EPCOS

SAW filters for mobile communications

Series/Type: B9309

The following products presented in this data sheet are being withdrawn.

| Ordering Code	Substitute Product	Date of Withdrawal	Deadline Last Orders	Last Shipments
B39202B9309G110	B39202B9505L310	2009-04-30	2009-10-31	2010-01-31

For further information please contact your nearest EPCOS sales office, which will also support you in selecting a suitable substitute. The addresses of our worldwide sales network are presented at www.epcos.com/sales.

SAW Components	B9309
Low-Loss Dual Band Filter for Mobile Communication	**881,5 / 1960,0 MHz**

Data Sheet   SMD

Chip Sized Saw Package **QCS10H**

Features

- Low-loss 2in1 RF filter for mobile telephone GSM850/1900 systems, receive path
- Usable passband:
  Filter 1 (GSM850):   25 MHz
  Filter 2 (GSM1900):   60 MHz
- Unbalanced to balanced operation of both filters
- Impedance transformation from 50 Ω to 150 Ω for both filters
- Suitable for GPRS Class 1 to 12
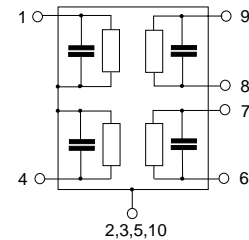- Ceramic package for **S**urface **M**ounted **T**echnology (**SMT**)
- Pb-free

bottom view

side view

top view
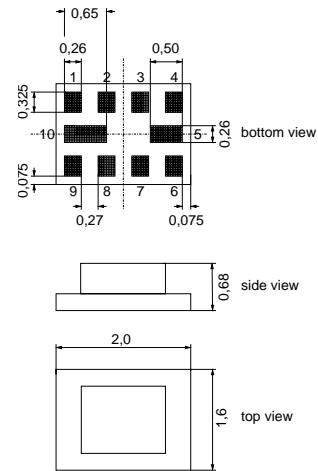
Dimensions in mm, approx. weight 0,008g.

Terminals

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
B9309	B39202-B9309-G110	C61157-A7-A141	F61074-V8152-Z000

Electrostatic **S**ensitive **D**evice (**ESD)**

Maximum ratings

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*	V	Machine Model, 10 pulses
Input power at GSM850, GSM900, GSM1800, GSM1900 Tx bands:				
Filter 1 (GSM850)	P_{IN}	15	dBm	effective power in the on-state,
Filter 2 (GSM1900)	P_{IN}	15	dBm	duty cycle 4:8

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

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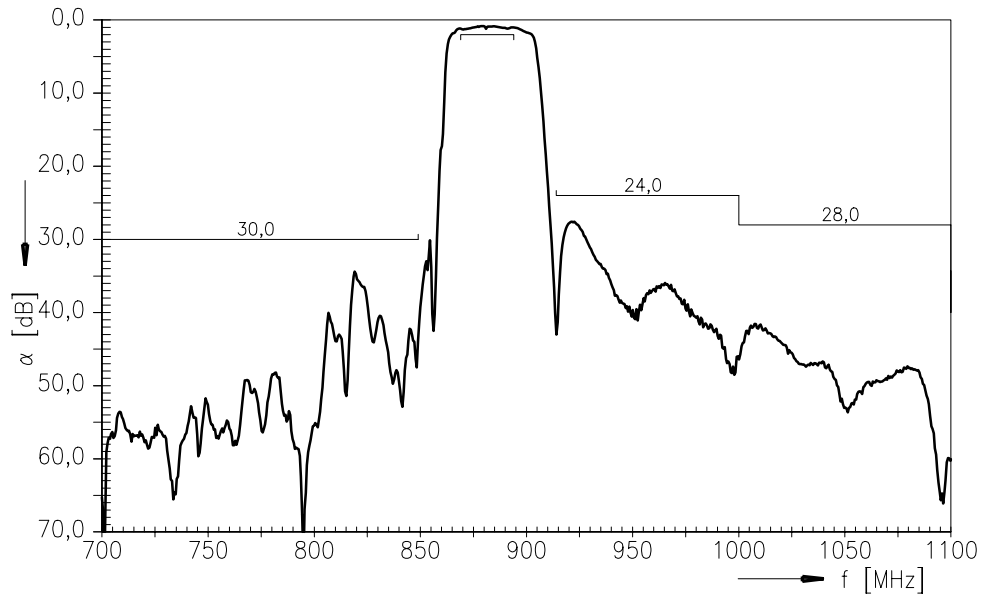| SAW Components	B9309
Low-Loss Dual Band Filter for Mobile Communication	**881,5 / 1960,0 MHz**
Data Sheet	SMD

Characteristics Filter 1 (GSM850)

