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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SAW Components

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SAW Components

Low-Loss Filter for Mobile Communication

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 mm²
- 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

**SAW Components**

**B8828**

**Low-Loss Filter for Mobile Communication** 1582.47 MHz

#### Characteristics of filter

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

#### Center frequency

<table>
<thead>
<tr>
<th>$f_C$</th>
<th>min.</th>
<th>typ. @ 25°C</th>
<th>max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1582.47 MHz</td>
<td>—</td>
<td>—</td>
<td>MHz</td>
</tr>
</tbody>
</table>

#### Maximum insertion attenuation

<table>
<thead>
<tr>
<th>$\alpha_{\text{max}}$</th>
<th>1559.052... 1563.144 MHz</th>
<th>1574.420... 1576.420 MHz</th>
<th>1573.370... 1577.470 MHz</th>
<th>1597.550... 1605.890 MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>—</td>
<td>1.0</td>
<td>1.0</td>
<td>1.3</td>
<td>1.6</td>
</tr>
</tbody>
</table>

#### Input VSWR

<table>
<thead>
<tr>
<th>1559.052... 1563.144 MHz</th>
<th>1574.420... 1576.420 MHz</th>
<th>1573.370... 1577.470 MHz</th>
<th>1597.550... 1605.890 MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>—</td>
<td>1.3</td>
<td>1.3</td>
<td>1.6</td>
</tr>
</tbody>
</table>

#### Output VSWR

<table>
<thead>
<tr>
<th>1559.052... 1563.144 MHz</th>
<th>1574.420... 1576.420 MHz</th>
<th>1573.370... 1577.470 MHz</th>
<th>1597.550... 1605.890 MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>—</td>
<td>1.4</td>
<td>1.4</td>
<td>1.6</td>
</tr>
</tbody>
</table>

#### Group Delay ripple 1) (p-p)

| 1597.550... 1605.890 MHz | 4 | 12 | ns |

#### Attenuation

<table>
<thead>
<tr>
<th>$\alpha$</th>
<th>10.0 ... 960.0 MHz</th>
<th>960.0 ... 1463.0 MHz</th>
<th>1710.0 ... 1785.0 MHz</th>
<th>1785.0 ... 1990.0 MHz</th>
<th>1990.0 ... 2280.0 MHz</th>
<th>2280.0 ... 2400.0 MHz</th>
<th>2400.0 ... 2500.0 MHz</th>
<th>2500.0 ... 2700.0 MHz</th>
<th>2700.0 ... 3000.0 MHz</th>
<th>3000.0 ... 6000.0 MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>46</td>
<td>49</td>
<td>40</td>
<td>45</td>
<td>38</td>
<td>43</td>
<td>39</td>
<td>46</td>
<td>38</td>
<td>46</td>
</tr>
</tbody>
</table>

1) Measured with an aperture of 2 MHz

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*Please read cautions and warnings and important notes at the end of this document.*
SAW Components

Low-Loss Filter for Mobile Communication

Design goal

Maximum ratings

<table>
<thead>
<tr>
<th>Storage temperature range</th>
<th>$T_{stg}$</th>
<th>$-40/+85^1$</th>
<th>$^\circ\text{C}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC voltage</td>
<td>$V_{DC}$</td>
<td>5 $^2$</td>
<td>$\text{V}$</td>
</tr>
<tr>
<td>ESD voltage</td>
<td>$V_{ESD}$</td>
<td>50 $^3$</td>
<td>$\text{V}$</td>
</tr>
<tr>
<td>Input Power (5000h, 50°C)</td>
<td>$P_{IN}$</td>
<td>25</td>
<td>dBm</td>
</tr>
<tr>
<td>777 to 915 MHz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1710 to 1710 MHz</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.

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SAW Components

B8828

Low-Loss Filter for Mobile Communication

1582.47 MHz

Design goal

Transfer function passband

Transfer function narrowband

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SAW Components B8828
Low-Loss Filter for Mobile Communication 1582.47 MHz

Design goal

Transfer function passband

Please read cautions and warnings and important notes at the end of this document.
Design goal

Smith chart / VSWR

$S_{11}$ function

$S_{22}$ function
# SAW Components

<table>
<thead>
<tr>
<th>B8828</th>
</tr>
</thead>
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## Low-Loss Filter for Mobile Communication  
**1582.47 MHz**

### Design goal

#### References

<table>
<thead>
<tr>
<th>Type</th>
<th>B8828</th>
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</thead>
<tbody>
<tr>
<td>Ordering code</td>
<td>B39162B8828P810</td>
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<td>Marking and package</td>
<td>C61157-A8-A30</td>
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<tr>
<td>Packaging</td>
<td>F61074-V8255-Z000</td>
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<tr>
<td>Date codes</td>
<td>L_1126</td>
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| S-parameters | B8828_NB.s2p, B8828_WB.s2p  
see file header for port/pin assignment table |
| Soldering profile | S_6001 |
| RoHS compatible | 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 8th, 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. |
| 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](http://www.tdk.co.jp/tefe02/coil.htm#aname1)  
and Data Library for circuit simulation  
[http://www.tdk.co.jp/etvcl/index.htm](http://www.tdk.co.jp/etvcl/index.htm) |

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