DIP2450-01D3

2 G / 5 G WLAN diplexer

Datasheet – production data

Features

- Low insertion loss in pass band
- High attenuation levels
- High rejection of out-of-band frequencies
- Small footprint: <1.4 mm^2

Benefits

- Very low profile (<600 µm after reflow)
- High Q, low loss
- High RF performance
- Tight tolerance
- Bill of materials and area reduction

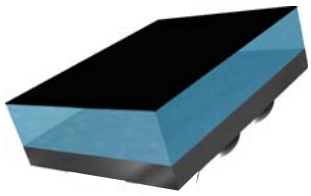
Applications

- WLAN
- Bluetooth
- Mobile phone application
- Wireless networking

Description

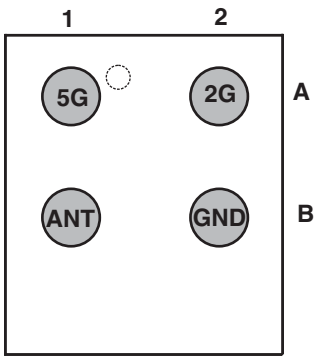
This diplexer targets the use of dual band 2.4 GHz and 5 GHz. The DIP2450-01D3 is a diplexer dedicated to the WLAN/BT application.

It is designed using STMicroelectronics IPD (integrated passive device) technology on non conductive glass substrate to optimize RF performance.



Flip Chip package 4 bumps

Figure 1. Pin configuration (bump view)



This is information on a product in full production. www.st.com

1 Characteristics

Table 1. Absolute rating (limiting values)

Symbol	Parameter	Value			Unit
		Min.	Typ.	Max.	
P_{AV}	Average power			27	dBm
V_{ESD} antenna and 2G ports	ESD ratings: MIL STD883C (HBM:C = 100 pF, R = 1.5 kΩ, air discharge) Charged device model (CDM) Machine model (MM: C = 200 pF, R = 25 Ω, L = 500 nH)	 400 500 100			V
T_{OP}	Operating temperature range	-40		+85	ºC

Table 2. Electrical characteristics and RF performance (T_{amb} = 25 °C)

Symbol	Parameter	Test condition	Value			Unit
			Min.	Typ.	Max.	
Pass band						
f	2 G band pass		2400		2483.5	MHz
	5 G band pass		4900		5850	MHz
Z	Nominal impedance			50		Ω
Return loss		All ports			-17	dB
S21	2 G to antenna insertion loss	2400 to 2483.5 MHz		0.6	0.7	dB
S31	5 G to antenna insertion loss	4900 to 5850 MHz		0.6	0.7	dB
Attenuation						
S21	2 G to antenna attenuation	4900 to 5850 MHz	20			dB
S31	5 G to antenna attenuation	2400 to 2483.5 MHz	18			dB
Out of band attenuation						
S21	2 G to antenna attenuation	5850 to 7000 MHz	15			dB
		7000 to 9500 MHz	9			
		9800 to 10500 MHz	16			
S31	5 G to antenna attenuation	9800 to 11650 MHz	11			dB

1.1 Measured performance

Figure 2. 2 G and 5 G forward transmission (T_{amb} = 25 °C)

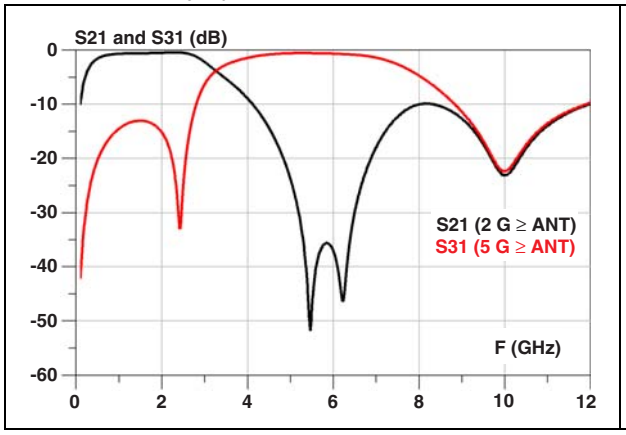


Figure 3. 2 G, 5 G and antenna reflection coefficient (T_{amb} = 25 °C)

