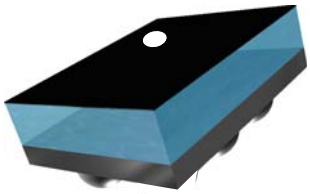
DIP1524-01D3

GPS/GLONASS and 2.4 GHz diplexer

Datasheet – production data

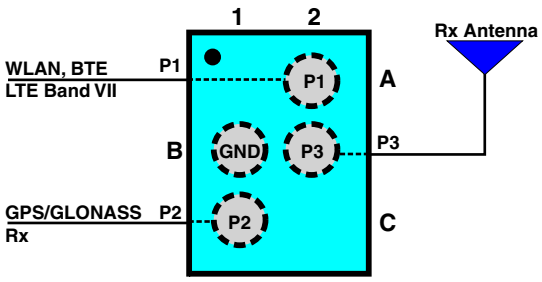
Features

- Low insertion loss
- High attenuation levels
- Input power for GPS: 25 dBm max
- Input power for WLAN: 28 dBm max
- High power capacity
- Lead-free, Flip-Chip package
- Small footprint
- Very low profile (< 630 µm thickness)
- High RF performance



Flip-Chip package 4 bumps

Figure 1. Schematic diagram (top view)



Applications

- Multi-band power amplifier module
- Multi-band front end module
- Multi-band GSM/WCDMA mobile phone
- PC (netbooks, tablet) and smartphones

Description

The DIP1524-01D3 is a diplexer designed to separate the RF received signals of the GPS-GLONASS from the RF received signals in the 2.4 to 2.7 GHz band.

The DIP1524-01D3 has been designed using STMicroelectronics IPD (Integrated Passive Device) technology on non conductive glass substrate to optimize RF performance.

1 Characteristics

Table 1. Absolute maximum rating (limiting values)

Symbol	Parameter	Value			Unit
		Min.	Typ.	Max.	
P_{IN}	Input power P_1			28	dBm
	Input power P_2 (GPS)			25	
V_{ESD} (HBM)	Human body model, JESD22-A114-B, all I/O			300	V
V_{ESD} (MM)	Machine model, JESD22-A115-A, all I/O			100	V
V_{ESD} (CDM)	Charge device model, JESD22-C101-C, all I/O			500	V
T_{OP}	Operating temperature range	-30		+85	ºC

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

Symbol	Parameter	Test condition	Value			Unit
			Min	Typ	Max	
f1	Pass band range	WLAN, BT, LTE BAND VII	2400		2700	MHz
f2		GPS: 1573.42 – 1577.42 MHz GLONASS: 1597.55 – 1605.89 MHz	1573.42		1605.89	MHz
IL	P1-P3	In f1: WLAN, BT, LTE BAND VII		0.85	0.90	dB
	P2-P3	In f2: GPS		0.60	0.65	
		In f2: GLONASS		0.65	0.75	
Attenuation	P1-P3	In f2	20			
	P2-P3	In f1	18			
Return loss	P1	In f1			-10	
	P2	In f2			-20	
	P3	In f1 and f2			-9.5	

1.1 RF measurement

Measurements performed at component level.

