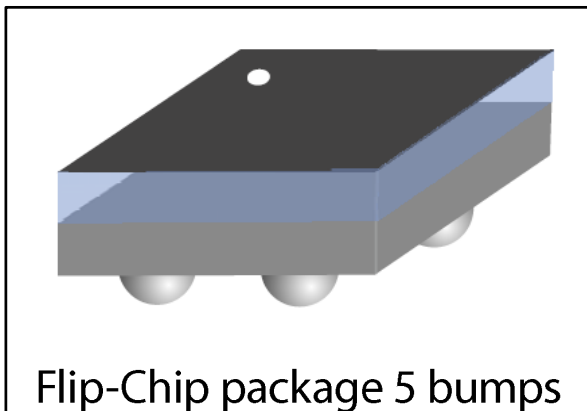


50  $\Omega$  nominal input / conjugate match balun CC2610, CC2620, CC2630, CC2640, CC2650 MHz, with integrated harmonic filter

Datasheet - production data



## Features

- 2.45 GHz balun with integrated matching network
- Matching optimized for CC26 series 5x5 external differential
- Low insertion loss
- Low amplitude imbalance
- Low phase imbalance
- Coated Flip-Chip on glass
- Small footprint < 1.5 mm<sup>2</sup>

## Benefits

- Very low profile
- High RF performance
- PCB space saving versus discrete solution
- RF BOM and size reduction
- Efficient manufacturability

## Description

STMicroelectronics' BALF-CC26-05D3 is an ultra-miniature balun, integrating both matching network and harmonics filter.

Matching impedance has been customized for the TI CC26xx series 5x5 SimpleLink™ multistandard wireless MCU.

The device uses STMicroelectronics' IPD technology on a non-conductive glass substrate, which optimizes RF performance.

Figure 1: Pin configuration

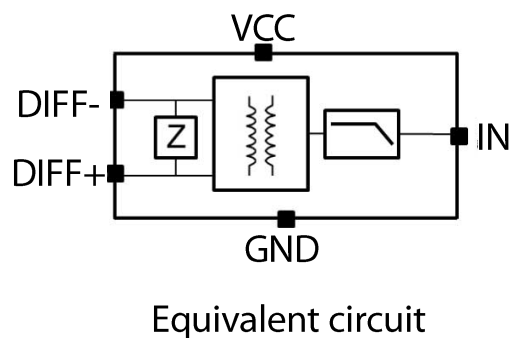
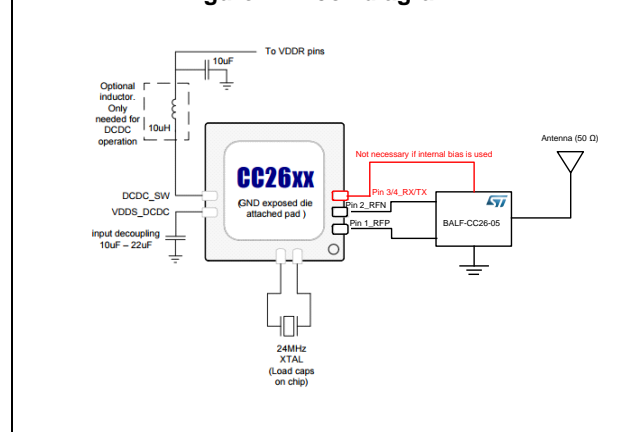