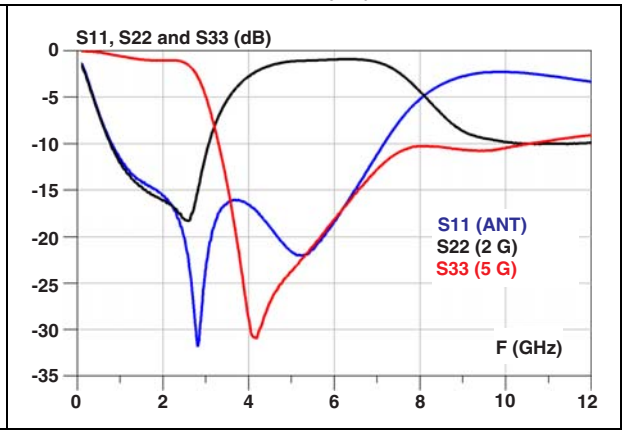


Figure 4. 2 G insertion loss (T_{amb} = 25 °C)

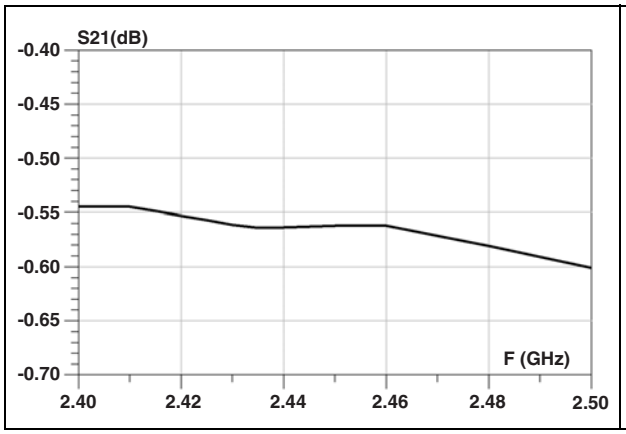


Figure 5. 2 G attenuation in 5 G band (T_{amb} = 25 °C)

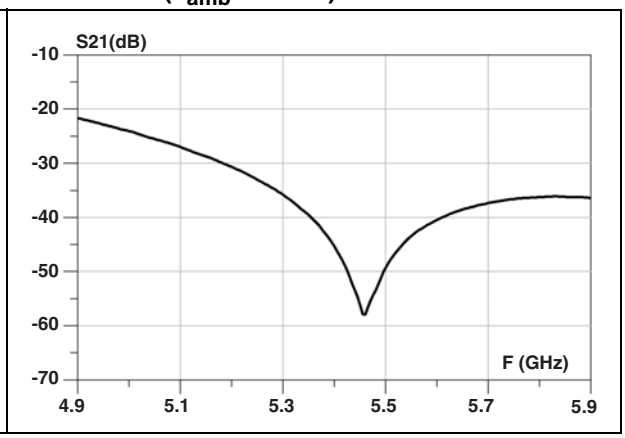


Figure 6. 2 G attenuation in high frequency band (T_{amb} = 25 °C)

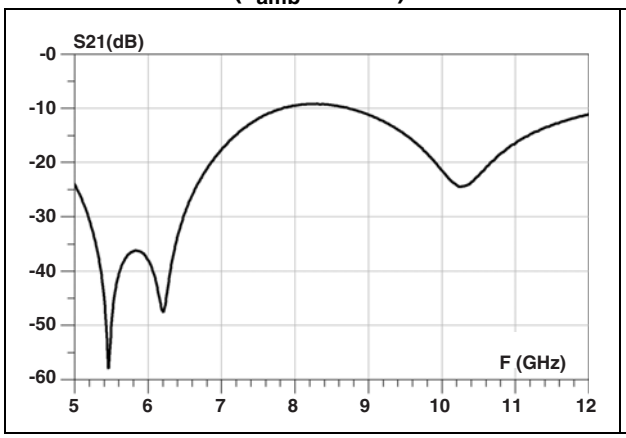


Figure 7. 2 G return loss (T_{amb} = 25 °C)

