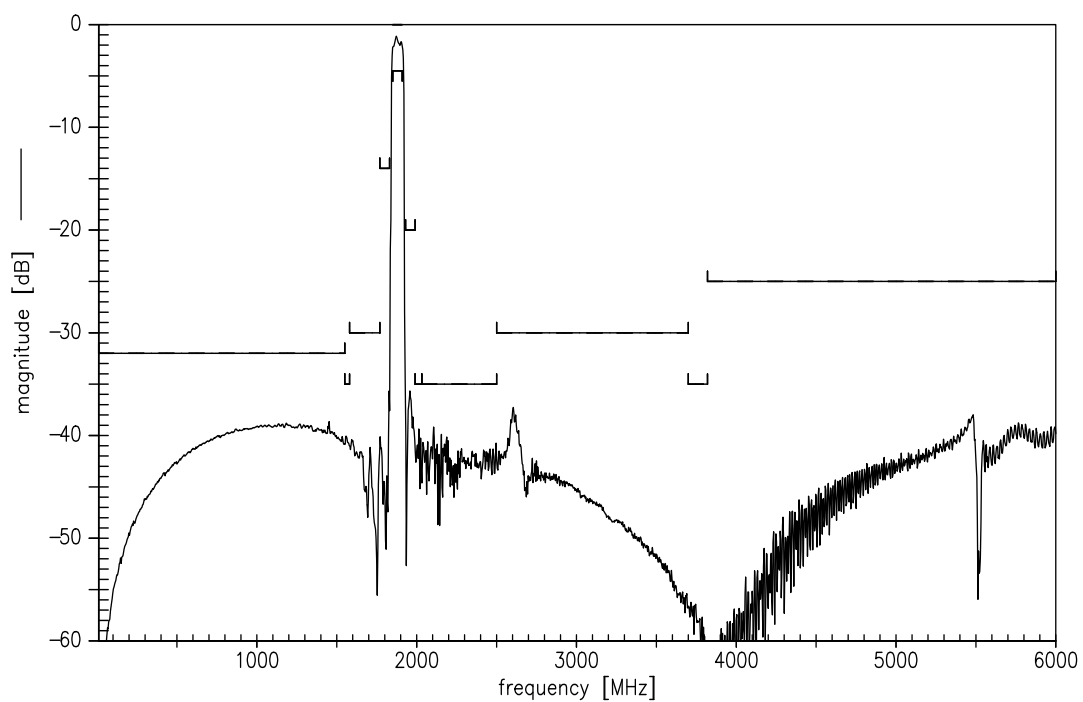
f_{Carrier} according to 3GPP TS 25.101 (e.g. for Passband, f_{Carrier} ranges from 1850.625 MHz (lowest Tx channel) to 1909.375 MHz (highest Tx channel)). $H_{\text{RRC}}(f)$ is the transfer function of the root-raised cosine transmit pulse shaping filter according to 3GPP TS 25.101 with the following normalization:

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

Maximum ratings

Operable temperature range	T	−40/+85	°C	machine model, 10 pulses
Storage temperature range	T _{stg}	−40/+85	°C	
DC voltage	V _{DC}	0	V	
ESD voltage	V _{ESD}	50 ¹⁾	V	CW, 50000 hrs @ 55deg
Input power at 1850.625 ... 1909.375 MHz	P _{IN}	8	dBm	