Figure 2. P1-P3 and P2-P3 - S13 and S23 forward transmission

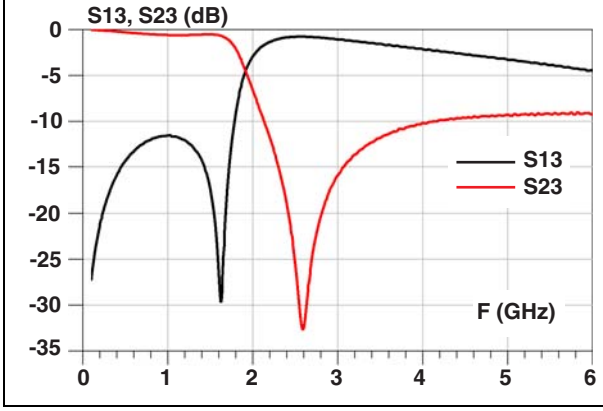


Figure 3. P1-P3 - S13 insertion loss in f1 band

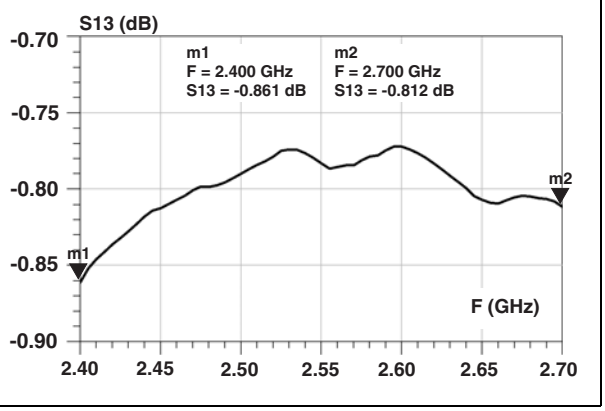


Figure 4. P2-P3 - S23 insertion loss in f2 band (GPS)

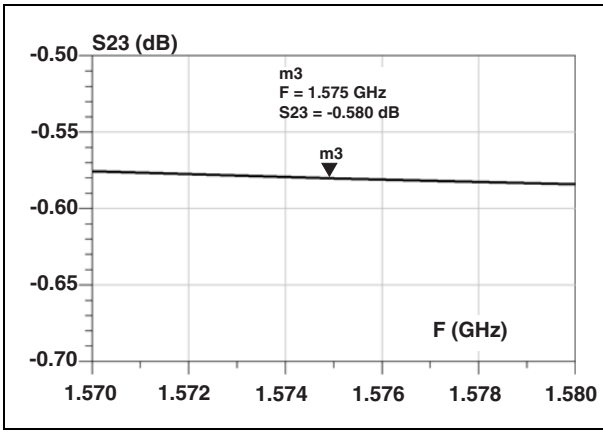


Figure 5. P2-P3 - S23 insertion loss in f2 band (GLONASS)