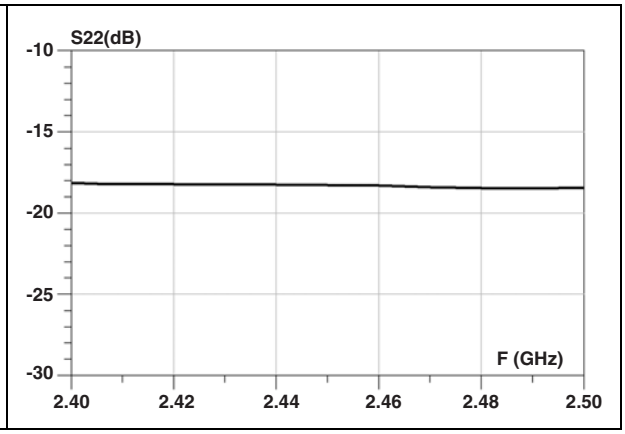


Figure 8. Antenna return loss in 2 G band (T_{amb} = 25 °C)

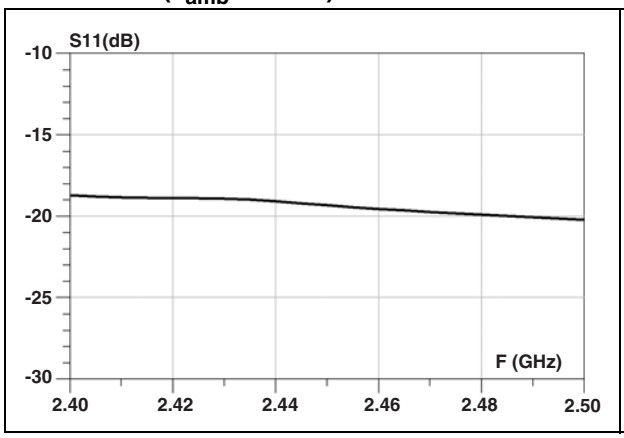


Figure 9. Antenna return loss in 5 G band (T_{amb} = 25 °C)

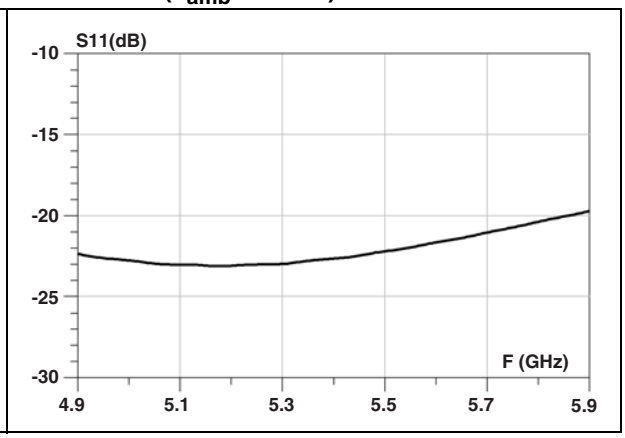


Figure 10. 5 G insertion loss (T_{amb} = 25 °C)

