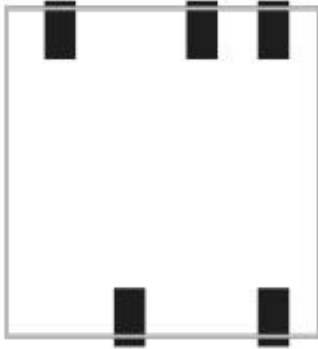

low pass filter matched to STC2512I

Top view (pads down)



Features

- Integrated impedance matching to STC2512I
- BGA footprint compatible
- Deep rejection harmonics filter
- Low insertion loss
- Small footprint
- Low thickness $\leq 450 \mu\text{m}$
- High RF performance
- RF BOM and area reduction
- ECOPACK2 compliant

Applications

- Bluetooth 5
- OpenThread
- Zigbee®

Description

This integrates an impedance matching network and harmonics filter. The matching impedance network has been tailored to maximize the RF performance of STC2512I. This device uses STMicroelectronics IPD technology on non-conductive glass substrate which optimizes RF performance.

1 Characteristics

Table 1. Absolute ratings ($T_{amb} = 25\text{ °C}$)

Symbol	Parameter	Value	Unit
P_{IN}	Input power RF_{IN}	10	dBm
V_{ESD}	ESD ratings human body model (JESD22-A114-C), all I/O one at a time while others connected to GND	2000	V
	ESD ratings machine model, all I/O	200	
T_{OP}	Maximum operating temperature	-40 to +105	°C

Table 2. Impedances($T_{amb} = 25\text{ °C}$)

Symbol	Parameter	Value			Unit
		Min.	Typ.	Max.	
Z_{IN}	STC2512I single-ended impedance	-	matched to STC2512I	-	Ω
Z_{OUT}	Antenna impedance	-	430	-	Ω

Table 3. Electrical characteristics and RF performance ($T_{amb} = 25\text{ °C}$)

Symbol	Parameter		Value			Unit
			Min.	Typ.	Max.	
f	Frequency range		2400		2500	MHz
IL	Insertion loss IS_{21}			0.90	1.1	dB
RL_{IN}	Input return loss IS_{11}		14	22		dB
RL_{OUT}	Output return loss IS_{22}		16	24		dB
Att	Harmonic rejection levels IS_{21}	Attenuation at 2fo	38	40		dB
		Attenuation at 3fo	43	45		dB
		Attenuation at 4fo	41	46		dB
		Attenuation at 5fo	35	42		dB

1.1 RF measurement

Figure 1. Transmission (dB)

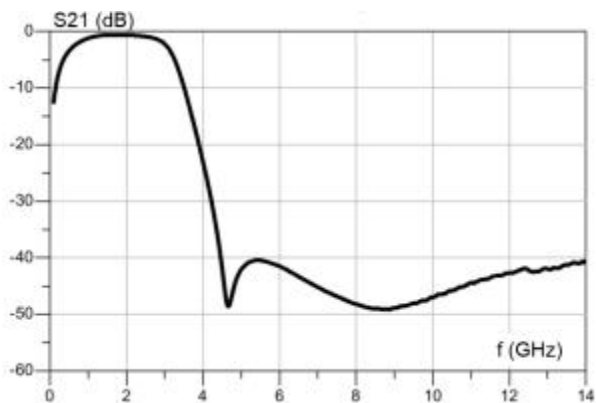


Figure 2. Insertion loss (dB)

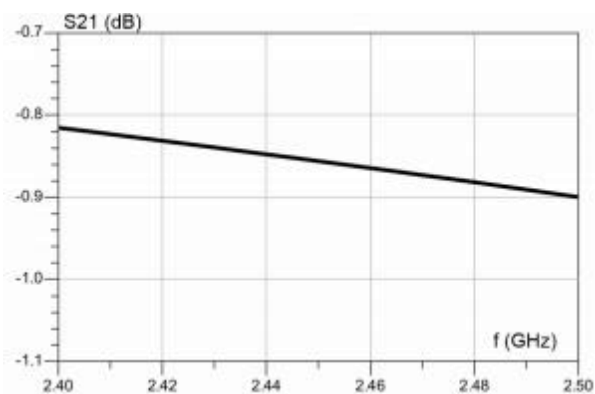


Figure 3. Input return loss (dB)

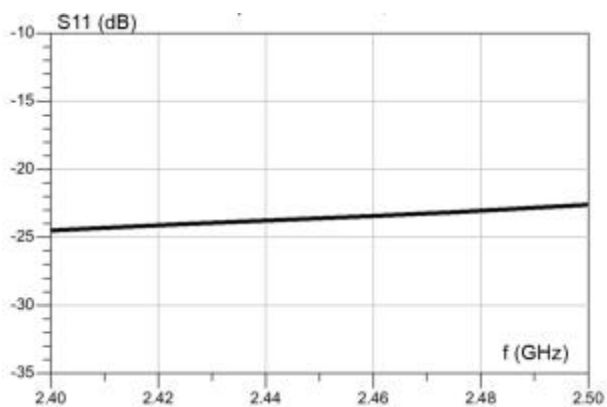


Figure 4. Output return loss (dB)