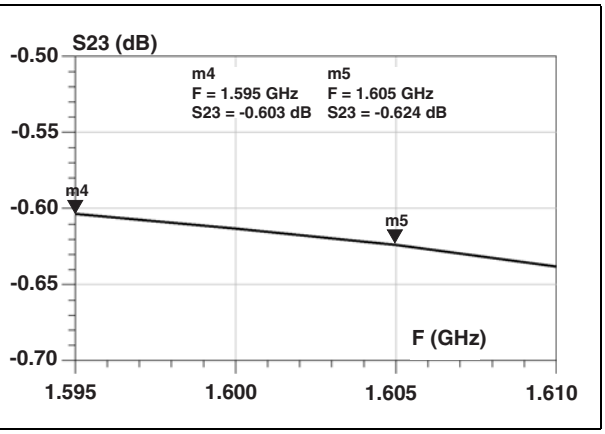


Figure 6. P1-P3 - S13 attenuation in f2 band

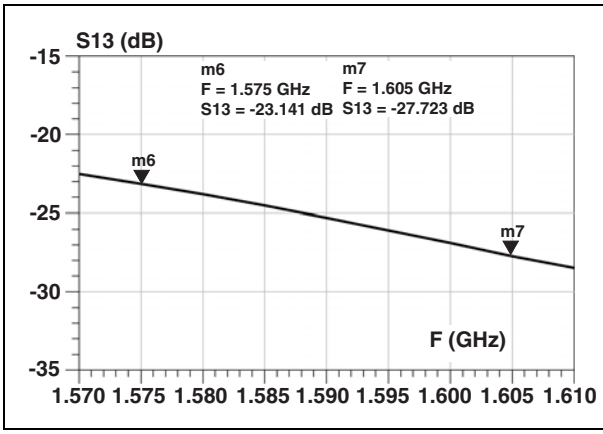


Figure 7. P2-P3 - S23 attenuation in f1 band

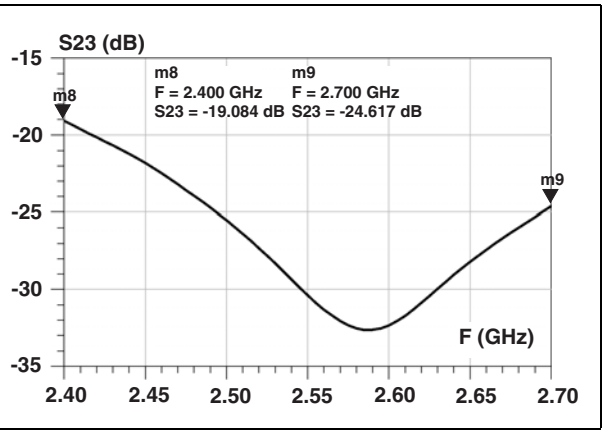


Figure 8. P1, P2, P3 - Sxx reflection coefficient

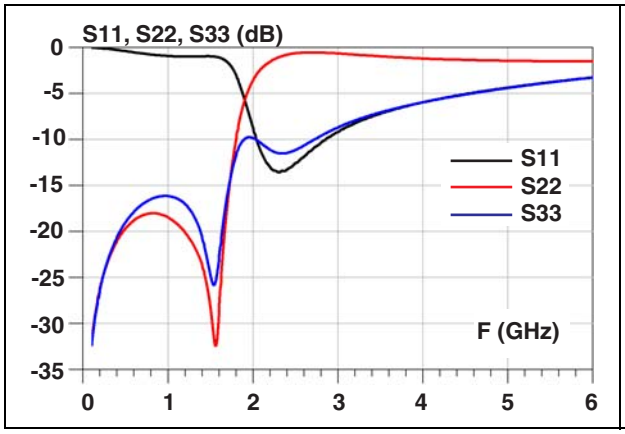