Figure 2: Block diagram



# 1 Characteristics

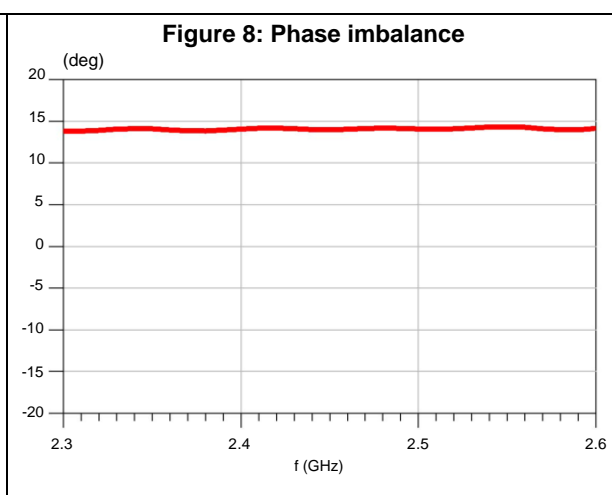
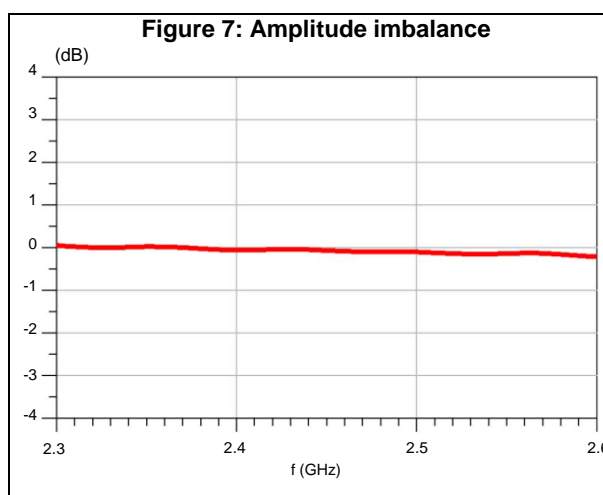
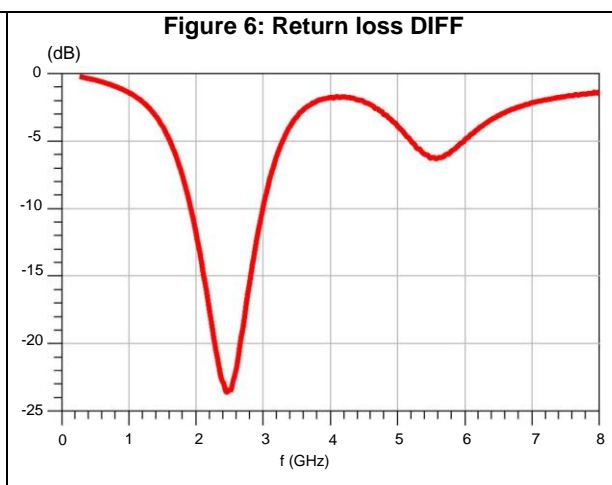
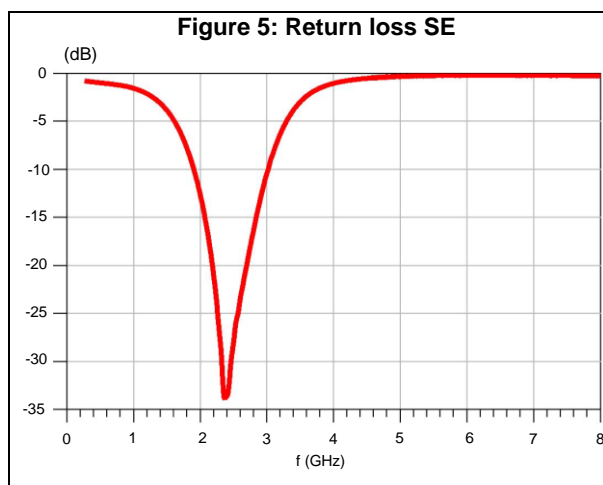
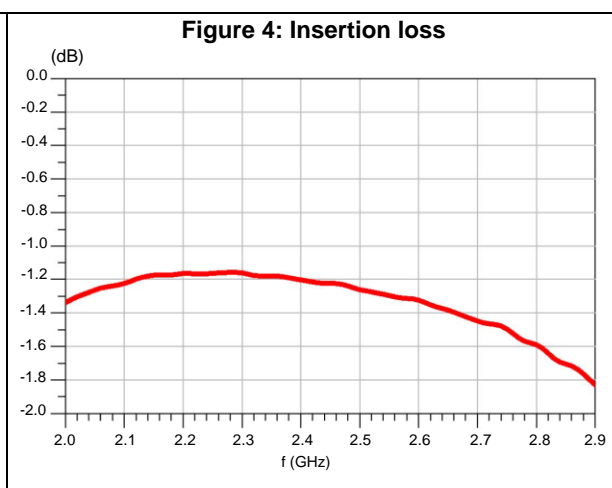
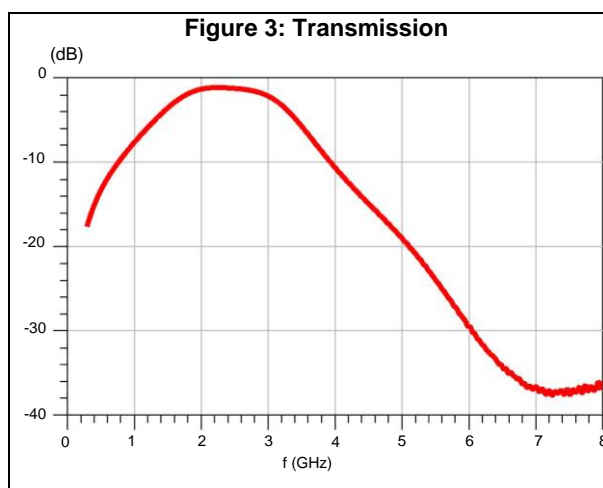
**Table 1: Absolute maximum ratings (limiting values)**