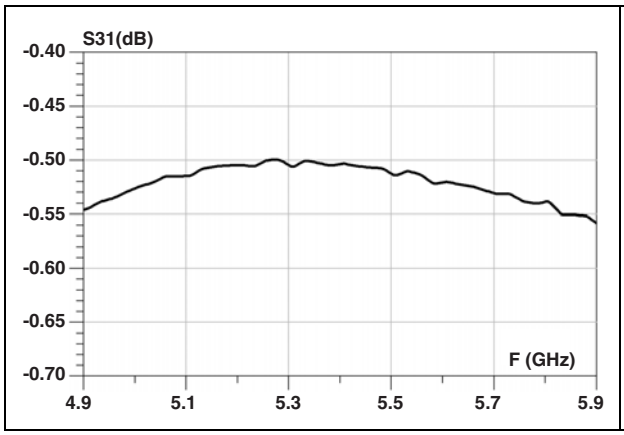


Figure 11. 5 G attenuation in 2 G band (T_{amb} = 25 °C)

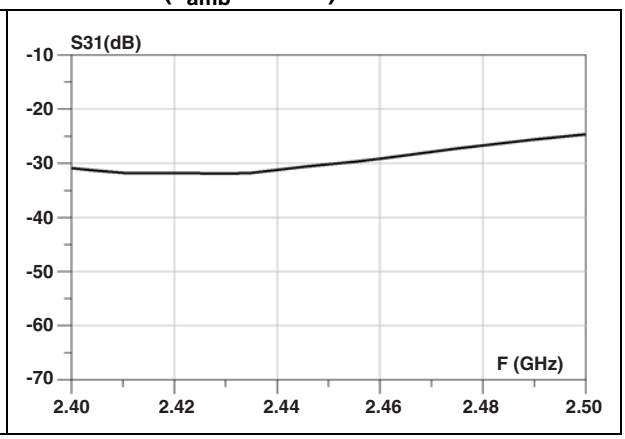


Figure 12. 5 G attenuation in high frequency band (T_{amb} = 25 °C)

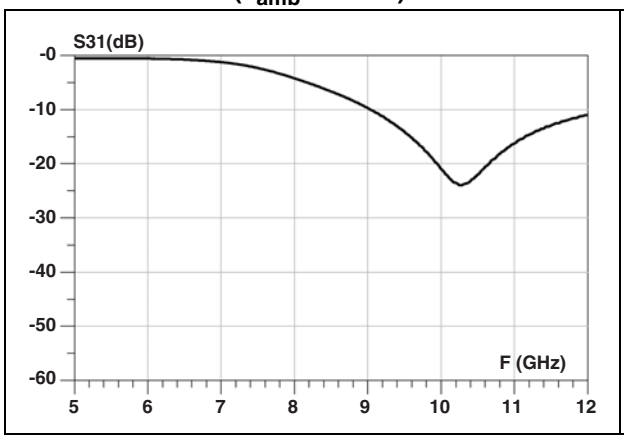


Figure 13. 5 G return loss (T_{amb} = 25 °C)

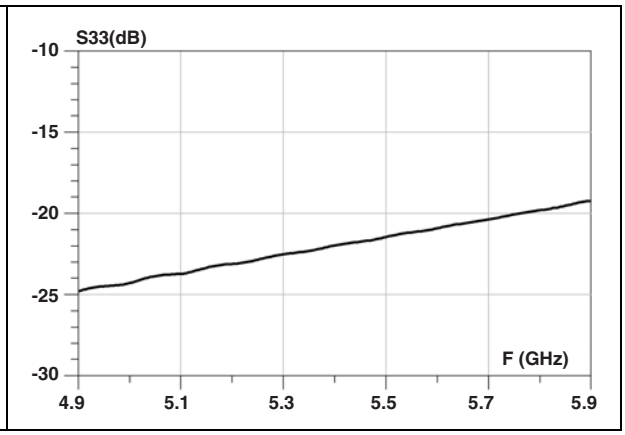


Figure 14. 2 G to 5 G isolation (T_{amb} = 25 °C)

