



# SAW filter for automotive electronics

## Series/Type: B3510

The following products presented in this data sheet are being withdrawn.

Ordering Code	Substitute Product	Date of Withdrawal	Deadline Last Orders	Last Shipments
B39202B3510U810		2008-11-28	2009-03-31	2009-06-30

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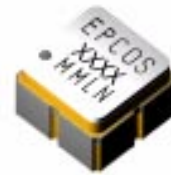


## Data sheet



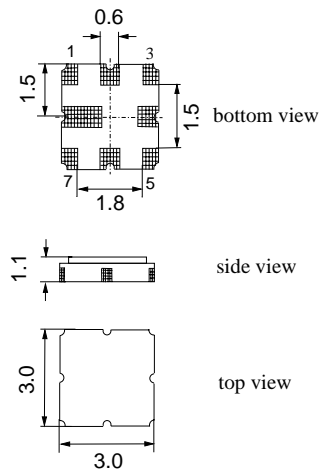
## Application

- Low-loss 2-in-1RF filter for mobile telephone AMPS and PCS CDMA systems, receive path
- Device with two integrated Rx filters
- Usable passband of PCS Rx filter: 60 MHz
- Usable passband of AMPS Rx filter: 25 MHz
- No matching network required for operation at 50  $\Omega$



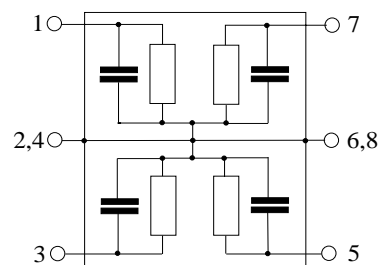
## Features

- Package size 3.0 x 3.0 x 1.1 mm<sup>3</sup>
- Package code QCC8D
- RoHS compatible
- Approximate weight 0.037 g
- Package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- Lead free soldering compatible with J - STD20C
- Passivation layer Elpas
- AEC-Q200 qualified component family
- **Electrostatic Sensitive Device (ESD)**



## Pin configuration

- 1 Input PCS filter
- 7 Output PCS filter
- 3 Input AMPS filter
- 5 Output AMPS filter
- 2,4,6,8 Case-ground, to be grounded



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



Data sheet



Characteristics of PCS Rx filter

Temperature range for specification:  $T = -30\text{ °C to }+75\text{ °C}$   
 Terminating source impedance:  $Z_S = 50\Omega$   
 Terminating load impedance:  $Z_L = 50\Omega$

		min.	typ.	max.	
<b>Center frequency</b>	$f_C$	—	1960.00	—	MHz
<b>Maximum insertion attenuation</b>	$\alpha_{max}$	—	3.7	4.2	dB
1930.00 ... 1990.00 MHz					
<b>Amplitude ripple (p-p)</b>	$\Delta\alpha$	—	1.9	2.9	dB
1930.00 ... 1990.00 MHz					
<b>Input return loss</b>		7.0	9.0	—	dB
1930.00 ... 1990.00 MHz					
<b>Output return loss</b>		7.0	9.0	—	dB
1930.00 ... 1990.00 MHz					
<b>Attenuation</b>	$\alpha$	20	22	—	dB
10.00 ... 1850.00 MHz					
		20	30	—	dB
2110.00 ... 2400.00 MHz					
<b>Tx band suppression</b>		10	12	—	dB
1850.00 ... 1910.00 MHz					



