

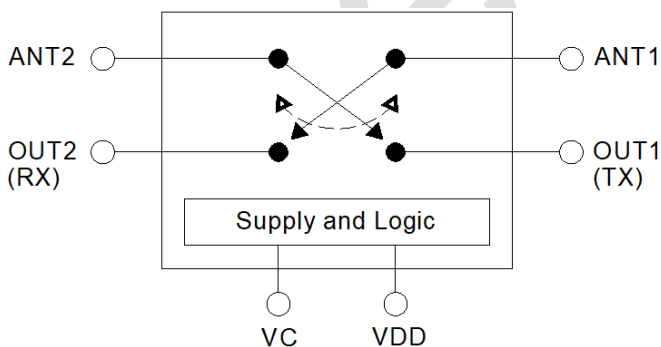
■ Description

The HWS585 is a CMOS Silicon-On-Insulator (SOI), Double-Pole, Double-Throw (DPDT) switch. The device can be used in many wireless digital communication systems like WLAN, IEEE 802.11 a/b/g/n/ac/ax and Bluetooth® for transmit/receive selection or antenna diversity function. The HWS503 DPDT switch operating frequency from 0.1 to 7.2 GHz in a low cost 1.5mm x 1.5mm x 0.45 mm USON-6L plastic lead (Pb) free package.

■ Features

- **Frequency Range** : 0.1 to 7.2 GHz
- **Insertion Loss** : 0.52 dB @ 2.4 GHz
0.67 dB @ 5.0 GHz
0.81 dB @ 7.2 GHz
- **Isolation** : 34.0 dB @ 2.4 GHz
28.6 dB @ 5.0 GHz
28.5 dB @ 7.2 GHz
- **IP1dB** : 32.0 dBm @ 2.4 GHz
32.0 dBm @ 5.0 GHz
32.0 dBm @ 7.2 GHz
- **Miniature USON6L (1.5x1.5x0.45 mm) Using Lead (Pb) free materials with RoHS compliant**
- **One Bit Control DPDT Switch**
- **HBM ESD Classification Level** : TBD
- **CDM ESD Classification Level** : TBD
- **Moisture Sensitivity Level** : TBD

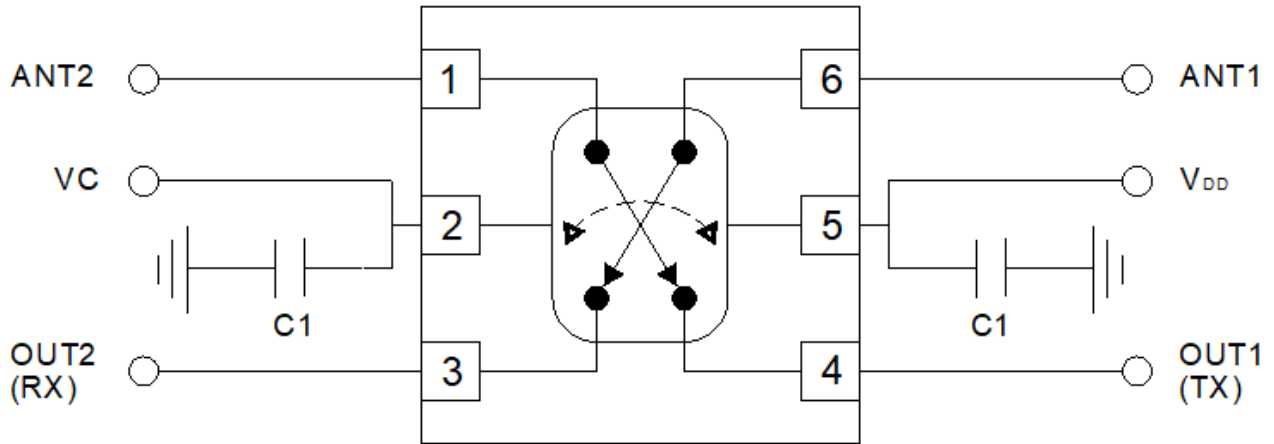
■ Functional Block Diagram



■ Applications

- **IEEE 802.11 a/b/g/n/ac/ax WLAN**
- **Bluetooth®**
- **Sub-1G**
- **UWB**

Application Circuit



Pin Assignments

Pin No.	Name	Description
1	ANT2	RF Signal Port
2	VC	DC Logic Control Voltage
3	OUT2	RF Signal Port
4	OUT1	RF Signal Port
5	V _{DD}	Supply Voltage
6	ANT1	RF Signal Port

Evaluation Board Bill of Material

Component	Value	Description	Supplier	Part Number
IC		HWS585	Hexawave	
C1	100pF	By-pass Capacitor	Murata	GRM1555C1H101JA01D

Note :

1. The internal DC voltage at each RF port is zero voltage, and if an external DC voltage will be coupled to RF port, then DC blocking capacitor is required.
2. Information in the above application is for reference only, and does not guarantee the mass production design of the device.

