SAW Components

SAW RF filter

TETRA

Series/type:	**B5151**
Ordering code:	**B39421B5151U310**
Date:	September 27, 2010
Version:	1.0

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Sample data SMD

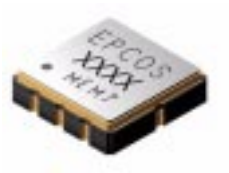
Revision History: Changes compared to previous iteration issue

ISSUE	ORIGINATOR	DETAIL SPEC CHANGES	DATE
DGLV69S01			
0.1	Kok Meng	Initial Release	13.02.2009
LV69A			
1.0	Kok Meng	Filter shifted high by 0.8MHz Updates of attenuation spec for Filter I Relaxation of IL for Filter 2 to 3.5dB Relaxation of AR for Filter 2 to 2.2dB Relaxation of VSWR for Filter 2 to 2.2 Updates of attenuation spec for Filter 2	08.04.2009
DGLV69S02			
0.2	Kok Meng	Change in customer spec for IL and attenuation	03.06.2009
LV69B			
1.0	Kok Meng	With reference to DGLV69S02, Relaxation of IL for Filter I to 2.3dB Improvement of AR for Filter I to 0.9dB Updates of attenaution spec for Filter I Relaxation of IL for Filter 2 to 2.7dB Improvement of AR for Filter 2 to 1.3dB Relaxation of Input VSWR for Filter 2 to 2.1 Updates of attenuation spec for Filter 2	28.08.2009
B5151			
1.0	Kok Meng	Include ordering code	27.09.2010

Sample data SMD

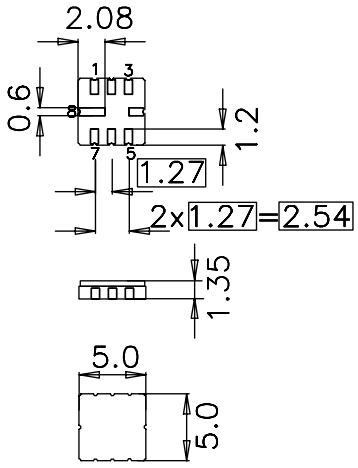
Application

- Low-loss RF filter for TETRA
- Low amplitude ripple
- Usable passband:
  Filter 1 : 20 MHz
  Filter 2 : 30 MHz
- Unbalanced to unbalanced operation
- No matching required for operation at 50 Ω



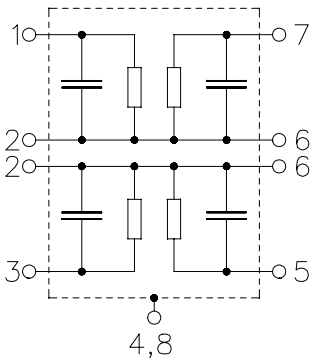
Features

- Package size 5.0 x 5.0 x 1.35 mm³
- Package code QCC8C
- RoHS compatible
- Approximate weight 0.10 g
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals
- **E**lectrostatic **S**ensitive **D**evice (**ESD**)



Pin configuration

■	1	Input [Filter 1]
■	3	Input [Filter 2]
■	7	Output [Filter 1]
■	5	Output [Filter 2]
■	2,6	To be grounded
■	4,8	Case ground



Sample data

SMD

Characteristics of Filter 1

Temperature range for specification: T = -30 to +70˚C
Terminating source impedance: Z_S = 50 Ω
Terminating load impedance: Z_L = 50 Ω

