

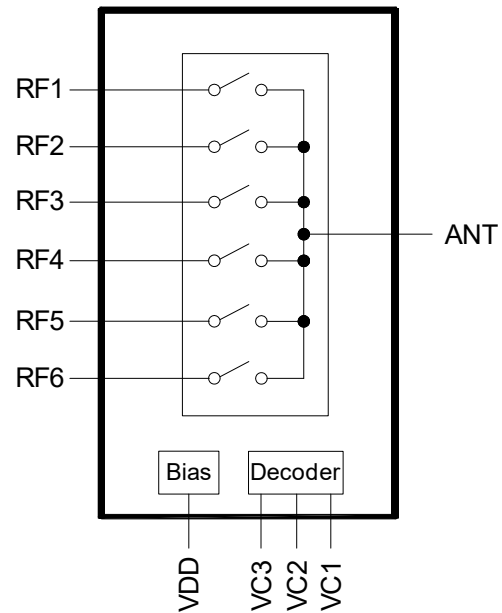
Features

- **Low Insertion Loss: 0.55 dB @ 2.7 GHz**
- **High Isolation: 27 dB @ 2.7 GHz**
- **Low control voltage: 1.3 to 3.0 V**
- **No external DC blocking capacitors required**

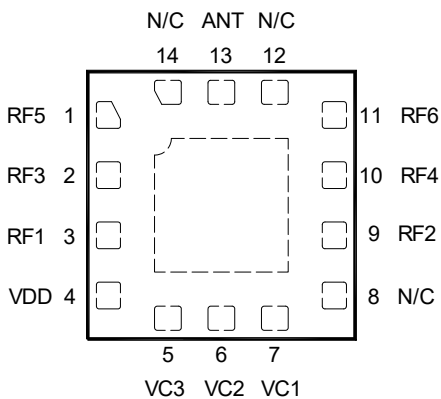
Description

The HWS556 is a SOI (Silicon On Insulator) multi ports switch operating at 0.5-3.8 GHz in a XQFN14L (2x2x0.55mm) package. The HWS556 features low insertion loss with very low DC power consumption. This switch can be used in any 2G/ 3G/ 4G antenna diversity systems for transmit/ receive or antenna diversity functions.

Functional Block Diagram



Pin Out (Top View)



Pin Names and Descriptions

Pin #	Name	Description	Pin #	Name	Description
1	RF5	RF output port 5	8	N/C	Not connected
2	RF3	RF output port 3	9	RF2	RF output port 2
3	RF1	RF output port 1	10	RF4	RF output port 4
4	VDD	DC power supply	11	RF6	RF output port 6
5	VC3	DC control voltage 3	12	N/C	Not connected
6	VC2	DC control voltage 2	13	ANT	Antenna port
7	VC1	DC control voltage 1	14	N/C	Not connected

Electrical Specifications at 25°C with VDD=2.6V, Vc=0/1.8V, Pin=0dBm

Parameter	Test Conditions		Min.	Typ.	Max.	Unit
RF Specification						
Insertion Loss	ANT port to RF1/2/3/4/5/6 port	0.5-1.0GHz		0.45	0.55	dB
		1.0-2.0GHz		0.50	0.65	dB
		2.0-3.0GHz		0.55	0.75	dB
		3.4-3.8GHz		0.90	1.40	dB
Isolation	ANT port to RF1/2/3/4/5/6 port	0.5-1.0GHz	35	38		dB
		1.0-2.0GHz	27	29		dB
		2.0-3.0GHz	25	27		dB
		3.4-3.8GHz	20	22		dB
Return Loss	ANT port to RF1/2/3/4/5/6 port	0.5-1.0GHz		24		dB
		1.0-2.0GHz		25		dB
		2.0-3.0GHz		17		dB
		3.4-3.8GHz		9		dB
Input Power for 0.1dB Compression	ANT to RF port	0.8-3.8GHz		37.5		dBm
2 nd Harmonics	ANT to RF port	Pin=+26dBm 0.5-3.0GHz		93		dBc
3 rd Harmonics	ANT to RF port	Pin=+26dBm 0.5-3.0GHz		96		dBc
2 nd Harmonics	ANT to RF port	Pin=+26dBm 3.4-3.8GHz		90		dBc
3 rd Harmonics	ANT to RF port	Pin=+26dBm 3.4-3.8GHz		93		dBc
3 rd Order Input Intercept Point	ANT to RF port	Pin=+26dBm, 2.0GHz $\Delta f=1\text{MHz}$		68		dBm
DC Specification (Decoder)						
Supply Voltage	V _{DD}		2.5	3.0	4.8	V
Supply Current	I _{DD}	V _{DD} =2.5V		40		uA
Control Voltage	V _c		High	1.3	1.8	3.0
			Low	0		0.3
Control Current	I _c	V _c =1.8V		0.5	1	uA
Shutdown Mode Supply Current	I _{off}	V _{DD} =3V All V _c =shutdown mode		5	10	uA
Switching Specification						
Switching Time		50% V _c to 90/10% RF		1.5		us

Note: All measurements made in a 50 ohm system with 0/+2.6V control voltages, unless otherwise specified.

Logic Table for Switch On-Path (high=1.8V, low= 0V)
SP6T

VC1	VC2	VC3	RF1	RF2	RF3	RF4	RF5	RF6	
0	0	0	on	off	off	off	off	off	
0	0	1	off	on	off	off	off	off	
0	1	0	off	off	on	off	off	off	
0	1	1	off	off	off	on	off	off	
1	0	0	off	off	off	off	on	off	
1	0	1	off	off	off	off	off	on	
1	1	0	off	off	on	off	on	off	
1	1	1	Shutdown mode						

Isolation Matrix

On Port	Frequency(GHz)	Isolation (dB)					
		RF1	RF2	RF3	RF4	RF5	RF6
Antenna to Port							
RF1	1.0		41	44	38	39	35
RF1	2.0		35	33	32	31	29
RF1	2.7		32	28	29	27	26
RF1	3.8		28	24	26	23	23
RF2	1.0	41		37	45	35	38
RF2	2.0	34		31	34	29	30
RF2	2.7	32		29	29	26	27
RF2	3.8	28		25	25	23	23
RF3	1.0	41	42		39	41	35
RF3	2.0	33	35		32	31	29
RF3	2.7	29	32		30	26	26
RF3	3.8	25	28		26	21	23
RF4	1.0	41	40	38		35	40
RF4	2.0	35	33	32		29	31
RF4	2.7	32	30	29		26	26
RF4	3.8	28	27	26		22	22
RF5	1.0	50	42	41	40		36
RF5	2.0	39	35	32	33		30
RF5	2.7	34	32	28	30		27
RF5	3.8	29	28	23	26		23
RF6	1.0	42	50	39	40	36	
RF6	2.0	35	39	33	32	30	
RF6	2.7	32	34	30	28	27	
RF6	3.8	27	29	26	24	23	