Data sheet



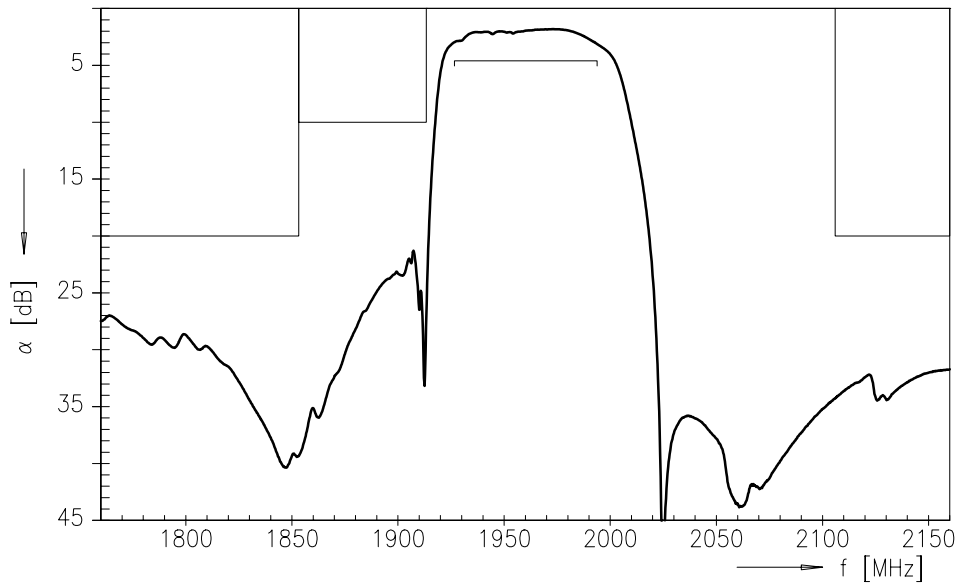
Characteristics of PCS Rx filter

Temperature range for specification:  $T = -40\text{ °C to }+85\text{ °C}$   
 Terminating source impedance:  $Z_S = 50\ \Omega$   
 Terminating load impedance:  $Z_L = 50\ \Omega$

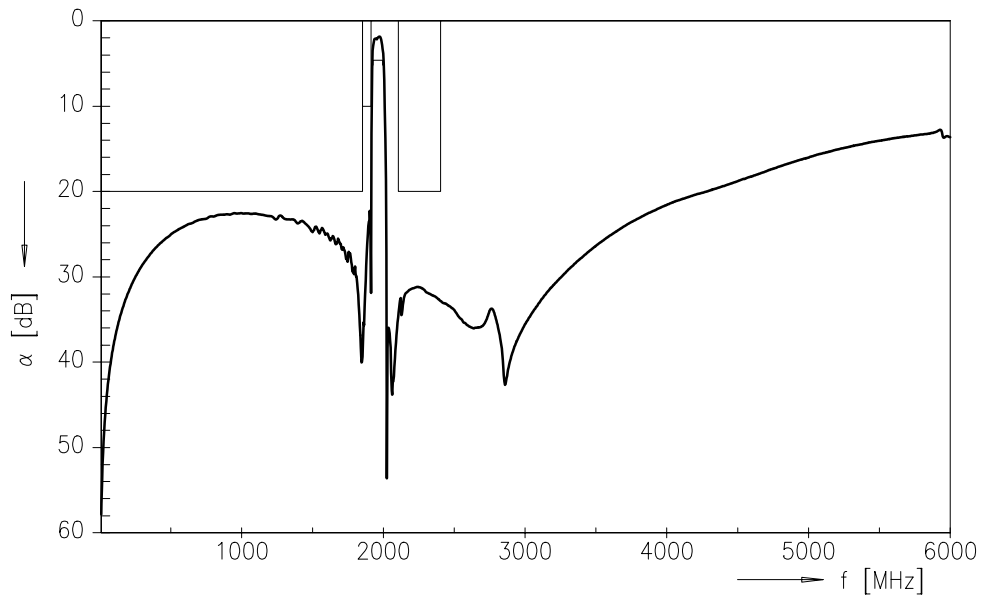
		min.	typ.	max.	
<b>Center frequency</b>	$f_C$	—	1960.00	—	MHz
<b>Maximum insertion attenuation</b>	$\alpha_{max}$	—	3.7	4.6	dB
1930.00 ... 1990.00 MHz					
<b>Amplitude ripple (p-p)</b>	$\Delta\alpha$	—	2.0	2.9	dB
1930.00 ... 1990.00 MHz					
<b>Input return loss</b>		7.0	9.0	—	dB
1930.00 ... 1990.00 MHz					
<b>Output return loss</b>		7.0	9.0	—	dB
1930.00 ... 1990.00 MHz					
<b>Attenuation</b>	$\alpha$	20	22	—	dB
10.00 ... 1850.00 MHz					
2110.00 ... 2400.00 MHz		20	30	—	dB
<b>Tx band suppression</b>		7	10	—	dB
1850.00 ... 1910.00 MHz					



Transfer function of the PCS filter (narrow band measurement)



