

Innovative semiconductor solutions
for energy efficiency, mobility
and security

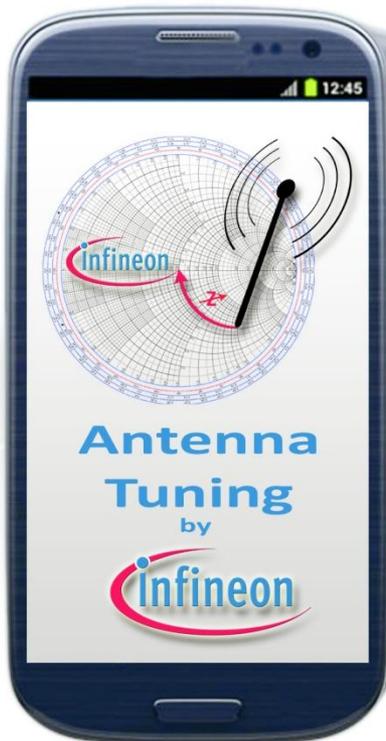


Antenna Tuning Solutions
for Smartphones & Tablets

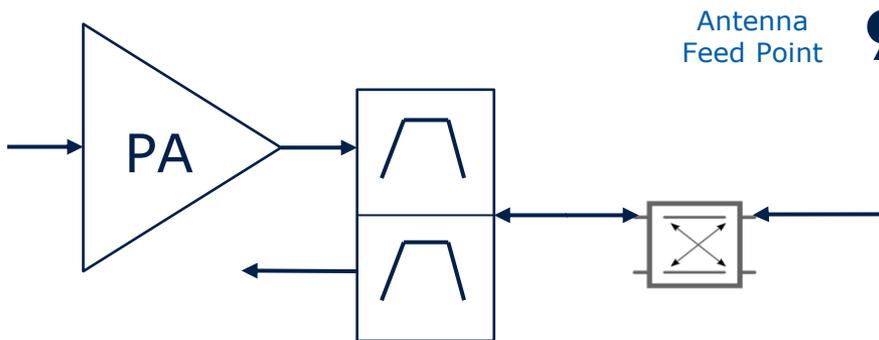
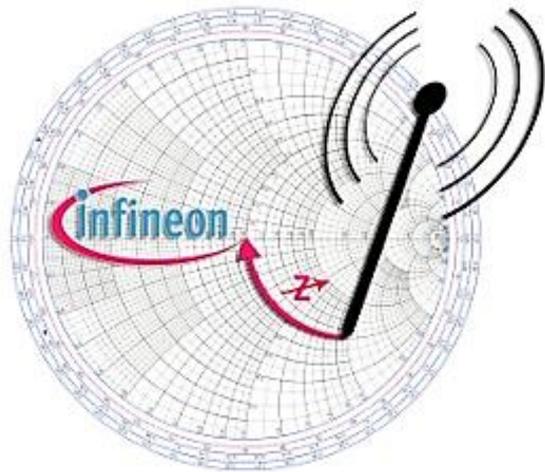


Key Assets of Antenna Tuning

- **Increased number of bands in Smartphones call for band specific optimized antenna matching**
 - **Improves TIS** (=Total Isotropic Sensitivity)
 - Rx insensitivity to VSWR
 - **Improves TRP** (=Total Radiated Power)
 - Tx insensitivity to VSWR
 - **Higher Flexibility in Antenna Form Factors**
 - **Less system current consumption (PA)** through optimized matching



