



**RF360**  
**Europe GmbH**

## **SAW Components**

### **SAW GPS + COMPASS + GLONASS filter**

Series/type:	B8819
Ordering code:	B39162B8819P810
Date:	April 19, 2016
Version:	2.5

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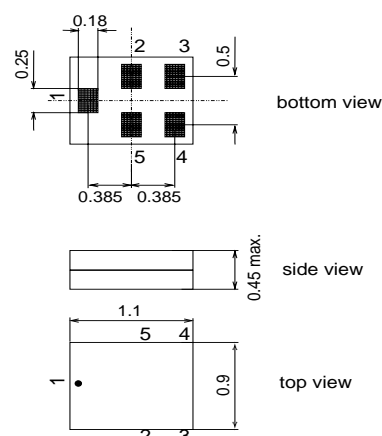
**Data Sheet**

**Application**

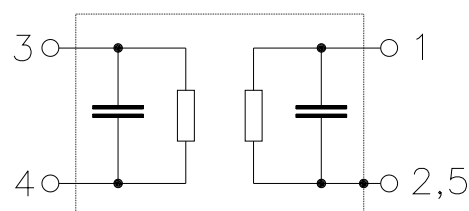
- Low-loss RF GPS + COMPASS + GLONASS filter
- Simultaneous usage of GPS, COMPASS and GLONASS bands
- Usable passbands: 2.0 MHz for GPS, 4.092 MHz for COMPASS and 8.34 MHz for GLONASS
- Very low insertion attenuation
- High out of band selectivity
- Impedance transformation from 50 Ω to 100 Ω
- Unbalanced to balanced operation
- No matching network required for operation at 50 Ω


**Features**

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


**Pin configuration**

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



**Data Sheet**

**Characteristics of Filter**

Temperature range for specification:	T = -30 °C to +85 °C
Terminating source impedance:	Z <sub>S</sub> = 50 Ω
Terminating load impedance:	Z <sub>L</sub> = 100 Ω

		min.	typ. @ 25 °C	max.	
<b>Center frequency</b>	f <sub>C</sub>	—	1582.47	—	MHz
<b>Maximum insertion attenuation</b>	α <sub>max</sub>				
1559.052... 1563.144 MHz		—	1.4	1.9	dB
1574.42 ... 1576.42 MHz		—	0.9	1.3	dB
1597.55 ... 1605.89 MHz		—	1.5	2.0	dB
<b>VSWR Input</b>					
1559.052... 1563.144 MHz		—	1.7	2.3	
1574.42 ... 1576.42 MHz		—	1.2	1.8	
1597.55 ... 1605.89 MHz		—	1.7	2.1	
<b>VSWR Output</b>					
1559.052... 1563.144 MHz		—	1.7	2.2	
1574.42 ... 1576.42 MHz		—	1.3	1.9	
1597.55 ... 1605.89 MHz		—	1.7	2.3	
<b>Group delay ripple<sup>1)</sup> (p-p)</b>	Δτ				
1597.55 ... 1605.89 MHz		—	3	12	ns
<b>Output amplitude balance ( S<sub>31</sub>/S<sub>21</sub> )</b>					
1559.052... 1563.144 MHz		-1.2	-0.6	1.2	dB
1574.42 ... 1576.42 MHz		-1	-0.4	1	dB
1597.55 ... 1605.89 MHz		-1.5	0.9	1.5	dB
<b>Output phase balance (φ(S<sub>31</sub>)-φ(S<sub>21</sub>)+180°)</b>					
1559.052... 1563.144 MHz		-10	1.5	10	°
1574.42 ... 1576.42 MHz		-10	-1.5	10	°
1597.55 ... 1605.89 MHz		-10	1.5	10	°
<b>Attenuation</b>	α				
10.0 ... 960.0 MHz		50	60	—	dB
1427.0 ... 1463.0 MHz		40	48	—	dB
1648.0 ... 1698.0 MHz		25	32	—	dB
1710.0 ... 1785.0 MHz		35	40	—	dB
1785.0 ... 1990.0 MHz		40	44	—	dB
1990.0 ... 2280.0 MHz		35	41	—	dB
2280.0 ... 2400.0 MHz		40	51	—	dB
2400.0 ... 2500.0 MHz		45	55	—	dB



