



# SAW Components

## SAW IF filter

GPS

<b>Series/type:</b>	<b>B5068</b>
<b>Ordering code:</b>	<b>B39171-B5068-H810</b>
<b>Date:</b>	<b>Jul 18, 2007</b>
<b>Version:</b>	<b>2.0</b>

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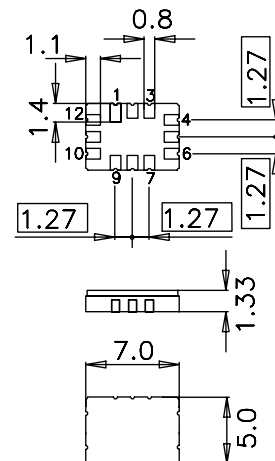
Data sheet


**Application**

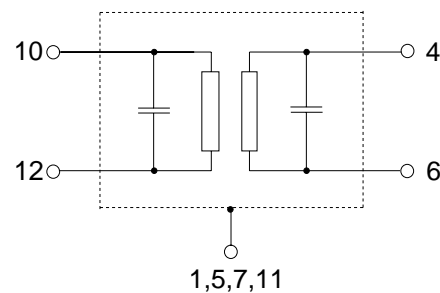
- Low-loss IF filter for GPS applications
- Usable passband 20.2 MHz
- Balanced or unbalanced operation possible


**Features**

- Package size 7.0 x 5.0 x 1.33 mm<sup>3</sup>
- Package code QCC12E
- RoHS compatible
- Approx. weight 0.25 g
- Ceramic package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- **Electrostatic Sensitive Device (ESD)**
- Filter surface passivated


**Pin configuration**

- 10 Input
- 12 Input ground or input balance
- 4 Output
- 6 Output ground or output balance
- 2, 3, 8, 9 To be grounded
- 1, 5, 7, 11 Case ground



**Data sheet**

**Characteristics**

Operating temperature range:	T = 25 °C
Terminating source impedance:	Z <sub>S</sub> = 50 Ω and matching network
Terminating load impedance:	Z <sub>L</sub> = 50 Ω and matching network

		min.	typ. @ 25 °C	max.	
<b>Nominal frequency</b>	f <sub>N</sub>	—	173.8	—	MHz
<b>Minimum insertion attenuation</b> (including matching network)	α <sub>min</sub>	—	9.3	11.0	dB
<b>Passband width</b>					
	α <sub>rel</sub> ≤ 1.5 dB    B <sub>1.5dB</sub>	20.3	22.9	—	MHz
	α <sub>rel</sub> ≤ 3.0 dB    B <sub>3.0dB</sub>	22.0	24.0	—	MHz
	α <sub>rel</sub> ≤ 35 dB    B <sub>35dB</sub>	—	28.6	31.0	MHz
	α <sub>rel</sub> ≤ 40 dB    B <sub>40dB</sub>	—	29.2	41.0	MHz
<b>Amplitude ripple (p-p)</b>	Δα				
	f <sub>N</sub> ± 11.0 MHz	—	1.0	1.5	dB
<b>Phase ripple (p-p)</b>	Δφ				
	f <sub>N</sub> ± 11.0 MHz	—	12	15	deg
<b>Group delay ripple (p-p)</b>	Δτ				
	f <sub>N</sub> ± 11.0 MHz	—	60	100	ns
<b>Absolute group delay (at f<sub>N</sub>)</b>	τ	—	640	—	ns
<b>Relative attenuation (relative to α<sub>min</sub>)</b>	α <sub>rel</sub>				
	80.0 MHz ... f <sub>N</sub> - 19.1 MHz	42	48	—	dB
	f <sub>N</sub> - 19.1 MHz ... f <sub>N</sub> - 14.6 MHz	35	38	—	dB
	f <sub>N</sub> + 14.6 MHz ... f <sub>N</sub> + 19.1 MHz	35	38	—	dB
	f <sub>N</sub> + 19.1 MHz ... f <sub>N</sub> + 26.1 MHz	39	42	—	dB
	f <sub>N</sub> + 26.1 MHz ... 1 GHz	42	48	—	dB
<b>Temperature coefficient of frequency</b>	TC <sub>f</sub>	—	-87	—	ppm/K

