SAW Components

SAW GPS Extractor Filter

GPS Extractor

Series/type:	**B7778**
Ordering code:	**B39162B7778P810**
Date:	December 06, 2010
Version:	2.0

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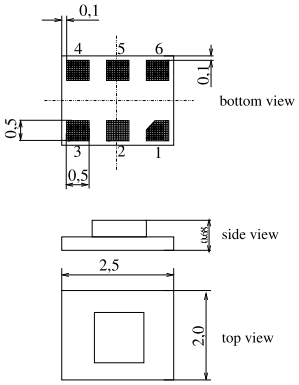
Application

- Low loss RF GPS Extractor filter for mobile phones using common antenna for GPS and Cellular/PCS/K-PCS/WCDMA/Bluetooth band
- Placed between antenna, GPS and Cellular/PCS/K-PCS/WCDMA/Bluetooth band
- No switches and control lines required
- Integrated low loss GPS filter with single ended output 50 Ω
- Very low insertion attenuation in GPS and NON-GPS band
- High selectivity of GPS filter
- Low amplitude ripple in all bands
- Usable passbands 2 MHz (GPS), 70 MHz (Cellular), 120 MHz (K-PCS), 140 MHz (PCS), 60 MHz (WCDMA Band I), 83.5 MHz (Bluetooth)

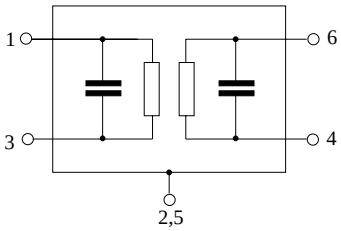
Features

- Package size 2.5 x 2.0 x 0.68 mm³
- Package code DCS6N
- RoHS compatible
- Approximate weight 0.015 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 antenna
- 3 Output GPS band
- 6 Output NON-GPS band (Cellular/K-PCS/PCS/WCDMA/Bluetooth band depending on external matching)
- 4 To be grounded
- 2,5 Ground



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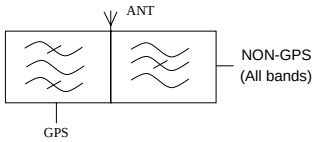
Characteristics

Matching Circuit 1[1)] : All Bands + GPS (1575.42 MHz)

Temperature range for specification: T = -30 ˚C to +85 ˚C
Terminating input antenna impedance: Z_{ANT} = 50 Ω || 6.8 nH
Terminating GPS impedance: Z_{GPS} = 50 Ω
Terminating NON-GPS impedance: Z_{nGPS} = 50 Ω || 6.8 nH



					B7778			
					min.	typ. @ 25 ˚C	max.	
Maximum insertion attenuation				α_{max}				
Antenna-GPS	1574.42	...	1576.42	MHz	—	1.1	1.6	dB
Antenna-NON-GPS	824.0	...	960.0	MHz	—	0.8	1.3	dB
Antenna-NON-GPS	1710.0	...	1990.0	MHz	—	0.8	1.4	dB
Antenna-NON-GPS	2110.0	...	2170.0	MHz	—	1.1	1.6	dB
Antenna-NON-GPS	2400.0	...	2483.5	MHz	—	1.1	1.7	dB
Attenuation				α				
Antenna-GPS	824.0	...	960.0	MHz	33	39	—	dB
Antenna-GPS	1710.0	...	1990.0	MHz	33	37	—	dB
Antenna-GPS	2110.0	...	2170.0	MHz	33	37	—	dB
Antenna-GPS	2400.0	...	2483.5	MHz	35	39	—	dB
VSWR (Antenna port)								
GPS band	1574.42	...	1576.42	MHz	—	1.3	1.8	
NON-GPS band	824.0	...	960.0	MHz	—	2.0	2.5	
NON-GPS band	1710.0	...	1990.0	MHz	—	1.4	2.0	
NON-GPS band	2110.0	...	2170.0	MHz	—	1.6	2.1	
NON-GPS band	2400.0	...	2483.5	MHz	—	1.8	2.4	
VSWR (GPS port)								
GPS band	1574.42	...	1576.42	MHz	—	1.2	1.8	
VSWR (NON-GPS port)								
	824.0	...	960.0	MHz	—	2.0	2.5	
	1710.0	...	1990.0	MHz	—	1.4	2.0	
	2110.0	...	2170.0	MHz	—	1.6	2.1	
	2400.0	...	2483.5	MHz	—	1.8	2.4	
Isolation between NON-GPS and GPS path				α				
	824.0	...	960.0	MHz	33	37	—	dB
	1710.0	...	1990.0	MHz	33	37	—	dB
	2110.0	...	2170.0	MHz	33	37	—	dB
	2400.0	...	2483.5	MHz	35	40	—	dB

