

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

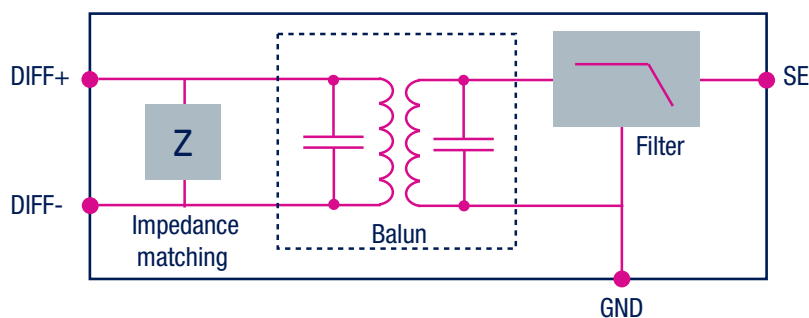
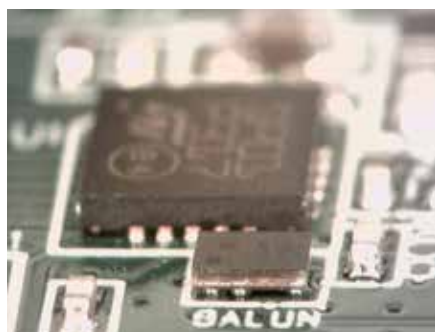
RF IC supplier	RF IC name	Matched Low Pass Filter	Frequency (MHz)	Integrated filter	Size	Package
STMicroelectronics	STM32WB55Cx BLE 5.0	MLPF-WB55-01E3(*)	2400-2500	Yes	1.5 mm x 1.0 mm	Bumpless CSP (LTCC assy-like)

RF IC Supplier	Ultra Wide Band	Balun 50/100 Ω	Frequency (GHz)	Integrated filter	Size	Package
Ultra Wide Band	Recommended for DW1000 from DecaWave	BAL-UWB-01E3(*)	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



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