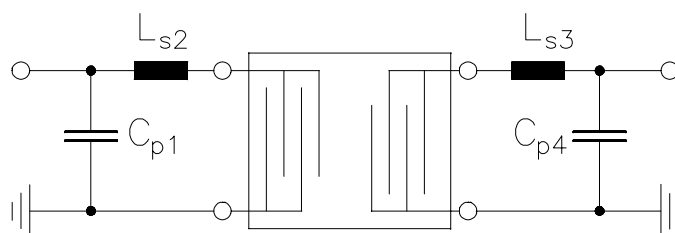
**Data sheet**

**Characteristics**

Operating temperature range:	T = -40 to 85 °C
Terminating source impedance:	Z <sub>S</sub> = 50 Ω and matching network
Terminating load impedance:	Z <sub>L</sub> = 50 Ω and matching network

		min.	typ. @ 25 °C	max.	
<b>Nominal frequency</b>	f <sub>N</sub>	—	173.8	—	MHz
<b>Minimum insertion attenuation</b> (including matching network)	α <sub>min</sub>	—	9.3	11.0	dB
<b>Passband width</b>					
	α <sub>rel</sub> ≤ 1.5 dB    B <sub>1.5dB</sub>	20.3	22.9	—	MHz
	α <sub>rel</sub> ≤ 3.0 dB    B <sub>3.0dB</sub>	22.0	24.0	—	MHz
	α <sub>rel</sub> ≤ 35 dB    B <sub>35dB</sub>	—	28.6	31.0	MHz
	α <sub>rel</sub> ≤ 40 dB    B <sub>40dB</sub>	—	29.2	41.0	MHz
<b>Amplitude ripple (p-p)</b>	Δα				
	f <sub>N</sub> ± 10.1 MHz	—	0.8	1.5	dB
<b>Phase ripple (p-p)</b>	Δφ				
	f <sub>N</sub> ± 10.1 MHz	—	9	15	deg
<b>Group delay ripple (p-p)</b>	Δτ				
	f <sub>N</sub> ± 10.1 MHz	—	40	100	ns
<b>Absolute group delay (at f<sub>N</sub>)</b>	τ	—	640	—	ns
<b>Relative attenuation (relative to α<sub>min</sub>)</b>	α <sub>rel</sub>				
	80.0 MHz ... f <sub>N</sub> - 20.0 MHz	42	48	—	dB
	f <sub>N</sub> - 20.0 MHz ... f <sub>N</sub> - 15.5 MHz	35	45	—	dB
	f <sub>N</sub> + 15.5 MHz ... f <sub>N</sub> + 20.0 MHz	35	39	—	dB
	f <sub>N</sub> + 20.0 MHz ... f <sub>N</sub> + 27.0 MHz	39	45	—	dB
	f <sub>N</sub> + 27.0 MHz ... 1 GHz	42	48	—	dB
<b>Temperature coefficient of frequency</b>	TC <sub>f</sub>	—	-87	—	ppm/K

Data sheet


**Matching network to 50 Ω unbalanced**


$$C_{p1} = 47 \text{ pF}$$

$$L_{s2} = 12 \text{ nH}$$

$$L_{s3} = 18 \text{ nH}$$

$$C_{p4} = 47 \text{ pF}$$

Element values depend upon PCB layout.

