DATA SHEET

SKY13416-485LF: 0.1 to 6.0 GHz SP6T Antenna Switch

Applications

- Any 2G/3G/4G antenna diversity or LTE (TDD/FDD) transmit/receive system for which GSM transmit is not required
- Cable modems
- Set-top boxes
- Filter band switching
- Relay/replacement to switch between DOCSIS 3.0 and DOCSIS 3.1 configuration

Features

- Broadband frequency range: 0.1 to 6.0 GHz
- Low insertion loss: 0.6 dB typical @ 5.0 GHz
- High isolation: >26 dB @ 2.7 GHz
- Integrated logic
- Small QFN (14-pin, 2.0 x 2.0 mm) package
- (MSL1, 260 °C per JEDEC J-STD-020)
- Ultra-high-linearity performance:
  - CTB <–100 dBc
  - CSO <–100 dBc
- Low insertion loss: 0.45 dB typical @ 1.5 GHz
- High isolation: >28 dB @ 1.5 GHz
- No external DC blocking capacitors required
- DC supply voltage: 2.5 V to 4.8 V
- For RoHS and other product compliance information, see the Skyworks Certificate of Conformance.

Description

The SKY13416-485LF is a single pole, six-throw (SP6T) antenna switch. A functional block diagram is shown in Figure 1. The high-linearity performance and low insertion loss achieved by the SKY13416-485LF make it an ideal choice for main/diversity switching commonly used in LTE-based handsets, data cards, and tablets that use antenna diversity solutions.

The SKY13416-485LF is part of a scalable family of products that covers SP4T through SP8T switches that allow up to eight bands of WCDMA/LTE:

- SKY13414-485LF SP4T Antenna Switch (Data Sheet #201689)
- SKY13415-485LF SP5T Antenna Switch (Data Sheet #201704)
- SKY13416-485LF SP6T Antenna Switch (this Data Sheet)
- SKY13417-485LF SP7T Antenna Switch (Data Sheet #201661)
- SKY13418-485LF SP8T Antenna Switch (Data Sheet #201712)

The symmetric port designs provide flexibility in signal routing for both receive diversity and higher power TD-SCDMA/TDD-LTE, WCDMA/FDD, and LTE transmit/receive applications.

The flexible design of the SKY13416-485LF allows the part to be used as a 75 Ω switch. The high-linearity performance and low insertion loss of the SKY13642-485LF meet the most stringent requirements of DOCSIS 3.1 applications.

The SKY13642-485LF is a "reflective short" on the isolated port.

Switching is controlled by three CMOS/TTL-compatible control voltage inputs (V1, V2, and V3). Depending on the logic voltage level applied to the control pins, the ANT pin is connected to one of six switched RF outputs (RF1 to RF6) using a low insertion loss path, while the paths between the ANT pin and the other RF pins are in a high isolation state. No external blocking capacitors are required on the RF paths unless VDC is externally applied.

The SKY13416-485LF is manufactured in a compact, 14-pin 2.0 x 2.0 mm, Quad Flat No-Lead (QFN) package.

The pin configuration and package are shown in Figure 2. Signal pin assignments and functional pin descriptions are provided in Table 1.

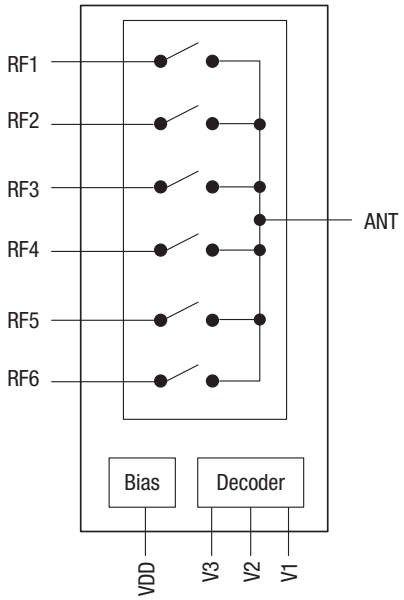


Figure 1. Functional Block Diagram

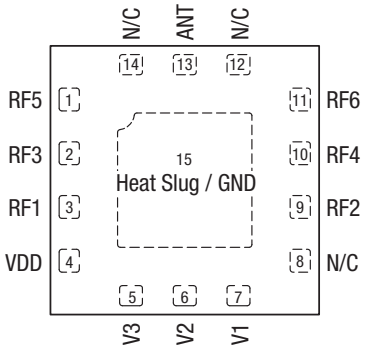


Figure 2. Pinout (Top View)