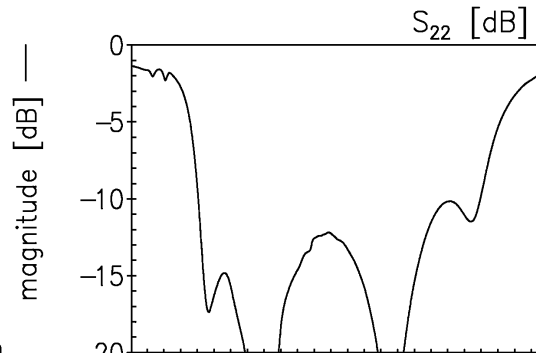
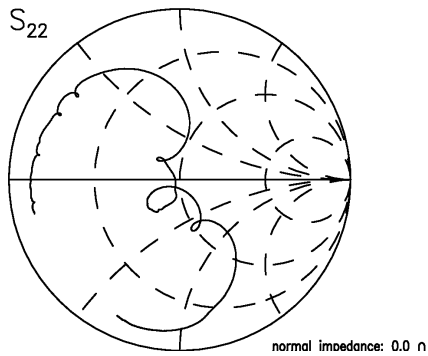
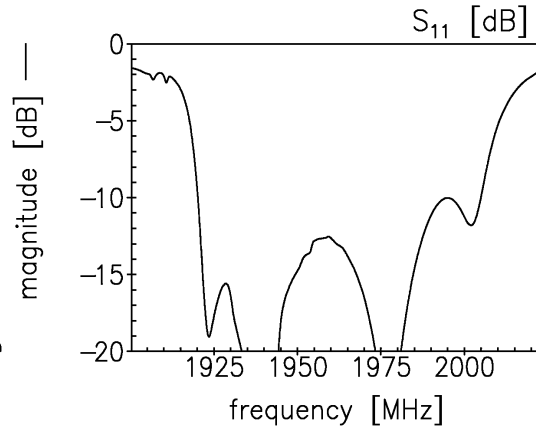
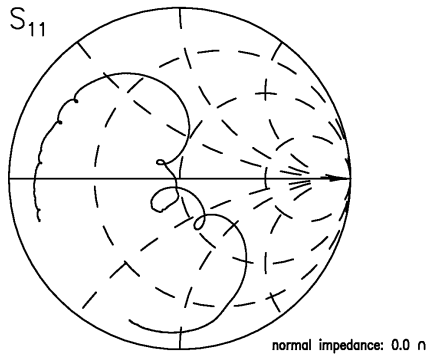
Transfer function of the PCS filter(wide band measurement)



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



Reflection coefficients of the PCS filter (measurement)





Data sheet



Characteristics of AMPS Rx filter

Temperature range for specification:  $T = -30\text{ °C to }+75\text{ °C}$   
 Terminating source impedance:  $Z_S = 50\Omega$   
 Terminating load impedance:  $Z_L = 50\Omega$

		min.	typ.	max.	
<b>Center frequency</b>	$f_C$	—	881.50	—	MHz
<b>Maximum insertion attenuation</b>	$\alpha_{max}$	—	2.6	3.1	dB
869.00 ... 894.00 MHz					
<b>Amplitude ripple (p-p)</b>	$\Delta\alpha$	—	1.0	1.5	dB
869.00 ... 894.00 MHz					
<b>Input return loss</b>		10.0	11.0	—	dB
869.00 ... 894.00 MHz					
<b>Output return loss</b>		10.0	12.0	—	dB
869.00 ... 894.00 MHz					
<b>Attenuation</b>	$\alpha$				
30.00 ... 824.00 MHz		35	42	—	dB
1050.00 ... 1080.00 MHz		38	42	—	dB
1080.00 ... 2300.00 MHz		30	32	—	dB
2300.00 ... 2600.00 MHz		25	30	—	dB
<b>Tx band suppression</b>		35	40	—	dB
824.00 ... 849.00 MHz					