		LV69B [1]			DGL [2]	
		min.	typ. @ 25 ˚C	max.	min./ max.	
Center frequency	f_C	—	390.0	—		MHz
Maximum insertion attenuation	α_{max}					
380.0 ... 400.0 MHz		—	1.8	2.3		dB
Amplitude ripple (p-p)	Δα					
380.0 ... 400.0 MHz		—	0.4	0.9		dB
Input VSWR						
380.0 ... 400.0 MHz		—	1.7	2.0		
Output VSWR						
380.0 ... 400.0 MHz		—	1.7	2.0		
Attenuation	α					
10.0 ... 150.0 MHz		35	42	—		dB
150.0 ... 287.0 MHz		33	37	—		dB
287.0 ... 335.0 MHz		26	29	—		dB
335.0 ... 360.0 MHz		20	23	—		dB
418.0 ... 442.0 MHz		15	21	—		dB
442.0 ... 456.0 MHz		25	33	—		dB
456.0 ... 532.0 MHz		28	36	—		dB
532.0 ... 560.0 MHz		28	32	—		dB
560.0 ... 668.0 MHz		22	24	—		dB
668.0 ... 1000.0 MHz		22	31	—		dB

[1] Values in columns min, typ and max indicate the development status of the current version.
[2] Values in column DesignGoal (DGL) indicate the target performance.

Sample data

SMD

Maximum ratings of Filter 1

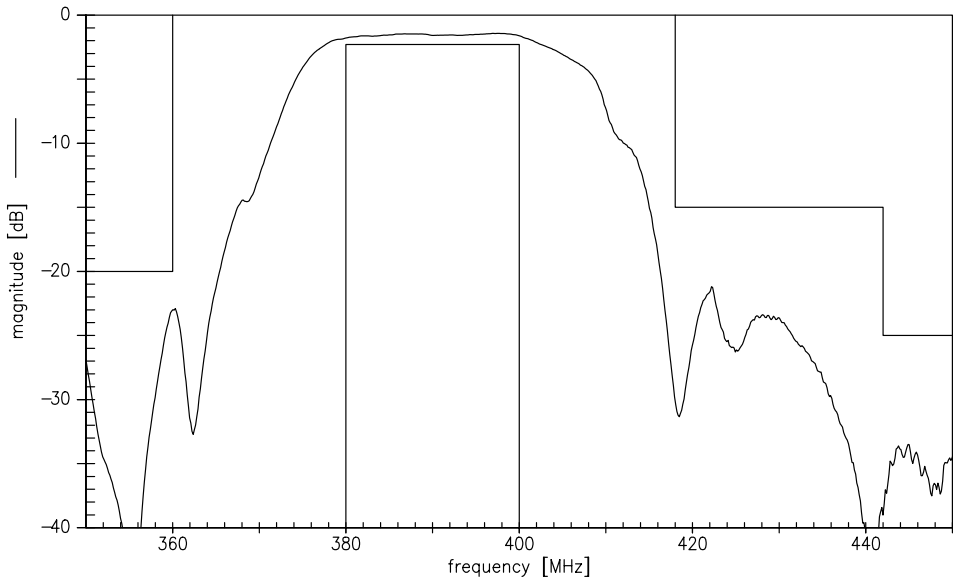
Operable temperature range	T	-40 / +85	˚C	
Storage temperature range	T_{stg}	-40 / +85	˚C	
DC voltage	V_{DC}	0	V	
ESD voltage	V_{ESD}	100 [1)]	V	machine model, 1 pulse
Input Power at				
380.0 ... 400.0 MHz	P_{IN}	15	dBm	continuous wave

1) acc. to JESD22-A115A (machine model), 1 negative & 1 positive pulse.

