RF360 Europe GmbH

A Qualcomm – TDK Joint Venture

SAW Components

SAW Rx 2in1 input diplex filter

GSM900 / GSM1800

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

RF360 Europe GmbH, Anzinger Str. 13, München, Germany

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SAW Rx 2in1 input diplex filter 942.5 / 1842.5 MHz

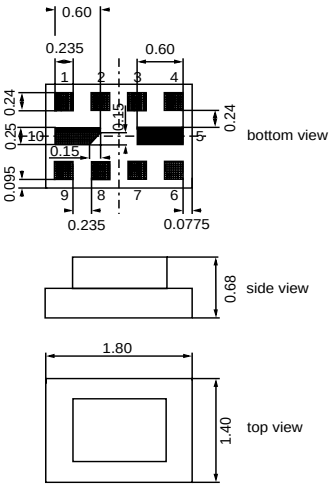
Datasheet SMD

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

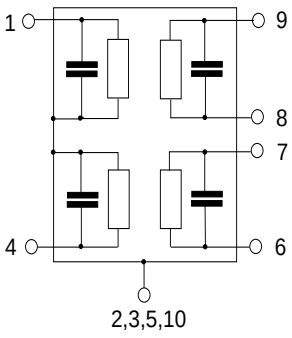
Features

- Package size 1.8 x1.4 x 0.68 mm^3
- RoHS compatible
- Approx. weight 0.006g
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals
- **E**lectrostatic **S**ensitive **D**evice (**ESD**)
- **M**oisture **S**ensitivity **L**evel 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



Characteristics of Filter 1 (GSM900)

Temperature range for specification: T = –20 ˚C to +85 ˚C
Terminating source impedance: Z_S = 50 Ω || 4.7nH
Terminating load impedance: Z_L = 50 Ω

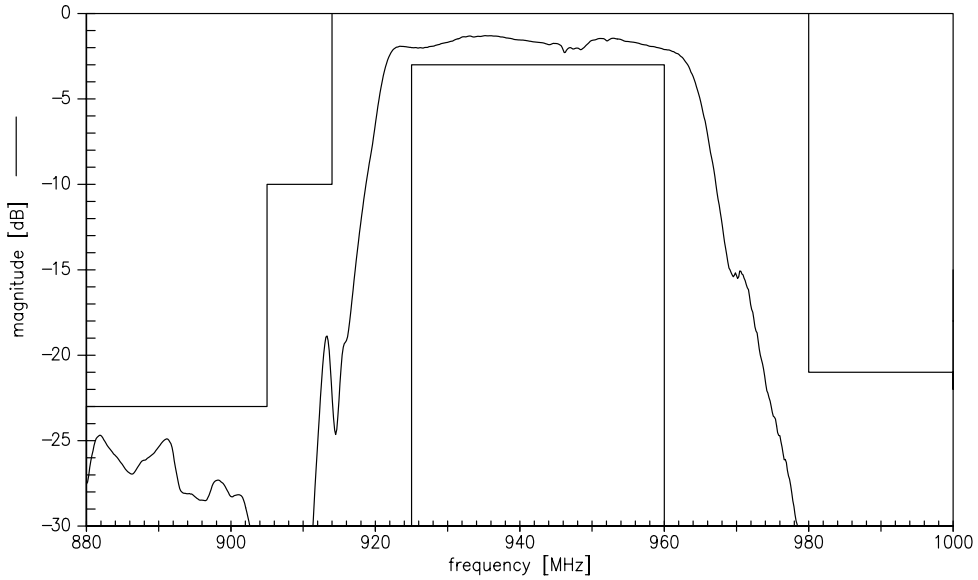
		min.	typ. @ 25 ˚C	max.	
Center frequency	f_C	—	942.5	—	MHz
Maximum insertion attenuation	α_{max}				
925.0 ... 960.0 MHz		—	2.3	3.0	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
925.0 ... 960.0 MHz		—	1.0	1.8	dB
Input VSWR					
925.0 ... 960.0 MHz		—	2.0	2.4	
Output VSWR					
925.0 ... 960.0 MHz		—	2.0	2.4	
Attenuation	α				
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

