

RF MATCHED FILTERS

Matched filters for wireless Bluetooth MCUs and transceivers



RF filter companion chips for STM32WB and BlueNRG-LP/LPS wireless MCUs with integrated harmonics filter and impedance matching network

Based on ST's IPD technology on non-conductive glass substrate, our MLPF series of RF filters with an integrated harmonics filter and impedance matching network are specifically designed as a companion chip for STM32WB and BLUENRG-LP/-LPS wireless chips.

Thanks to a $50\ \Omega$ nominal impedance on the antenna side, a deep rejection harmonic filter and low insertion losses, these high-quality RF passive components on glass substrate optimize the MCUs' RF performance while offering a small footprint and low thickness.

KEY FEATURES & BENEFITS

- Optimum impedance matched for STM32-WB and BLUENRG-LP/-LPS wireless chips
- Simplifies impedance matching and filtering
- Low temperature variation and 85% less PCB space compared with discretes
- Cost effectiveness thanks to reduced RF BOM

KEY APPLICATIONS

- Diagnostics, e-metering, and industrial applications
- Smart home devices, RF tags and finders, toys and gaming
- Wearables, medical equipment, asset tracking, e-payment, and smart cards
- Standards supported: Bluetooth 5, OpenThread, Zigbee and IEEE 802.15.4

Matching network and harmonics filter

Combining a matching network and harmonics filter in a low profile package customized for STM32WB and BLUENRG-LP/-LPS wireless chips, our MLPF filters are single-component solutions that offers low dispersion over temperature and a small footprint.

Design issues

For 2.4 GHz wireless applications, the path between the antenna and the pins of the RF transceiver must feature an optimized matched impedance to guarantee the best receive sensitivity and transmit output power levels. Moreover, this RF path must also limit harmonic emissions in compliance with regulatory agencies including FCC, ETSI and ARIB.

Other issues when using discrete components is that the resulting network is very sensitive to temperature variations. The rework is often needed if one component reference is changed for another passive supplier. Moreover, the discrete network occupies a large PCB space.

Available Devices

Companion chip for...	STM32/RF IC Package Package	Part Number	Package
BLUENRG-3x5Vx, BLUENRG-3x5Ax, BLUENRG-332xx, BLUENRG-3x5Mx	QFN and CSP	MLPF-NRG-01D3	CSP 6 bumps
STM32WB55Cx, STM32WB55Rx, STM32WB35xxx, STM32WB50xxx and STM32WB30xxx, STM32WB15x	QFN	MLPF-WB-01D3	CSP 6 bumps
STM32WB55Cx, STM32WB55Rx, STM32WB35xxx, STM32WB50xxx and STM32WB30xxx, STM32WB15x	QFN	MLPF-WB-01E3	CSP 6 Pads
STM32WB55Cx, STM32WB55Rx, STM32WB35xxx, STM32WB50xxx and STM32WB30xxx, STM32WB15x	QFN	MLPF-WB55-01E3	CSP 6 Pads
STM32WB5x and STM32WB1x	BGA	MLPF-WB-02D3	CSP 6 bumps
STM32WB5x and STM32WB1x	BGA	MLPF-WB55-02E3	CSP 6 Pads

ST's solution

ST's IPD technology integrates high-quality RF passive components on a single glass substrate. This ensures an ultra-small footprint providing optimum impedance to guarantee the best RF performance even under temperature variations, removing the hassle for the RF designer to manage all these constraints. With the MLPF series, ST is the only semiconductor supplier to offer an integrated RF filter and impedance matching with fully optimized performance for our STM32WB and BLUENRG-LP/-LPS chips.



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