Figure 9. P1 - S11 return loss in f1 band

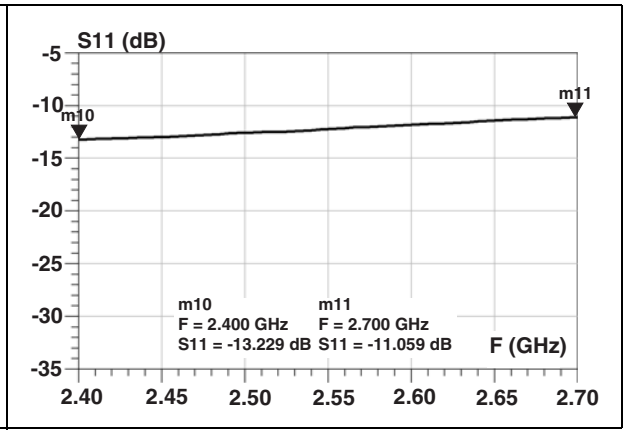


Figure 10. P2 - S22 return loss in f2 band

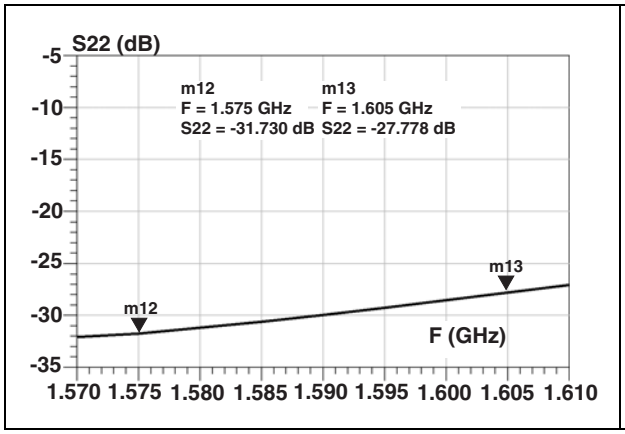


Figure 11. P3 - S33 return loss in f1 band

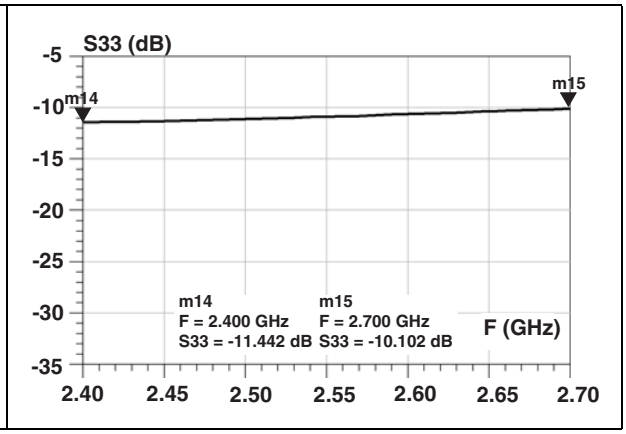


Figure 12. P3 - S33 return loss in f2 band

