



# SAW filters for mobile communications

## **Series/Type: B9200**

The following products presented in this data sheet are being withdrawn.

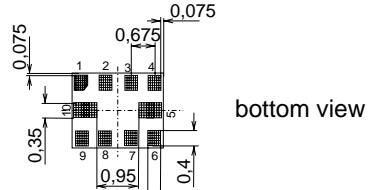
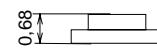
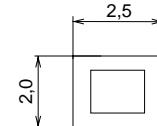
Ordering Code	Substitute Product	Date of Withdrawal	Deadline Last Orders	Last Shipments
B39202B9200G610		2010-05-14	2011-02-28	2011-05-31

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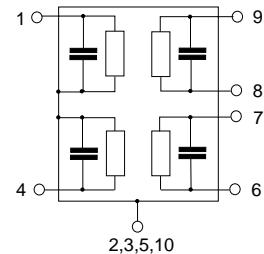
**SAW Components**
**B9200**
**Low-Loss Dual Band Filter for Mobile Communication**
**881,5 / 1960,0 MHz**
**Data Sheet**

**Chip sized saw package QCS10D**
**Features**

- Low-loss RF filter for mobile telephone CDMA 800/1900 system, receive path
- Usable passband:
  - Filter 1 (CDMA800): 25 MHz
  - Filter 2 (CDMA1900): 60 MHz
- Unbalanced to balanced operation of both filters
- Impedance transformation from  $50 \Omega$  to  $100 \Omega$  for both filters
- Ceramic package for Surface Mounted Technology (SMT)


**bottom view**

**side view**

**top view**
**Dimensions in mm, approx. weight 12mg**
**Terminals**

- Ni, gold-plated


**Pin configuration**

1	Input [ Filter 1 ]
4	Input [ Filter 2 ]
6, 7	Output, balanced [ Filter 2 ]
8, 9	Output, balanced [ Filter 1 ]
2, 3, 5, 10	Case ground

Type	Ordering code	Marking and Package according to	Packing according to
B9200	B39202-B9200-G610	C61157-A7-A112	F61074-V8153-Z000

**Electrostatic Sensitive Device (ESD)**
**Maximum ratings**

Operable temperature range	$T$	$-30 / +85$	$^{\circ}\text{C}$	
Storage temperature range	$T_{\text{stg}}$	$-40 / +85$	$^{\circ}\text{C}$	
DC voltage	$V_{\text{DC}}$	5	V	
ESD voltage	$V_{\text{ESD}}^*$	50	V	Machine Model, 10 pulses
Input power at CDMA800/1900 Tx bands:				
Filter 1 (CDMA800-Rx)	$P_{\text{IN}}$	15	dBm	continuous wave
Filter 2 (CDMA1900-Rx)	$P_{\text{IN}}$	12	dBm	@ $+55^{\circ}\text{C}$ ambient

\* - acc. to JESD22-A115A (Machine Model), 10 negative &amp; 10 positive pulses



SAW Components

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881,5 / 1960,0 MHz

Data Sheet

**Characteristics Filter 1 ( CDMA800 )**

Operating temperature range:

 $T = +25 \pm 2 \text{ }^{\circ}\text{C}$ 

Terminating source impedance:

 $Z_S = 50 \Omega$  (unbalanced)

Terminating load impedance:

