

RF360 Europe GmbH

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## SAW Components

### SAW Rx 2in1 input duplex filter

GSM900 / GSM1800

Series/type:	B9522
Ordering code:	B39182B9522P810
Date:	December, 12, 2013
Version:	2.1

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## **SAW Components**

**SAW Rx 2in1 input diplex filter**  
GSM900 / GSM1800

<b>Series/type:</b>	<b>B9522</b>
<b>Ordering code:</b>	<b>B39182B9522P810</b>
<b>Date:</b>	<b>December, 12, 2013</b>
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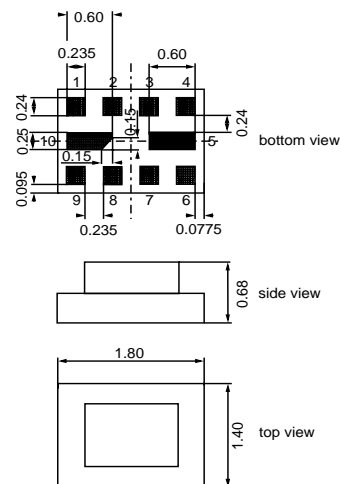
**Datasheet**

**Application**

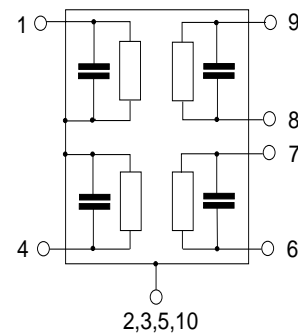
- Low-loss 2in1 RF filter for mobile telephone GSM 900 and GSM 1800 systems, receive path (Rx)
- Usable passband:
  - Filter 1 (GSM 900): 35 MHz
  - Filter 2 (GSM 1800): 75 MHz
- Unbalanced to unbalanced operation for both filters
- Low amplitude ripple
- Suitable for GPRS class 1 to 12


**Features**

- Package size 1.8 x 1.4 x 0.68 mm<sup>3</sup>
- RoHS compatible
- Approx. weight 0.006g
- Package for Surface Mount Technology (SMT)
- Ni, gold-plated terminals
- **Electrostatic Sensitive Device (ESD)**
- **Moisture Sensitivity Level 3**


**Pin configuration**

- 1 Input [Diplex]
- 6 Output [Filter 2]
- 9 Output [Filter 1]
- 2,3,5,10 Case ground
- 4,7,8 To be ground



**Datasheet**

**Characteristics of Filter 1 (GSM900)**

Temperature range for specification:  $T = -20\text{ °C to }+85\text{ °C}$   
 Terminating source impedance:  $Z_S = 50\ \Omega \parallel 4.7\text{nH}$   
 Terminating load impedance:  $Z_L = 50\ \Omega$

		min.	typ. @ 25 °C	max.	
<b>Center frequency</b>	$f_C$	—	942.5	—	MHz
<b>Maximum insertion attenuation</b>	$\alpha_{\max}$				
925.0 ... 960.0 MHz		—	2.3	3.0	dB
<b>Amplitude ripple (p-p)</b>	$\Delta\alpha$				
925.0 ... 960.0 MHz		—	1.0	1.8	dB
<b>Input VSWR</b>					
925.0 ... 960.0 MHz		—	2.0	2.4	
<b>Output VSWR</b>					
925.0 ... 960.0 MHz		—	2.0	2.4	
<b>Attenuation</b>	$\alpha$				
10.0 ... 480.0 MHz		45	61	—	dB
480.0 ... 850.0 MHz		30	32	—	dB
850.0 ... 905.0 MHz		23	25	—	dB
905.0 ... 914.0 MHz		10	19	—	dB
980.0 ... 1850.0 MHz		21	27	—	dB
1850.0 ... 1920.0 MHz		22	24	—	dB
1920.0 ... 3700.0 MHz		18	20	—	dB
3700.0 ... 6000.0 MHz		15	19	—	dB