1) Further Matching Circuits are specified in B7778 Appendix

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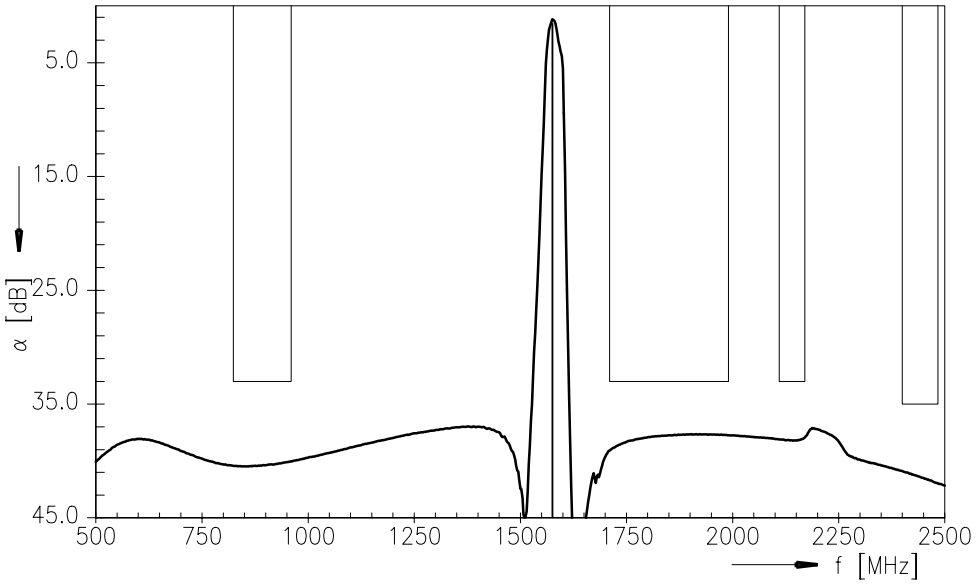
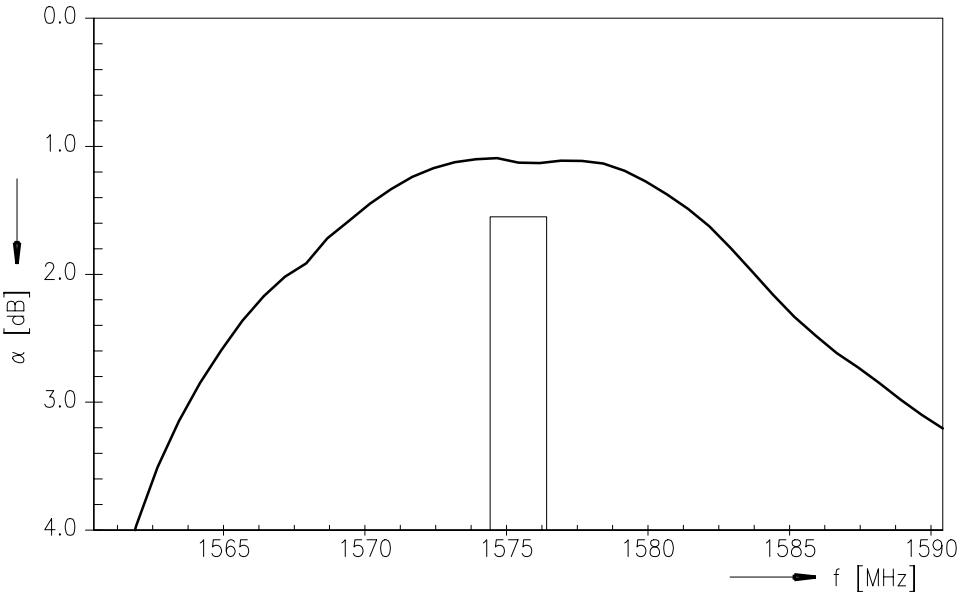
Antenna - GPS (transfer function for matching circuit 1):



