

RF360 Europe GmbH

A Qualcomm – TDK Joint Venture

## SAW Components

### SAW filter

GPS + GALILEO + COMPASS + GLONASS Band

Series/type:	B8828
Ordering code:	B39162B8828P810
Date:	2015
Version:	2.2

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<b>Version:</b>	<b>2.2</b>

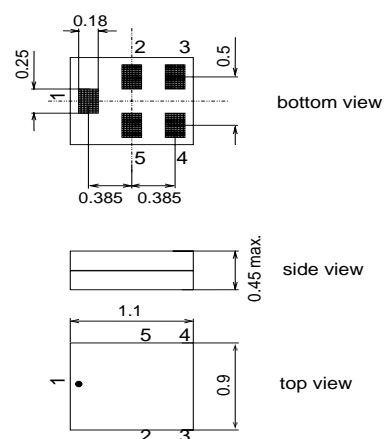
**Design goal**

**Application**

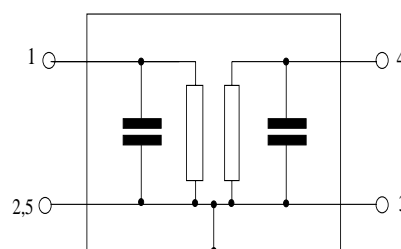
- Low-loss RF GPS + GALILEO + COMPASS + GLONASS filter
- Simultaneous usage of GPS, COMPASS and GLONASS bands
- Usable passbands: 2.0 MHz for GPS, 4.092 MHz for COMPASS and 8.34 MHz for GLONASS
- Very low insertion attenuation
- High out of band selectivity
- Filter impedance 50 Ω
- Unbalanced to unbalanced operation
- No matching network required for operation at 50 Ω


**Features**

- Package size 1.1 x 0.9 mm<sup>2</sup>
- Maximum package height 0.45 mm
- RoHS compatible
- Approximate weight 0.0012 g
- Package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- **Electrostatic Sensitive Device (ESD)**
- **Moisture Sensitive Level 3 (MSL3)**


**Pin configuration**

- 1 Input, unbalanced
- 4 Output, unbalanced
- 2,3,5 To be grounded



**Design goal**

**Characteristics of filter**

Temperature range for specification:	$T = -30\text{ °C to }+85\text{ °C}$
Terminating source impedance:	$Z_S = 50\ \Omega$
Terminating load impedance:	$Z_L = 50\ \Omega$

		min.	typ. @ 25°C	max.	
<b>Center frequency</b>	$f_c$	—	1582.47	—	MHz
<b>Maximum insertion attenuation</b>	$\alpha_{\max}$				
1559.052... 1563.144 MHz		—	1.2	1.5	dB
1574.420... 1576.420 MHz		—	1.0	1.3	dB
1573.370... 1577.470 MHz		—	1.0	1.3	dB
1597.550... 1605.890 MHz		---	1.3	1.6	dB
<b>Input VSWR</b>					
1559.052... 1563.144 MHz		—	1.7	2.0	
1574.420... 1576.420 MHz		—	1.3	1.9	
1573.370... 1577.470 MHz		---	1.3	1.9	
1597.550... 1605.890 MHz		---	1.6	1.9	
<b>Output VSWR</b>					
1559.052... 1563.144 MHz		—	1.7	2.0	
1574.420... 1576.420 MHz		—	1.4	1.9	
1573.370... 1577.470 MHz		---	1.4	1.9	
1597.550... 1605.890 MHz		---	1.6	1.9	
<b>Group Delay ripple <sup>1)</sup> (p-p)</b>	$\Delta\tau$				
1597.550... 1605.890 MHz		—	4	12	ns
<b>Attenuation</b>	$\alpha$				
10.0 ... 960.0 MHz		46	49	—	dB
960.0 ... 1463.0 MHz		40	45	—	dB
1710.0 ... 1785.0 MHz		38	43	—	dB
1785.0 ... 1990.0 MHz		39	46	—	dB
1990.0 ... 2280.0 MHz		38	41	—	dB
2280.0 ... 2400.0 MHz		47	52	—	dB
2400.0 ... 2500.0 MHz		48	52	—	dB
2500.0 ... 2700.0 MHz		47	50	—	dB
2700.0 ... 3000.0 MHz		42	46	—	dB
3000.0 ... 6000.0 MHz		27	38	—	dB