■ Absolute Maximum Ratings

Parameter	Symbol	Maximum	Units
Supply Voltage	V _{DD}	4.2	V
Control Voltage	VC	3.6	V
RF Input Power	P _{in}	+32	dBm
Operating Temperature	T _{op}	-40 to +85	°C
Storage Temperature	T _{STG}	-65 to +150	°C
HBM ESD Classification Level		TBD	
CDM ESD Classification Level		TBD	

Note : If the satisfied of any one or more of the above conditions will lead to equipment damage.

■ Recommended Operating Ranges

Parameter	Symbol	Min	Typ	Max	Unit
Operation Frequency	Freq.	0.1		7.2	GHz
Supply Voltage	V _{DD}	1.8	3.3	3.6	V
Control Voltage (Low)	VC_L	0	0	0.2	V
Control Voltage (High)	VC_H	1.8	3.3	V _{DD}	V

Note : Recommended Operating Ranges indicate conditions for which the device is intended to be functional, but does not guarantee specific performance limits.

■ Logic Truth Table of Switch (ON-Path)

VC (Pin2)	Insertion Loss Path	Insertion Loss Path
L	ANT1 to OUT1(Tx)	ANT2 to OUT2(Rx)
H	ANT1 to OUT2(Rx)	ANT2 to OUT1(Tx)

Note :

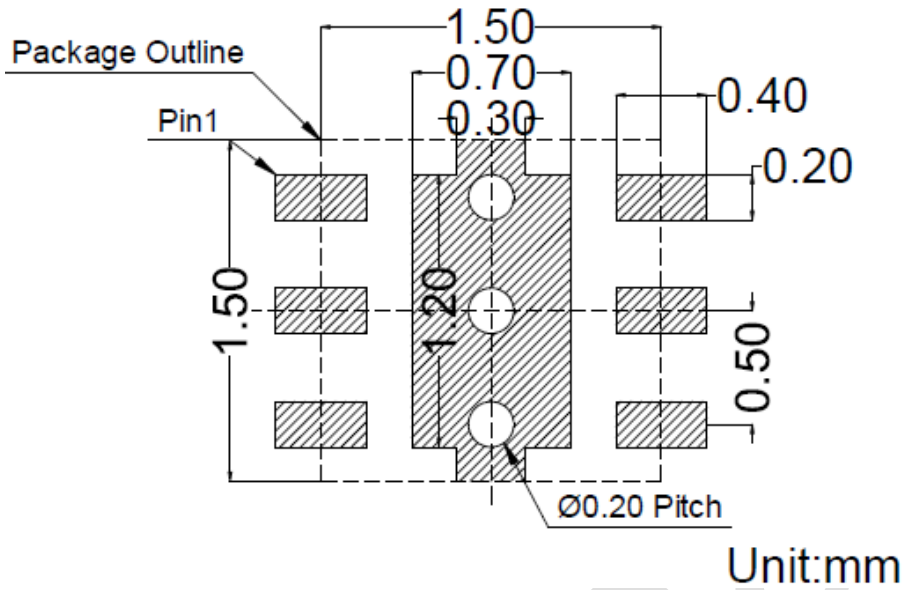
- "H" = VC_H, "L" = VC_L.
- Any modes other than those listed above are not supported.