**SAW Components**

**B3510**

**SAW 2in1 filter**

**881.5 & 1960.0 MHz MHz**

Data sheet



**Characteristics of AMPS Rx filter**

Temperature range for specification:  $T = -40\text{ °C to }+85\text{ °C}$   
 Terminating source impedance:  $Z_S = 50\ \Omega$   
 Terminating load impedance:  $Z_L = 50\ \Omega$

		min.	typ.	max.	
<b>Center frequency</b>	$f_C$	—	881.50	—	MHz
<b>Maximum insertion attenuation</b>	$\alpha_{max}$	—	2.6	3.3	dB
869.00 ... 894.00 MHz					
<b>Amplitude ripple (p-p)</b>	$\Delta\alpha$	—	1.0	1.5	dB
869.00 ... 894.00 MHz					
<b>Input return loss</b>		9.5	11.0	—	dB
869.00 ... 894.00 MHz					
<b>Output return loss</b>		9.5	12.0	—	dB
869.00 ... 894.00 MHz					
<b>Attenuation</b>	$\alpha$				
30.00 ... 824.00 MHz		35	42	—	dB
1050.00 ... 1080.00 MHz		38	42	—	dB
1080.00 ... 2300.00 MHz		30	32	—	dB
2300.00 ... 2600.00 MHz		25	30	—	dB
<b>Tx band suppression</b>		35	40	—	dB
824.00 ... 849.00 MHz					

**Maximum ratings**

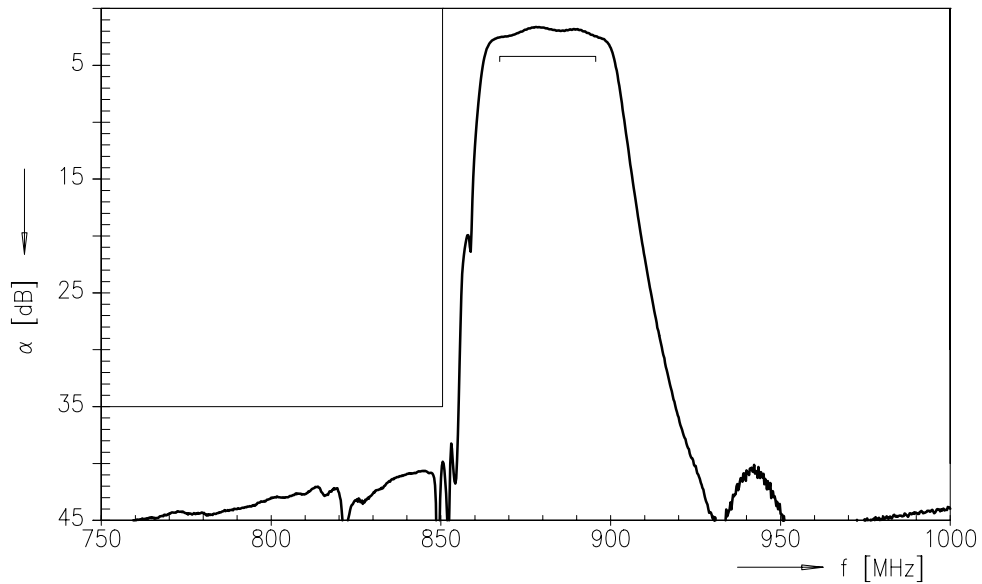
Operable temperature range	T	-45 /+125	°C	
Storage temperature range	T <sub>stg</sub>	-45 /+125	°C	
DC voltage	V <sub>DC</sub>	0	V	
Input power max.				
824...849 MHz	P <sub>IN</sub>	13	dBm	source and load impedance 50 Ω continuous wave
1850...1910 MHz		13	dBm	continuous wave