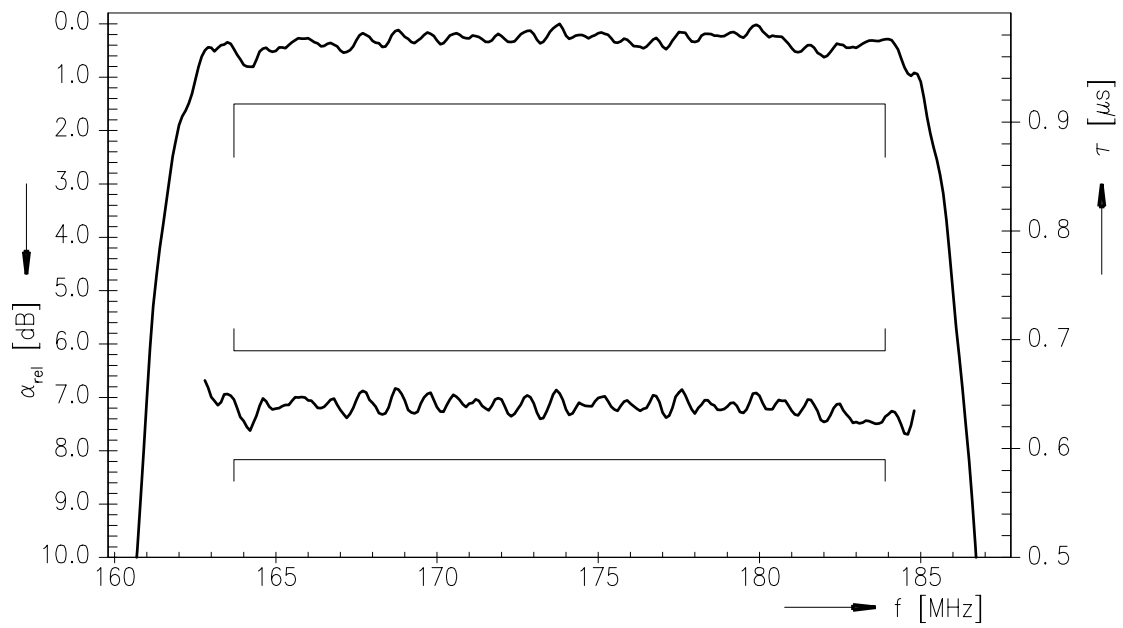
**Maximum ratings**

Operable temperature range	T	-40/+85	°C	machine model, 1 pulse
Storage temperature range	T <sub>stg</sub>	-40/+85	°C	
DC voltage	V <sub>DC</sub>	0	V	
ESD voltage	V <sub>ESD</sub>	100 <sup>1)</sup>	V	
Input power	P <sub>IN</sub>	10	dBm	

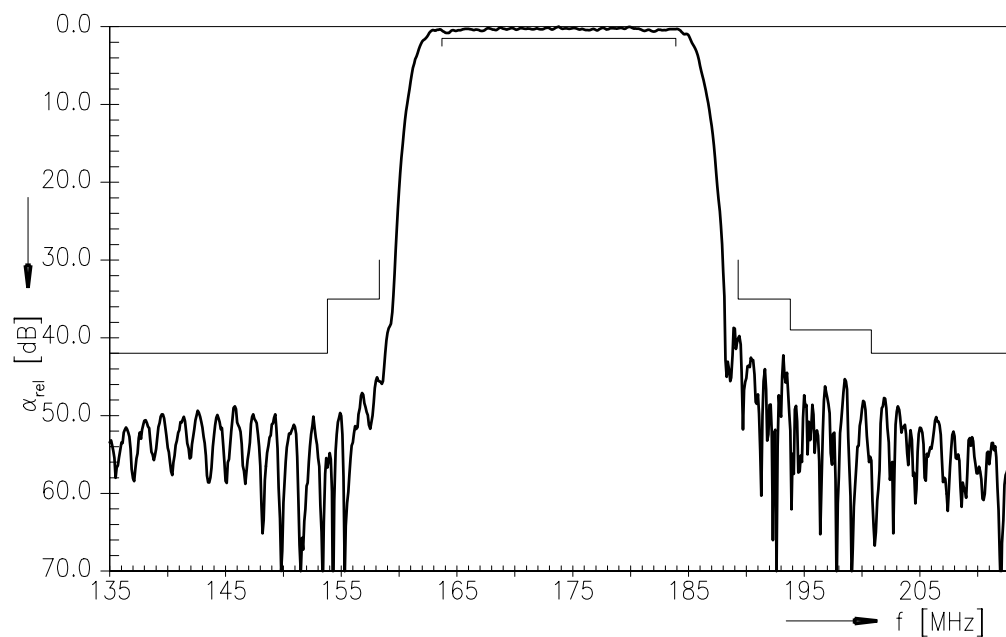
<sup>1)</sup> acc. to J-STD22A-0115A (machine model, 1 pulse +/-).



Transfer function



Transfer function (wideband)



**SAW Components**

**B5068**

**SAW IF filter**

**173.8 MHz**

Data sheet



## References

<b>Type</b>	B5068
<b>Ordering code</b>	B39171-B5068-H810
<b>Marking and package</b>	C61157-A7-A103
<b>Packaging</b>	F61074-V8170-Z000
<b>Date codes</b>	L_1126
<b>S-parameters</b>	
<b>Soldering profile</b>	S_6001
<b>RoHS compatible</b>	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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