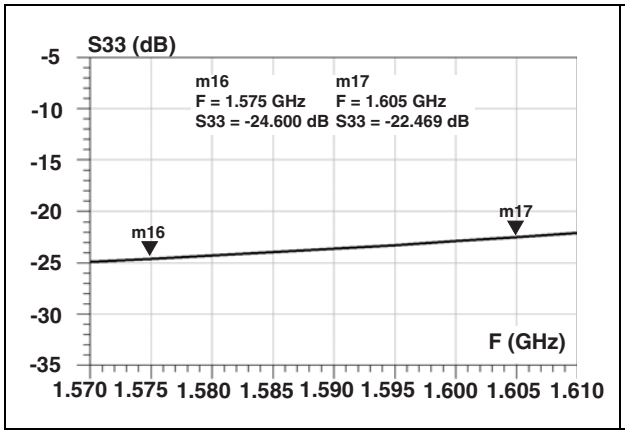


Figure 13. P1-P2 - S12 isolation

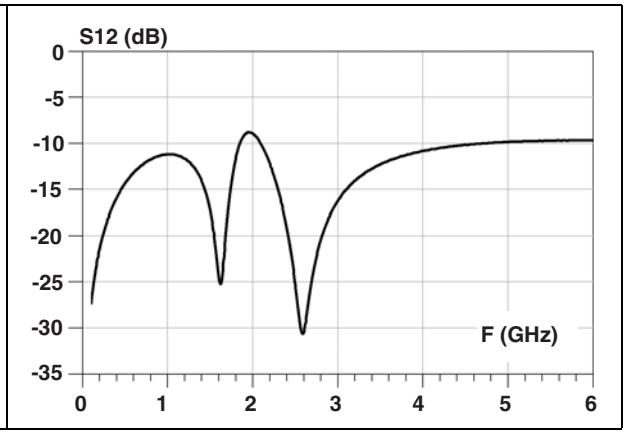


Figure 14. P1-P2 - S12 isolation in f1 band

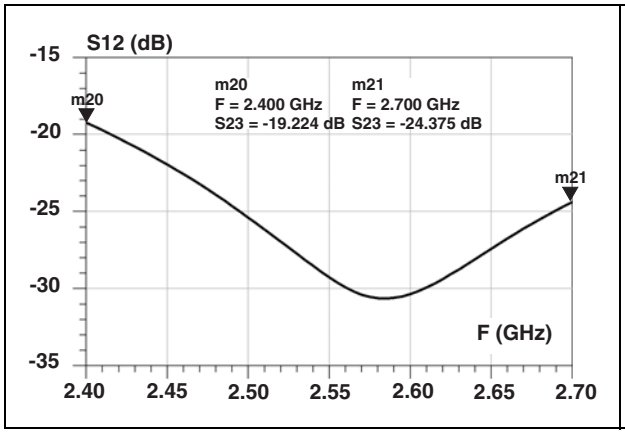
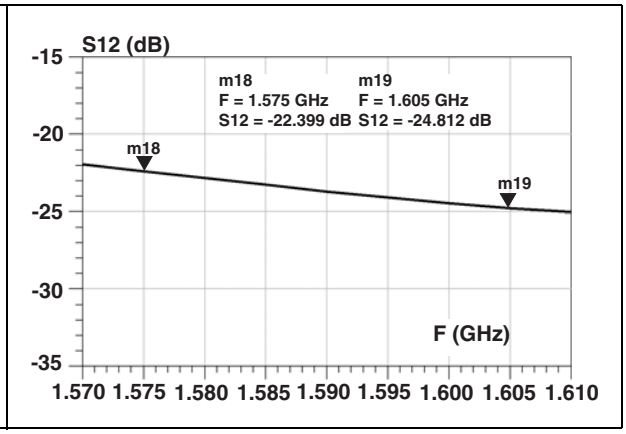
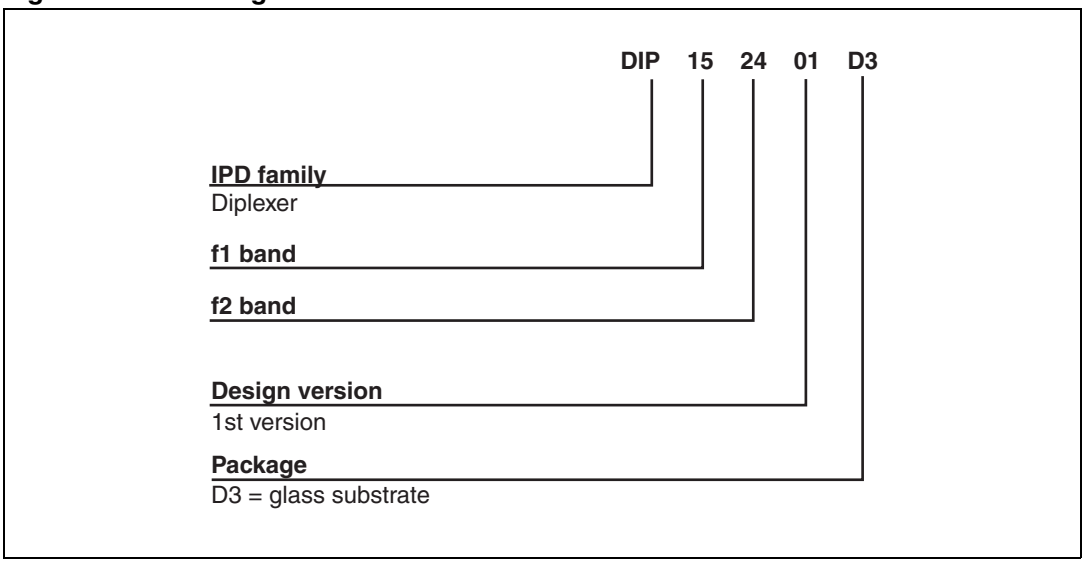