Operating temperature range: T = -20 to +75°C
Terminating source impedance: Z_S = 50 Ω
Terminating load impedance: Z_L = 150 Ω || 82nH (balanced)

		min.	typ.	max.	
Center frequency	f_c	—	881,5	—	MHz
Maximum insertion attenuation	α_{max}				
869,0 ... 894,0 MHz		—	1,6	1,8	dB
869,0 ... 894,0 MHz [1]		—	1,5	1,7	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
869,0 ... 894,0 MHz		—	0,7	1,0	dB
Input VSWR					
869,0 ... 894,0 MHz		—	2,0	2,2	
Output VSWR					
869,0 ... 894,0 MHz		—	2,0	2,2	
Output amplitude balance ($|S_{31}/S_{21}|$)					
869,0 ... 894,0 MHz		-1,0	-0,7/+0,2	1,0	dB
Output phase balance ($\phi(S_{31})-\phi(S_{21})+180°$)					
869,0 ... 894,0 MHz		-10	-3 /+3	10	degree
Attenuation	α_{min}				
10,0 ... 447,0 MHz		45	50	—	dB
447,0 ... 849,0 MHz		30	34	—	dB
914,0 ...1000,0 MHz		24	26	—	dB
1000,0 ...1738,0 MHz		28	38	—	dB
1738,0 ...1788,0 MHz		40	50	—	dB
1788,0 ...6000,0 MHz		35	44	—	dB

[1] T = +25 ± 2°C

Transfer Function Filter 1 (GSM850)

Transfer Function Filter 1 (GSM850) - wideband

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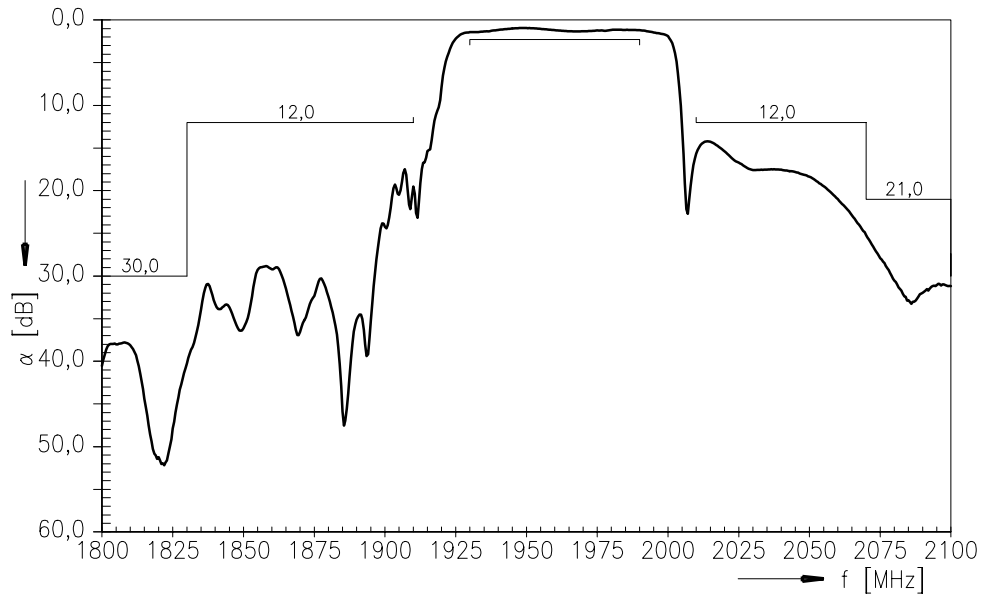| SAW Components	B9309
Low-Loss Dual Band Filter for Mobile Communication	**881,5 / 1960,0 MHz**

Data Sheet   SMD
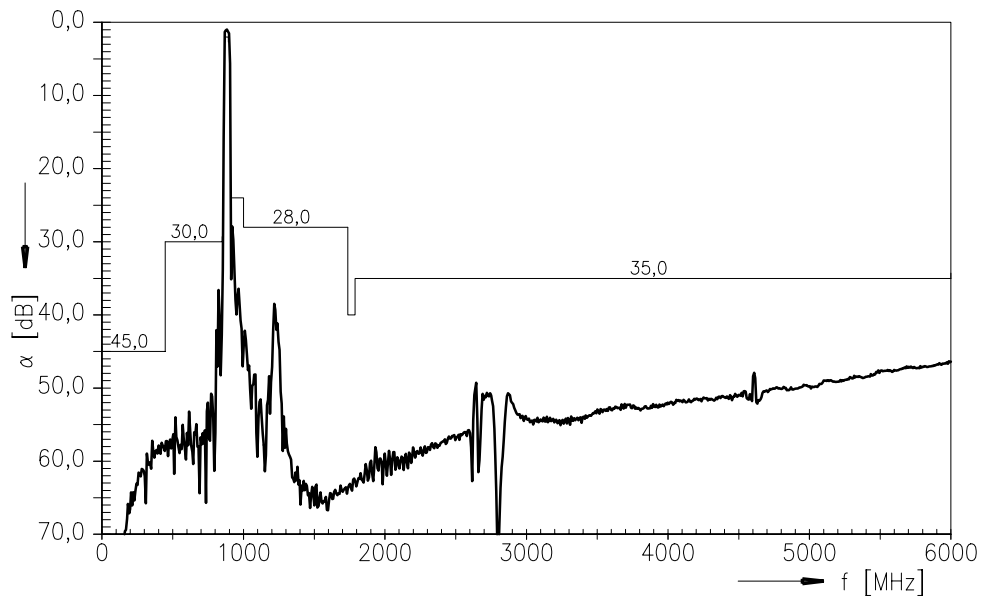
Characteristics Filter 2 (GSM1900)

