1 Characteristics

Table 1. Absolute maximum ratings (limiting values)

Symbol	Parameter	Value			Unit
		Min	Typ	Max	
P_{IN}	Average power RF_{IN}			24	dBm
V_{ESD}	ESD ratings MIL STD883C (HBM: C = 100 pF, R = 1.5 kΩ, air discharge)	2000			V
	ESD ratings charged device model (JESD22-C101-D)	500			
	ESD ratings machine model (MM: C = 200 pF, R = 25 Ω, L = 500 nH)	200			
T_{OP}	Operating temperature	-30 to +85			°C

Table 2. Impedances (T_{amb} = 25 °C)

Symbol	Parameter	Value			Unit
		Min	Typ	Max	
Z_{OUT}	Nominal differential output impedance		matched		Ω
Z_{IN}	Nominal input impedance		50		Ω

Table 3. RF performance (T_{amb} = 25 °C)

Symbol	Parameter	Value			Unit
		Min	Typ	Max	
F	Frequency range (bandwidth)	2400		2500	MHz
IL	Insertion loss in bandwidth		0.97		dB
RL_{SE}	Single ended return loss in bandwidth		-21		dB
RL_{DIFF}	Differential return loss in bandwidth		-24		dB
ϕimb	Phase imbalance	-10		10	°
Aimb	Amplitude imbalance	-1	0.1	1	dB
Att_{2f0}	2nd harmonic attenuation		-19		dB

