SAW Components

SAW IF filter

GPS

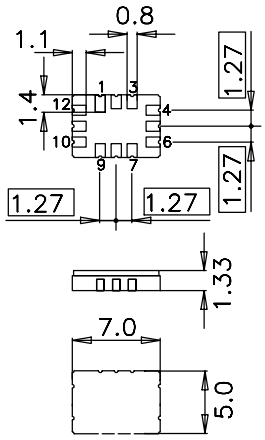
Series/type:	**B5068**
Ordering code:	**B39171-B5068-H810**
Date:	Jul 18, 2007
Version:	2.0

Application

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

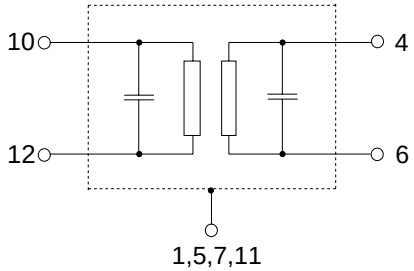
Features

- Package size 7.0 x 5.0 x 1.33 mm³
- Package code QCC12E
- RoHS compatible
- Approx. weight 0.25 g
- Ceramic package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals
- **E**lectrostatic **S**ensitive **D**evice (**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 SMD

Characteristics

Operating temperature range: T = 25 °C
Terminating source impedance: Z_S = 50 Ω and matching network
Terminating load impedance: Z_L = 50 Ω and matching network

		min.	typ. @ 25 °C	max.	
Nominal frequency	f_N	—	173.8	—	MHz
Minimum insertion attenuation (including matching network)	α_{min}	—	9.3	11.0	dB
Passband width					
$\alpha_{rel} \leq 1.5$ dB	$B_{1.5dB}$	20.3	22.9	—	MHz
$\alpha_{rel} \leq 3.0$ dB	$B_{3.0dB}$	22.0	24.0	—	MHz
$\alpha_{rel} \leq 35$ dB	B_{35dB}	—	28.6	31.0	MHz
$\alpha_{rel} \leq 40$ dB	B_{40dB}	—	29.2	41.0	MHz
Amplitude ripple (p-p)	$\Delta\alpha$				
$f_N \pm 11.0$ MHz		—	1.0	1.5	dB
Phase ripple (p-p)	$\Delta\varphi$				
$f_N \pm 11.0$ MHz		—	12	15	deg
Group delay ripple (p-p)	$\Delta\tau$				
$f_N \pm 11.0$ MHz		—	60	100	ns
Absolute group delay (at f_N)	τ	—	640	—	ns
Relative attenuation (relative to α_{min})	α_{rel}				
80.0 MHz ... $f_N - 19.1$ MHz		42	48	—	dB
$f_N - 19.1$ MHz ... $f_N - 14.6$ MHz		35	38	—	dB
$f_N + 14.6$ MHz ... $f_N + 19.1$ MHz		35	38	—	dB
$f_N + 19.1$ MHz ... $f_N + 26.1$ MHz		39	42	—	dB
$f_N + 26.1$ MHz ... 1 GHz		42	48	—	dB
Temperature coefficient of frequency	TC_f	—	–87	—	ppm/K

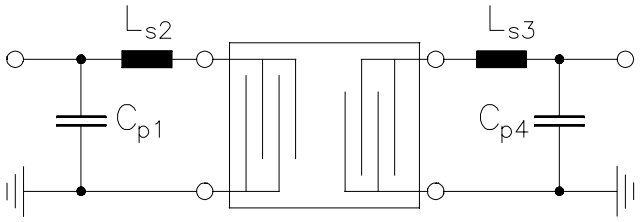
Data sheet SMD

Characteristics

Operating temperature range: T = –40 to 85 °C
Terminating source impedance: Z_S = 50 Ω and matching network
Terminating load impedance: Z_L = 50 Ω and matching network

		min.	typ. @ 25 °C	max.	
Nominal frequency	f_N	—	173.8	—	MHz
Minimum insertion attenuation (including matching network)	α_{min}	—	9.3	11.0	dB
Passband width					
$\alpha_{rel} \leq 1.5$ dB	$B_{1.5dB}$	20.3	22.9	—	MHz
$\alpha_{rel} \leq 3.0$ dB	$B_{3.0dB}$	22.0	24.0	—	MHz
$\alpha_{rel} \leq 35$ dB	B_{35dB}	—	28.6	31.0	MHz
$\alpha_{rel} \leq 40$ dB	B_{40dB}	—	29.2	41.0	MHz
Amplitude ripple (p-p)	$\Delta\alpha$				
$f_N \pm 10.1$ MHz		—	0.8	1.5	dB
Phase ripple (p-p)	$\Delta\varphi$				
$f_N \pm 10.1$ MHz		—	9	15	deg
Group delay ripple (p-p)	$\Delta\tau$				
$f_N \pm 10.1$ MHz		—	40	100	ns
Absolute group delay (at f_N)	τ	—	640	—	ns
Relative attenuation (relative to α_{min})	α_{rel}				
80.0 MHz ... $f_N - 20.0$ MHz		42	48	—	dB
$f_N - 20.0$ MHz ... $f_N - 15.5$ MHz		35	45	—	dB
$f_N + 15.5$ MHz ... $f_N + 20.0$ MHz		35	39	—	dB
$f_N + 20.0$ MHz ... $f_N + 27.0$ MHz		39	45	—	dB
$f_N + 27.0$ MHz ... 1 GHz		42	48	—	dB
Temperature coefficient of frequency	TC_f	—	–87	—	ppm/K