Table 1. Signal Descriptions

Pin	Name	Description	Pin	Name	Description
1	RF5	RF I/O path 5	9	RF2	RF I/O path 2
2	RF3	RF I/O path 3	10	RF4	RF I/O path 4
3	RF1	RF I/O path 1	11	RF6	RF I/O path 6
4	VDD	DC power supply	12	N/C[1]	Not connected
5	V3	DC control voltage 3	13	ANT	Antenna port
6	V2	DC control voltage 2	14	N/C[1]	Not connected
7	V1	DC control voltage 1	15	Heat slug/GND[1]	Must be connected to ground
8	N/C	Not connected			

1. The heat slug/GND (Pin 15) is the only valid connection to ground. The N/C pins (8, 12, 14) are not wire-bonded internally and cannot be used for grounding.

Functional Description

The SKY13416-485LF includes an internal negative voltage generator and decoder that eliminate the need for external DC blocking capacitors on the RF ports. No external components are required for proper operation. DC decoupling capacitors may be added on the VDD and control lines if necessary.

Switching is controlled by three control voltage inputs, V1, V2, and V3. Depending on the logic voltage level applied to the control pins, the antenna pin is connected to one of six switched RF outputs.

A seventh state enables RF3 and RF5 at the same time. The output power measured at RF3 and RF5 in this state is 3 dB less than the typical insertion loss.

Shutdown mode is enabled by connecting all three control pins (V1, V2, and V3) to logic high. This mode reduces the overall current consumption of the device to 5 uA typical.

Electrical and Mechanical Specifications

The absolute maximum ratings of the SKY13416-485LF are provided in Table 2. Electrical specifications are provided in Table 3.

The state of the SKY13416-485LF is determined by the logic shown in Table 4.

The isolation matrix shown in Table 5 provides the port-to-port and antenna-to-port isolation for all available RF states at four different frequencies: 1.0 GHz, 2.0 GHz, 2.7 GHz, and 3.8 GHz Table 6 shows the insertion loss and return loss.

Table 2. Absolute Maximum Ratings [1]

Parameter	Symbol	Minimum	Maximum	Units
Supply voltage	V_{DD}	2.5	5.0	V
Control voltage (V1, V2, and V3)	V_{CTL}	–0.5	+3.0	V
RF input power (RF1 to RF6): 0.1 to 2.7 GHz 3.4 to 5.0 GHz	P_{IN}		 +37.5 +36.5	 dBm dBm
Operating temperature	T_{OP}	–40	+85	°C
Storage temperature	T_{STG}	–55	+150	°C
Electrostatic discharge: Charged Device Model (CDM), Class 1V Human Body Model (HBM), Class 1B	ESD		 1000 500	 V V

1. Exposure to maximum rating conditions for extended periods may reduce device reliability. There is no damage to device with only one parameter set at the limit and all other parameters set at or below their nominal value. Exceeding any of the limits listed here may result in permanent damage to the device.

ESD Handling: Industry-standard ESD handling precautions must be adhered to at all times to avoid damage to this device.

Table 3. Electrical Specifications[1]

