

# Tiniest Matched Baluns for WiFi, Bluetooth & Sub-GHz



## Simplify RF complexity

The tremendous growth of Internet of Things is leading to the development of increasingly smaller wearables that require easy-to-implement electronic components in environments with higher densities.

Tuned for high RF integration, ST's RF IPD baluns provide improved system performances while simplifying RFIC to antenna matching network complexity.

In addition, designed with integrated harmonic filters, they make it easy to comply with major EMC regulations: CCC, FCC, ETSI, ARIB.

### KEY BENEFITS

#### Integration

- Integrated matched balun with harmonic filter
- Package size down to 0.8 mm<sup>2</sup> compared to 60 mm<sup>2</sup> for discrete RF solution
- Less than 560 µm height after reflow

#### Performance

- Improve RF performance and save battery life
- Low insertion loss
- Low amplitude imbalance
- Low phase imbalance

#### Simplicity

- Replaces twisty discrete SMD matching network
- Single-chip solution

### KEY APPLICATIONS

- Alarm
- Assets tracking
- Beacons
- Drones
- Fitness devices
- Smartbands
- Smart speakers
- Smart watches
- Thermostats
- Wireless toys

## BALUN AND RF FILTER PORTFOLIO

RF IC supplier	RF IC name	Matched Balun	Frequency (MHz)	Integrated filter	Size	Package
STMicroelectronics	SPIRIT 1	<b>BALF-SPI-01D3</b>	868/915	Yes	1.4 mm x 2.0 mm	CSP
		<b>BALF-SPI-02D3</b>	433	Yes	1.4 mm x 2.0 mm	CSP
	S2-LP	<b>BALF-SPI2-01D3</b>	868/915	Yes	2.1mm x 1.55 mm	CSP
		<b>BALF-SPI2-02D3</b>	433	Yes	2.1mm x 1.55 mm	CSP
	BlueNRG-MS (QFP32 and CSP34)	<b>BALF-NRG-01D3</b>	2400	Yes	1.4 mm x 0.85 mm	CSP
	BlueNRG-1 (QFP32 and CSP34) BlueNRG-2 (QFP32 and CSP34)	<b>BALF-NRG-02D3</b>	2400	Yes	1.4 mm x 0.85 mm	CSP
		<b>BALF-NRG-02J5 (Height &lt;350µm)</b>	2400	Yes	1.4 mm x 0.85 mm	CSP and Thin CSP
	ATWINC1500A	<b>BAL-WILC10-01D3</b>	2400	No	0.95 mm x 0.95 mm	CSP
Atmel	ATSAMR21E8	<b>BALF-ATM-01E3</b>	2400	Yes	2.00 mm x 1.25 mm	Bumpless CSP (LTCC assy-like)
	CC1101	<b>BAL-CC1101-01D3</b>	868/915	No	2.0 mm x 1.0 mm	CSP
Texas Instrument	CC1120/ CC1125	<b>BALF-112X-01D3</b>	868/915	Yes	1.95 mm x 1.87 mm	CSP
		<b>BALF-112X-02D3</b>	433	Yes	1.95 mm x 1.87 mm	CSP
	CC2540/43/45 , CC2530/31/33	<b>BAL-CC25-01D3</b>	2400	Yes	0.9 mm x 0.9 mm	CSP
	CC2541	<b>BALF-CC25-02D3</b>	2400	Yes	0.9 mm x 0.9 mm	CSP
	CC2610/2620/2630/ 2640/2650	<b>BALF-CC26-05D3</b>	2400	Yes	0.9 mm x 0.9 mm	CSP
Nordic Semi	nRF51822-QFAACx/QFABAx nRF51422-QFAACx	<b>BAL-NRF01D3</b>	2400	Yes	1.5 mm x 1.0 mm	CSP
	nRF51822-CTAx	<b>BALF-NRF01J5 (Height &lt;350µm)</b>	2400	Yes	1.4 mm x 0.85 mm (height < 350µm)	Thin CSP
	nRF51822-CxAx/nRF51422-CxAx	<b>BAL-NRF02D3</b>	2400	Yes	1.4 mm x 0.9 mm	CSP
	nRF51822-QFAAHx/nRF51822-QFACAx nRF51422-QFAAFx/nRF51422-QFACAx	<b>BALF-NRF01E3</b>	2400	Yes	1.5 mm x 1.0 mm	Bumpless CSP (LTCC assy-like)
	nRF51822-QFAAGx/nRF51822-QFABBx nRF51422-QFAAEx/nRF51422-QFABAx	<b>BALF-NRF01D3</b>	2400	Yes	1.5 mm x 1.0 mm	CSP

RF IC supplier	RF IC name	Matched Low Pass Filter	Frequency (MHz)	Integrated filter	Size	Package
STMicroelectronics	STM32WB55Cx BLE 5.0	<b>MLPF-WB55-01E3(*)</b>	2400-2500	Yes	1.5 mm x 1.0 mm	Bumpless CSP (LTCC assy-like)

RF IC Supplier	Ultra Wide Band	Balun 50/100 Ω	Frequency (GHz)	Integrated filter	Size	Package
Ultra Wide Band	Recommended for DW1000 from DecaWave	<b>BAL-UWB-01E3(*)</b>	3-8	No	1.8 mm x 1.25 mm	Bumpless CSP (LTCC assy-like)

\*available in Q1 2019

The baluns of STMicroelectronics integrate 3 functions :

- Impedance matching
- 50 Ω nominal input impedance
- Harmonic filter

