RF solutions for the connected world
Pocket Guide 2021

www.infineon.com/RF
Long battery lifetime

Fast data transmission

Strong signal everywhere
Infineon RF mobile devices for fast, efficient, and reliable wireless communication

RF mobile product portfolio

Antenna Centric Solutions
- Antenna tuners
- Antenna cross switches
- Coupler

RF switches
- Diversity path/Main path
- Low, mid-, and high power
- High linearity
- Multi-purpose
- Fast switching
- Ultra-Wide-Band (UWB)

Low Noise Amplifier (LNA)
- 4G/5G
- GPS
- High gain
- By-pass capability
- Low power consumption

Switch + LNA module
- Low, mid and high-band modules; including frequencies for special regions
- By-pass capability

4G/5G WiFi + Bluetooth GNSS

Smartphone

Smart home

Set Top Box

Hotspot/Modem

Wearables

Smart thermostat & Smart metering
# Antenna centric solutions

## Infineon antenna tuners for best antenna efficiency

<table>
<thead>
<tr>
<th>Part number</th>
<th>Type</th>
<th>$V_{	ext{max}}$ [V]</th>
<th>$R_{	ext{on}}$ [Ω]</th>
<th>$C_{	ext{off}}$ [pF]</th>
<th>Control interface</th>
<th>Frequency (max.) [GHz]</th>
<th>Size [mm$^2$]</th>
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<tbody>
<tr>
<td>BGSA11GN10</td>
<td>2xSPST Series</td>
<td>36</td>
<td>1.0</td>
<td>250</td>
<td>2 GPIO</td>
<td>6.0</td>
<td>1.1 x 1.5</td>
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<tr>
<td>BGSA12GN10</td>
<td>SPST Series</td>
<td>36</td>
<td>1.60</td>
<td>120</td>
<td>2 GPIO</td>
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<td>1.1 x 1.5</td>
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<td>BGSA12VGL8</td>
<td>SPST Series</td>
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<td>0.60</td>
<td>270</td>
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<td>SP4T Series</td>
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<td>1.60</td>
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<td>1.1 x 1.5</td>
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<td>BGSA14GNL10</td>
<td>SP4T Series/shunt</td>
<td>42</td>
<td>1.15</td>
<td>140</td>
<td>3 GPIO</td>
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<td>1.1 x 1.5</td>
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<td>BGSA13ML10</td>
<td>SP4T Series/shunt</td>
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<td>1.15</td>
<td>140</td>
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<td>BGSA145G10</td>
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<td>1.1 x 1.5</td>
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<td>0.80</td>
<td>230</td>
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<td>SP4T Series</td>
<td>72</td>
<td>1.75</td>
<td>110</td>
<td>MIPI 2.1</td>
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<td>1.1 x 1.5</td>
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<tr>
<td>BGSA142MN12</td>
<td>(single VIO)</td>
<td>72</td>
<td>1.75</td>
<td>110</td>
<td>MIPI 2.1</td>
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<tr>
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<td>1.1 x 1.5</td>
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1) Maximum operating RF Voltage with electrical performances guaranteed over the lifetime of the product

## Infineon coupler for RF calibration and power control

<table>
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<tr>
<th>Part number</th>
<th>Type</th>
<th>IL@2.7 GHz [dB]</th>
<th>Max RF Input Power [dBm]</th>
<th>Control interface</th>
<th>Frequency (max.) [GHz]</th>
<th>Size [mm$^2$]</th>
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<tr>
<td>BGC100GN10</td>
<td>Coupler</td>
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<td>GPIO</td>
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## Infineon high/low power cross switches for antenna swapping

<table>
<thead>
<tr>
<th>Part number</th>
<th>Type</th>
<th>Power (max.) [dBm]</th>
<th>Frequency (max.) [GHz]</th>
<th>Size [mm$^2$]</th>
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<tbody>
<tr>
<td>BGSX220G14</td>
<td>DP07</td>
<td>&gt;36</td>
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<td>1.1 x 1.5</td>
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<tr>
<td>BGSX24MU16</td>
<td>DP47</td>
<td>&gt;36</td>
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<td>2.0 x 2.0</td>
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<tr>
<td>BGSX33MU16</td>
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<td>&gt;36</td>
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<td>2.0 x 2.0</td>
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<tr>
<td>BGSX40M12</td>
<td>DP7T</td>
<td>&gt;32</td>
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<tr>
<td>BGSX210MA18</td>
<td>DP10T</td>
<td>&gt;32</td>
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<td>BGSX212MA18</td>
<td>DP12T</td>
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www.infineon.com/antennacentric
## Infineon RF switches with MIPI control interface