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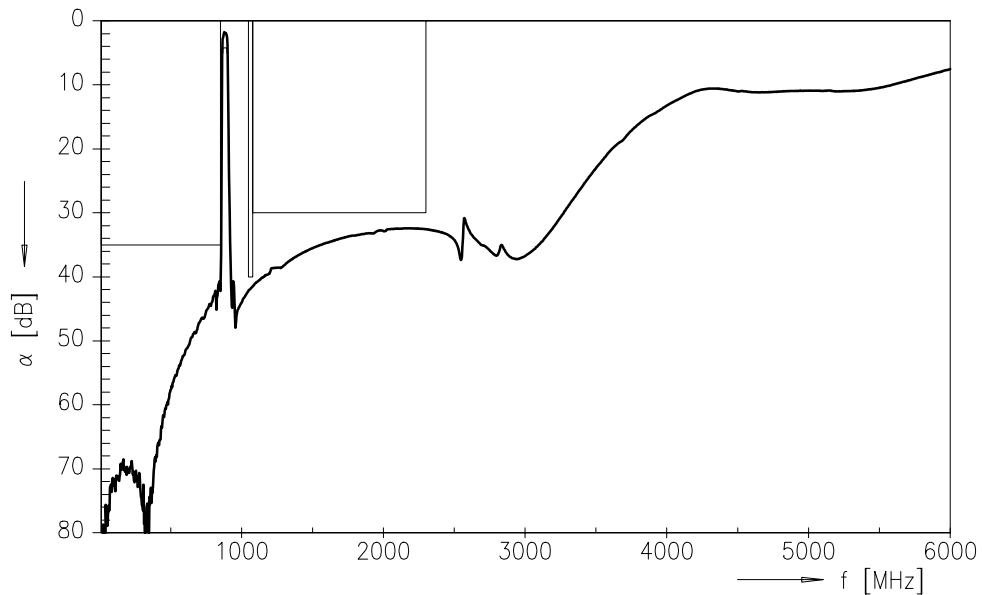




Transfer function of the AMPS filter (narrow band measurement)



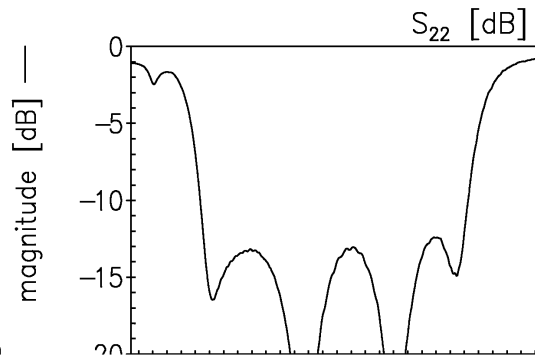
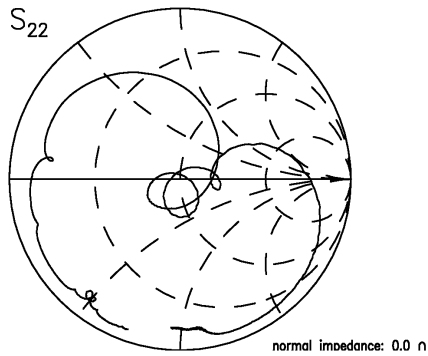
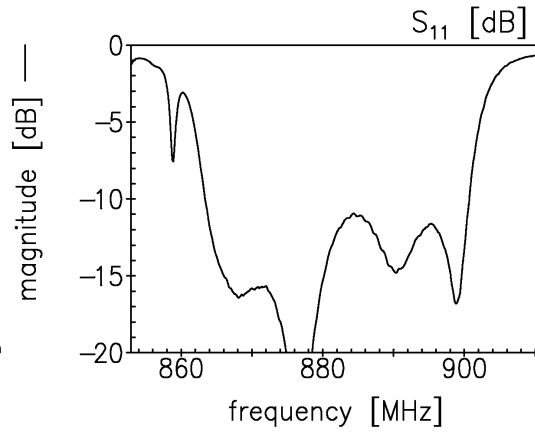
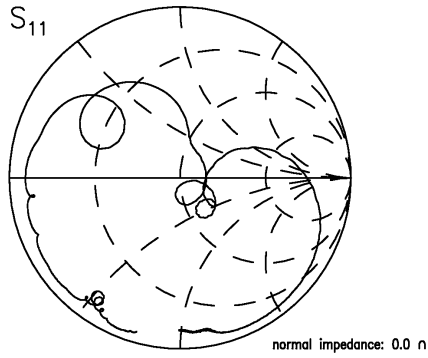
Transfer function of the AMPS filter (wide band measurement)



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Reflection coefficients of the AMPS filter (measurement)





SAW Components

B3510

SAW 2in1 filter

881.5 & 1960.0 MHz MHz

Data sheet



## References

Type	B3510
Ordering code	B39202B3510U810
Marking and package	C61157-A7-A72
Packaging	F61074-V8168-Z000
Date codes	L_1126
S-parameters	B3510_SB.s2p B3510_WB.s2p
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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11 February 14, 2008



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