<sup>1)</sup> Measured with an aperture of 2 MHz

Design goal


**Maximum ratings**

Storage temperature range	$T_{\text{stg}}$	-40/+85 <sup>1)</sup>	°C	
DC voltage	$V_{\text{DC}}$	5 <sup>2)</sup>	V	
ESD voltage	$V_{\text{ESD}}$	50 <sup>3)</sup>	V	machine model, 10 pulse
Input Power (5000h, 50°C)				
777 to 915 MHz	$P_{\text{IN}}$	25	dBm	1/8 duty cycle, effective power in the on-state
1710 to 1710 MHz	$P_{\text{IN}}$	15	dBm	1/8 duty cycle, effective power in the on-state

1) extended upperlimit: 168@125°C acc. to IEC 60068-202 Bb

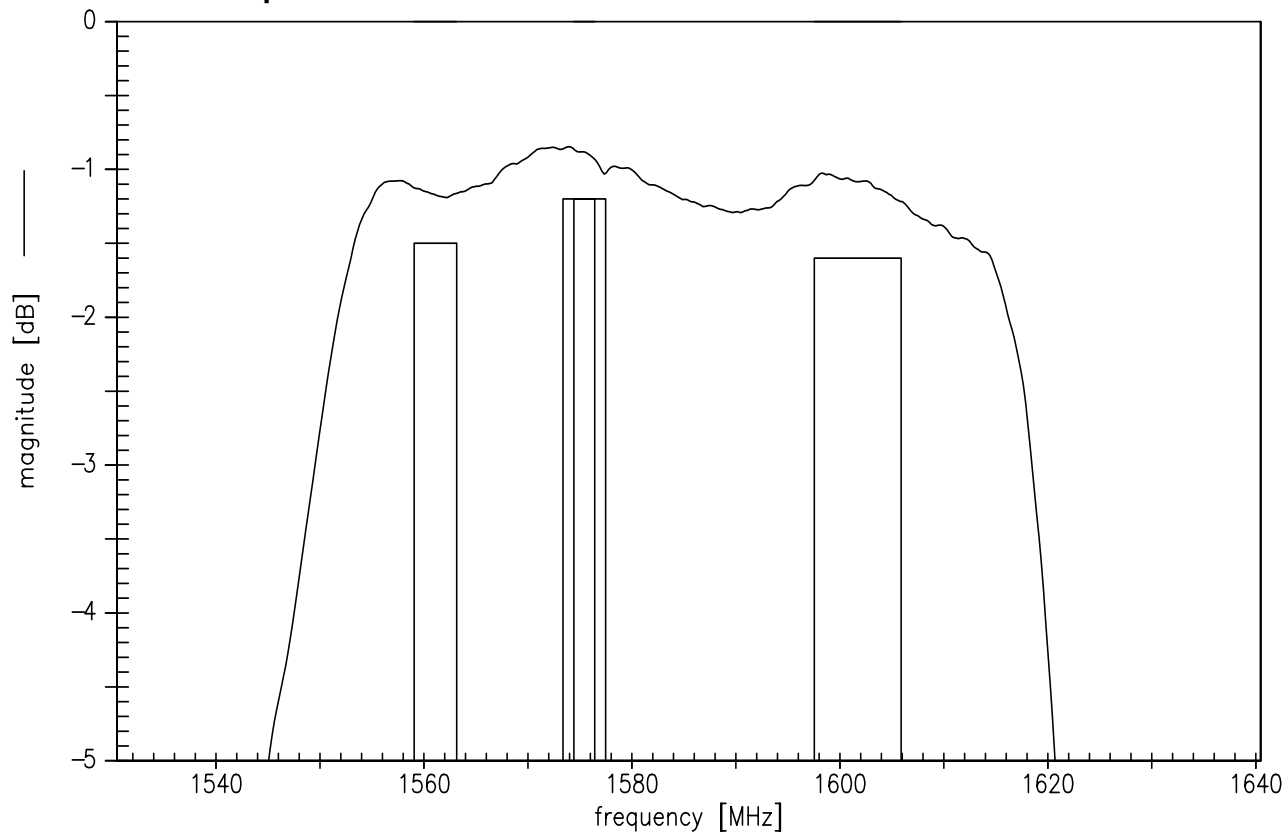
2) 168h Damp Heat Steady State acc. to IEC60068-2-67 Cy.

3) acc. to JESD22-A115B (machine model), 10 negative & 10 positive pulses.