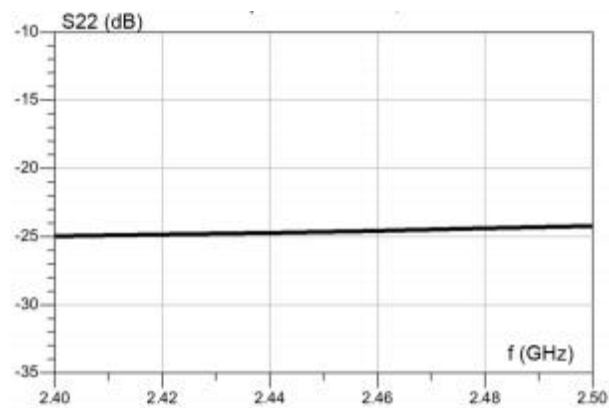


Figure 5. Attenuation 2f0 (dB)

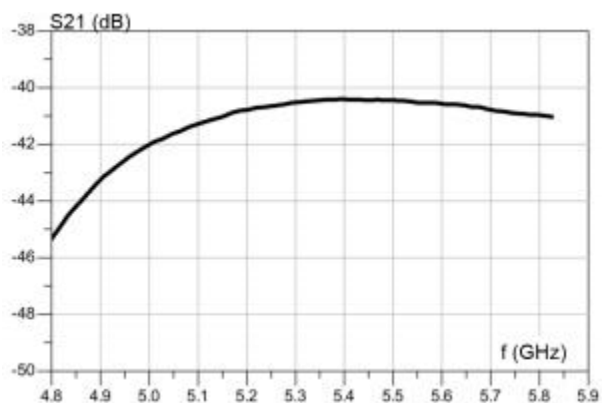


Figure 6. Attenuation 3f0 (dB)

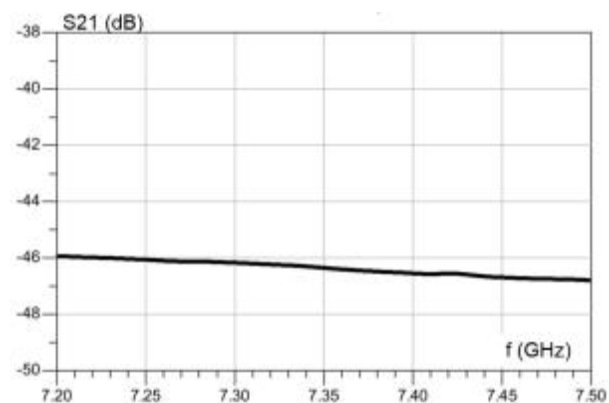


Figure 7. Attenuation 4f0 (dB)

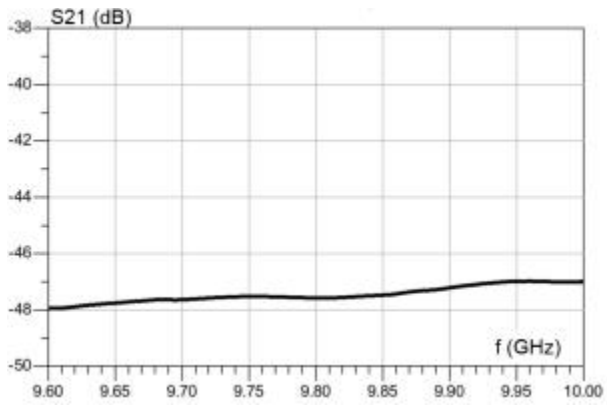
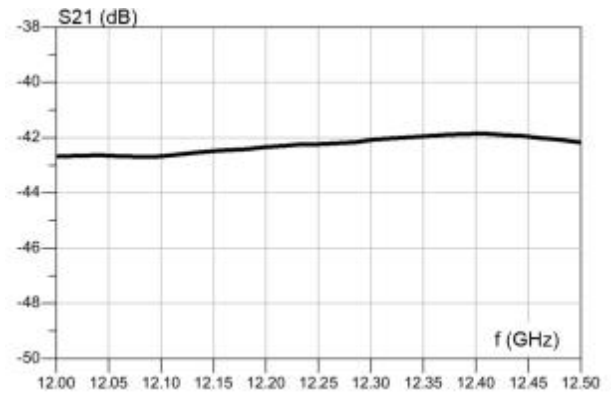


Figure 8. Attenuation 5f0 (dB)



2.Package information

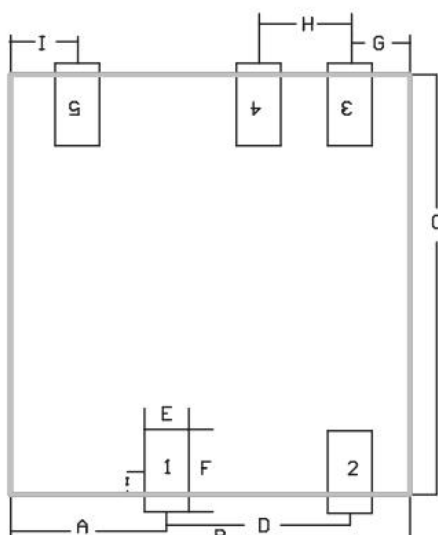


Table 5. Tape and reel mechanical data

Ref	Dimensions		
	Millimeters		
	Min	Typ	Max
A	/	3.12	/
B	7.8	8	8.2
C	8.2	8.4	8.6
D	/	3.68	/
E	0.9	1	1.1
F	1.5	1.7	1.9
G	/	1.2	/
H	/	1.83	/
I	1.3	1.35	1.4

Table 6. Pad description top view (pads down)

Pad ref	Pad name
1	IN1
2	IN2
3	GND
4	OUT2
5	OUT1