Symbol	Parameter	Value	Unit
P <sub>IN</sub>	Input power RFIN	20	dBm
V <sub>ESD</sub>	ESD ratings MIL STD883C (HBM: C = 100 pF, R = 1.5 Ω, air discharge)	900	V
	ESD ratings machine model (MM: C = 200 pF, R = 25 W, L = 500 nH)	100	
T <sub>OP</sub>	Operating temperature	-40 to +105	°C

**Table 2: Electrical characteristics (T<sub>amb</sub> = 25 °C)**

Symbol	Parameter	Value			Unit
		Min.	Typ.	Max.	
Z <sub>OUT</sub>	Nominal differential output impedance	Match to 5x5 CC26xx series			Ω
Z <sub>IN</sub>	Nominal input impedance		50		Ω
f	Frequency range (bandwidth)	2400		2500	MHz
IL	Insertion loss in bandwidth		1.2	1.5	dB
RL SE	Single Ended Return loss in bandwidth		-27	-18	dB
RL DIFF	Differential Return loss in bandwidth		-23	-20	dB
Phase_imbal	Phase imbalance	-16		16	°
Ampl_imbal	Amplitude imbalance	-0.3		0.3	dB
H2	Second harmonic rejection		-18	-17	
H3	Third harmonic rejection		-37	-35	

## 1.2 RF measurement



## 2 Package information

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: [www.st.com](http://www.st.com). ECOPACK® is an ST trademark.