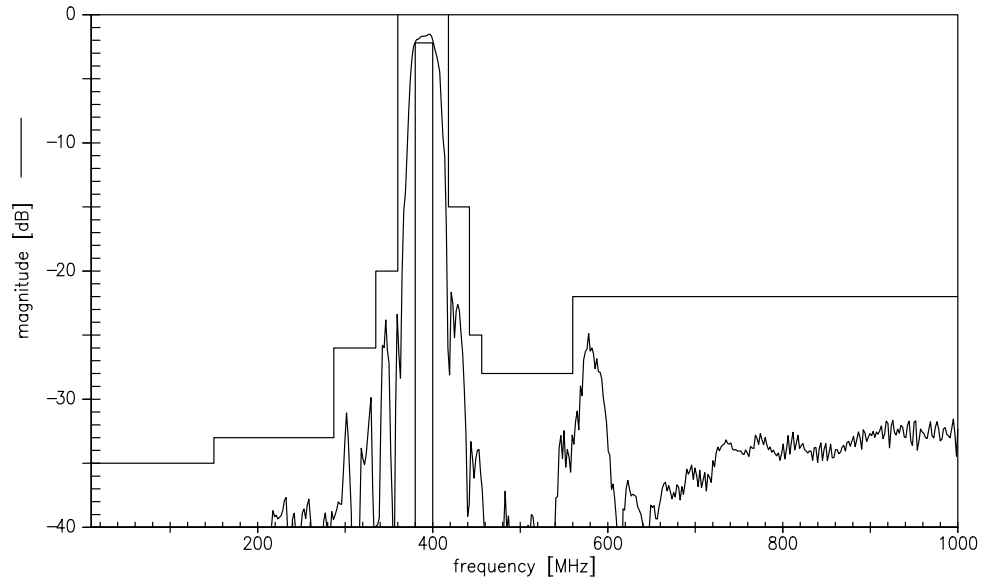
Sample data

SMD

Transfer function of Filter 1



Transfer function (wideband)

