



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The following products presented in this data sheet are being withdrawn.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



#### 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)

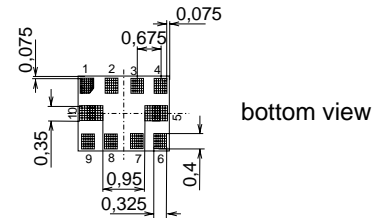
#### Terminals

- Ni, gold-plated

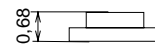
#### Pin configuration

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

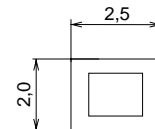
Chip sized saw package QCS10D



bottom view

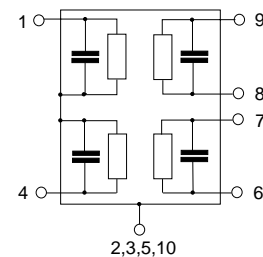


side view



top view

Dimensions in mm, approx. weight 12mg



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	$^{\circ}\text{C}$	Machine Model, 10 pulses
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	
Input power at CDMA800/1900 Tx bands:				
Filter 1 (CDMA800-Rx)	$P_{\text{IN}}$	15	dBm	continuous wave @ +55 $^{\circ}\text{C}$ ambient
Filter 2 (CDMA1900-Rx)	$P_{\text{IN}}$	12	dBm	

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



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#### Characteristics Filter 1 ( CDMA800 )

Operating temperature range:

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

Terminating source impedance:

$$Z_S = 50 \text{ } \Omega \text{ (unbalanced)}$$

Terminating load impedance:

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

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



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

#### 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>	$\alpha_{\max}$				
869,0 ... 894,0 MHz		—	1,9	2,2	dB
<b>Amplitude ripple (p-p)</b>	$\Delta\alpha$				
869,0 ... 894,0 MHz		—	0,7	1,1	dB
<b>Input VSWR</b>					
869,0 ... 894,0 MHz		—	1,7	1,9	
<b>Output VSWR</b>					
869,0 ... 894,0 MHz		—	1,8	2,0	
<b>Output amplitude balance (<math> S_{31} / S_{21} </math>)</b>					
869,0 ... 894,0 MHz		-0,5	-0,1/ +0,1	0,5	dB
<b>Output phase balance (<math>\phi(S_{31})-\phi(S_{21})+180^{\circ}</math>)</b>					
869,0 ... 894,0 MHz		-5,0	-1/+ 2	5,0	degree
<b>Inter-band isolation</b>	$\alpha_{\min}$				
1930,0 ... 1990,0 MHz		30,0	52,0	—	dB
<b>Attenuation</b>	$\alpha_{\min}$				
10,0 ... 824,0 MHz		45,0	65,0	—	dB
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



SAW Components

B9200

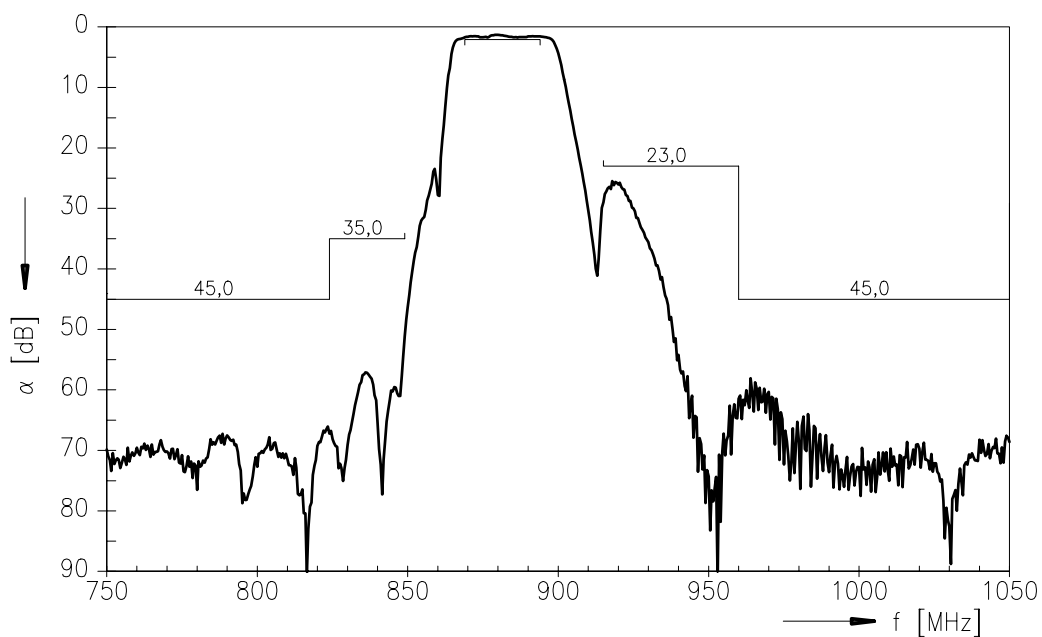
Low-Loss Dual Band Filter for Mobile Communication