(V_{DD} = 2.6 V, V1 = V2 = V3 = 0 / 1.8 V, P_{IN} = 0 dBm, TOP = +25 °C, Characteristic Impedance [Z_O] = 50 Ω, Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
DC Specifications						
Supply voltage	V_{DD}		2.5	3.0	4.8	V
Supply current	I_{DD}			40	50	uA
Control voltage: High Low	 V_{CTL_H} V_{CTL_L}		1.35	1.80	2.70 0.4	 V V
Control current	I_{CTL}	V_{CTL} = 1.8 V		0.5	1.0	uA
Shutdown mode supply current	I_{OFF}	V1/2/3 = 1.8 V, V_{DD} = 3 V		5	10	uA
Turn-on switching time	T_{ON}	50% of final control voltage to 90% of final RF power, switching between RF1/2/3/4/5/6		1.75	2.20	us
RF Specifications						
Insertion loss (ANT pin to RF1/2/3/4/5/6 pins)	IL	0.005 to 0.200 GHz (50 Ω or 75 Ω) 0.2 to 1.0 GHz (50 Ω or 75 Ω) 1.0 to 2.0 GHz (50 Ω or 75 Ω) 2.0 to 2.7 GHz 3.4 to 3.8 GHz		0.4 0.45 0.45 0.50 0.50	 0.55 0.60 0.95	dB dB dB dB dB
Insertion loss (ANT-RF1/2/3/4)	IL	3.8 to 6.0 GHz		0.6	1.4	dB
Insertion loss (ANT-RF5/6)	IL	3.8 to 6.0 GHz		0.9	2.2	dB
Isolation (ANT pin to RF1/2/3/4/5/6 pins)	Iso	0.005 to 1.0 GHz (50 Ω or 75 Ω) 1.0 to 2.0 GHz (50 Ω or 75 Ω) 1.0 to 2.0 GHz 2.0 to 2.7 GHz 3.4 to 3.8 GHz	36 28 25 17 15	39 29 27 20 18		dB dB dB dB dB
Input return loss (ANT pin to RF1/2/3/4/5/6 pins)	RL	0.1 to 1.0 GHz 1.0 to 2.0 GHz 2.0 to 2.7 GHz 3.4 to 3.8 GHz 3.8 to 6.0 GHz	24 23 15 8.5 6.0	27 25 18 10 12		dB dB dB dB dB
Return loss (RFC pin to RF1/2/3/4/5/6 pins)	RL	5 to 200 MHz (75 Ω) 0.2 to 1.5 GHz (75 Ω)		27 25		dB dB
Second harmonics: ANT pin to RF1/2/3/4/5/6 pins ANT pin to RF2/3/4/5/6 pins ANT pin to RF1/2/3/4/5/6 pins	 2fo 2fo 2fo (75 Ω)	 P_{IN} = +26 dBm, 0.1 to 2.7 GHz P_{IN} = +26 dBm, 3.4 to 3.8 GHz P_{IN} = +73 dBmV, 5 MHz to 1.5 GHz		 +96 +92 +96		 dBc dBc dBc
Third harmonics: ANT pin to RF1/2/3/4/5/6 pins ANT pin to RF2/3/4/5/6 pins ANT pin to RF1/2/3/4/5/6 pins	 3fo 3fo 3fo (75 Ω)	 P_{IN} = +26 dBm, 0.1 to 2.7 GHz P_{IN} = +26 dBm, 3.4 to 3.8 GHz P_{IN} = +73 dBmV, 5 MHz to 1.5 GHz		 +99 +94	 +99	 dBc dBc dBc
Harmonics (ANT-RF3,4,5,6) +26 dBm input power	2fo 3fo 2fo 3fo	3.8 to 5 GHz 3.8 to 5 GHz 3.8 to 5 GHz, VSWR 5:1 3.8 to 5 GHz, VSWR 5:1		–78 –79 –70 –75	–55 –53 –40 –42	dBm dBm dBm dBm
0.1 dB compression point @ 50 Ω (ANT pin to RF1/2/3/4/5/6 pins) 0.1 dB compression point @ 75 Ω (RFC pin to RF1/2/3/4/5/6 pins)	$P0.1dB_{50\ \Omega}$ $P0.1dB_{75\ \Omega}$	0.1 GHz to 2.7 GHz 3.4 GHz to 5.0 GHz 1.0 GHz	+36.5	+37.5 +37.1 +84.5		dBm dBm dBmV
Third order input intercept point	IIP	@ 2.0 GHz, P_{IN} = +26 dBm, Δf = 1 MHz		+70		dBm
CTB		79 channels, +45 dBmV per channel output power		–100		dBc

Table 3. Electrical Specifications[1] (Continued)

(V_{DD} = 2.6 V, V1 = V2 = V3 = 0 / 1.8 V, P_{IN} = 0 dBm, TOP = +25 °C, Characteristic Impedance [Z_O] = 50 Ω, Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
CSO		79 channels, +45 dBmV per channel output power		–100		dBc
Typical RF Performance (Measured in EVB)						
Insertion loss (RFC pin to RF1/2/3/4/5/6 pins)	IL EVB	5 to 200 MHz 0.2 to 1.5 MHz		0.7 1.1		dB dB
Return loss (RFC pin to RF1/2/3/4/5/6 pins)	RL EVB	5 to 200 MHz 0.2 to 1.5 MHz		–20 –15		dB dB

1. Performance is assured only under the conditions listed in this table.

Table 4. Control Logic[1]