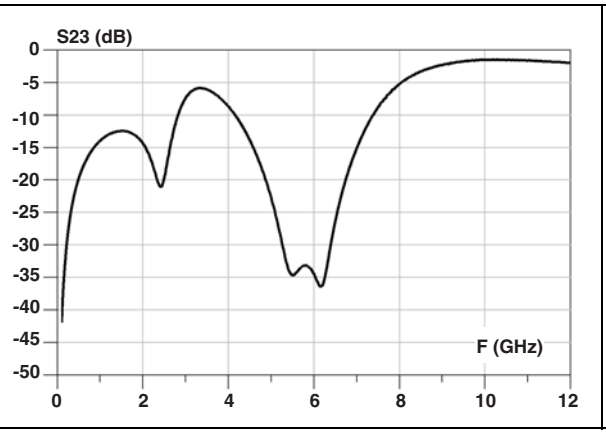


Figure 15. 2 G to 5 G isolation in 2 G band (T_{amb} = 25 °C)

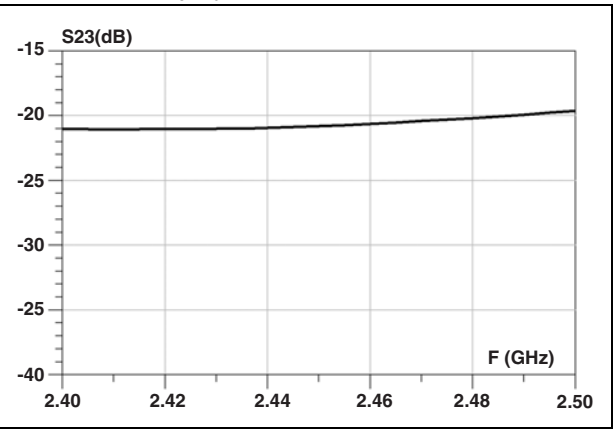
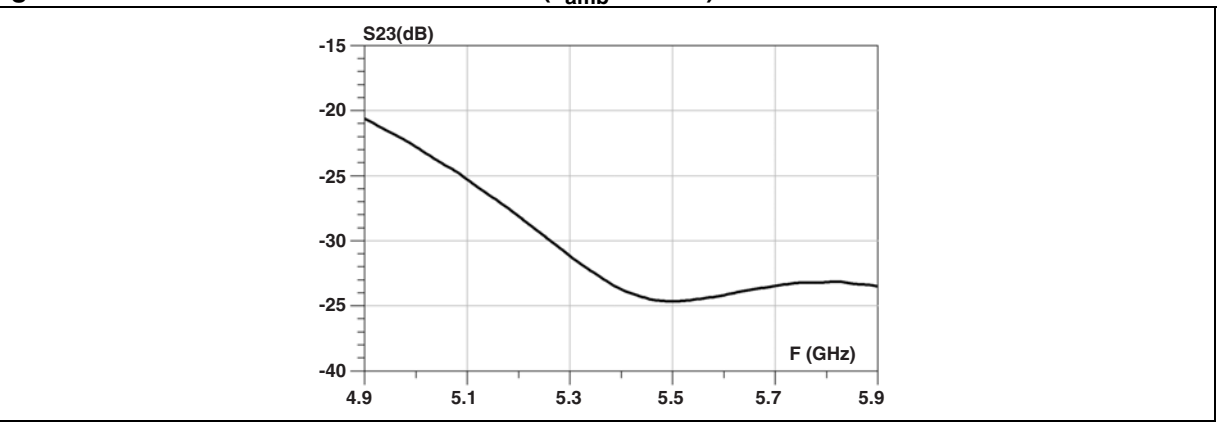


Figure 16. 2 G to 5 G isolation in 5 G band (T_{amb} = 25 °C)