1.1 Measurements

Figure 2. Insertion loss

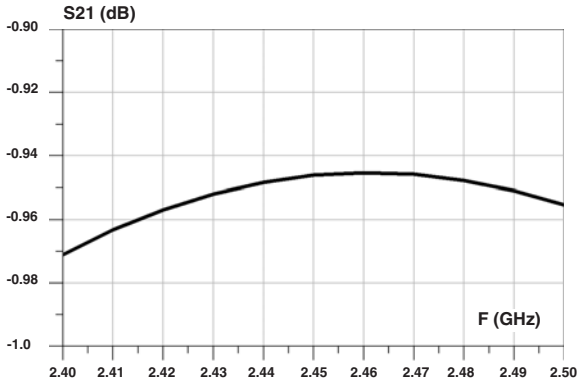


Figure 3. Single indeed return loss

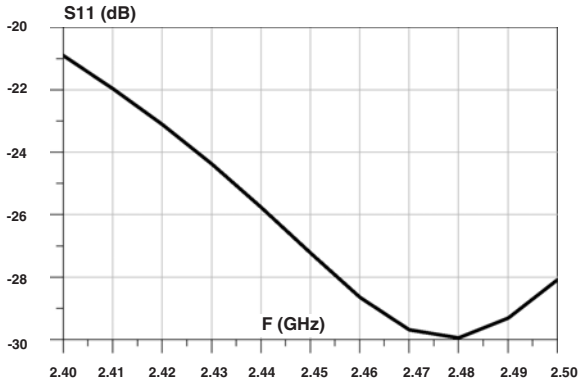


Figure 4. Differential return loss

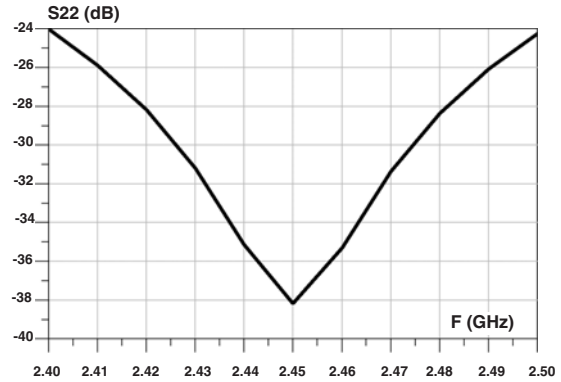


Figure 5. Amplitude imbalance

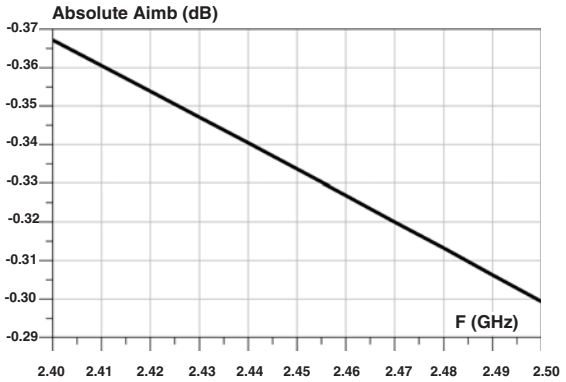


Figure 6. Phase imbalance

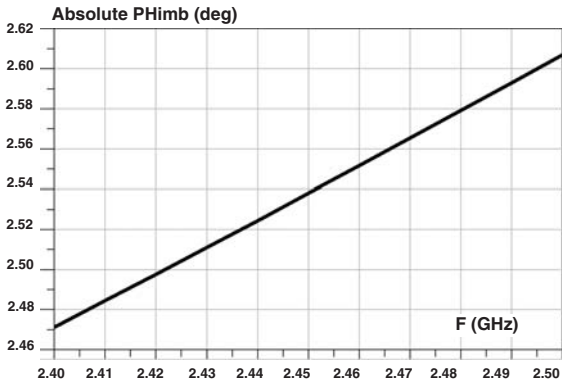
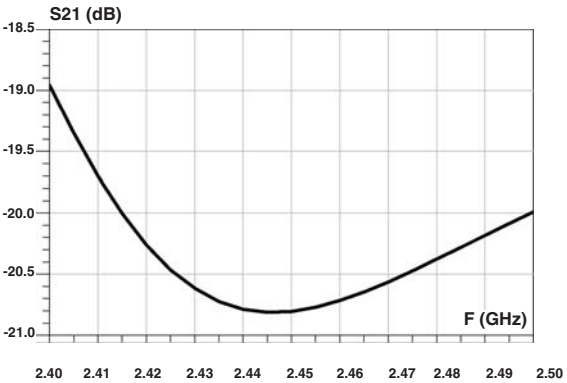


Figure 7. Second harmonic attenuation



2 Package information

- Epoxy meets UL94, V0
- Lead-free package

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*. ECOPACK® is an ST trademark.

2.1 Flip-Chip package information

Figure 8. Flip-Chip package outline

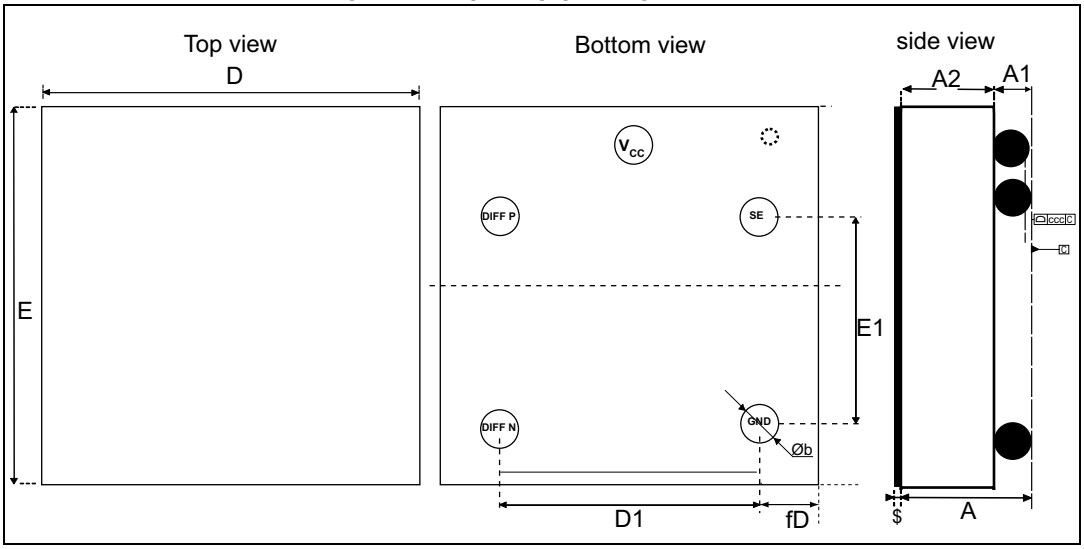


Table 4. Flip-Chip package mechanical data

Parameter	Description	Min.	Typ.	Max.	Unit
A	Bump height + substrate thickness	0.570	0.630	0.690	mm
A1	Bump height	0.155	0.205	0.255	mm
A2	Substrate thickness		0.400		mm
b	Bump diameter	0.215	0.255	0.295	mm
D	Y dimension of the die	1.150	1.200	1.250	mm
D1	Y pitch		0.760		mm
E	X dimension of the die	0.940	0.990	1.040	mm
E1	X pitch		0.400		mm
fD	Distance from bump to edge of die on Y axis		0.105		mm
ccc				0.05	mm
$			0.025		mm