**Maximum ratings of Filter 1**

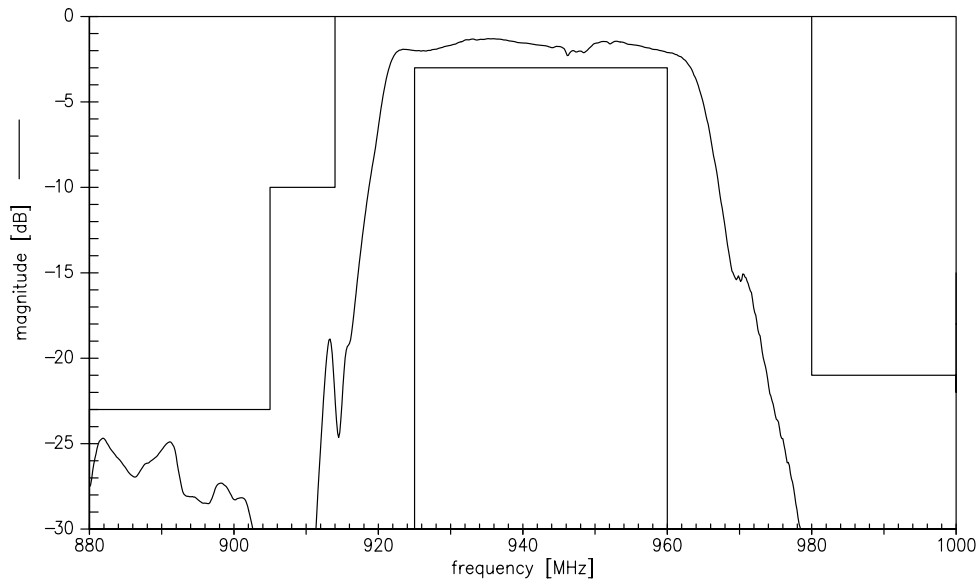
Operable temperature range	T	-40/+85	°C	
Storage temperature range	T <sub>stg</sub>	-40/+85	°C	
DC voltage	V <sub>DC</sub>	5	V	
ESD voltage	V <sub>ESD</sub>	50 <sup>1)</sup>	V	machine model, 1 pulse
Input power at				
GSM 850, GSM 900	P <sub>IN</sub>	15	dBm	effective power in the on-state, duty cycle 4:8, 10 000 hours
GSM 1800, GSM 1900	P <sub>IN</sub>	3	dBm	
Tx bands				

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

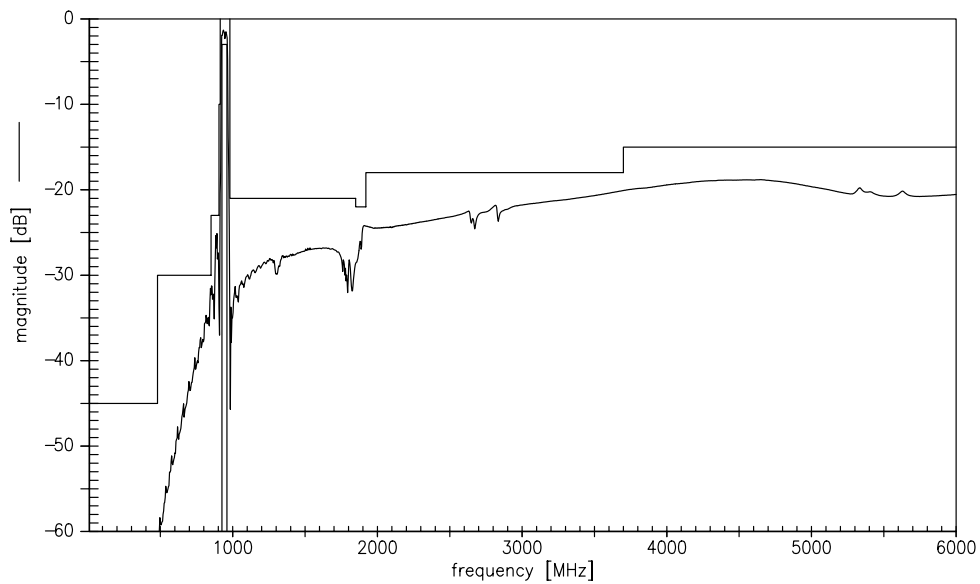
Datasheet



Transfer function of Filter 1 (GSM900)