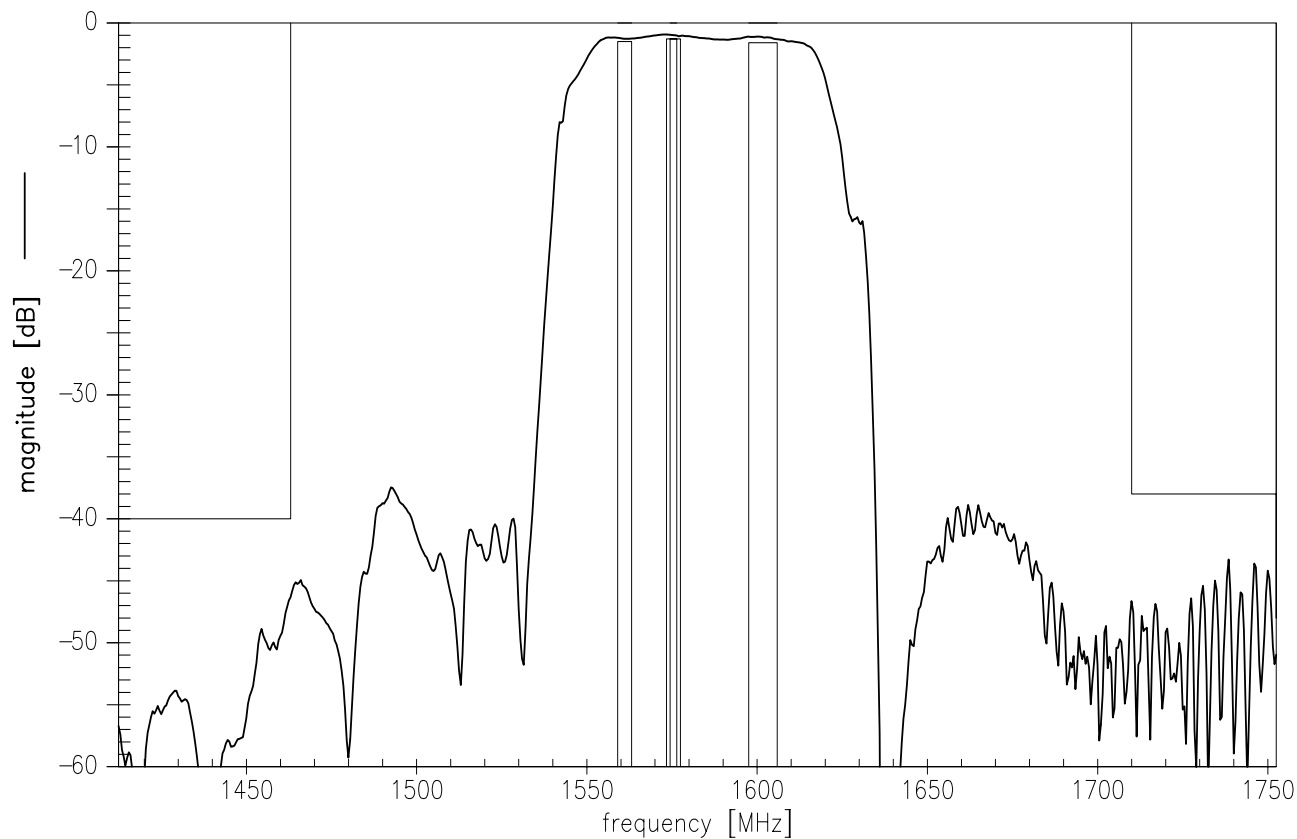
Design goal



**Transfer function passband**



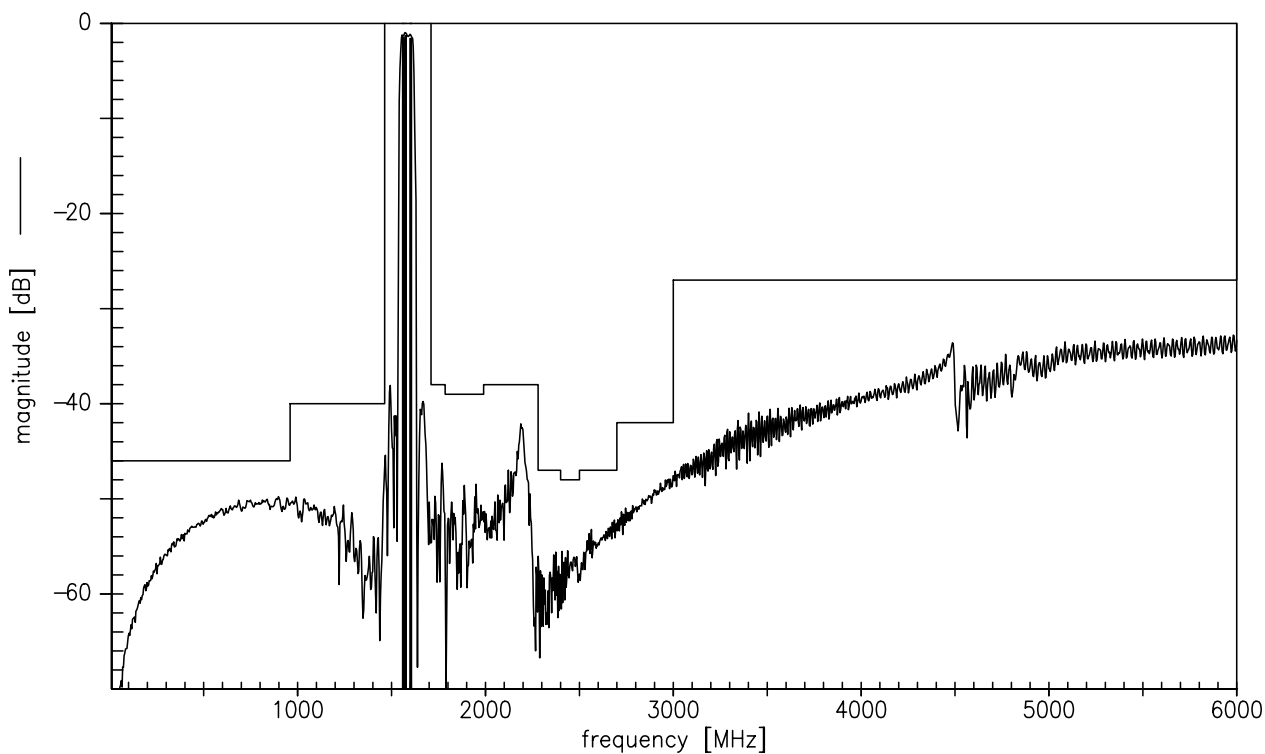
**Transfer function narrowband**



Design goal



Transfer function passband



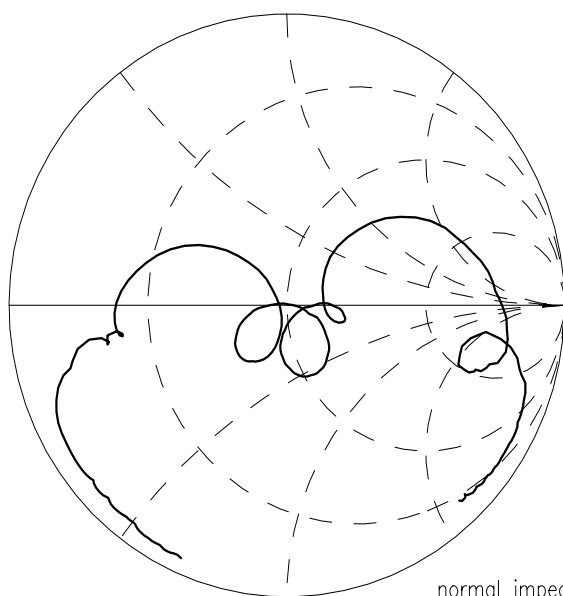


Design goal

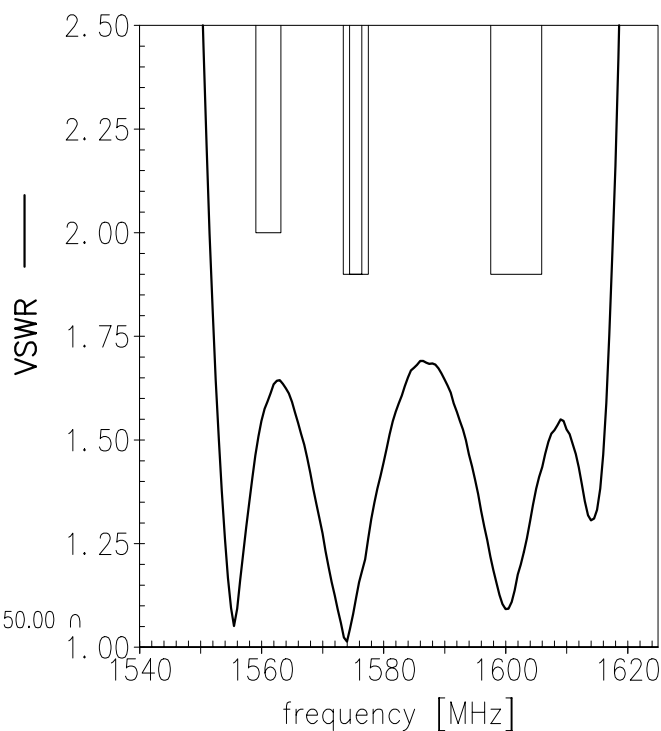


Smith chart / VSWR

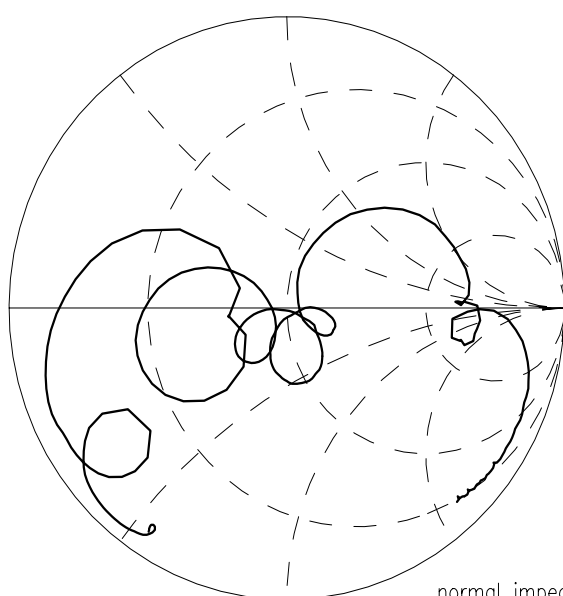
**S<sub>11</sub> function**



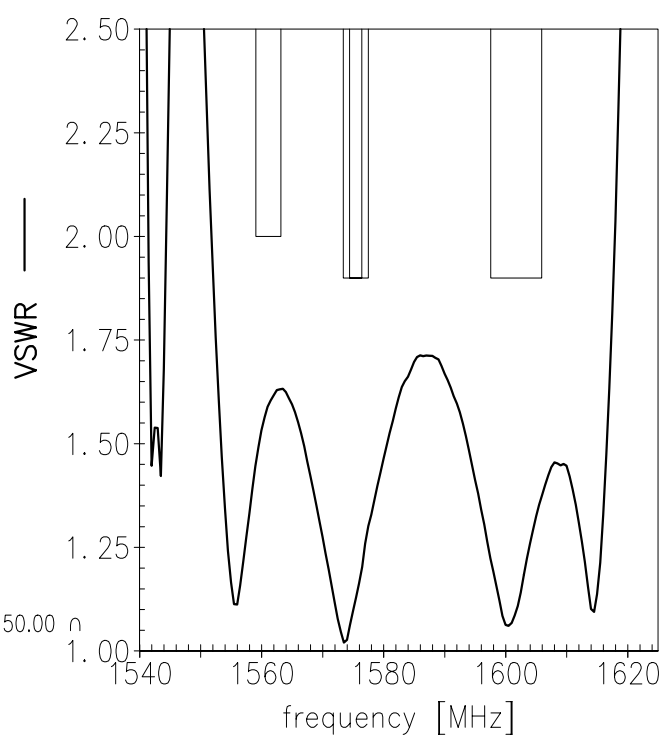
normal impedance: 50.00  $\Omega$



**S<sub>22</sub> function**



normal impedance: 50.00  $\Omega$



Design goal



References

<b>Type</b>	B8828
<b>Ordering code</b>	B39162B8828P810
<b>Marking and package</b>	C61157-A8-A30
<b>Packaging</b>	F61074-V8255-Z000
<b>Date codes</b>	L_1126
<b>S-parameters</b>	B8828_NB.s2p, B8828_WB.s2p see file header for port/pin assignment table
<b>Soldering profile</b>	S_6001
<b>RoHS compatible</b>	RoHS-compatible means that products are compatible with the requirements according to Art. 4 (substance restrictions) of Directive 2011/65/EU of the European Parliament and of the Council of June 8 <sup>th</sup> , 2011, on the restriction of the use of certain hazardous substances in electrical and electronic equipment ("Directive") with due regard to the application of exemptions as per Annex III of the Directive in certain cases.
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<b>Matching coils</b>	See Inductor pdf-catalog <a href="http://www.tdk.co.jp/tefe02/coil.htm#aname1">http://www.tdk.co.jp/tefe02/coil.htm#aname1</a> and Data Library for circuit simulation <a href="http://www.tdk.co.jp/etvcl/index.htm">http://www.tdk.co.jp/etvcl/index.htm</a>

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