Figure 9. Footprint

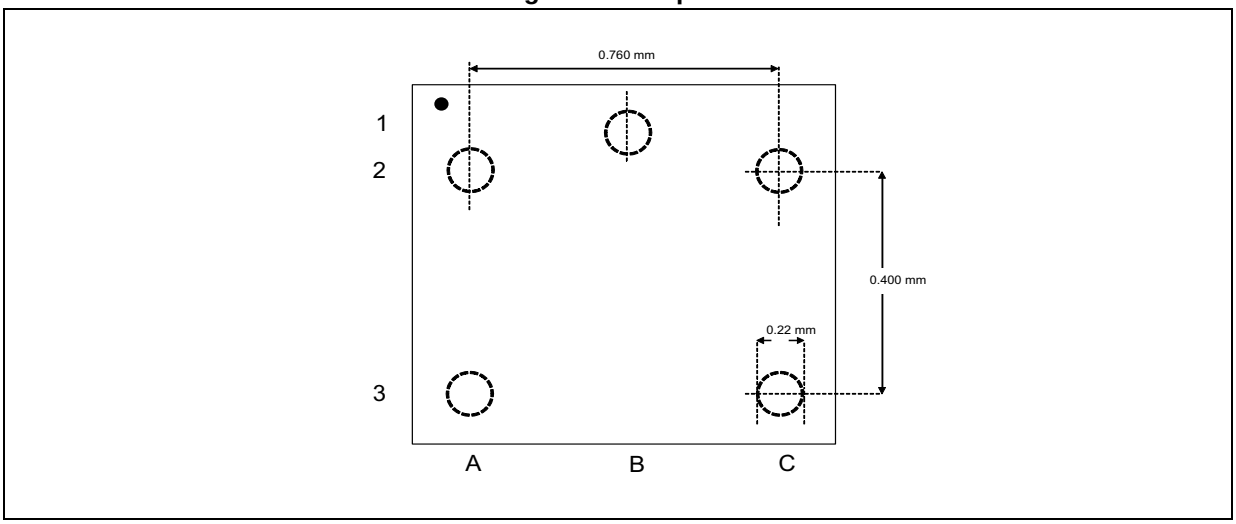


Figure 10. Footprint - 3 mils stencil -non solder mask defined

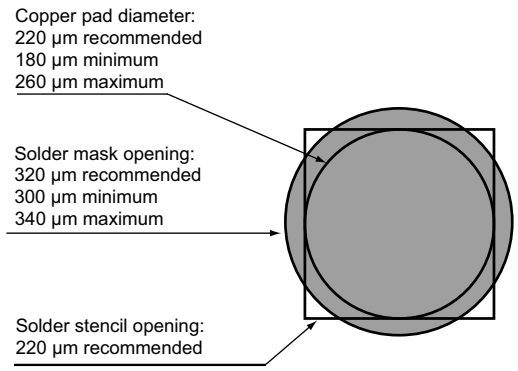


Figure 11. Footprint - 3 mils stencil - solder mask defined

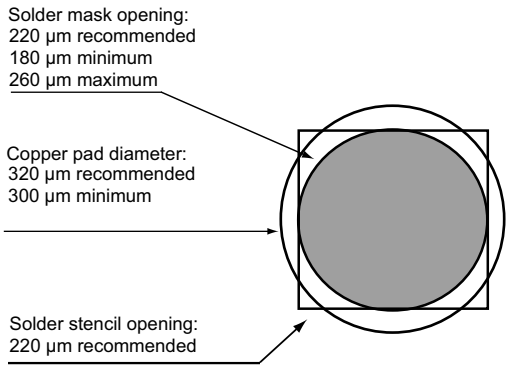


Figure 12. Footprint - 5 mils stencil -non solder mask defined