Transfer function of Filter 1 (GSM900) - Wideband

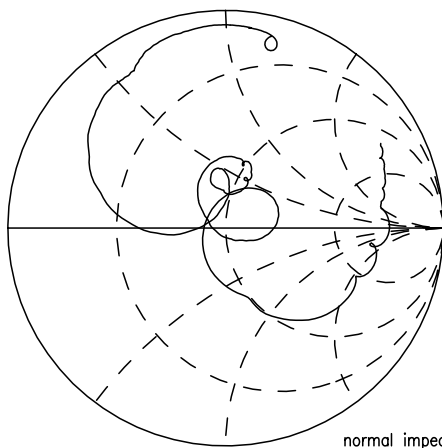


Datasheet

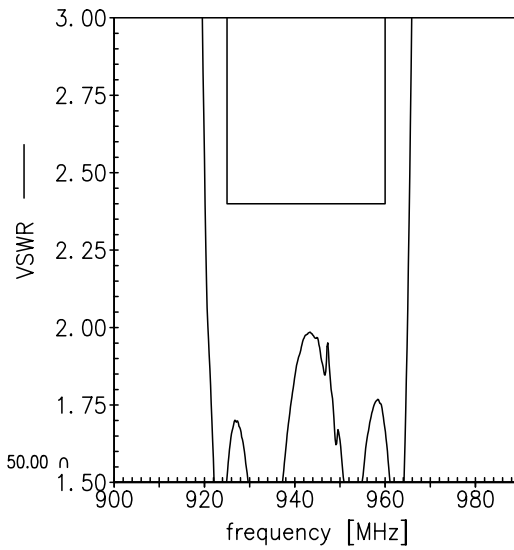


Smith charts of Filter 1

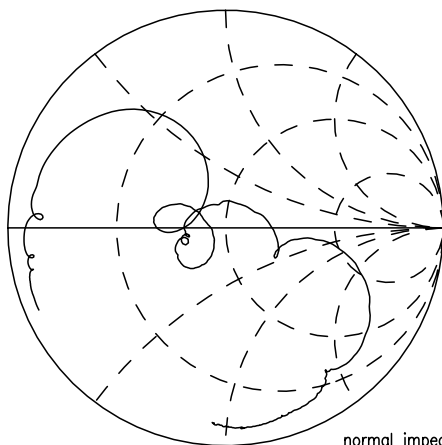
$S_{11}$  function



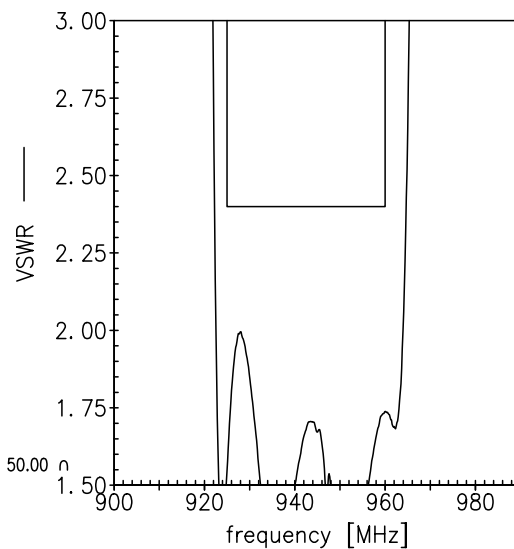
normal impedance: 50.00  $\Omega$



$S_{22}$  function



normal impedance: 50.00  $\Omega$





**Datasheet**

**Characteristics of Filter 2 (GSM1800)**

Temperature range for specification:  $T = -20\text{ °C to }+85\text{ °C}$   
 Terminating source impedance:  $Z_S = 50\Omega \parallel 4.7\text{nH}$   
 Terminating load impedance:  $Z_L = 50\Omega$

		min.	typ. @ 25 °C	max.	
<b>Center frequency</b>	$f_C$	—	1842.5	—	MHz
<b>Maximum insertion attenuation</b>	$\alpha_{\max}$	—	2.6	4.0	dB
1805.0 ... 1880.0	MHz				
<b>Amplitude ripple (p-p)</b>	$\Delta\alpha$	—	1.1	2.6	
1805.0 ... 1880.0	MHz				
<b>Input VSWR</b>		—	2.1	2.6	
1805.0 ... 1880.0	MHz				
<b>Output VSWR</b>		—	2.1	2.6	
1805.0 ... 1880.0	MHz				
<b>Attenuation</b>	$\alpha$				
10.0 ... 940.0	MHz	30	44	—	dB
940.0 ... 1705.0	MHz	28	33	—	
1705.0 ... 1785.0	MHz	12	16	—	
1920.0 ... 1980.0	MHz	18	23	—	
1980.0 ... 2030.0	MHz	26	28	—	
2030.0 ... 2400.0	MHz	32	34	—	
2400.0 ... 2500.0	MHz	32	36	—	
2500.0 ... 2775.0	MHz	32	36	—	
2775.0 ... 5000.0	MHz	26	29	—	
5000.0 ... 6000.0	MHz	24	27	—	