Matching network to 50 Ω unbalanced



C_{p1} = 47 pF
L_{s2} = 12 nH
L_{s3} = 18 nH
C_{p4} = 47 pF

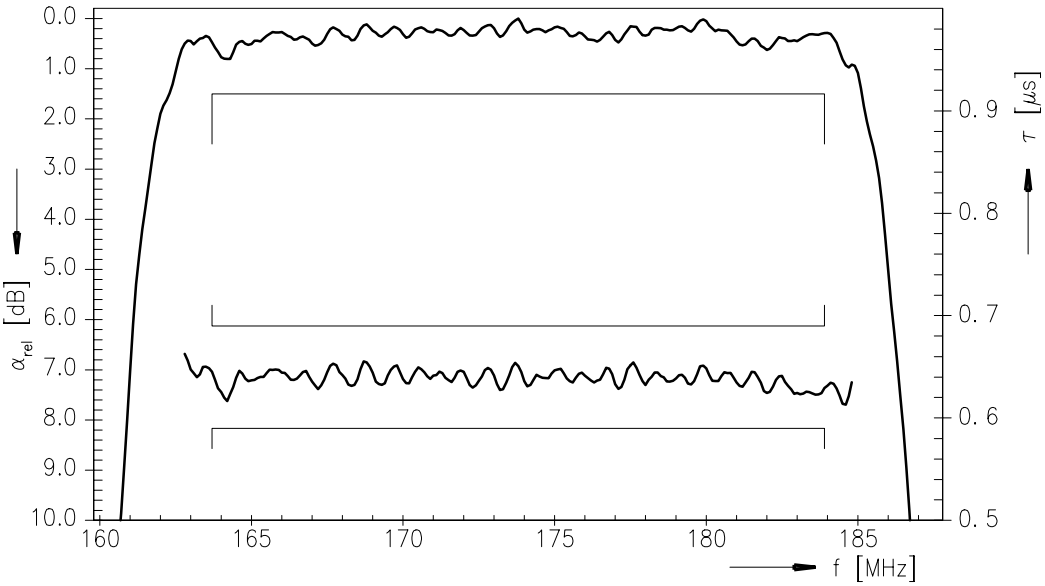
Element values depend upon PCB layout.

Maximum ratings

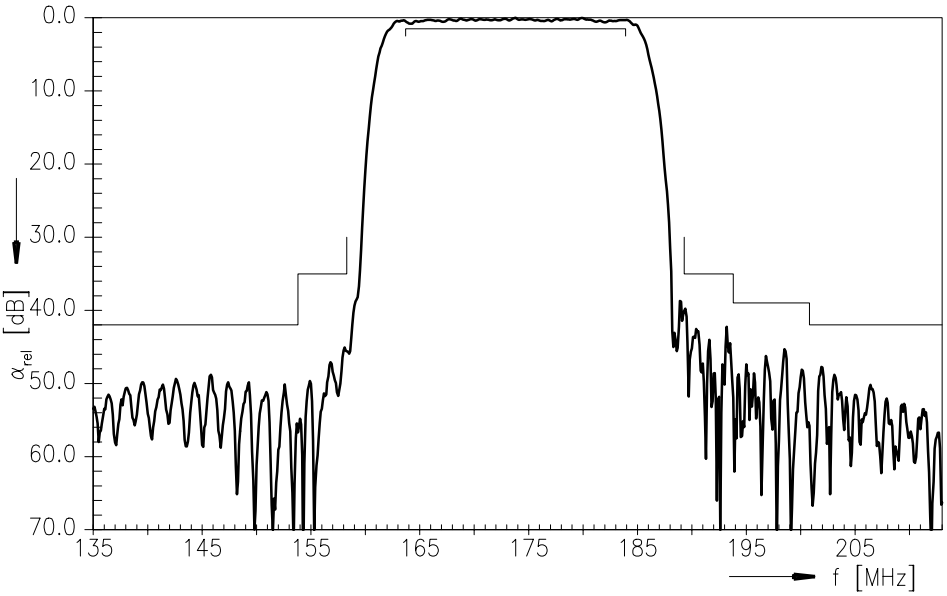
Operable temperature range	T	–40/+85	˚C	
Storage temperature range	T_{sta}	–40/+85	˚C	
DC voltage	V_{DC}	0	V	
ESD voltage	V_{ESD}	100[1)]	V	machine model, 1 pulse
Input power	P_{IN}	10	dBm	

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

Transfer function



Transfer function (wideband)



References

Type	B5068
Ordering code	B39171-B5068-H810
Marking and package	C61157-A7-A103
Packaging	F61074-V8170-Z000
Date codes	L_1126
S-parameters	
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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Published by EPCOS AG
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