### 2.1 Flip-Chip CSPG 0.4 package information

Figure 9: Flip-Chip CSPG 0.4 package outline

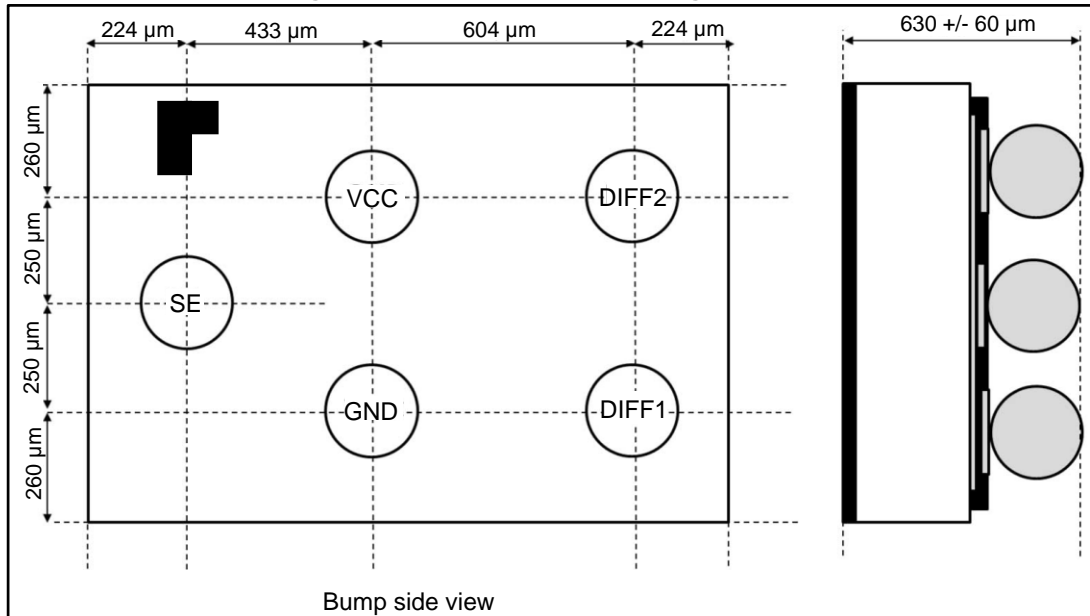


Figure 10: PCB layout recommendation

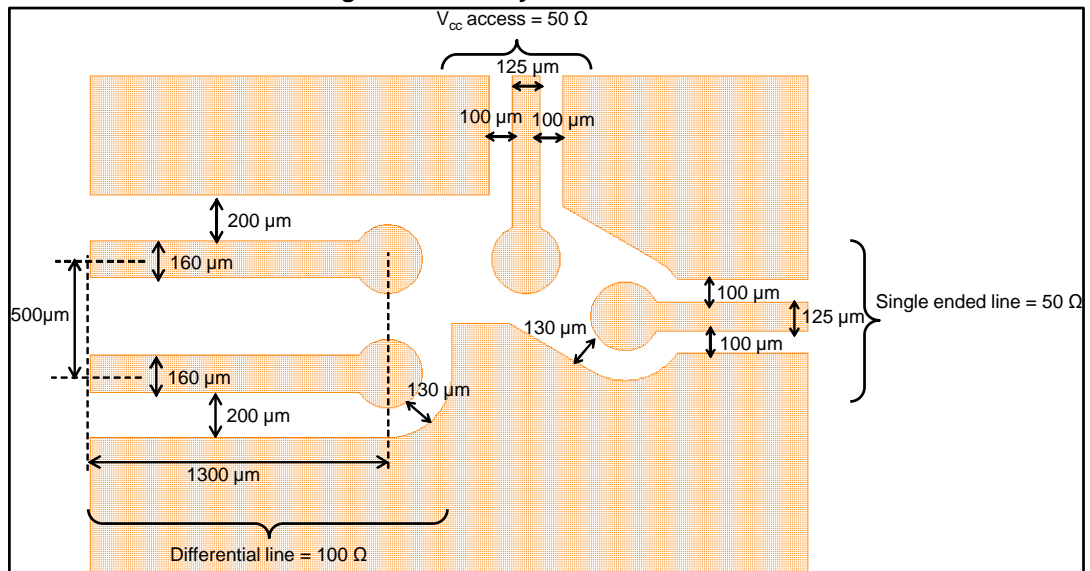


Figure 11: Footprint - non solder mask defined

Copper pad diameter:  
220µm recommended  
180µm minimum  
260µm maximum

Solder mask opening:  
320µm recommended  
300µm minimum  
340µm maximum

Solder stencil opening:  
220µm recommended

Line to connect copper pad on solder mask opening  
should be smaller than copper pad diameter

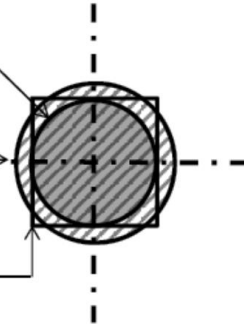
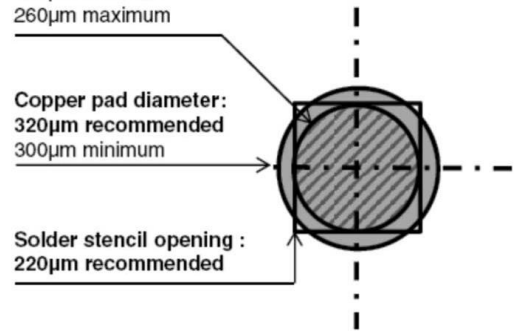