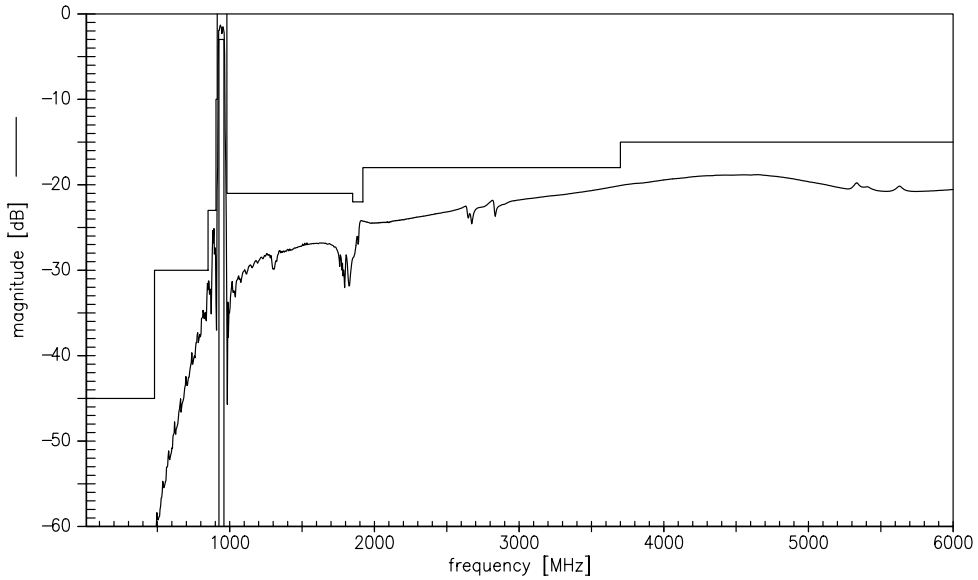
Operable temperature range	T	–40/+85	˚C	
Storage temperature range	T_{stg}	–40/+85	˚C	
DC voltage	V_{DC}	5	V	
ESD voltage	V_{ESD}	50[1)]	V	machine model, 1 pulse
Input power at				
GSM 850, GSM 900	P_{IN}	15	dBm	effective power in the on-state,
GSM 1800, GSM 1900	P_{IN}	3	dBm	duty cycle 4:8, 10 000 hours
Tx bands				

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

Transfer function of Filter 1 (GSM900)