<table>
<thead>
<tr>
<th>Part number</th>
<th>Type</th>
<th>Frequency (max.) [GHz]</th>
<th>Power (max.) [dBm]</th>
<th>Size [mm²]</th>
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<tr>
<td>BGS16MA12</td>
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<tr>
<td>BGS18MA12</td>
<td>SP8T</td>
<td>6.0</td>
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<td>1.1 x 1.9</td>
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<td>BGS16MA14</td>
<td>SP8T</td>
<td>3.8</td>
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<td>2.0 x 2.0</td>
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<td>BGS14MA11</td>
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<tr>
<td>BGS15MU14</td>
<td>SP5T</td>
<td>6.0</td>
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## Infineon high power/high linearity RF Switches

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<tr>
<th>Part number</th>
<th>Type</th>
<th>Control interface</th>
<th>Frequency (max.) [GHz]</th>
<th>Power (max.) [dBm]</th>
<th>Size [mm²]</th>
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<tbody>
<tr>
<td>BGS12PL6</td>
<td>SPDT</td>
<td>GPIO</td>
<td>4.0</td>
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<td>BGS12PN10</td>
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<td>GPIO</td>
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<td>1.1 x 1.5</td>
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<tr>
<td>BGS14PN10</td>
<td>SP4T</td>
<td>GPIO</td>
<td>6.0</td>
<td>38</td>
<td>1.1 x 1.5</td>
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<tr>
<td>BGS12PL6</td>
<td>SPDT</td>
<td>GPIO</td>
<td>6.0</td>
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<td>0.7 x 1.1</td>
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<tr>
<td>BGS14MPA9</td>
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## Infineon multi-purpose switches SPDT/SP3T

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<th>Part number</th>
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<th>Frequency (max.) [GHz]</th>
<th>Power (max.) [dBm]</th>
<th>Size [mm²]</th>
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<tbody>
<tr>
<td>BGS12SN6</td>
<td>SPDT</td>
<td>GPIO</td>
<td>6.0</td>
<td>32</td>
<td>0.7 x 1.1</td>
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<tr>
<td>BGS13SN8</td>
<td>SP3T</td>
<td>GPIO</td>
<td>6.0</td>
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<tr>
<td>BGS13S4N9</td>
<td>SP3T</td>
<td>GPIO</td>
<td>3.0</td>
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## Infineon fast speed RF switches <200 ns

<table>
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<th>Part number</th>
<th>Type</th>
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<th>Frequency (max.) [GHz]</th>
<th>Power (max.) [dBm]</th>
<th>Size [mm²]</th>
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<tbody>
<tr>
<td>BGS12WN6</td>
<td>SPDT</td>
<td>GPIO</td>
<td>9.0</td>
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<td>BGS14WMA9</td>
<td>SP4T</td>
<td>MIPI</td>
<td>3.0</td>
<td>32</td>
<td>1.1 x 1.1</td>
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</table>
## Low Noise Amplifier (LNA)