Principles of Antenna Aperture Tuning Smartphones & Tablets



Tuning Element

Antenna Aperture Tuning

Example

Purpose

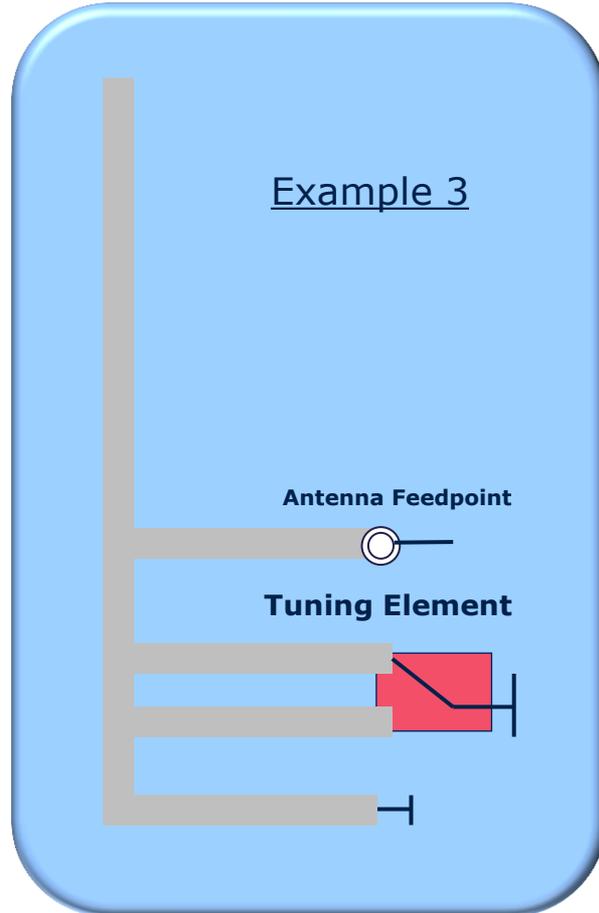
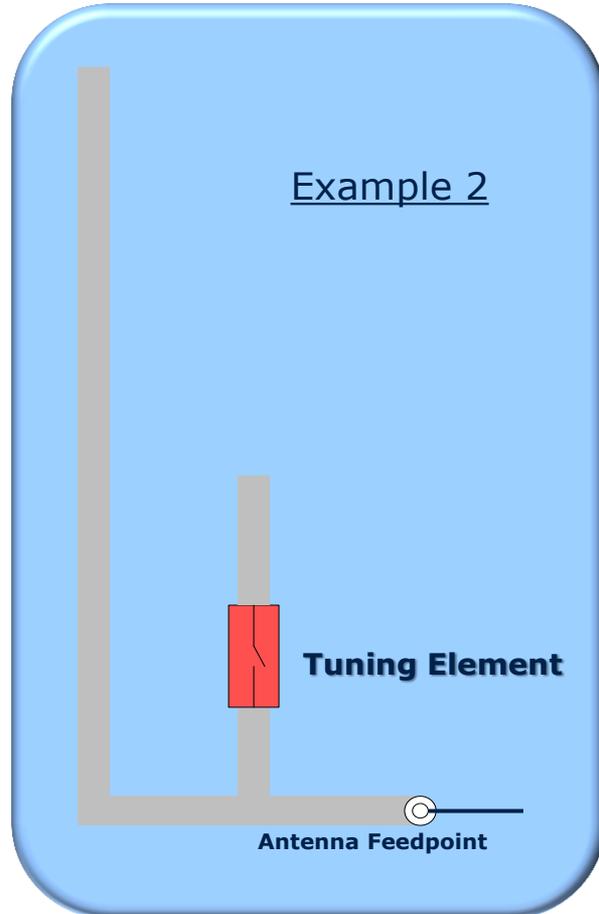
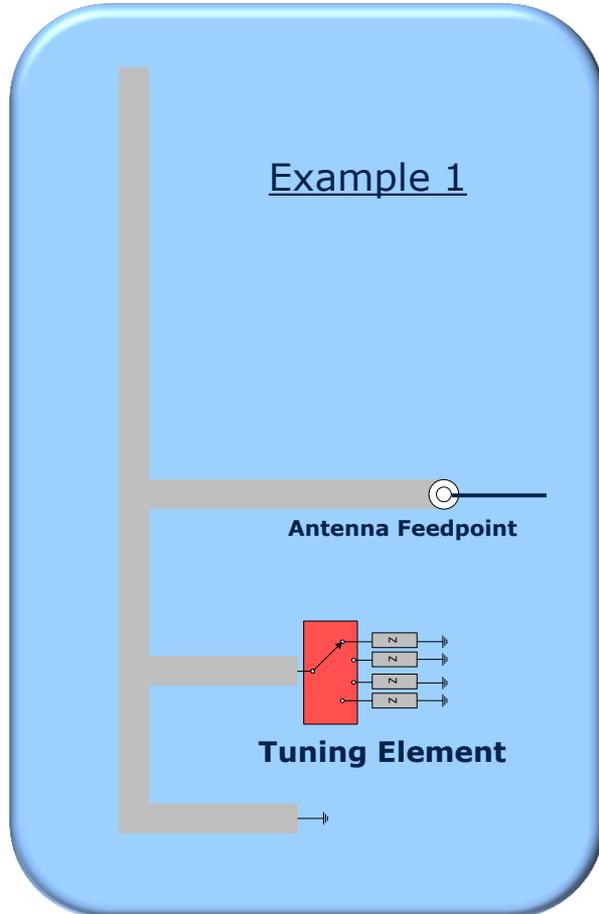
- Optimizes Antenna Radiation Efficiency
- Optimizes Antenna Radiation Pattern