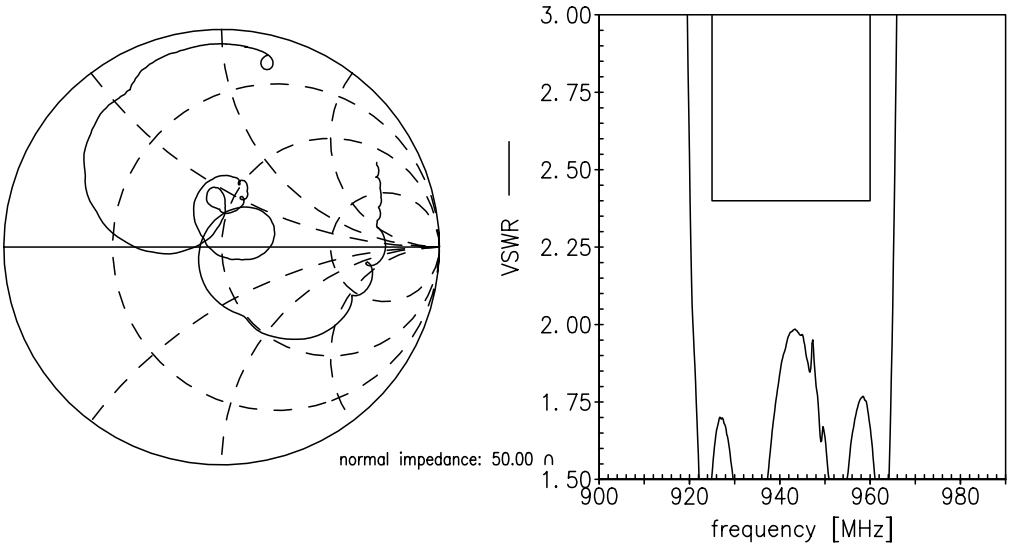


Transfer function of Filter 1 (GSM900) - Wideband

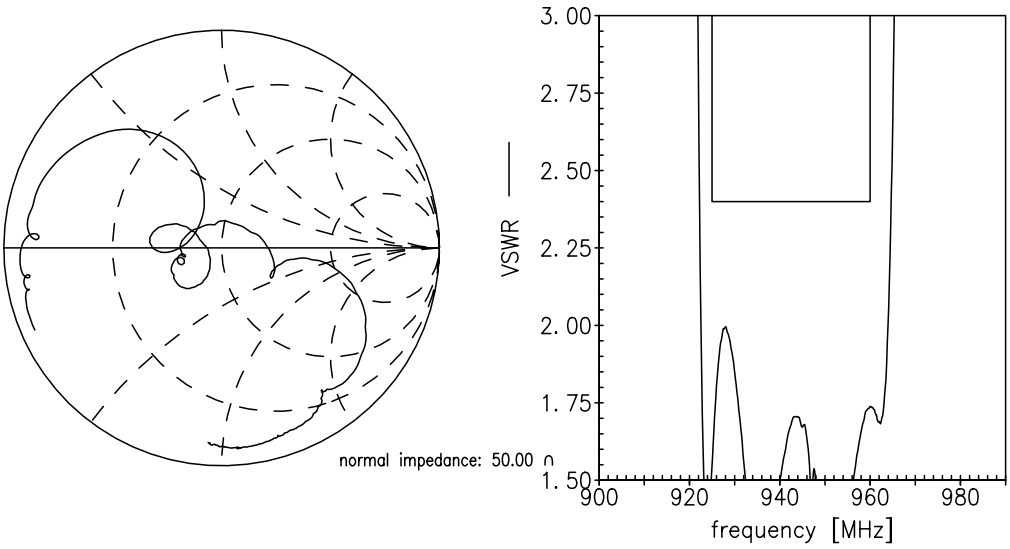


Smith charts of Filter 1

S_{11} function



S_{22} function



Characteristics of Filter 2 (GSM1800)

Temperature range for specification: T = –20 ˚C to +85˚C
Terminating source impedance: Z_S = 50Ω || 4.7nH
Terminating load impedance: Z_L = 50Ω