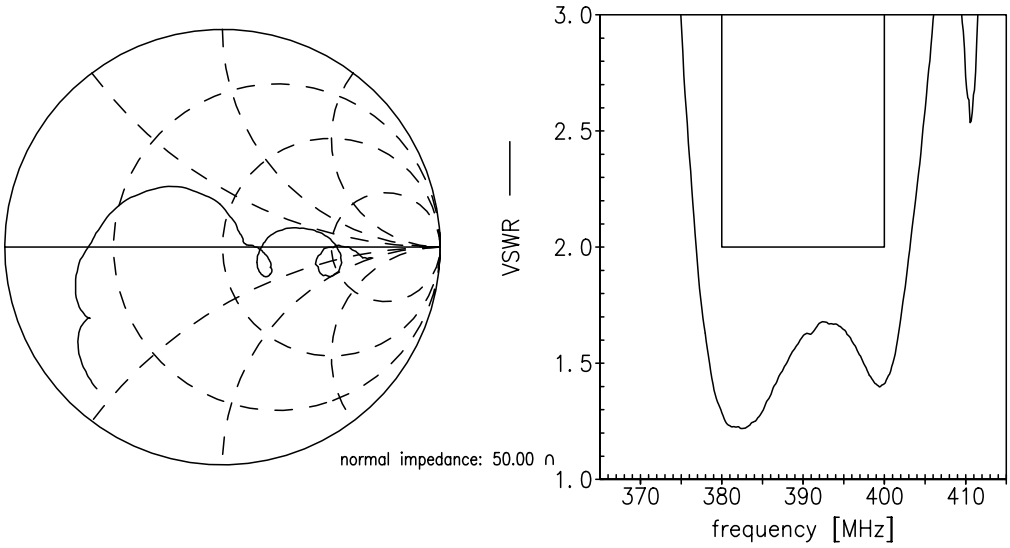


Sample data

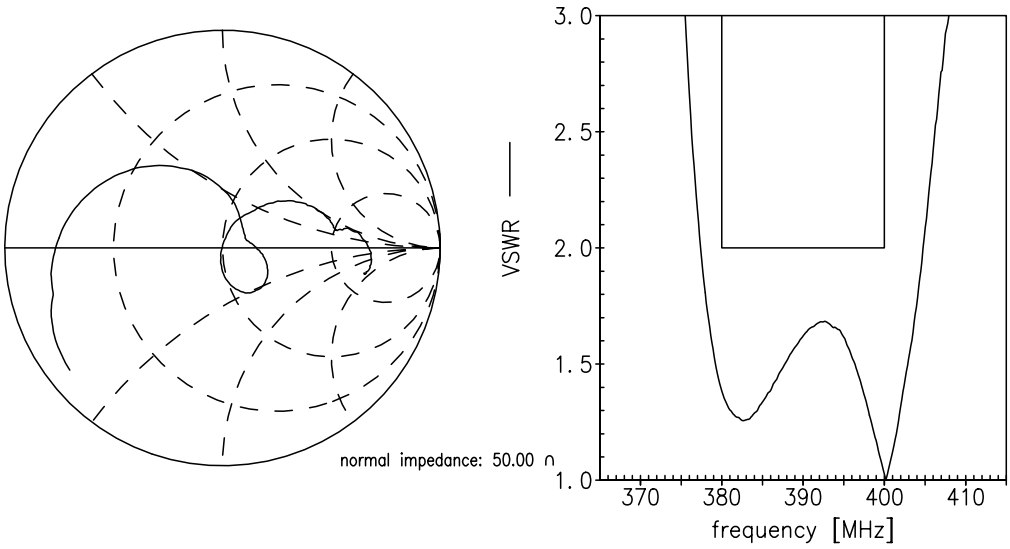
SMD

Smith charts of Filter 1

S_{11} function



S_{22} function



Sample data

SMD

Characteristics of Filter 2

Temperature range for specification: T = -30 to +70˚C
Terminating source impedance: Z_S = 50 Ω
Terminating load impedance: Z_L = 50 Ω

		LV69B [1]			DGL [2]	
		min.	typ. @ 25 ˚C	max.	min./ max.	
Center frequency	f_C	—	415.0	—		MHz
Maximum insertion attenuation	α_{max}					
400.0 ... 430.0 MHz		—	2.2	2.7		dB
Amplitude ripple (p-p)	$\Delta\alpha$					
400.0 ... 430.0 MHz		—	0.8	1.3		dB
Input VSWR						
400.0 ... 430.0 MHz		—	1.7	2.1		
Output VSWR						
400.0 ... 430.0 MHz		—	1.7	2.0		
Attenuation	α					
10.0 ... 345.0 MHz		25	29	—		dB
345.0 ... 390.0 MHz		9	11	—		dB
440.0 ... 470.0 MHz		4	7	—		dB
470.0 ... 480.0 MHz		25	30	—		dB
480.0 ... 561.0 MHz		27	34	—		dB
561.0 ... 593.0 MHz		28	31	—		dB
593.0 ... 950.0 MHz		21	23	—		dB
950.0 ... 2000.0 MHz		13	16	—		dB
2000.0 ... 2500.0 MHz		5	8	—		dB

[1] Values in columns min, typ and max indicate the development status of the current version.
[2] Values in column DesignGoal (DGL) indicate the target performance.