	min.	typ. @ 25 °C	max.	
2500.0 ... 2700.0 MHz	35	54	—	dB
2700.0 ... 4400.0 MHz	35	48	—	dB
4400.0 ... 6000.0 MHz	25	40	—	dB
<b>Common mode suppression</b>				
				$S_{cs21}$
10.0 ... 960.0 MHz	41	45	—	dB
1427.0 ... 1463.0 MHz	35	42	—	dB
1710.0 ... 1785.0 MHz	37	42	—	dB
1785.0 ... 1990.0 MHz	37	42	—	dB
1990.0 ... 2280.0 MHz	35	39	—	dB
2280.0 ... 2400.0 MHz	32	38	—	dB
2400.0 ... 2500.0 MHz	30	37	—	dB
2500.0 ... 2700.0 MHz	30	35	—	dB

1) Measured with an aperture of 2 MHz

**Data Sheet**

**Maximum ratings of Filter**

Storage temperature range	$T_{stg}$	-40/+85 <sup>1)</sup>	°C	
DC voltage	$V_{DC}$	5 <sup>2)</sup>	V	
ESD voltage	$V_{ESD}$	50 <sup>3)</sup>	V	Machine Model
		275 <sup>4)</sup>	V	Human Body Model
		600 <sup>5)</sup>	V	Charged Device Model
Input power (5000 h, 50°C)				
@ 915 MHz	$P_{IN}$	23	dBm	1/8 duty cycle
@ 1710 MHz	$P_{IN}$	15	dBm	cw
@ 1453 MHz	$P_{IN}$	15	dBm	cw