**Datasheet**

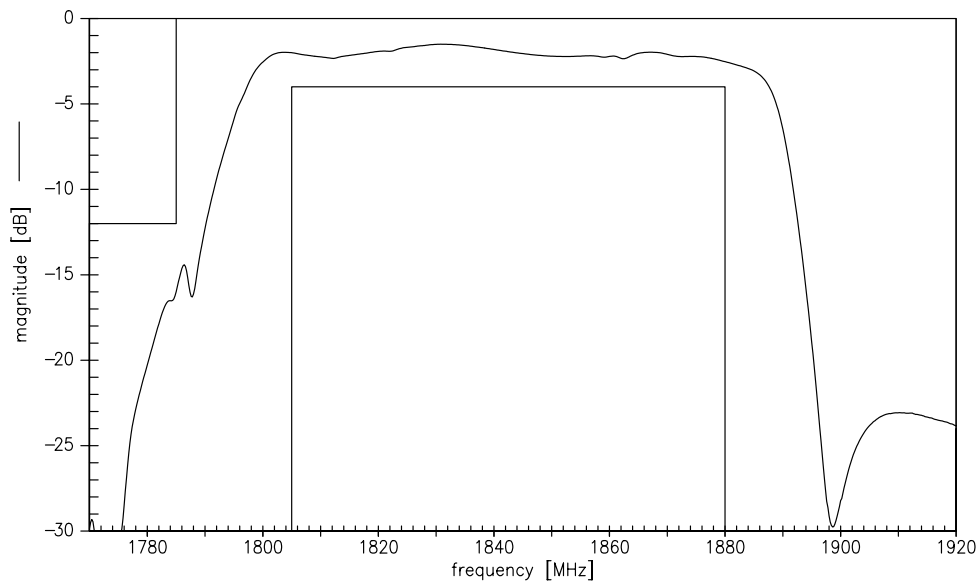
**Maximum ratings of Filter 2**

Operable temperature range	T	-40/+85	°C	
Storage temperature range	T <sub>stg</sub>	-40/+85	°C	
DC voltage	V <sub>DC</sub>	5	V	
ESD voltage	V <sub>ESD</sub>	50 <sup>1)</sup>	V	machine model, 1 pulse
Input power at				
GSM 850, GSM 900	P <sub>IN</sub>	15	dBm	effective power in the on-state, duty cycle 4:8, 10 000 hours
GSM 1800, GSM 1900	P <sub>IN</sub>	3	dBm	
Tx bands				

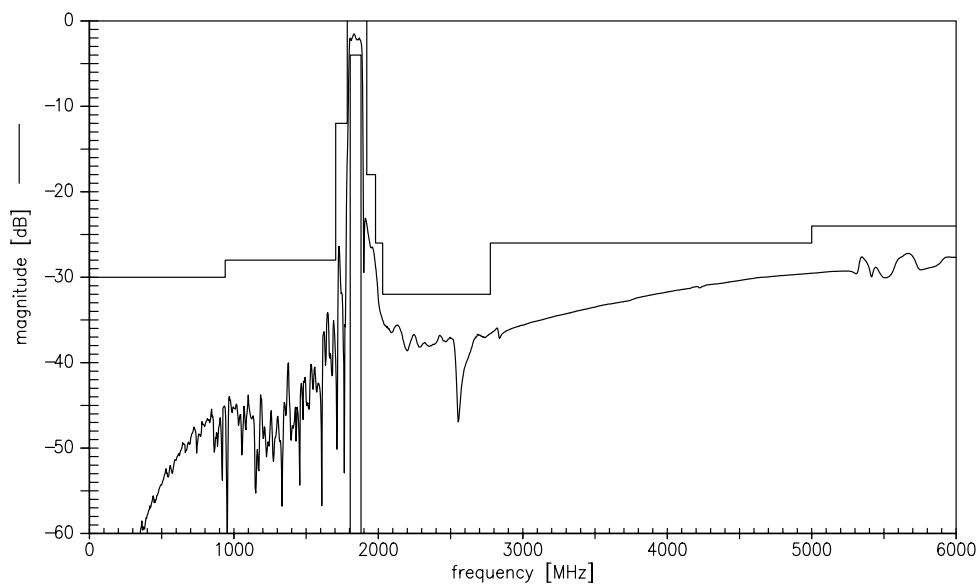
<sup>1)</sup> acc. to JESD22-A115A (machine model), 1 negative & 1 positive pulse.