2 Application information

Figure 17. Application schematic

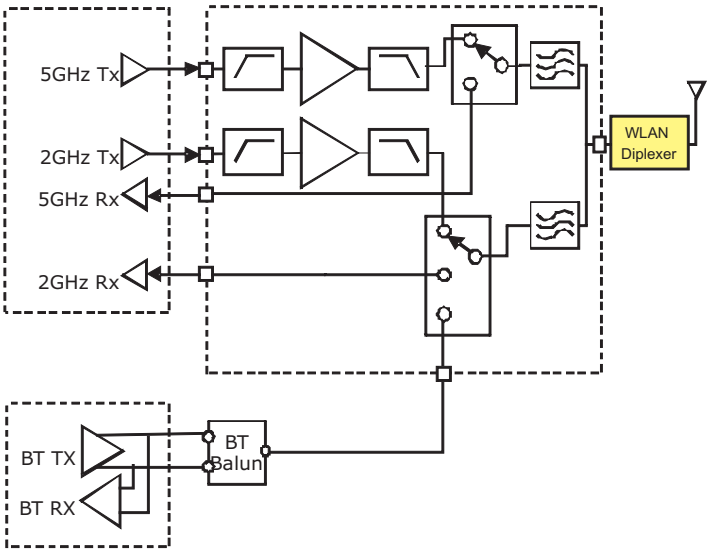
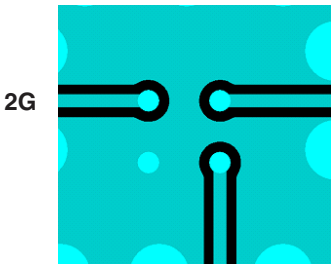


Figure 18. PCB recommendation



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Pad diameter: 220 µm, distance from ground: 100 µm

3 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. ECOPACK® is an ST trademark.