881,5 / 1960,0 MHz

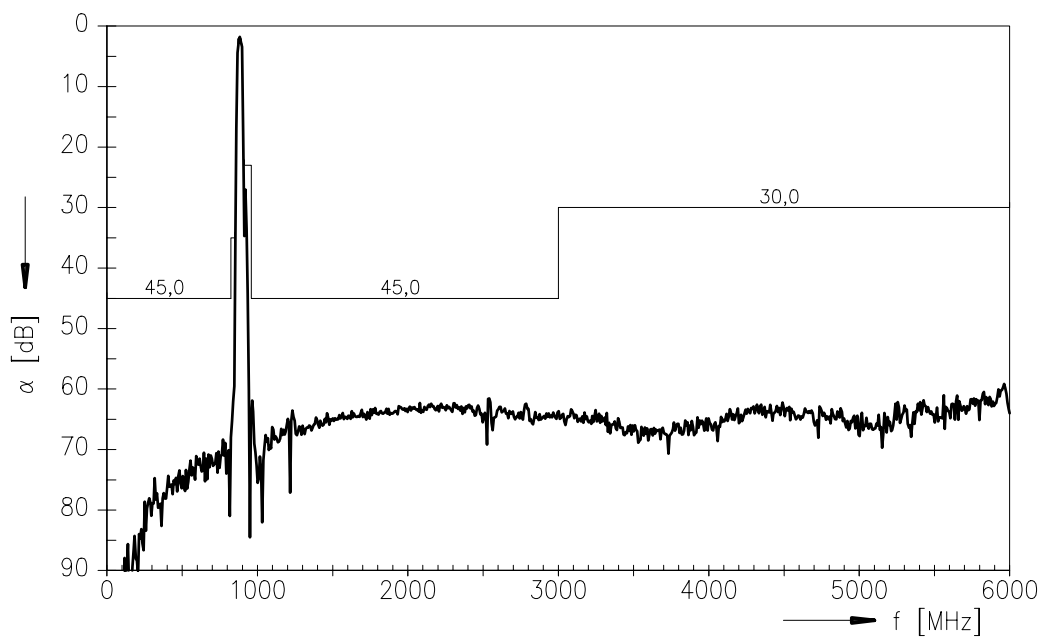
Data Sheet



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

881,5 / 1960,0 MHz

### Data Sheet



#### Characteristics Filter 2 ( CDMA1900 )

Operating temperature range:

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

Terminating source impedance:

$$Z_S = 50 \text{ } \Omega \text{ (unbalanced)}$$

Terminating load impedance:

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

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



# SAW Components

B9200

## Low-Loss Dual Band Filter for Mobile Communication

881,5 / 1960,0 MHz

### 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) || 15nH

			min.	typ.	max.	
<b>Center frequency</b>	$f_c$		—	1960,0	—	MHz
<b>Maximum insertion attenuation</b>	$\alpha_{\max}$					
	1930,0 ... 1990,0 MHz		—	2,7	3,6	dB
<b>Amplitude ripple (p-p)</b>	$\Delta\alpha$					
	1930,0 ... 1990,0 MHz		—	1,3	2,2 <sup>1)</sup>	dB
<b>Input VSWR</b>						
	1930,0 ... 1990,0 MHz		—	2,0	2,3	
<b>Output VSWR</b>						
	1930,0 ... 1990,0 MHz		—	2,0	2,3	
<b>Output amplitude balance (<math> S_{31} / S_{21} </math>)</b>						
	1930,0 ... 1990,0 MHz		-1,8	-1,0/+ 1,2	1,8	dB
<b>Output phase balance (<math>\phi(S_{31})-\phi(S_{21})+180^{\circ}</math>)</b>						
	1930,0 ... 1990,0 MHz		-12,0	-9/ +9	12,0	degree
<b>Inter-band isolation</b>	$\alpha_{\min}$					
	869,0 ... 894,0 MHz		30,0	52,0	—	dB
<b>Attenuation</b>	$\alpha_{\min}$					
	10,0 ... 1850,0 MHz		30,0	37,0	—	dB
	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  $+70^{\circ}\text{C}$