Operating temperature range: T = -20 to +75°C
Terminating source impedance: Z_S = 50 Ω
Terminating load impedance: Z_L = 150 Ω || 18nH (balanced)

			min.	typ.	max.	
Center frequency		f_C	—	1960,0	—	MHz
Maximum insertion attenuation		α_{max}				
	1930,0 ... 1990,0 MHz		—	1,7	2,3	dB
	1930,0 ... 1990,0 MHz [1]		—	1,6	2,1	dB
Amplitude ripple (p-p)		$\Delta\alpha$				
	1930,0 ... 1990,0 MHz		—	0,5	1,0	dB
Input VSWR						
	1930,0 ... 1990,0 MHz		—	1,7	2,0	
Output VSWR						
	1930,0 ... 1990,0 MHz		—	1,7	2,0	
Output amplitude balance ($|S_{31}/S_{21}|$)						
	1930,0 ...1990,0 MHz		-1,0	-0,6/+0,6	+1,0	dB
Output phase balance ($\phi(S_{31})-\phi(S_{21})+180°$)						
	1930,0 ...1990,0 MHz		-10	-2/+4	+10	°
Attenuation		α				
	10,0 ... 1830,0 MHz		30	36	—	dB
	1830,0 ... 1910,0 MHz		12	16	—	dB
	2010,0 ... 2070,0 MHz		12	16	—	dB
	2070,0 ... 2400,0 MHz		21	24	—	dB
	2400,0 ... 2500,0 MHz		30	34	—	dB
	2500,0 ... 4000,0 MHz		28	34	—	dB
	4000,0 ... 6000,0 MHz		28	34	—	dB

[1] T = +25 ± 2°C

Transfer Function Filter 2 (GSM1900)

Transfer Function Filter 2 (GSM1900) - wideband
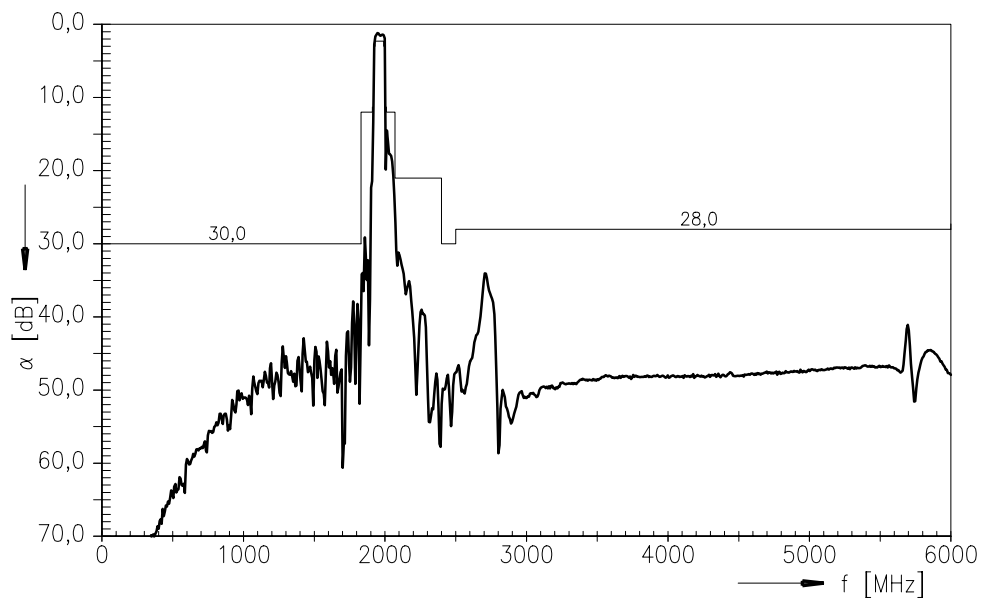
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Data Sheet

Purchase orders are subject to the General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry recommended by the ZVEI (German Electrical and Electronic Manufacturers' Association), unless otherwise agreed.

This brochure replaces the previous edition.

For questions on technology, prices and delivery please contact the Sales Offices of EPCOS AG or the international Representatives.

Due to technical requirements components may contain dangerous substances. For information on the type in question please also contact one of our Sales Offices.