Sample data

SMD

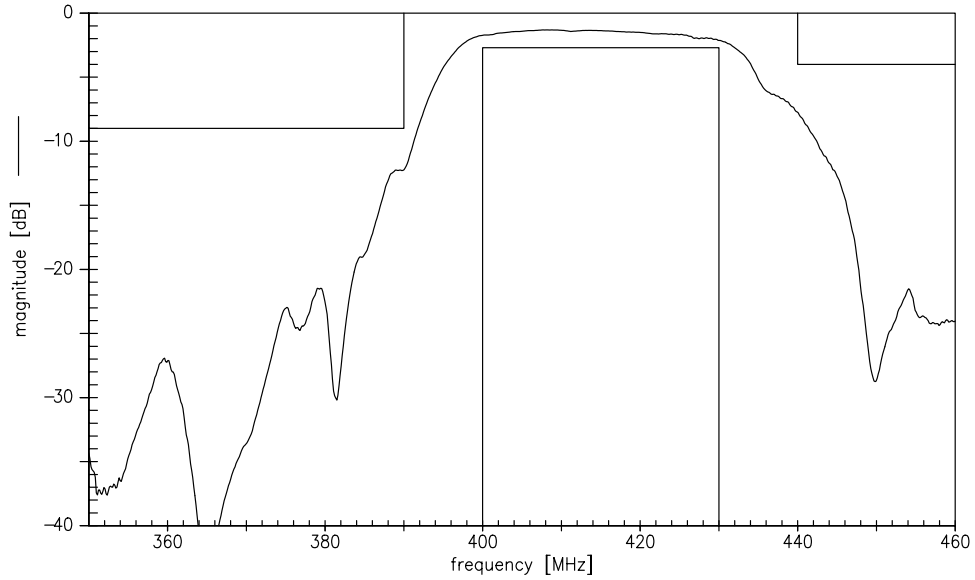
Maximum ratings of Filter 2

Operable temperature range	T	-40 / +85	˚C	
Storage temperature range	T_{stg}	-40 / +85	˚C	
DC voltage	V_{DC}	0	V	
ESD voltage	V_{ESD}	100 [1)]	V	machine model, 1 pulse
Input Power at 400.0 ... 430.0 MHz	P_{IN}	15	dBm	continuous wave

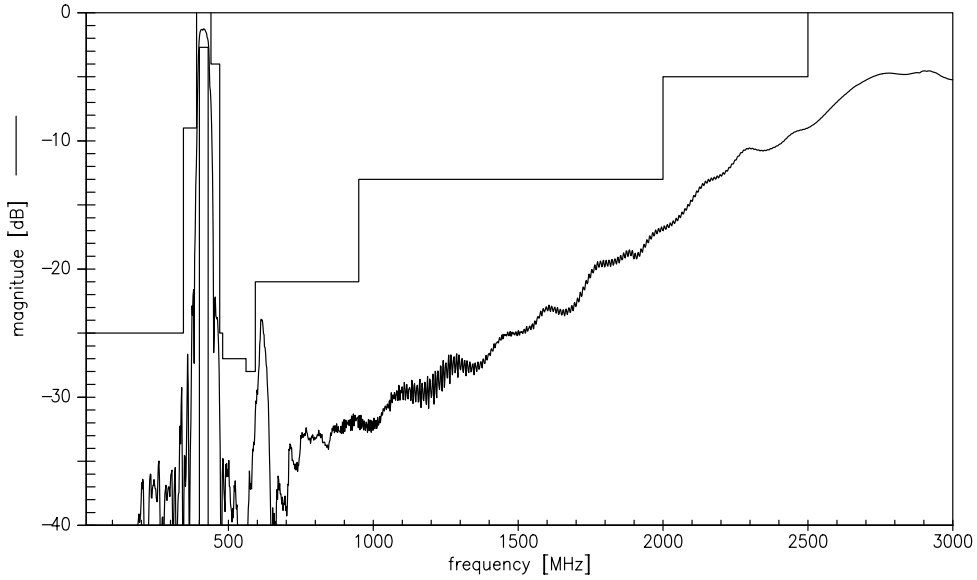
1) acc. to JESD22-A115A (machine model), 1 negative & 1 positive pulse.

Sample data SMD

Transfer function of Filter 2



Transfer function (wideband)

