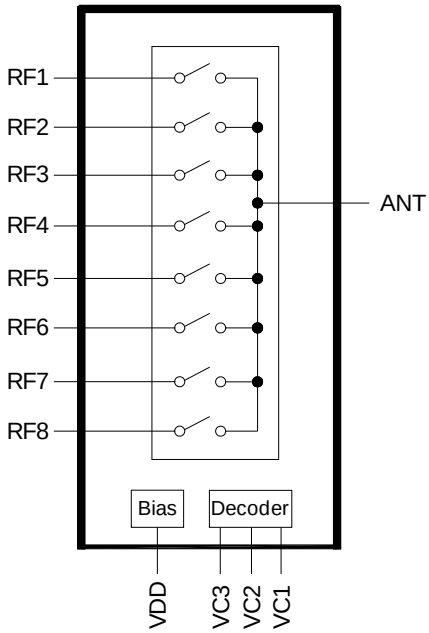
Features

- **Low Insertion Loss: 0.75 dB @ 2.7 GHz**
- **High Isolation: 20 dB @ 2.7 GHz**
- **Low control voltage: 1.3 to 3.0 V**
- **No external DC blocking capacitors required**

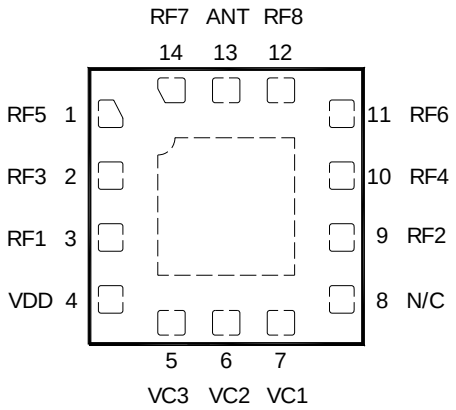
Description

The HWS558 is a SOI (Silicon On Insulator) multi ports switch operating at 0.5-3.0 GHz in a XQFN14L (2x2x0.55mm) package. The HWS558 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	RF8	RF output port 8
6	VC2	DC control voltage 2	13	ANT	Antenna port
7	VC1	DC control voltage 1	14	RF7	RF output port 7

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 1.0-2.0GHz 2.0-3.0GHz		0.50 0.60 0.75		dB dB dB
Insertion Loss	ANT port to RF7/8 port	0.5-1.0GHz 1.0-2.0GHz 2.0-3.0GHz		0.50 0.65 0.90		dB dB dB
Isolation	ANT port to RF1/2/3/4/5/6 port	0.5-1.0GHz 1.0-2.0GHz 2.0-3.0GHz		37 31 27		dB dB dB
Isolation	ANT port to RF7/8 port	0.5-1.0GHz 1.0-2.0GHz 2.0-3.0GHz		30 23 20		dB dB dB
Return Loss	ANT port to RF1/2/3/4/5/6 port	0.5-1.0GHz 1.0-2.0GHz 2.0-3.0GHz		25 20 16		dB dB dB
Return Loss	ANT port to RF7/8 port	0.5-1.0GHz 1.0-2.0GHz 2.0-3.0GHz		20 16 12		dB dB dB
Input Power for 0.1dB Compression	ANT to RF port	0.8-2.7GHz		37.5		dBm
2nd Harmonics	ANT to RF port	Pin=+26dBm 0.5-3.0GHz		90		dBc
3rd Harmonics	ANT to RF port	Pin=+26dBm 0.5-3.0GHz		93		dBc
3rd Order Input Intercept Point	ANT to RF port	Pin=+26dBm, 2.0GHz Δf=1MHz		66		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 High Low	Vc		1.3 0	1.8	3.0 0.3	V
Control Current	Ic	Vc=1.8V		0.5	1	uA
Shutdown Mode Supply Current	I_{off}	VDD=3V All Vc=shutdown mode		5	10	uA
Switching Specification						
Switching Time		50% Vc to 90/10% RF		1.2		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)

SP8T

VC1	VC2	VC3	RF1	RF2	RF3	RF4	RF5	RF6	RF7	RF8
0	0	0	on	off	off	off	off	off	off	off
0	0	1	off	on	off	off	off	off	off	off
0	1	0	off	off	on	off	off	off	off	off
0	1	1	off	off	off	on	off	off	off	off
1	0	0	off	off	off	off	on	off	off	off
1	0	1	off	off	off	off	off	on	off	off
1	1	0	off	off	off	off	off	off	on	off
1	1	1	off	off	off	off	off	off	off	on

Isolation Matrix

On Port	Frequency (GHz)	Isolation (dB)							
		RF1	RF2	RF3	RF4	RF5	RF6	RF7	RF8
Antenna to Port									
RF1	1.0		43	42	39	39	35	29	30
RF1	2.0		36	32	33	31	29	22	23
RF1	2.7		33	28	30	27	27	19	21
RF2	1.0	43		38	44	35	39	28	30
RF2	2.0	36		32	33	29	31	22	24
RF2	2.7	33		29	29	26	28	19	21
RF3	1.0	36	43		40	41	36	29	30
RF3	2.0	29	36		33	30	29	22	24
RF3	2.7	26	34		30	26	27	19	21
RF4	1.0	43	36	39		35	42	29	31
RF4	2.0	36	31	33		29	30	22	24
RF4	2.7	33	28	30		26	26	19	21
RF5	1.0	46	44	35	41		37	31	31
RF5	2.0	37	36	28	34		30	23	24
RF5	2.7	33	33	25	30		27	19	21
RF6	1.0	43	47	40	36	36		29	33
RF6	2.0	36	38	33	29	30		22	24
RF6	2.7	33	34	30	26	27		19	20
RF7	1.0	48	44	47	42	40	39		33
RF7	2.0	38	37	35	34	30	31		25
RF7	2.7	34	33	30	30	25	27		21
RF8	1.0	44	48	41	47	38	39	31	
RF8	2.0	36	38	34	36	30	29	23	
RF8	2.7	33	34	30	31	27	25	20	

Absolute Maximum Ratings

Parameter	Absolute Maximum
RF Input Power, 0.5-3.0 GHz	+37.5dBm
Supply Voltage	+5.0V
Control Voltage	+3.0V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C
Electrostatic Discharge HBM, Class 1C	1000V

Package Dimensions

XQFN-14L (2.0X2.0X0.55mm)