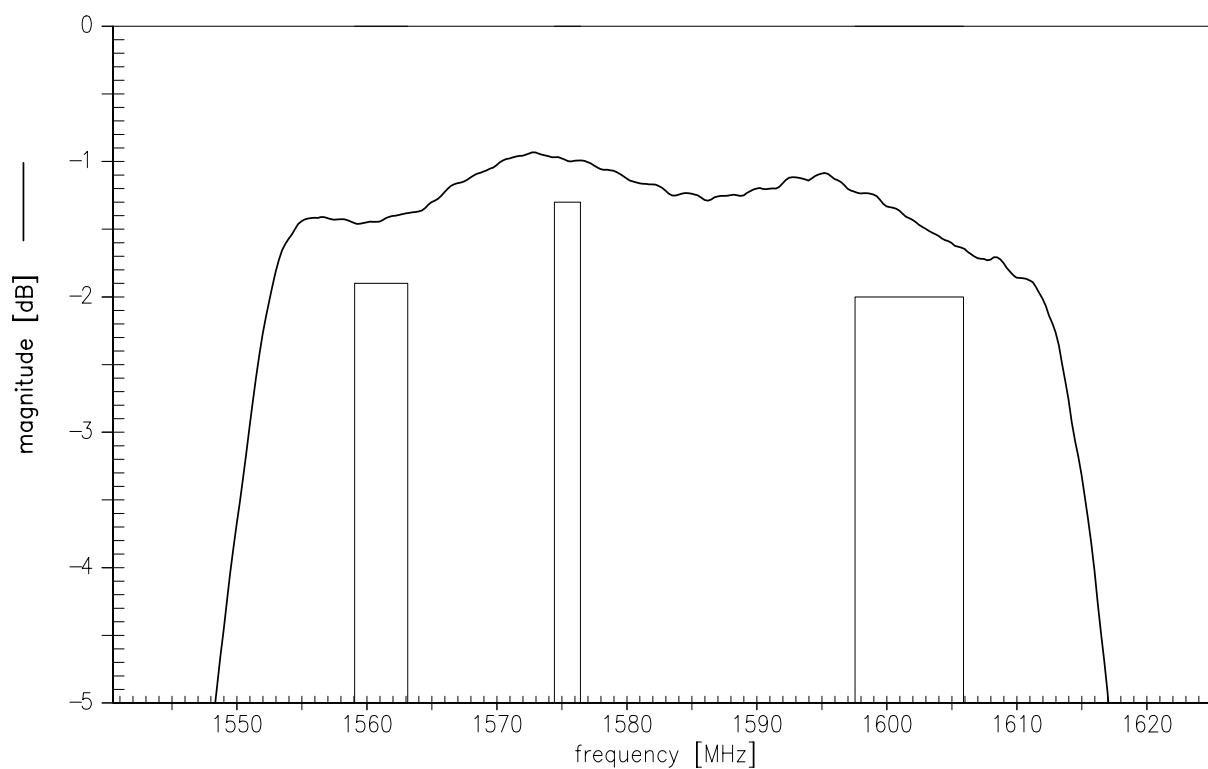
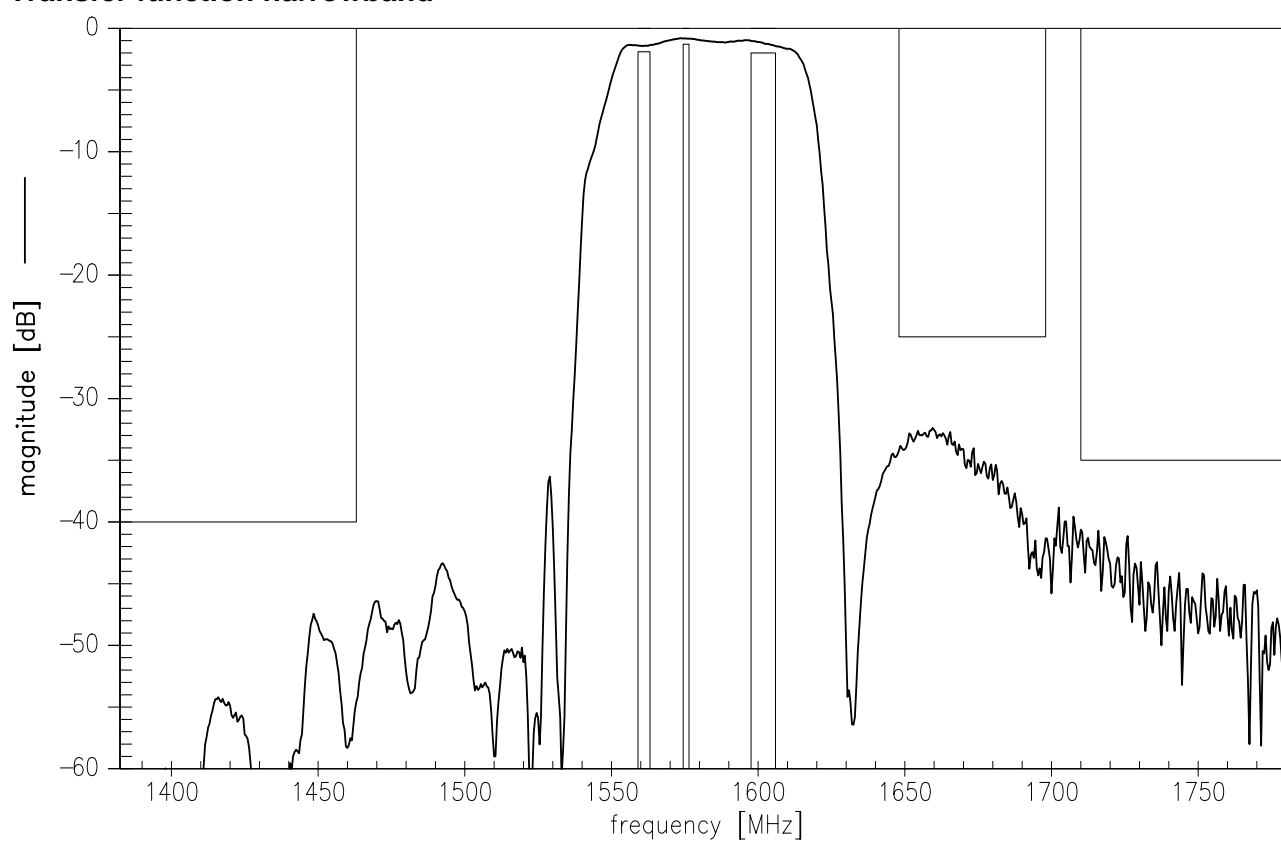
1) extended upperlimit: 168@125°C acc. to IEC 60068-2-2 Bb