Antenna - GPS (transfer function passband for matching circuit 1):



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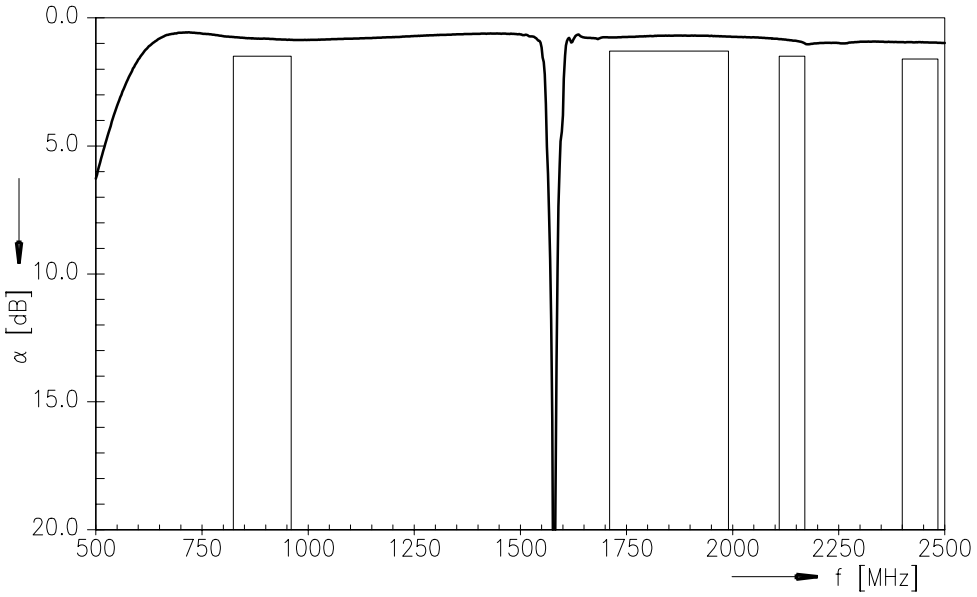
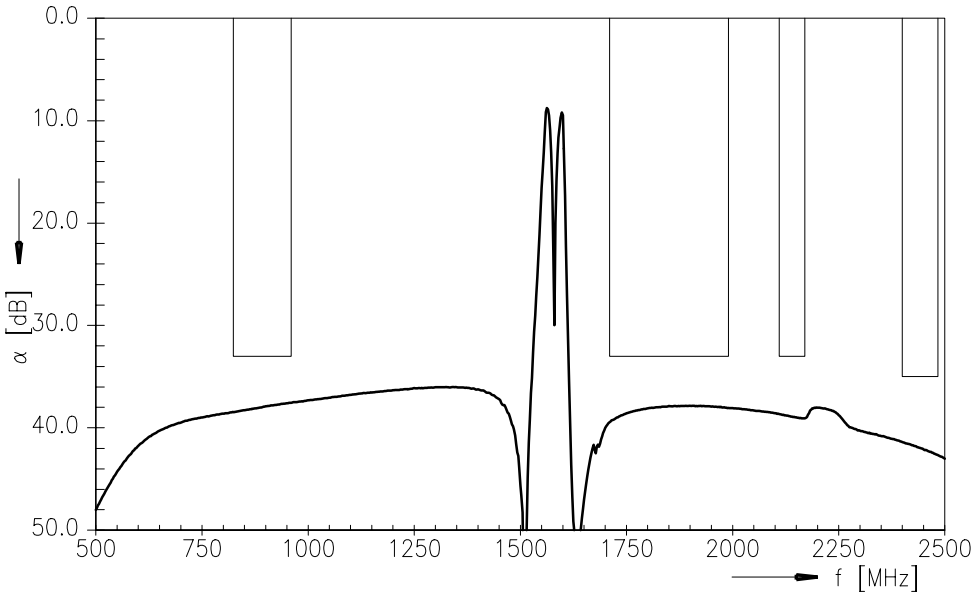
Antenna - NON-GPS (transfer function for matching circuit 1, all bands**):**