Electrical Specifications

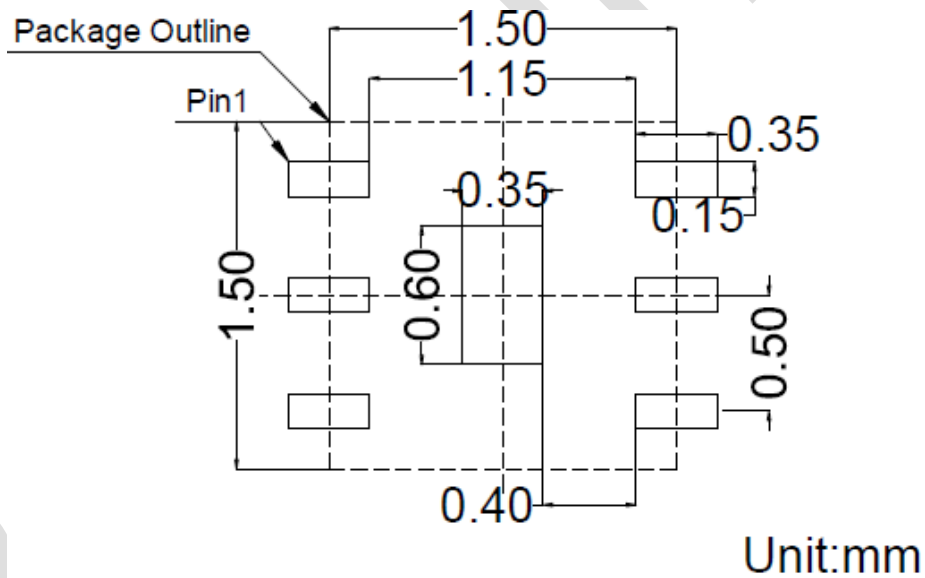
Temperature = 25°C, Impedance 50Ω with VC = 0/3.3V, Pin = 0dBm, unless otherwise noted

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Insertion Loss	IL	2.4 – 2.5 GHz		0.52		dB
		4.9 – 6.0 GHz		0.67		dB
		6.0 – 7.2 GHz		0.81		dB
Isolation (OUT1, OUT2 to ANT1, ANT2)	ISO-1	2.4 – 2.5 GHz		34.0		dB
		4.9 – 6.0 GHz		28.6		dB
		6.0 – 7.2 GHz		28.5		dB
Isolation (OUT1 to OUT2) (ANT1 to ANT2)	ISO-2	2.4 – 2.5 GHz		40.9		dB
		4.9 – 6.0 GHz		29.2		dB
		6.0 – 7.2 GHz		26.2		dB
Return Loss	RL	2.4 – 2.5 GHz		18.0		dB
		4.9 – 6.0 GHz		13.6		dB
		6.0 – 7.2 GHz		14.2		dB
Input Power for 1 dB Compression	P1dB	@ 2.4 GHz @ 5.0 GHz @ 7.2 GHz		32 32 32		dBm
2 nd Harmonic	2fo	f = 2.5GHz @20 dBm		-67.2		dBc
3 rd Harmonic	3fo			-66.4		dBc
Switching on/off Time	Ts	50% VC to 90/10% RF		137.3		ns
Supply Current	I _{dd}	V _{DD} = 3.3V, VC = 0/3.3V (No RF Signal)		13		uA
Control Current	I _{ctrl}	V _{DD} = 3.3V, VC = 3.3V (No RF Signal)		2		uA