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

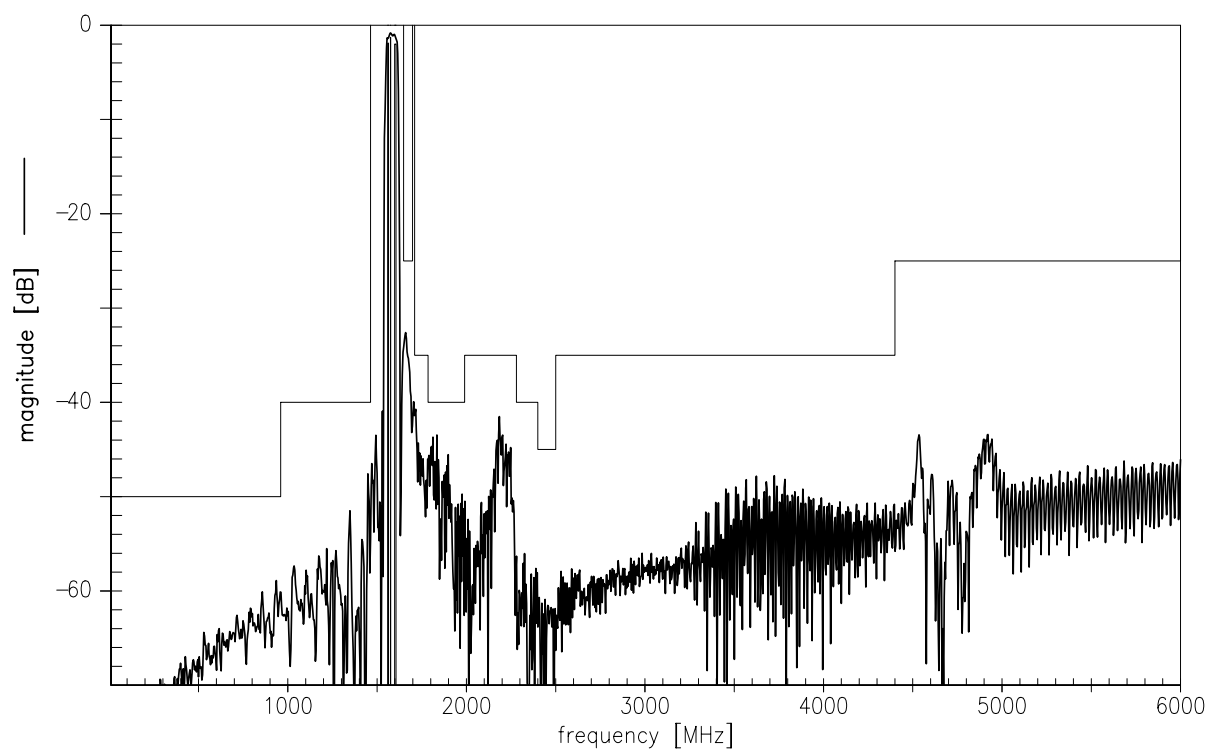
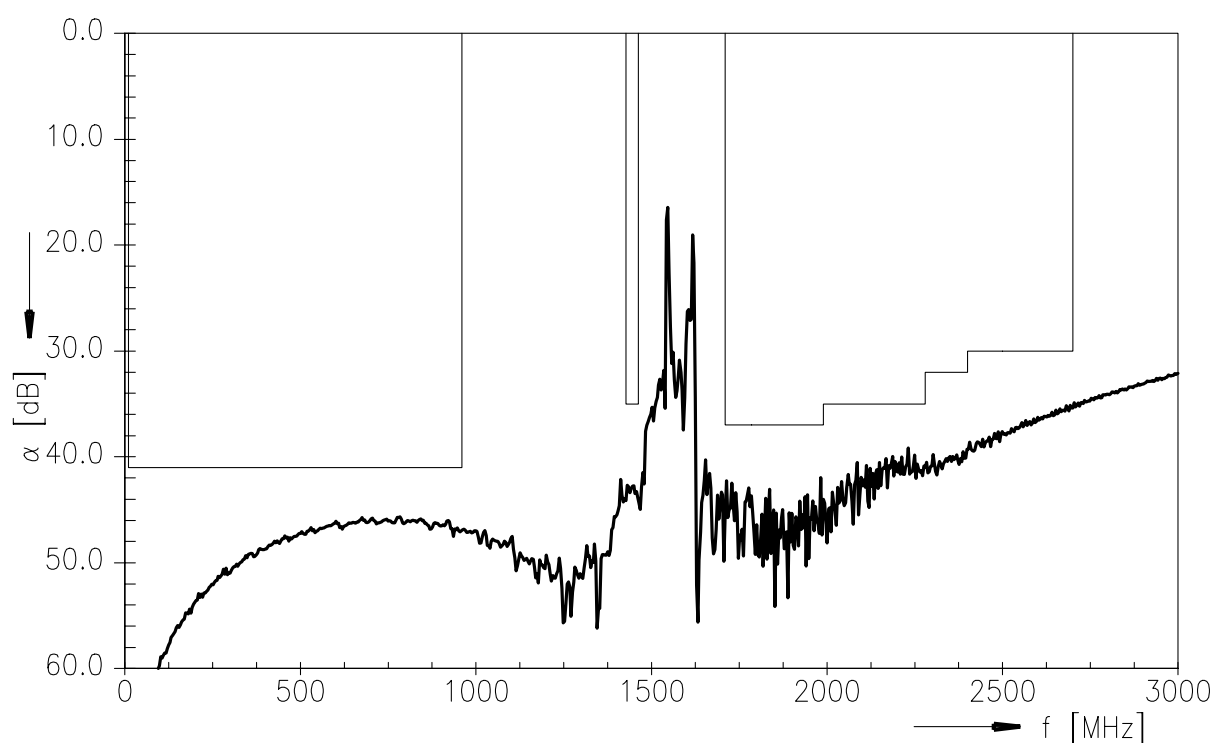
3) acc. to JESD22-A115B (MM - Machine Model), 10 negative & 10 positive pulses