**4G/5G LNA to improve system sensitivity**

<table>
<thead>
<tr>
<th>Part number</th>
<th>Type</th>
<th>Gain ²</th>
<th>NF ²</th>
<th>Frequency</th>
<th>Size</th>
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<tbody>
<tr>
<td>BGA718M6</td>
<td>With bypass</td>
<td>13.6</td>
<td>0.75</td>
<td>716 – 960</td>
<td>1.1 x 0.7</td>
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<tr>
<td>BGA718N6</td>
<td>With bypass</td>
<td>15.7</td>
<td>0.8</td>
<td>1805 – 2690</td>
<td>1.1 x 0.7</td>
</tr>
<tr>
<td>BGA818M6</td>
<td>With bypass</td>
<td>18.5</td>
<td>0.7</td>
<td>600 – 1000</td>
<td>1.1 x 0.7</td>
</tr>
<tr>
<td>BGA818N6</td>
<td>With bypass</td>
<td>19.3</td>
<td>0.65</td>
<td>1805 – 2200</td>
<td>1.1 x 0.7</td>
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<tr>
<td>BGA918M6</td>
<td>With bypass</td>
<td>18.1</td>
<td>0.7</td>
<td>2300 – 2690</td>
<td>1.1 x 0.7</td>
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<tr>
<td>BGAMA10D</td>
<td>Gainstep</td>
<td>18.1</td>
<td>1.1</td>
<td>2300 – 2690</td>
<td>1.1 x 1.5</td>
</tr>
<tr>
<td>BGAMA10D</td>
<td>Gainstep</td>
<td>18.0</td>
<td>1.3</td>
<td>3400 – 3800</td>
<td>1.1 x 1.5</td>
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<tr>
<td>BGAMA10D</td>
<td>Gainstep</td>
<td>20.5</td>
<td>1.7</td>
<td>5150 – 5925</td>
<td>1.1 x 1.5</td>
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<tr>
<td>BGAMA10D</td>
<td>Gainstep</td>
<td>21.0</td>
<td>0.75</td>
<td>3300 – 4200</td>
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<td>BGAMA10D</td>
<td>Gainstep</td>
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<td>0.9</td>
<td>4400 – 5500</td>
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### Infineon GNSS LNA

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<th>Type</th>
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<th>NF ²</th>
<th>I_{DC}</th>
<th>Size</th>
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<tbody>
<tr>
<td>BGA824N6</td>
<td>Low power</td>
<td>19.6</td>
<td>0.65</td>
<td>2.5</td>
<td>0.7 x 1.1</td>
</tr>
<tr>
<td>BGA824N6</td>
<td>High linearity</td>
<td>17.0</td>
<td>0.65</td>
<td>4.0</td>
<td>0.7 x 1.1</td>
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<tr>
<td>BGA123L4</td>
<td>Ultra low power</td>
<td>18.3</td>
<td>0.75</td>
<td>1.1</td>
<td>0.7 x 0.7</td>
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<tr>
<td>BGA123L5</td>
<td>High linearity</td>
<td>18.0</td>
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<tr>
<td>BGA123N6</td>
<td>Ultra low power</td>
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<td>BGA125N6</td>
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<td>19.7</td>
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### Switch + LNA modules

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<th>Module type</th>
<th>Gain [dB]</th>
<th>NF [dB]</th>
<th>Frequency [GHz]</th>
<th>Size [mm²]</th>
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<tbody>
<tr>
<td>BGM12LBA9</td>
<td>GPIO</td>
<td>SPDT + Bypass</td>
<td>13.3</td>
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<tr>
<td>BGM13HBA9</td>
<td>GPIO</td>
<td>SP3T + Bypass</td>
<td>15.0</td>
<td>0.85</td>
<td>1.8–2.7</td>
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<tr>
<td>BGM14HBA12</td>
<td>MIPI</td>
<td>SP4T + Bypass</td>
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<td>1.8–2.7</td>
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<tr>
<td>BGM15LA12</td>
<td>MIPI</td>
<td>SPST</td>
<td>27.5</td>
<td>0.2</td>
<td>0.7–1.0</td>
<td>1.1 x 1.9</td>
</tr>
</tbody>
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1) LNA with two gain modes (high-gain/low-gain); 2) Values in high-gain (HG) 3) Gain state: G0

1) LNA with two gain modes (high-gain/low-gain); 2) Values in high-gain (HG) 3) Gain state: G0
Support material

More detailed information on RF devices

- www.infineon.com/mobile
- www.infineon.com/mobiledevices

Datasheets/Application notes/Technical documents

- www.infineon.com/rf

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- www.infineon.com/rfcomentlibraries

Evaluation boards

- www.infineon.com/rfevalboards
Package information

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<thead>
<tr>
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<td>ATSLP-10-50/-51/-1/-3</td>
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<td>ATSLP-11</td>
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<td>ATSLP-12</td>
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<td>ATSLP-12-13</td>
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<td>ATSLP-14-7/-10</td>
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› India ....................... 000 800 4402 951 (English)
› USA ....................... 1-866 951 9519 (English/German)
› Other countries ... 00* 800 951 951 951 (English/German)
› Direct access ........ +49 89 234-0 (interconnection fee, German/English)

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