Recommended Footprint Patterns

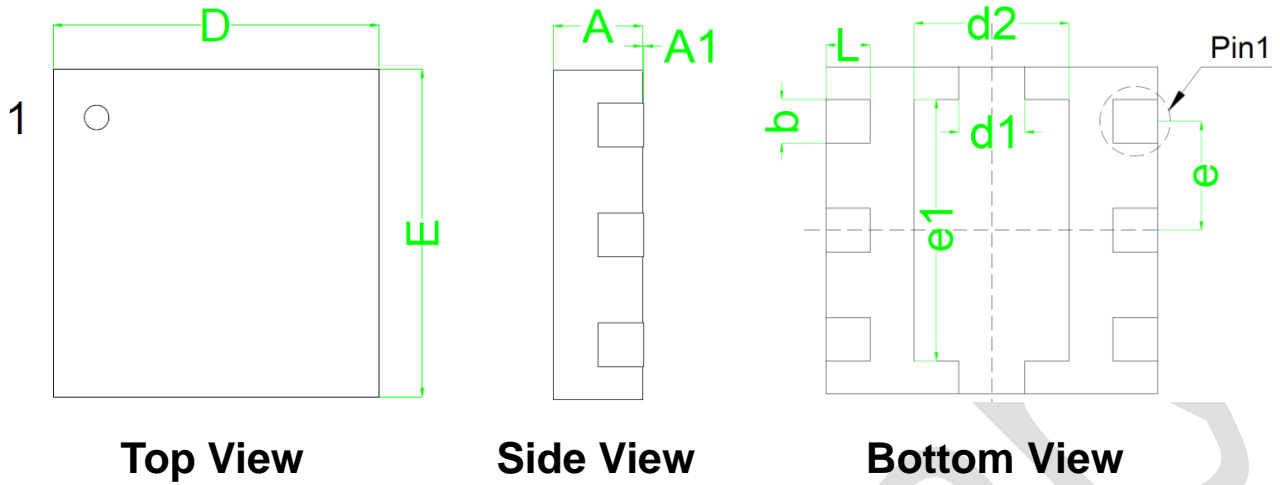


Metallization Top View



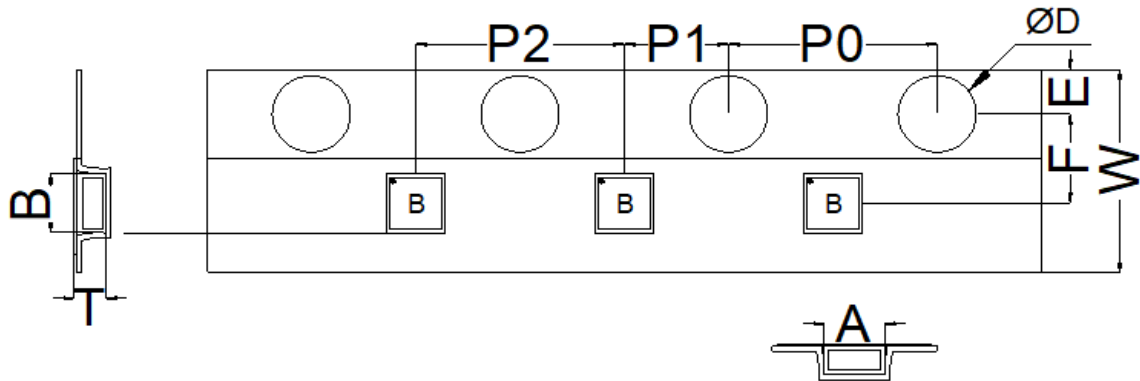
Stencil Aperture Top View

Package Dimensions



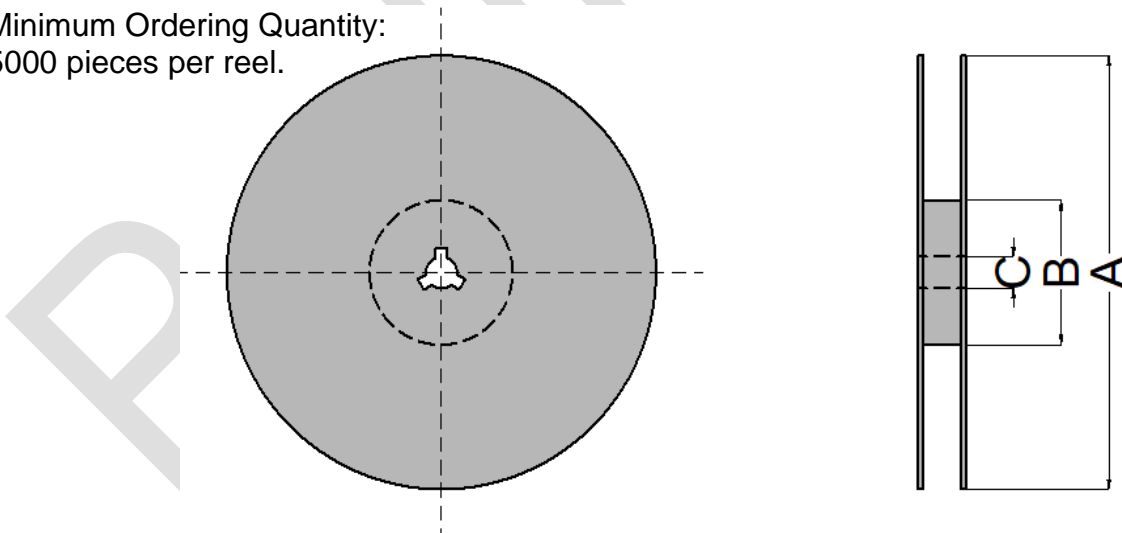
Symbol	Min	Max	Unit
A	0.400	0.500	mm
A1	0.000	0.050	
b	0.170	0.270	
D	1.400	1.500	
d1	0.300 REF		
d2	0.700 REF		
E	1.400	1.500	
e	0.500 TYP.		
e1	1.200 REF		
L	0.125	0.225	

■Tape and Reel Dimensions



Symbol	Min	Max	Unit
A	1.65	1.75	mm
B	1.65	1.75	
ØD	1.50	1.60	
E	1.65	1.85	
F	3.45	3.55	
P0	3.90	4.10	
P1	1.95	2.05	
P2	3.90	4.10	
T	0.55	0.65	
W	7.70	8.30	

Minimum Ordering Quantity:
5000 pieces per reel.



Symbol	Min	Max	Unit
A	Ø177	Ø179	mm
B	Ø53.5	Ø54.5	
C	Ø13.0	Ø13.5	