 $Z_L = 100 \Omega$  (balanced) || 100nH

			min.	typ.	max.	
<b>Center frequency</b>		$f_c$	—	881,50	—	MHz
<b>Maximum insertion attenuation</b>		$\alpha_{\max}$	—	1,8	2,1	dB
	869,0 ... 894,0	MHz				
<b>Amplitude ripple (p-p)</b>		$\Delta\alpha$	—	0,6	1,0	dB
	869,0 ... 894,0	MHz				
<b>Input VSWR</b>			—	1,7	1,9	
	869,0 ... 894,0	MHz				
<b>Output VSWR</b>			—	1,8	2,0	
	869,0 ... 894,0	MHz				
<b>Output amplitude balance (<math> S_{31}/S_{21} </math>)</b>			-0,5	-0,1/+ 0,1	0,5	dB
	869,0 ... 894,0	MHz				
<b>Output phase balance (<math>\phi(S_{31}) - \phi(S_{21}) + 180^\circ</math>)</b>			-5,0	-1/+ 2	5,0	degree
	869,0 ... 894,0	MHz				
<b>Inter-band isolation</b>		$\alpha_{\min}$	30,0	52,0	—	dB
	1930,0 ... 1990,0	MHz				
<b>Attenuation</b>		$\alpha_{\min}$	45,0	65,0	—	dB
	10,0 ... 824,0	MHz				
	824,0 ... 849,0	MHz	35,0	48,0	—	dB
	915,0 ... 960,0	MHz	23,0	26,0	—	dB
	960,0 ... 3000,0	MHz	45,0	59,0	—	dB
	3000,0 ... 6000,0	MHz	30,0	60,0	—	dB



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Data Sheet

**Characteristics Filter 1 ( CDMA800 )**

Operating temperature range:

 $T = -30$  to  $+85^\circ\text{C}$ 

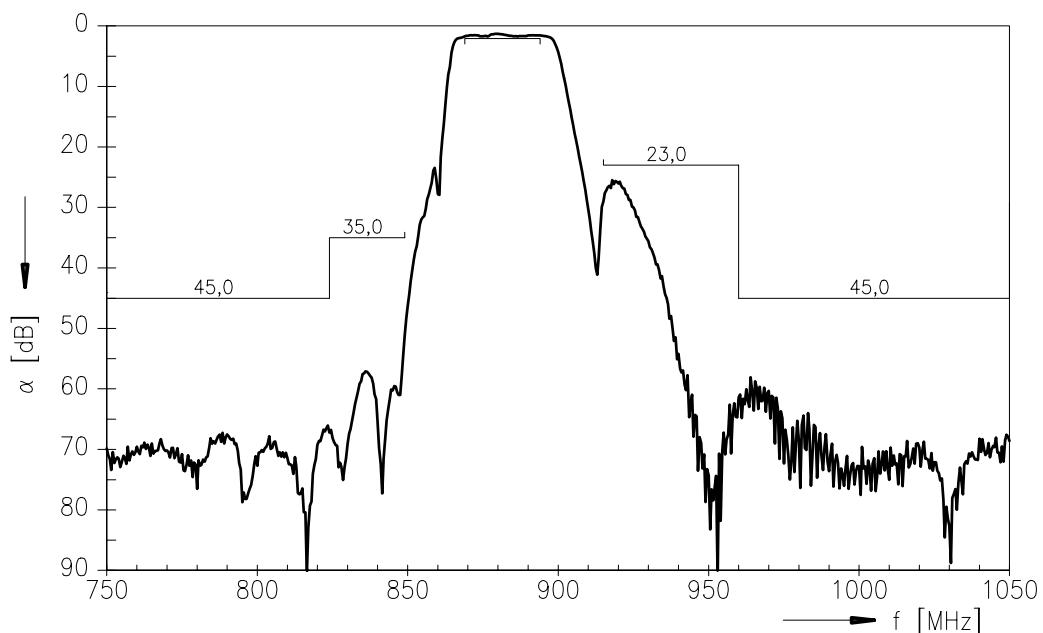
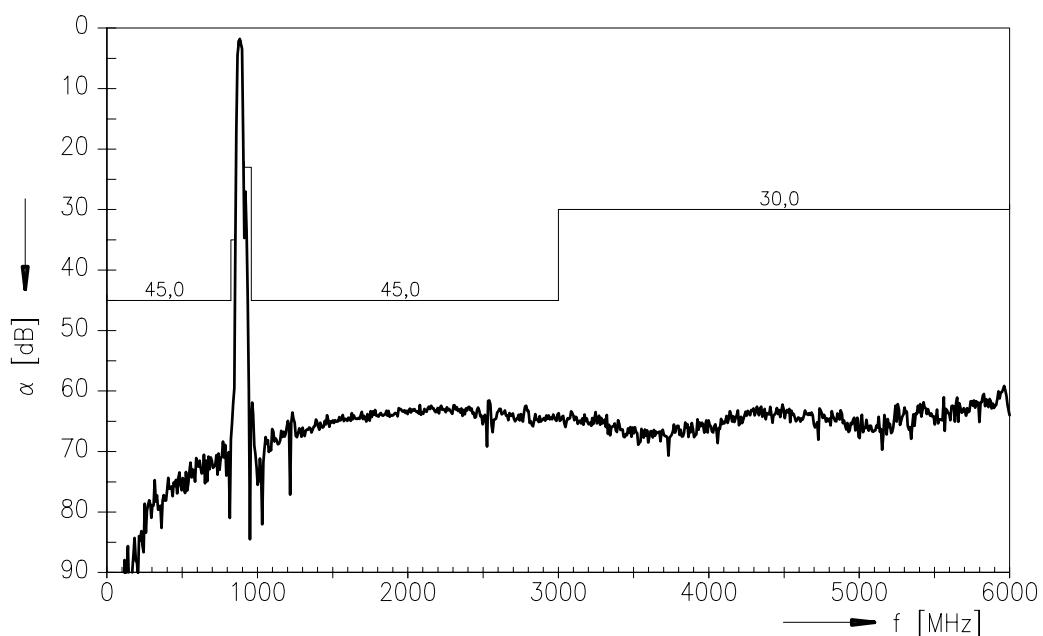
Terminating source impedance:

 $Z_S = 50 \Omega$  (unbalanced)

Terminating load impedance:

 $Z_L = 100 \Omega$  (balanced)  $\parallel 100\text{nH}$ 

			min.	typ.	max.	
<b>Center frequency</b>		$f_c$	—	881,50	—	MHz
<b>Maximum insertion attenuation</b>		$\alpha_{\max}$	—	1,9	2,2	dB
	869,0 ... 894,0	MHz				
<b>Amplitude ripple (p-p)</b>		$\Delta\alpha$	—	0,7	1,1	dB
	869,0 ... 894,0	MHz				
<b>Input VSWR</b>			—	1,7	1,9	
	869,0 ... 894,0	MHz				
<b>Output VSWR</b>			—	1,8	2,0	
	869,0 ... 894,0	MHz				
<b>Output amplitude balance (<math> S_{31}/S_{21} </math>)</b>			-0,5	-0,1 / +0,1	0,5	dB
	869,0 ... 894,0	MHz				
<b>Output phase balance (<math>\phi(S_{31}) - \phi(S_{21}) + 180^\circ</math>)</b>			-5,0	-1 / + 2	5,0	degree
	869,0 ... 894,0	MHz				
<b>Inter-band isolation</b>		$\alpha_{\min}$	30,0	52,0	—	dB
	1930,0 ... 1990,0	MHz				
<b>Attenuation</b>		$\alpha_{\min}$	45,0	65,0	—	dB
	10,0 ... 824,0	MHz				
	824,0 ... 849,0	MHz	35,0	44,0	—	dB
	915,0 ... 960,0	MHz	23,0	25,0	—	dB
	960,0 ... 3000,0	MHz	45,0	59,0	—	dB
	3000,0 ... 6000,0	MHz	30,0	60,0	—	dB

**Transfer function Filter 1 ( CDMA800 ) - spec for 25 °C**

**Transfer function Filter 1 ( CDMA800 ) - wideband**




SAW Components

B9200

Low-Loss Dual Band Filter for Mobile Communication

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Data Sheet

**Characteristics Filter 2 ( CDMA1900 )**

Operating temperature range:

 $T = +25 \pm 2 \text{ }^{\circ}\text{C}$ 

Terminating source impedance:

 $Z_S = 50 \Omega$  (unbalanced)

Terminating load impedance:

 $Z_L = 100 \Omega$  (balanced) || 15nH

			min.	typ.	max.	
<b>Center frequency</b>		$f_c$	—	1960,0	—	MHz
<b>Maximum insertion attenuation</b>		$\alpha_{\max}$	—	2,6	3,2	dB
	1930,0 ... 1990,0	MHz				
<b>Amplitude ripple (p-p)</b>		$\Delta\alpha$	—	1,2	1,8	dB
	1930,0 ... 1990,0	MHz				
<b>Input VSWR</b>			—	2,0	2,3	
	1930,0 ... 1990,0	MHz				
<b>Output VSWR</b>			—	2,0	2,3	
	1930,0 ... 1990,0	MHz				
<b>Output amplitude balance (<math> S_{31}/S_{21} </math>)</b>			-1,4	-1,0/+ 0,8	1,4	dB
	1930,0 ... 1990,0	MHz				
<b>Output phase balance (<math>\phi(S_{31}) - \phi(S_{21}) + 180^\circ</math>)</b>			-12,0	-9/+ 9	12,0	degree
	1930,0 ... 1990,0	MHz				
<b>Inter-band isolation</b>		$\alpha_{\min}$	30,0	52,0	—	dB
	869,0 ... 894,0	MHz				
<b>Attenuation</b>		$\alpha_{\min}$	30,0	37,0	—	dB
	10,0 ... 1850,0	MHz				
	1850,0 ... 1910,0	MHz	19,0	20,0	—	dB
	2040,0 ... 2200,0	MHz	25,0	32,0	—	dB
	2200,0 ... 2800,0	MHz	30,0	41,0	—	dB
	2800,0 ... 3400,0	MHz	40,0	46,0	—	dB
	3400,0 ... 6000,0	MHz	35,0	45,0	—	dB



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B9200

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Data Sheet

**Characteristics Filter 2 ( CDMA1900 )**

Operating temperature range:

 $T = -30$  to  $+85^\circ\text{C}$ 

Terminating source impedance:

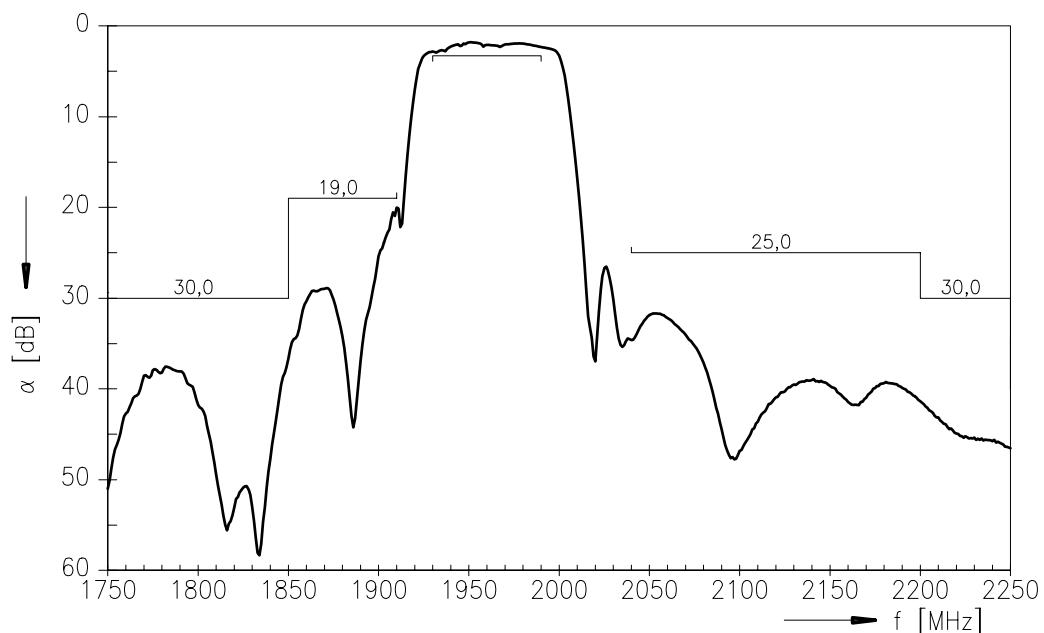
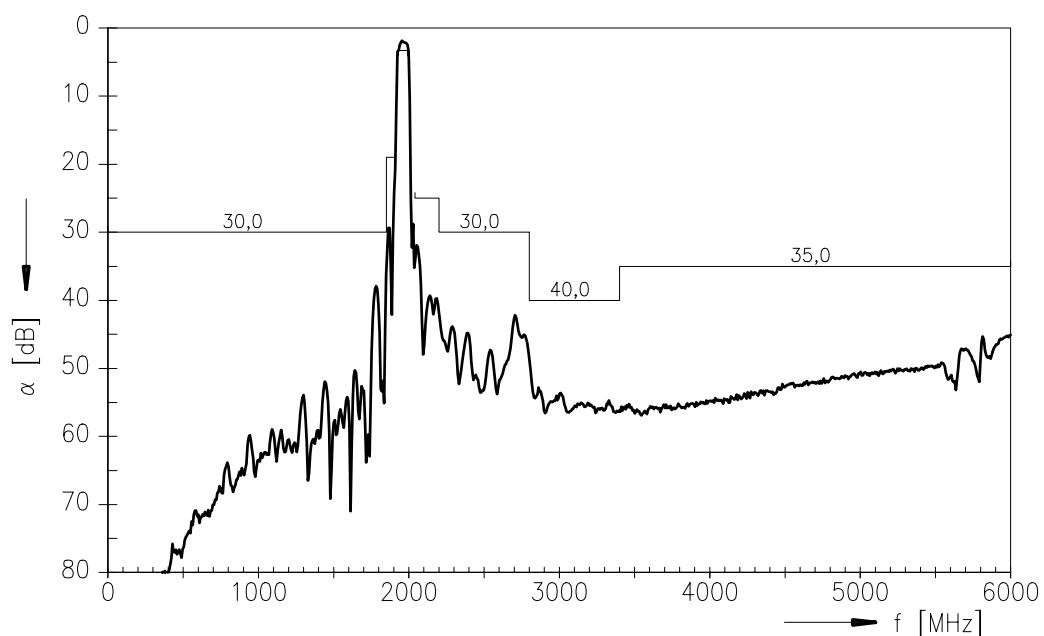
 $Z_S = 50 \Omega$  (unbalanced)