Figure 12: Footprint - solder mask defined

Solder mask opening:  
220µm recommended  
180µm minimum  
260µm maximum

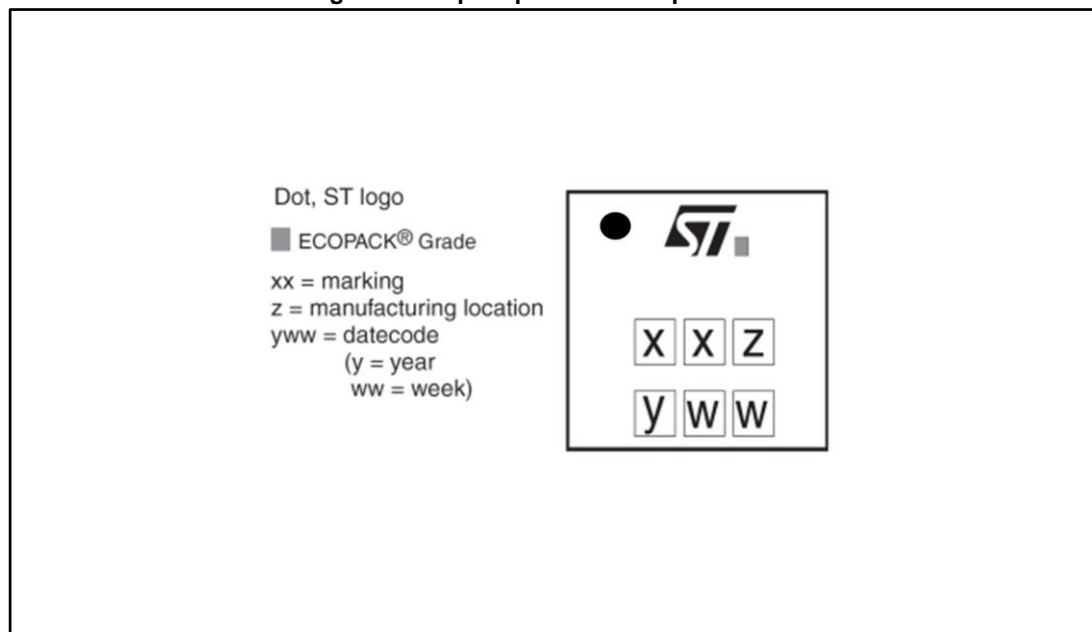
Copper pad diameter:  
320µm recommended  
300µm minimum

Solder stencil opening :  
220µm recommended



## 2.2 Flip-chip CSPG 0.4 packing information

Figure 13: Flip-chip CSPG 0.4 tape outline



Technical drawing of a 4-hole type 1 cable reel. The drawing shows a side view of the reel with four circular holes and three rectangular raised cross-bars. Dimensions are given in mm.

Key dimensions and features:

- Overall width:  $8.0 \pm 0.30 - 0.10$
- Distance between hole centers:  $4.0 \pm 0.10$
- Hole diameter:  $\varnothing 1.5 \pm 0.10$
- Distance from left edge to first hole center:  $2.0 \pm 0.05$
- Distance from last hole center to right edge:  $1.1 \pm 0.05$
- Distance from left edge to first cross-bar center:  $0.22 \pm 0.02$
- Distance from last cross-bar center to right edge:  $0.71 \pm 0.05$
- Distance between cross-bar centers:  $4.0 \pm 0.10$
- Height of reel:  $1.75 \pm 0.10$
- Height of raised cross-bar:  $0.3$
- Feature:  $0.3$  raised cross-bar

All dimensions are typical values in mm

User direction of unreeling →

### 3 Ordering information

Table 3: Ordering information

Order code	Marking	Package	Weight	Base qty.	Delivery mode
BALF-CC26-05D3	TH	Flip-Chip CSPG 0.4	1.724 mg	5000	Tape and reel (7")

### 4 Revision history

Table 4: Document revision history

Date	Revision	Changes
27-Jul-2016	1	First issue.

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