Figure 19. Package dimensions

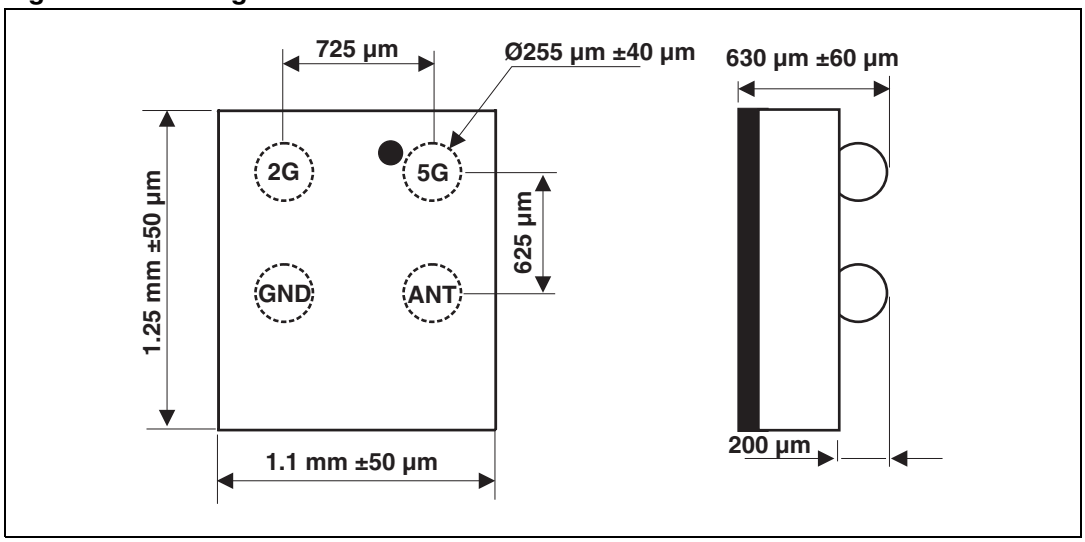


Figure 20. Footprint

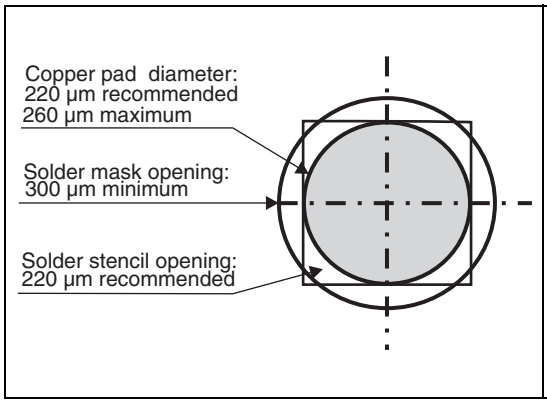


Figure 21. Marking

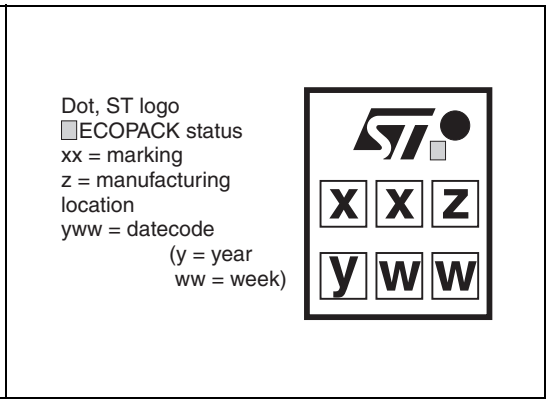
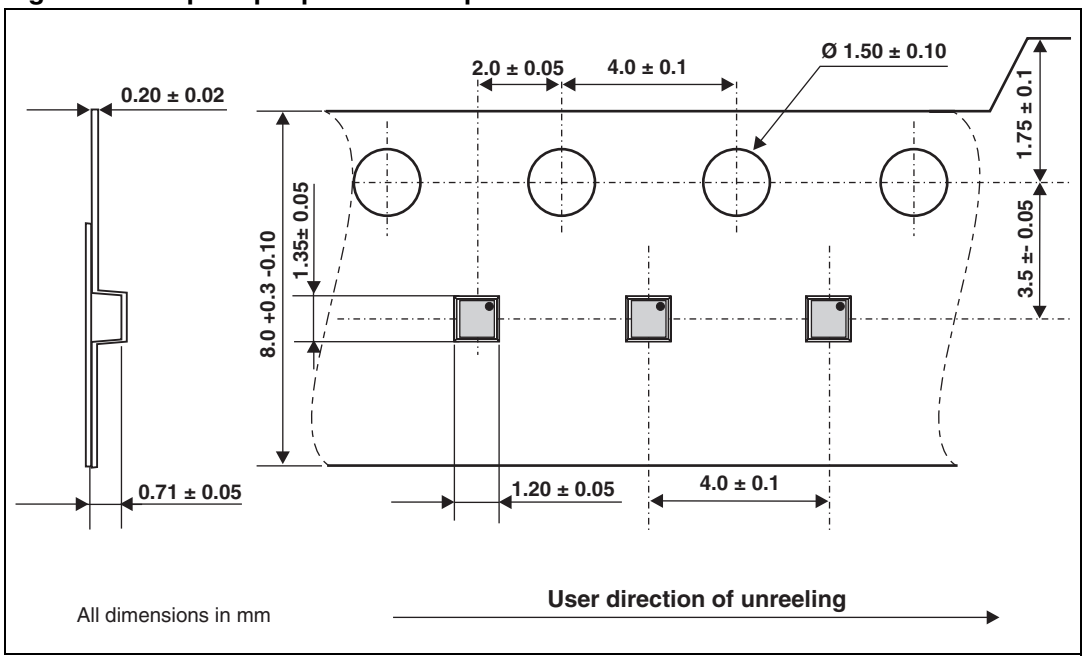


Figure 22. Flip Chip tape and reel specifications



4 Ordering information

Table 3. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
DIP2450-01D3	SA	Flip Chip	1.88 mg	5000	Tape and reel (7”)

5 Revision history

Table 4. Document revision history

Date	Revision	Changes
27-June-2012	1	Initial release

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