4) acc. to JESD22-A114F (HBM - Human Body Model), 1 negative & 1 positive pulses

5) acc. to JESD22-C101C (CDM - Field Induced Charged Device Model), 3 negative & 3 positive pulses


**Transfer function passband**

**Transfer function narrowband**




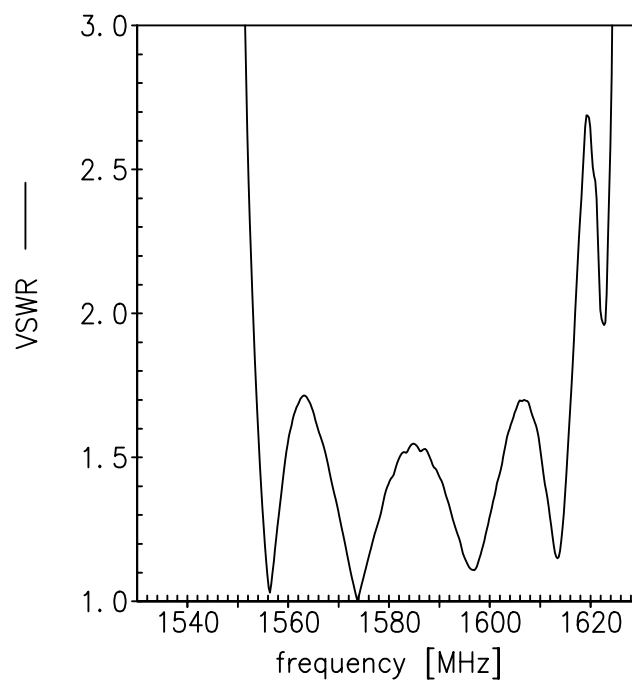
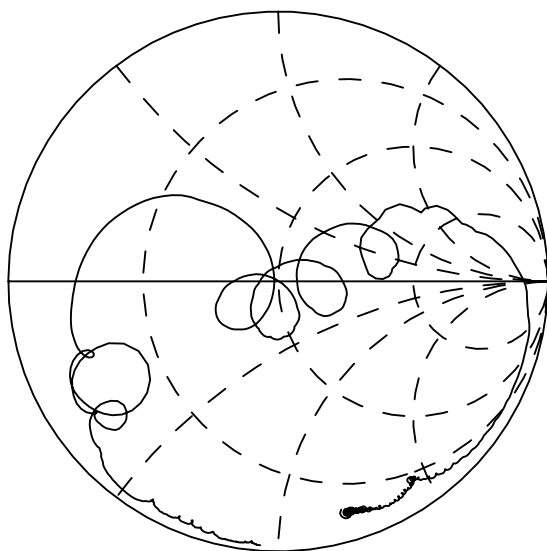