Figure 15. P1-P2 - S12 isolation in f2 band



2 Ordering information scheme

Figure 16. Ordering information scheme



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 17. Package dimensions

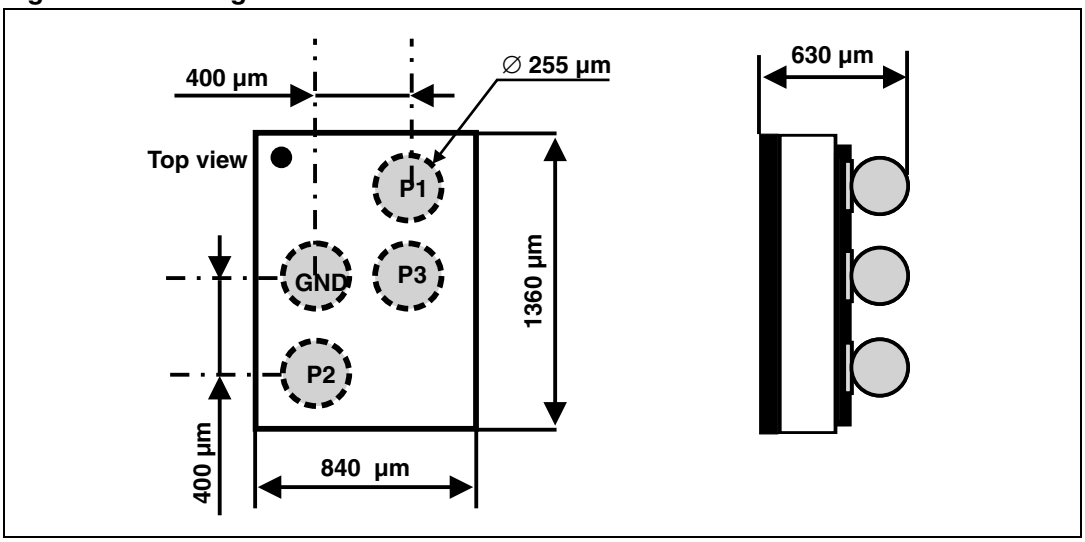


Figure 18. Footprint

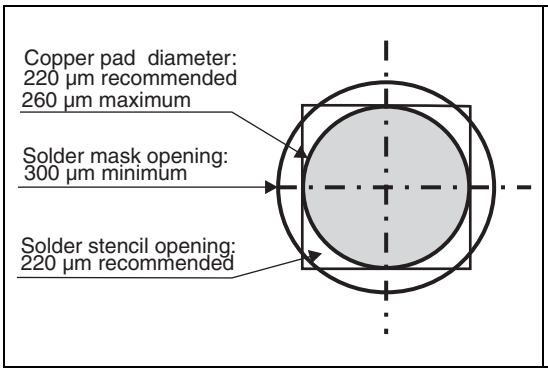


Figure 19. Marking

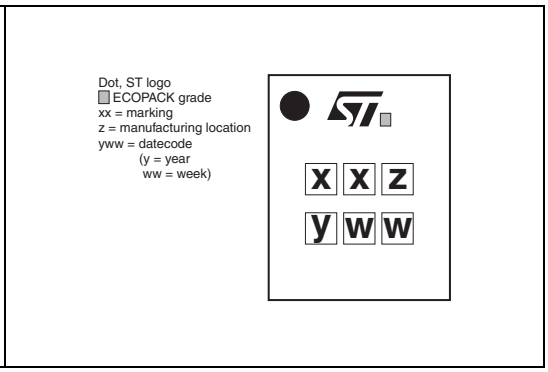
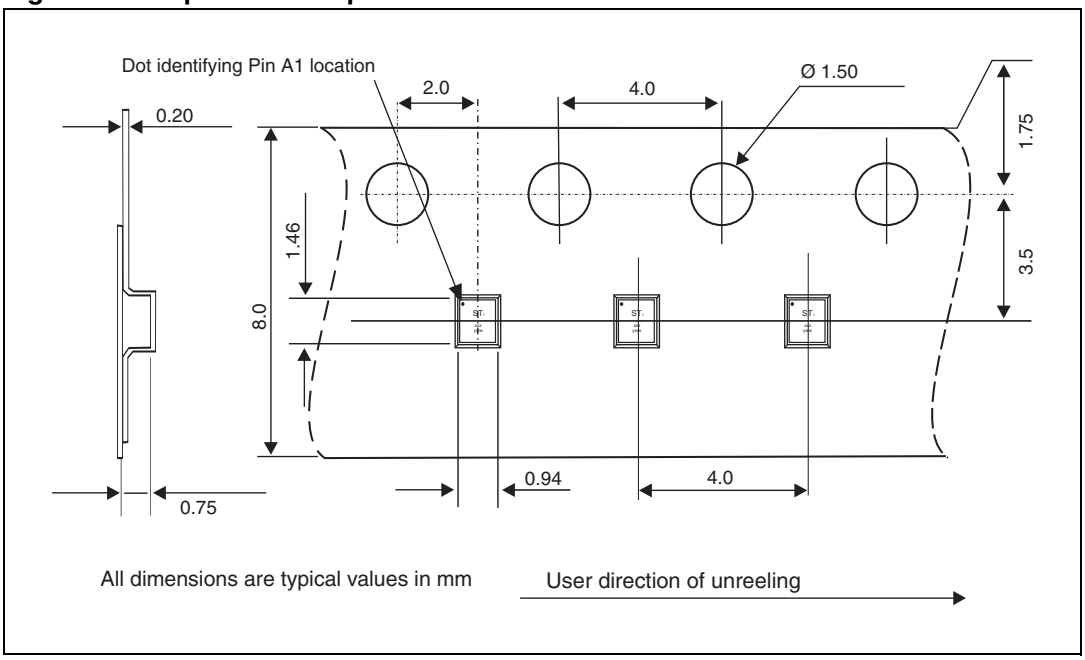


Figure 20. Tape and reel specifications



Note: More information is available in the application note:

AN2348, "IPAD™ 400 µm Flip Chip: package description and recommendations for use"

4 Ordering information

Table 3. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
DIP1524-01D3	RT	Flip Chip	1.35 mg	5000	Tape and reel (7”)

5 Revision history

Table 4. Document revision history

Date	Revision	Changes
14-Feb-2012	1	Initial release
17-Jan-2013	2	Updated package graphics for clarity.

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