GPS - NON-GPS (isolation, transfer function for matching circuit 1, all bands**):**



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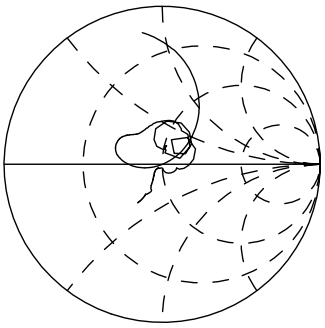
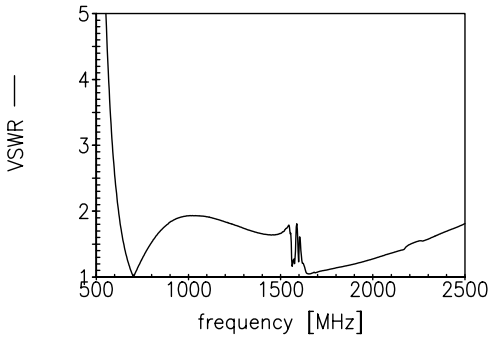
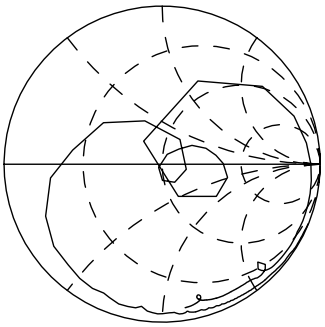
Smith charts / VSWR (for matching circuit 1, all bands**)**

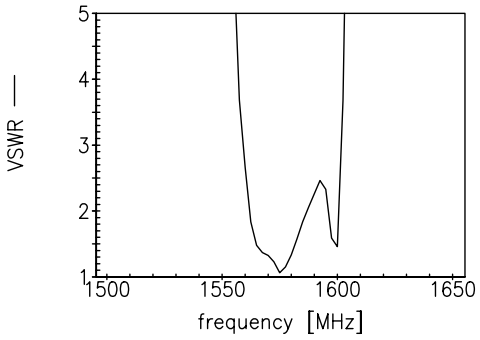
S_{11} Antenna



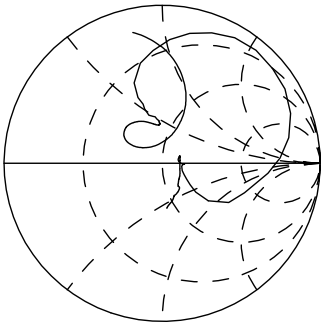


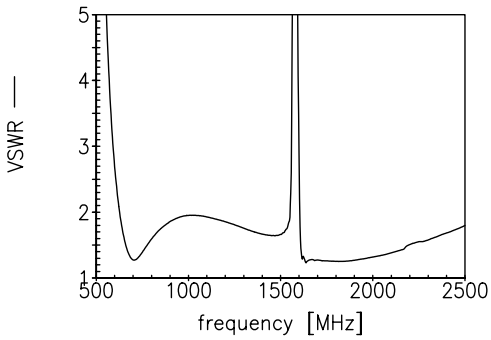
S_{22} GPS





S_{33} NON-GPS





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Maximum ratings

Operable temperature range	T	–30/+85	˚C	
Storage temperature range	T_{stg}	–40/+85	˚C	
DC voltage	V_{DC}	5	V	
ESD voltage	V_{ESD}	50[1)]	V	machine model, 10 pulses
Input power at				
824 ... 960 MHz	P_{IN}	31	dBm	
1710 ... 1990 MHz	P_{IN}	31	dBm	effective power in the on-state
1850 ... 1990 MHz	P_{IN}	31	dBm	continuous wave signal
2400 ... 2483.5 MHz	P_{IN}	31	dBm	

1) acc. to JESD22-A115A (machine model), 10 negative & 10 positive pulses.

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References

Type	B7778
Ordering code	B39162B7778P810
Marking and package	C61157-A7-A116
Packaging	F61074-V8153-Z000
Date codes	L_1126
S-parameters (unmatched)	B7778_NB.s3p, B7778_WB.s3p
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."
Moldability	Before using in overmolding environment, please contact your EPCOS sales office.
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 .

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