**Transfer function wideband**

**Transfer function (common mode,  $S_{cs21}$ )**


Data Sheet

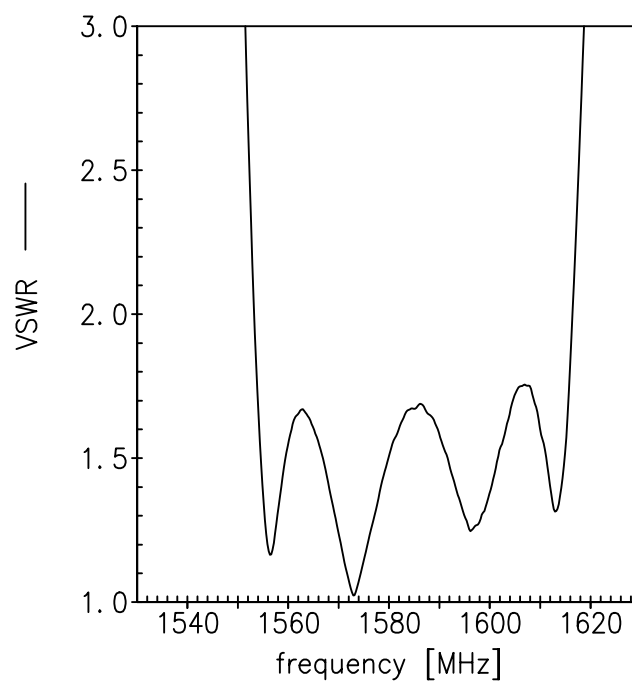
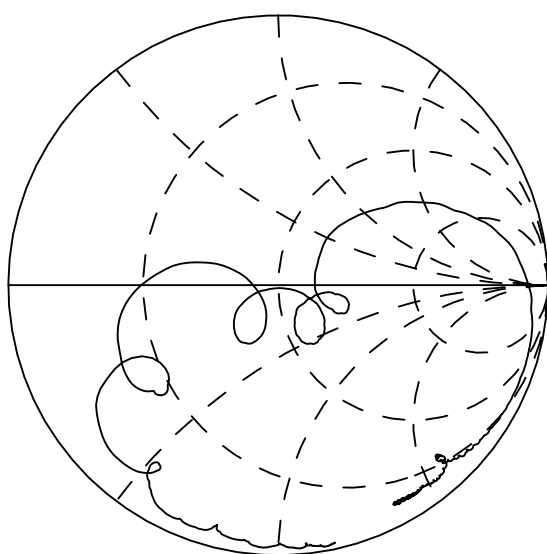


Smith chart / VSWR

$S_{11}$  function



$S_{22}$  function



Data Sheet



References

<b>Type</b>	B8819
<b>Ordering code</b>	B39162B8819P810
<b>Marking and package</b>	C61157-A8-A30
<b>Packaging</b>	F61074-V8255-Z000
<b>Date codes</b>	L_1126
<b>S-parameters</b>	B8819_NB.s3p, B8819_WB.s3p see file header for port/pin assignment table
<b>Soldering profile</b>	S_6001
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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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