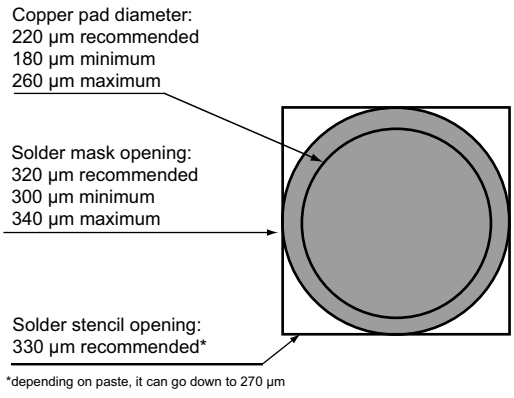


Figure 13. Footprint - 5 mils stencil - solder mask defined

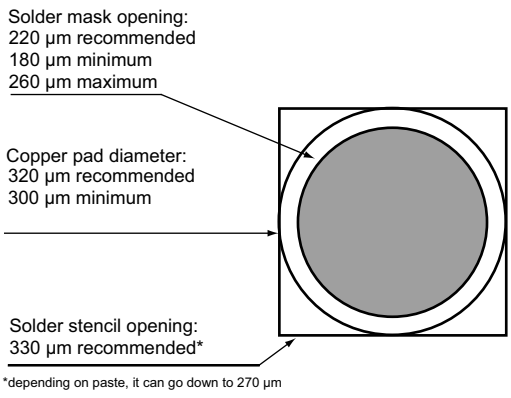


Figure 14. Recommended land pattern (used for balun characterization)

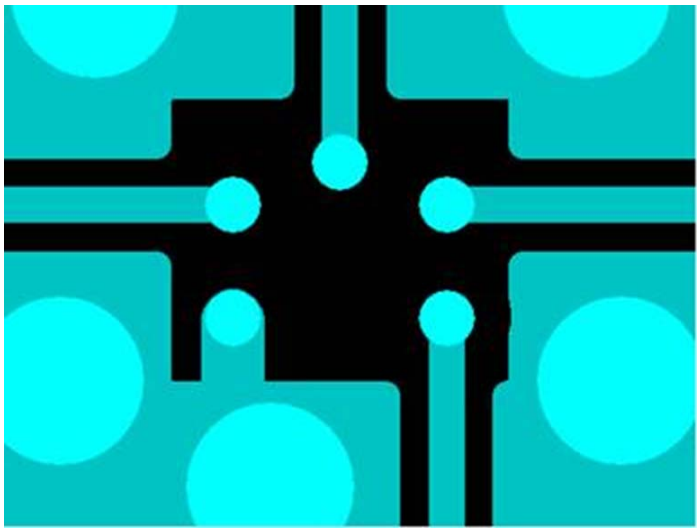


Figure 15. Marking

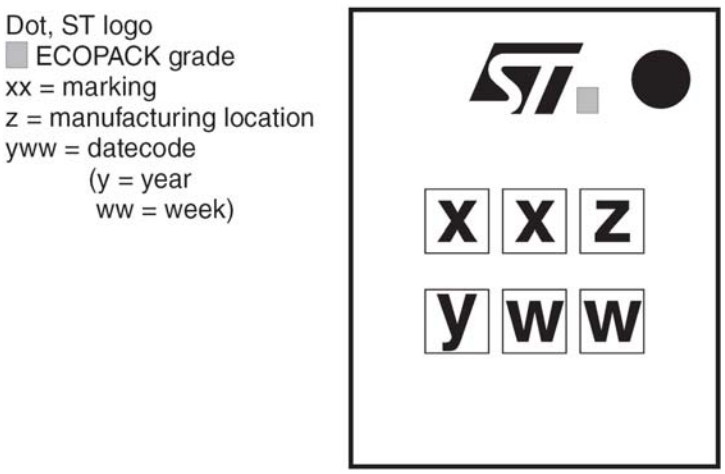
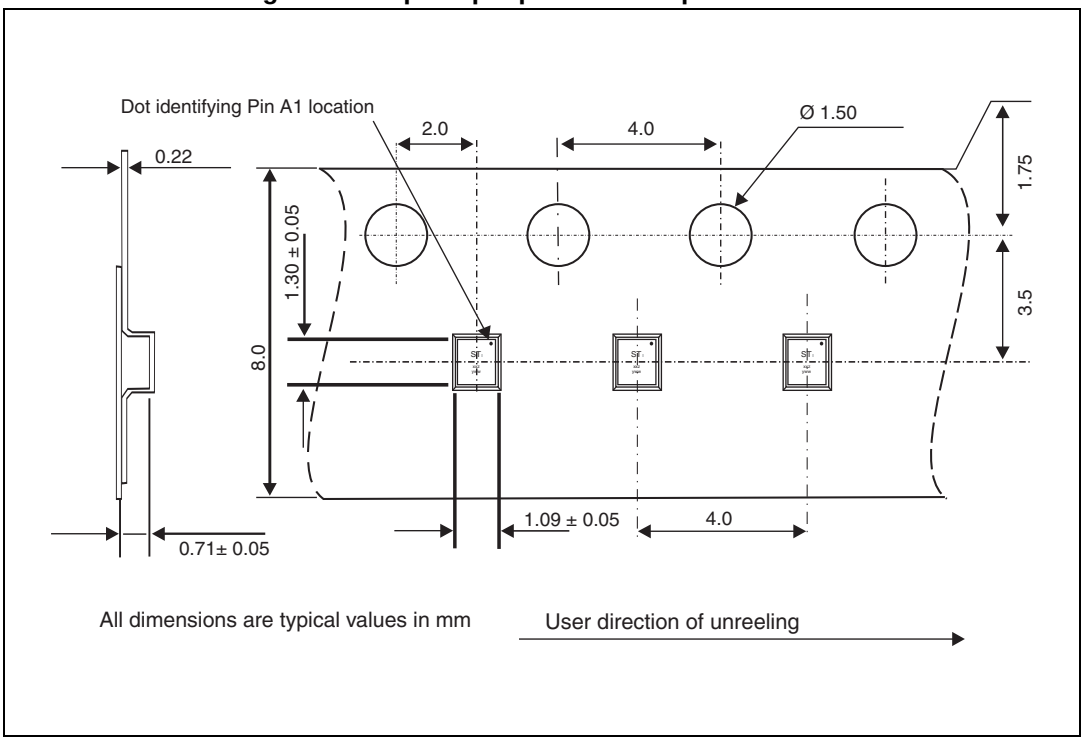