Antenna Aperture Tuning

Smartphone & Tablets

Typical **PIFA** antennas

Application examples are not limited to below configurations



High Power + High voltage **RF Switches**

Antenna Aperture Tuning Switches

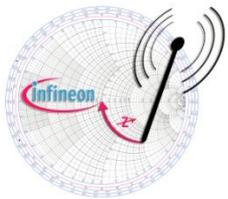
RF CMOS Technology



	<i>Target data</i>	<i>Target data</i>	<i>Target data</i>
	GPIO SPDT BGSA12GN10	GPIO SP3T BGSA13GN10	GPIO SP4T BGSA14GN10
Ron [Ω]	1.6Ω	RF1 0.8Ω RF2 1.3Ω RF3 1.6Ω	1.6Ω
Coff [fF]	120 fF	RF1 240 fF RF2 145 fF RF3 120 fF	120 fF
Effective Ron x Coff	<200fs	<200fs	<200fs
H2 @ Pout=25dBm	-105dBc	-105dBc	-105dBc
H3 @ Pout=25dBm	-115dBc	-115dBc	-115dBc
Packaging	Plastic 1.5 x 1.1mm²		



Highest Flexibility - ONE SIZE FITS ALL

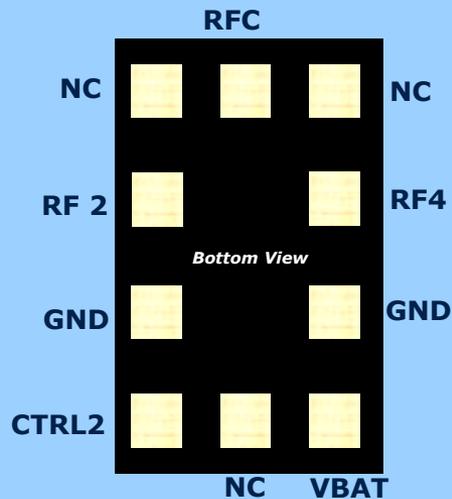


Same Footprint & Pinout GPIO Controlled Antenna Tuning Switches



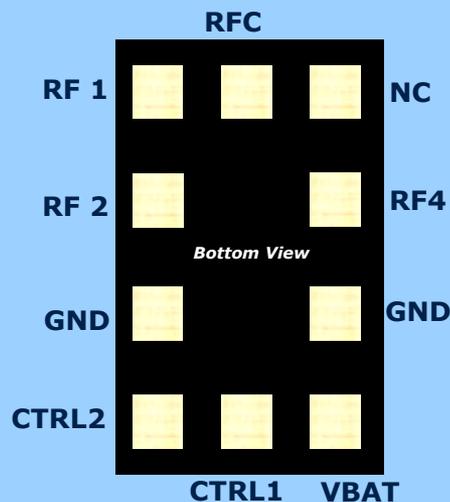
SPDT

BGSA12GN10



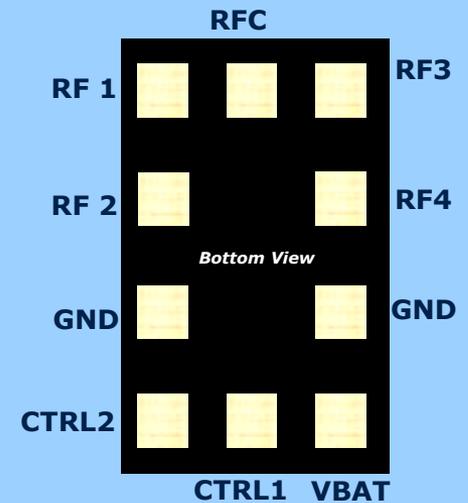
SP3T

BGSA13GN10



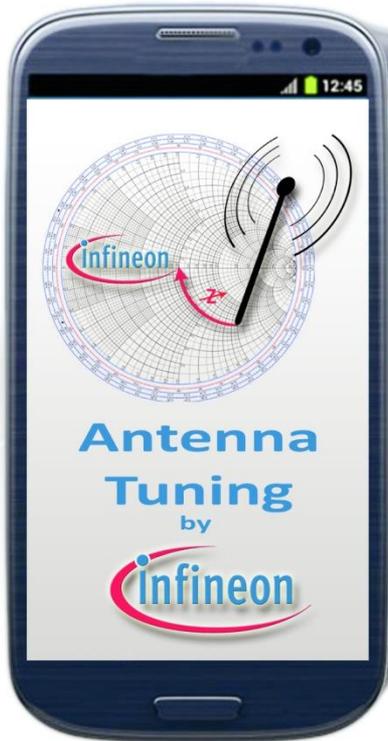
SP4T

BGSA14GN10



Full Compatibility

Superior Quality and Economy of Scale with **RF CMOS** in **Plastic Package**

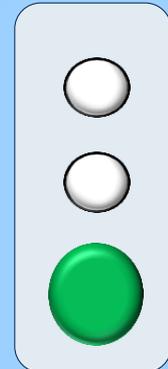


Quality Level

Drop tests

Final electrical test

**High volume CMOS
In Plastic Package**





ENERGY EFFICIENCY MOBILITY SECURITY

Innovative semiconductor solutions for energy efficiency, mobility and security.