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B9200

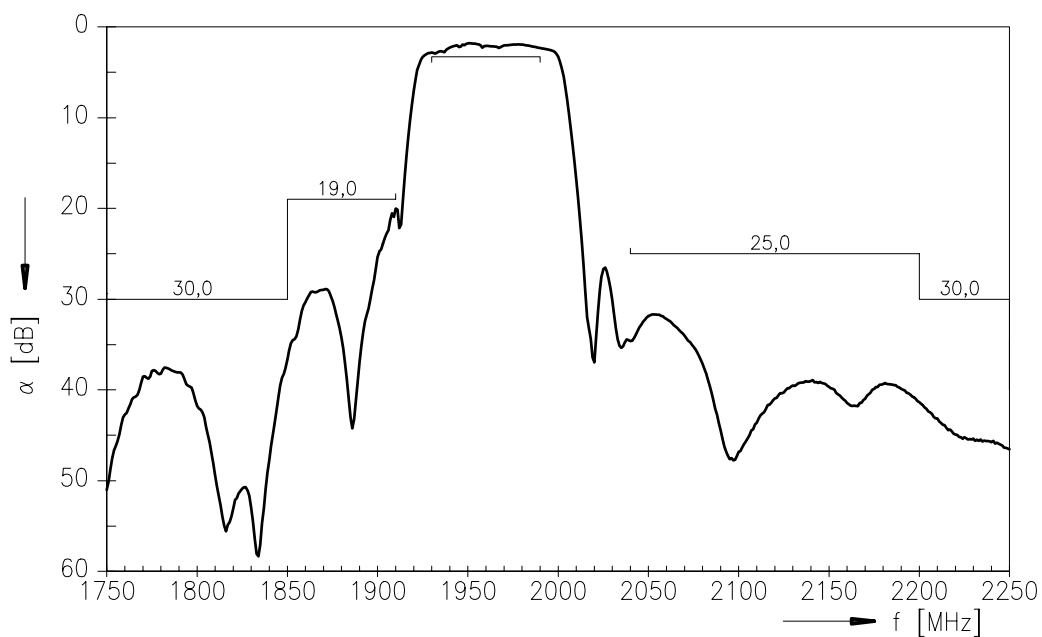
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881,5 / 1960,0 MHz

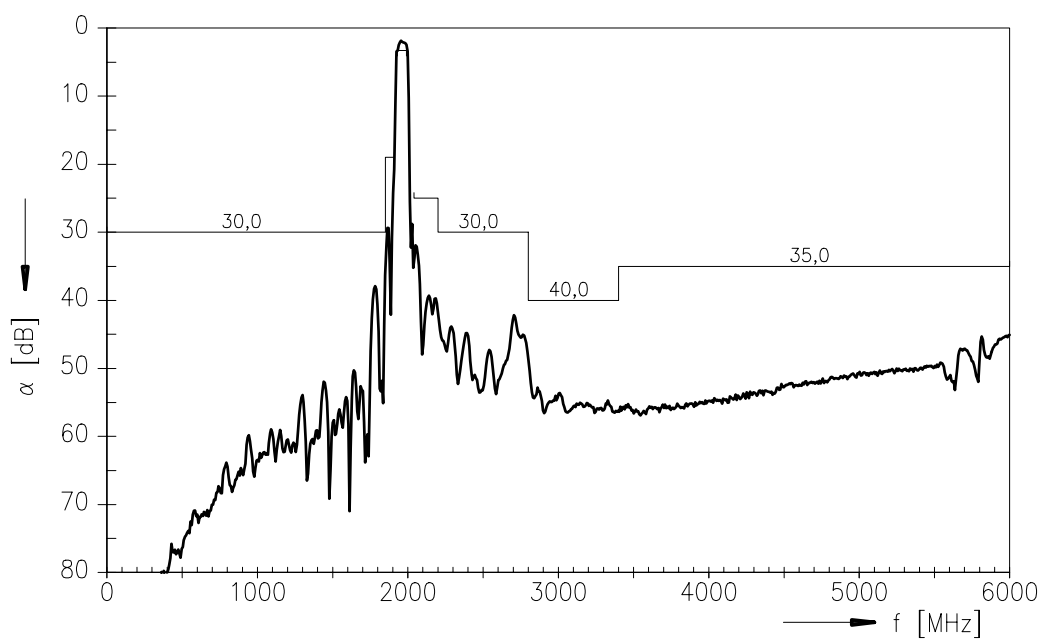
Data Sheet



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



Transfer function Filter 2 ( CDMA1900 ) - wideband







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

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