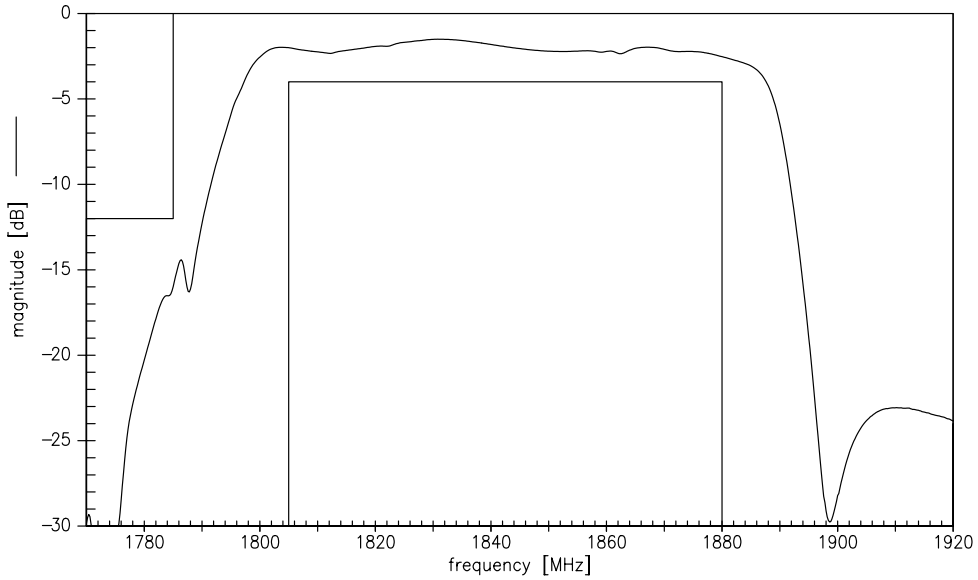
		min.	typ. @ 25 ˚C	max.	
Center frequency	f_C	—	1842.5	—	MHz
Maximum insertion attenuation	α_{max}				
1805.0 ... 1880.0 MHz		—	2.6	4.0	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
1805.0 ... 1880.0 MHz		—	1.1	2.6	dB
Input VSWR					
1805.0 ... 1880.0 MHz		—	2.1	2.6	
Output VSWR					
1805.0 ... 1880.0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

Maximum ratings of Filter 2

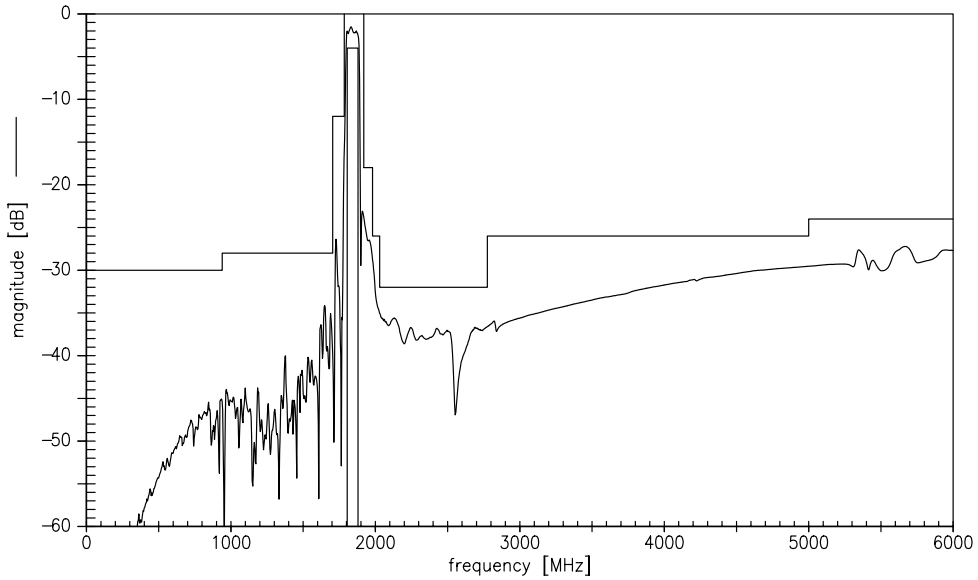
Operable temperature range	T	–40/+85	˚C	
Storage temperature range	T_{stg}	–40/+85	˚C	
DC voltage	V_{DC}	5	V	
ESD voltage	V_{ESD}	50[1)]	V	machine model, 1 pulse
Input power at				
GSM 850, GSM 900	P_{IN}	15	dBm	effective power in the on-state,
GSM 1800, GSM 1900	P_{IN}	3	dBm	duty cycle 4:8, 10 000 hours
Tx bands				

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

Transfer function of Filter 2 (GSM1800)