Transfer function of Filter 2 (GSM1800)



Transfer function of Filter 2 (GSM1800) - Wideband

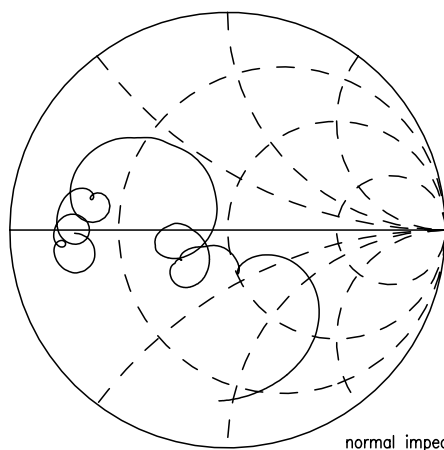


Datasheet

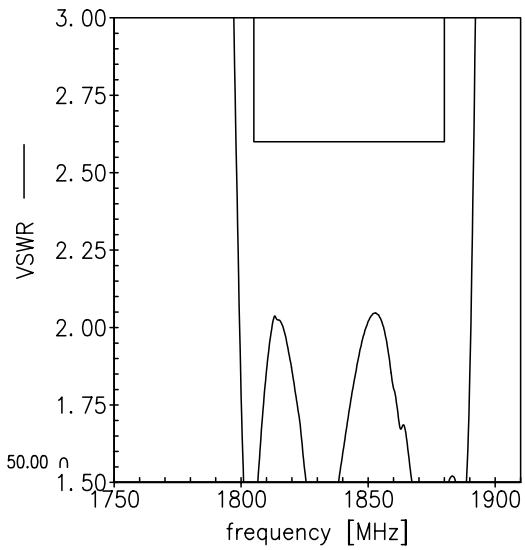


Smith charts of Filter 2

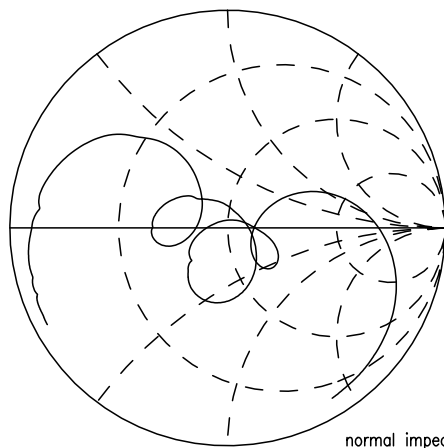
$S_{11}$  function



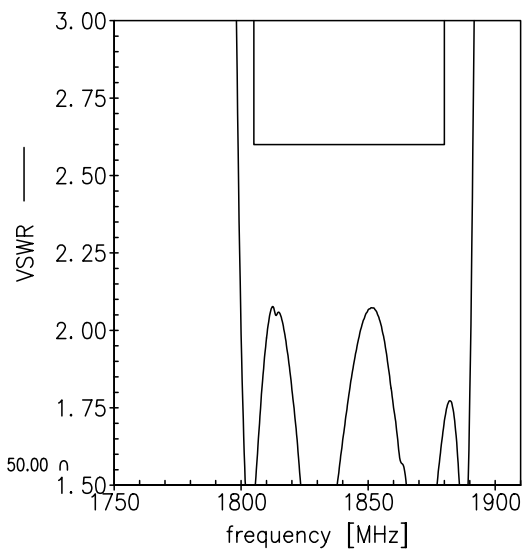
normal impedance: 50.00  $\Omega$



$S_{22}$  function



normal impedance: 50.00  $\Omega$



Datasheet



References

<b>Type</b>	B9522
<b>Ordering code</b>	B39182B9522P810
<b>Marking and package</b>	C61157-A7-A152
<b>Packaging</b>	F61074-V8226-Z000
<b>Date codes</b>	L_1126
<b>S-parameters</b>	B9522_LB_NB.s2p , B9522_LB_WB.s2p B9522_UB_NB.s2p , B9522_UB_WB.s2p see file header for port/pin assignment table
<b>Soldering profile</b>	S_6001
<b>RoHS compatible</b>	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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