Terminating load impedance:

 $Z_L = 100 \Omega$  (balanced)  $\parallel 15\text{nH}$ 

			min.	typ.	max.	
<b>Center frequency</b>		$f_c$	—	1960,0	—	MHz
<b>Maximum insertion attenuation</b>		$\alpha_{\max}$	—	2,7	3,6	dB
	1930,0 ... 1990,0	MHz				
<b>Amplitude ripple (p-p)</b>		$\Delta\alpha$	—	1,3	2,2 <sup>1)</sup>	dB
	1930,0 ... 1990,0	MHz				
<b>Input VSWR</b>			—	2,0	2,3	
	1930,0 ... 1990,0	MHz				
<b>Output VSWR</b>			—	2,0	2,3	
	1930,0 ... 1990,0	MHz				
<b>Output amplitude balance (<math> S_{31}/S_{21} </math>)</b>			-1,8	-1,0/+ 1,2	1,8	dB
	1930,0 ... 1990,0	MHz				
<b>Output phase balance (<math>\phi(S_{31}) - \phi(S_{21}) + 180^\circ</math>)</b>			-12,0	-9/+ 9	12,0	degree
	1930,0 ... 1990,0	MHz				
<b>Inter-band isolation</b>		$\alpha_{\min}$	30,0	52,0	—	dB
	869,0 ... 894,0	MHz				
<b>Attenuation</b>		$\alpha_{\min}$	30,0	37,0	—	dB
	10,0 ... 1850,0	MHz				
	1850,0 ... 1910,0	MHz	15,0	20,0	—	dB
	2040,0 ... 2200,0	MHz	25,0	32,0	—	dB
	2200,0 ... 2800,0	MHz	30,0	41,0	—	dB
	2800,0 ... 3400,0	MHz	40,0	46,0	—	dB
	3400,0 ... 6000,0	MHz	35,0	45,0	—	dB

1) 2,1 for  $T = -30$  to  $+70^\circ\text{C}$

**Transfer function Filter 2 ( CDMA1900 ) - spec for 25 °C**

**Transfer function Filter 2 ( CDMA1900 ) - wideband**




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