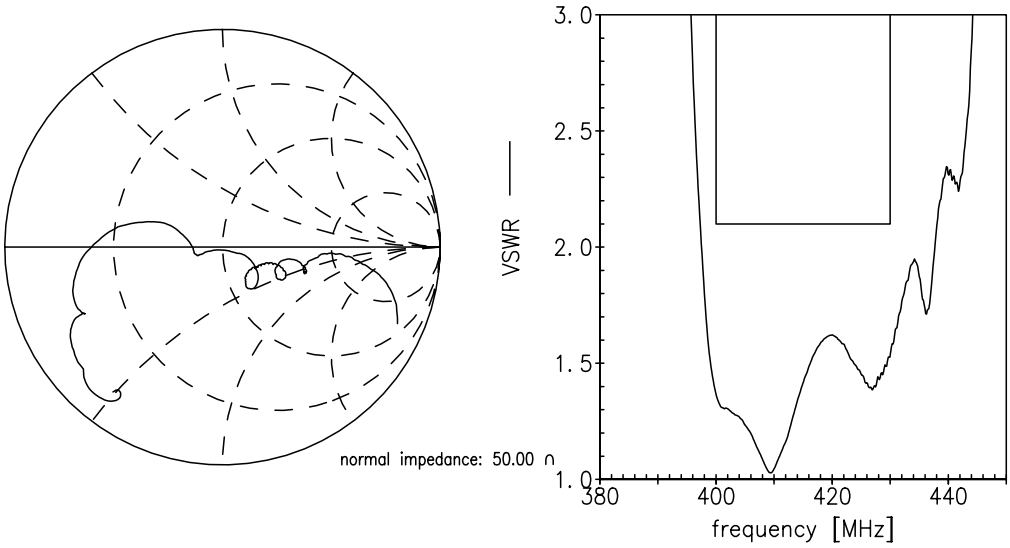


Sample data

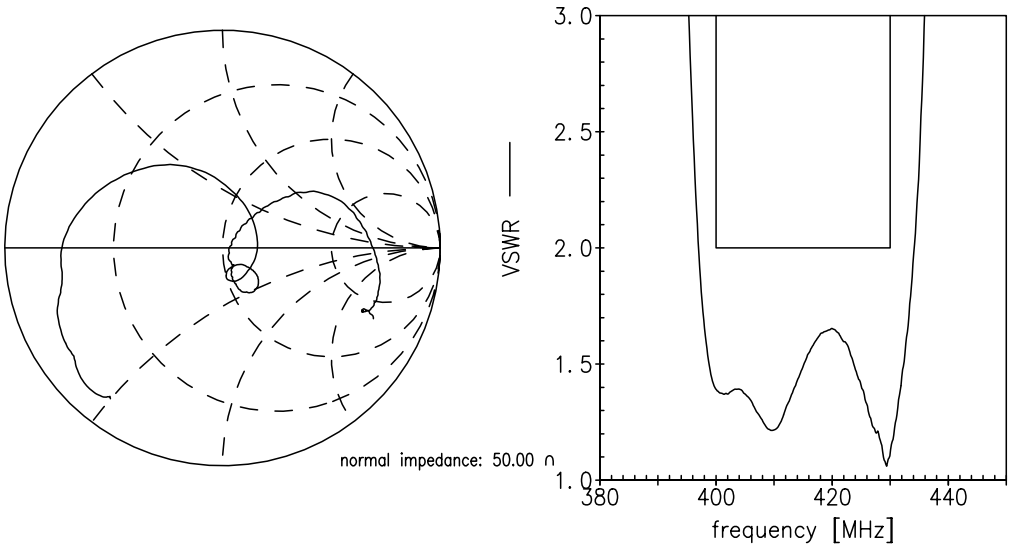
SMD

Smith charts of Filter 2

S_{11} function



S_{22} function



Sample data



References

Type	B5151
Ordering code	B39421B5151U310
Marking and package	C61157-A7-A56
Packaging	F61074-V8169-Z000
Date codes	L_1126
S-parameters	LV69B_NB.s2p LV69B_WB.s2p see file header for port/pin assignment table
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."
Matching coils	See Inductor pdf-catalog http://www.tdk.co.jp/tefe02/coil.htm#aname1 and Data Library for circuit simulation http://www.tdk.co.jp/etvcl/index.htm

For further information please contact your local EPCOS sales office or visit our webpage at www.epcos.com .

Published by EPCOS AG
Surface Acoustic Wave Components Division
P.O. Box 80 17 09, 81617 Munich, GERMANY

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