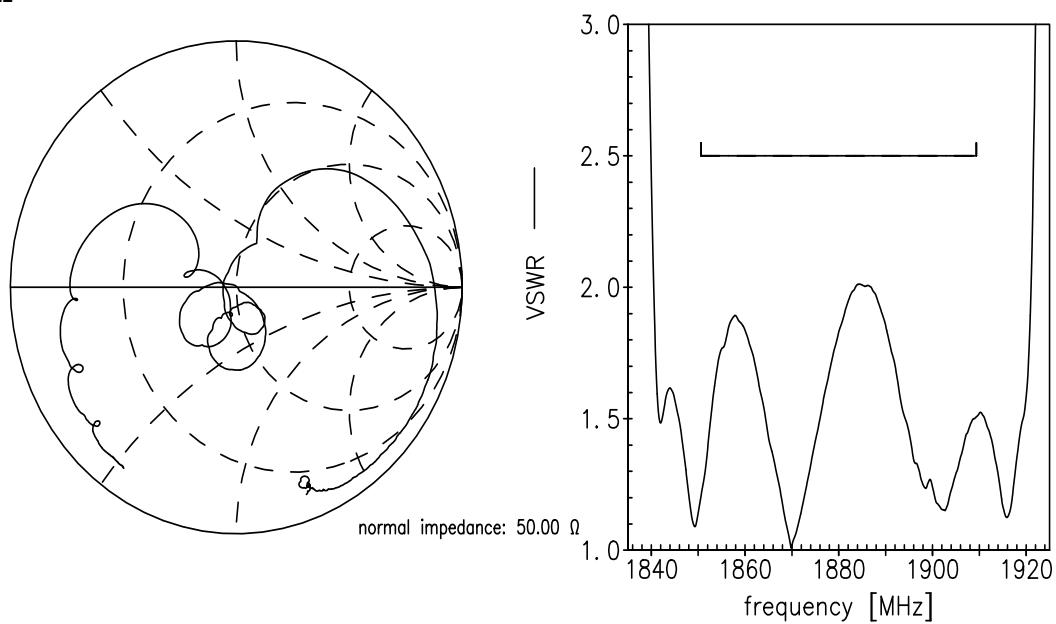
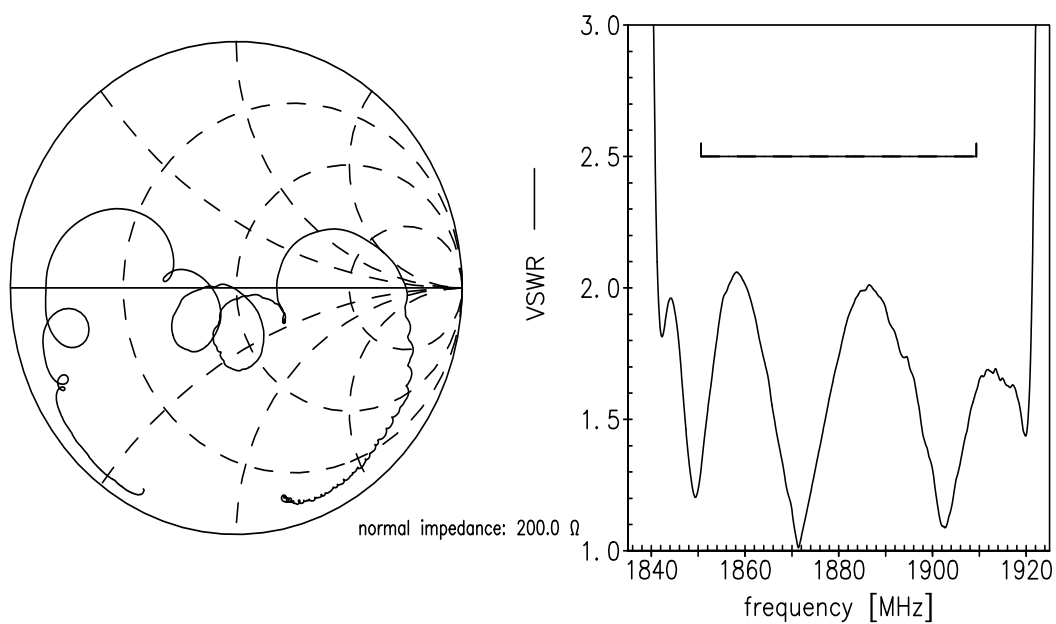
¹⁾ acc. to JESD22-A115B (machine model), +/- 10 pulses.

Transfer function (Narrowband)

Transfer function (wideband)


Data sheet



Smith charts

 S_{11} function

 S_{22} function


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References

Type	B9611
Ordering code	B39192B9611P810
Marking and package	C61157-A8-A8
Packaging	F61074-V8237-Z000
Date codes	L_1126
S-parameters	B9611_NB.s2p, B9611_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.
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