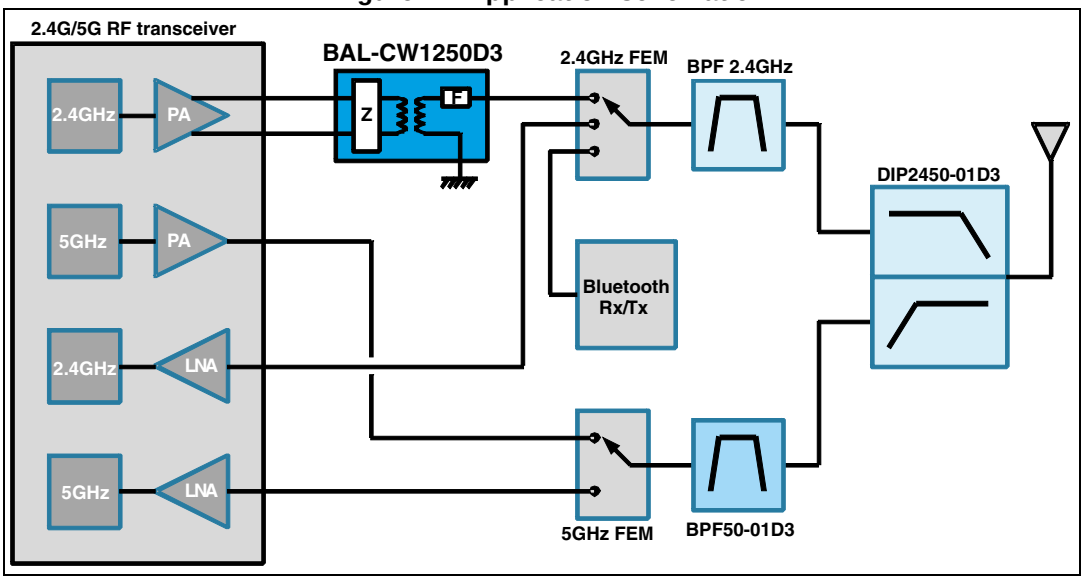
Figure 16. Flip-Chip tape and reel specifications



Note: More information is available in the STMicroelectronics Application note: AN2348 Flip-Chip: "Package description and recommendations for use"

3 Application information

Figure 17. Application schematic



Note: More information is available in the application notes:

AN2348 Flip-Chip package description and recommendations for use

4 Ordering information

Table 5. Ordering information

Part Number	Marking	Package	Weight	Base Qty	Delivery Mode
BAL-CW1250D3	SG	Flip-Chip	1.46 mg	5000	Tape and reel(7”)

5 Revision history

Table 6. Document revision history

Date	Revision	Changes
23-May-2013	1	Initial release.
23-Sep-2015	2	Updated *Figure 8*. Added *Figure 10*, *Figure 11*, *Figure 12*, *Figure 13* and *Table 4*. Reformatted to current standards.