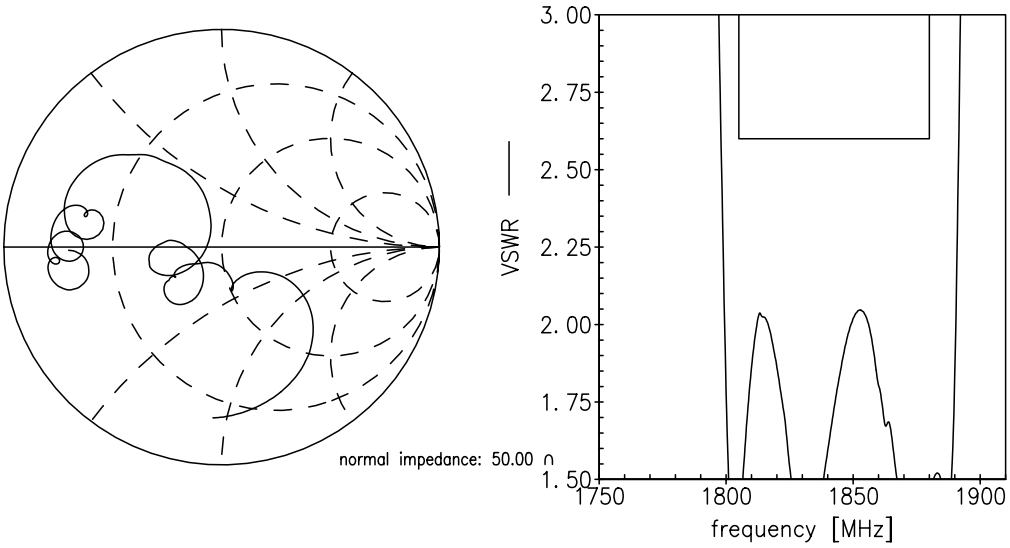


Transfer function of Filter 2 (GSM1800) - Wideband

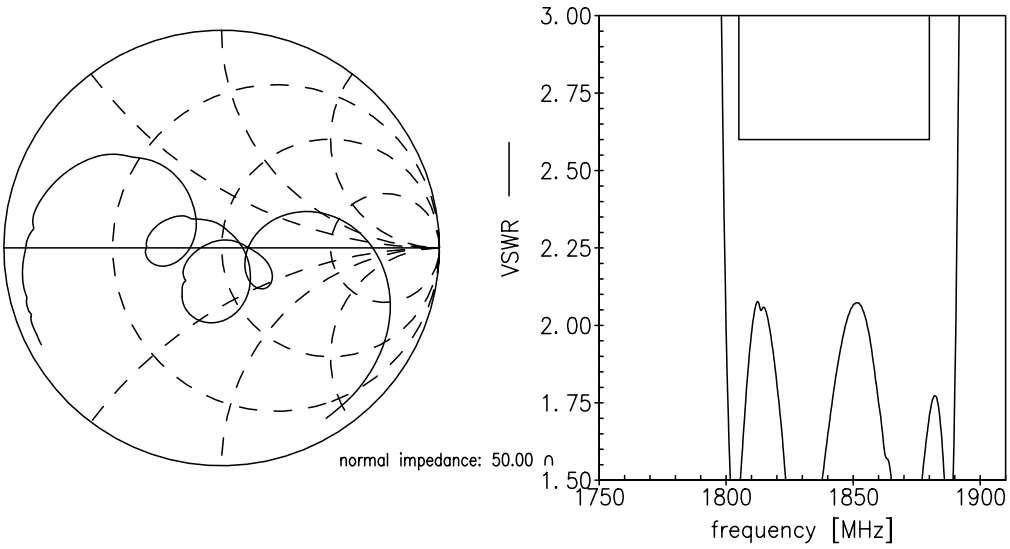


Smith charts of Filter 2

S_{11} function



S_{22} function



Datasheet SMD

References

Type	B9522
Ordering code	B39182B9522P810
Marking and package	C61157-A7-A152
Packaging	F61074-V8226-Z000
Date codes	L_1126
S-parameters	B9522_LB_NB.s2p , B9522_LB_WB.s2p B9522_UB_NB.s2p , B9522_UB_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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