Control Pins			Switched RF Outputs					
V1 (Pin 7)	V2 (Pin 6)	V3 (Pin 5)	RF1 (Pin 3)	RF2 (Pin 9)	RF3 (Pin 2)	RF4 (Pin 10)	RF5 (Pin 1)	RF6 (Pin 11)
0	0	0	Insertion loss	Isolation	Isolation	Isolation	Isolation	Isolation
0	0	1	Isolation	Insertion loss	Isolation	Isolation	Isolation	Isolation
0	1	0	Isolation	Isolation	Insertion loss	Isolation	Isolation	Isolation
0	1	1	Isolation	Isolation	Isolation	Insertion loss	Isolation	Isolation
1	0	0	Isolation	Isolation	Isolation	Isolation	Insertion loss	Isolation
1	0	1	Isolation	Isolation	Isolation	Isolation	Isolation	Insertion loss
1	1	0	Isolation	Isolation	Insertion loss	Isolation	Insertion loss	Isolation
1	1	1	Shutdown mode					

1. “High” = 1.8 V; “Low” = 0 V. Any state other than that described in this table places the switch into an undefined state. An undefined state does not damage the device. Insertion loss in V1/V2/V3 = 110b state is 3 dB lower than typical insertion loss.

Table 5. Isolation Matrix

(V_{DD} = 2.6 V, V1 = V2 = V3 = 0 / 1.8 V, P_{IN} = 0 dBm, T_{OP} = +25 °C, Characteristic Impedance [Z_O] = 50 Ω, Unless Otherwise Noted)

"On" Port	Frequency (GHz)	Isolation (dB)					
		RF1	RF2	RF3	RF4	RF5	RF6
Antenna-to-Port							
RF1	1.0		–48	–41	–42	–39	–38
RF1	2.0		–40	–32	–36	–30	–31
RF1	2.7		–37	–28	–33	–26	–28
RF1	3.8		–32	–18	–34	–25	–31
RF2	1.0	–45		–40	–40	–36	–39
RF2	2.0	–38		–34	–33	–30	–31
RF2	2.7	–35		–31	–29	–27	–27
RF2	3.8	–32		–33	–18	–29	–25
RF3	1.0	–38	–47		–43	–42	–38
RF3	2.0	–31	–40		–36	–31	–31
RF3	2.7	–28	–36		–33	–26	–28
RF3	3.8	–18	–34		–34	–18	–31
RF4	1.0	–44	–38	–40		–37	–43
RF4	2.0	–37	–32	–34		–30	–31
RF4	2.7	–34	–29	–31		–27	–27
RF4	3.8	–33	–18	–33		–29	–19
RF5	1.0	–47	–47	–38	–44		–39
RF5	2.0	–36	–40	–30	–36		–32
RF5	2.7	–31	–36	–27	–33		–29
RF5	3.8	–22	–33	–17	–33		–30
RF6	1.0	–45	–49	–41	–39	–38	
RF6	2.0	–38	–37	–35	–31	–31	
RF6	2.7	–35	–32	–31	–28	–28	
RF6	3.8	–33	–23	–32	–17	–29	
Port-to-Port							
RF1	1.0		–52	–31	–52	–44	–43
RF1	2.0		–43	–25	–44	–35	–37
RF1	2.7		–38	–22	–39	–30	–33
RF1	3.8		–32	–23	–29	–21	–24
RF2	1.0	–53		–47	–31	–40	–44
RF2	2.0	–42		–40	–25	–34	–35

Table 5. Isolation Matrix (Continued)

(V_{DD} = 2.6 V, V1 = V2 = V3 = 0 / 1.8 V, P_{IN} = 0 dBm, T_{OP} = +25 °C, Characteristic Impedance [Z_O] = 50 Ω, Unless Otherwise Noted)

"On" Port	Frequency (GHz)	Isolation (dB)					
		RF1	RF2	RF3	RF4	RF5	RF6
RF2	2.7	–38		–37	–22	–31	–30
RF2	3.8	–31		–27	–25	–23	–22
RF3	1.0	–31	–54		–53	–33	–44
RF3	2.0	–24	–44		–44	–26	–37
RF3	2.7	–21	–39		–39	–23	–34
RF3	3.8	–24	–32		–29	–21	–24
RF4	1.0	–54	–31	–48		–41	–33
RF4	2.0	–43	–24	–41		–35	–26
RF4	2.7	–39	–22	–37		–32	–23
RF4	3.8	–30	–25	–27		–23	–22
RF5	1.0	–36	–54	–30	–54		–46
RF5	2.0	–30	–44	–24	–44		–38
RF5	2.7	–27	–39	–21	–39		–34
RF5	3.8	–26	–32	–22	–29		–24
RF6	1.0	–54	–37	–50	–31	–43	
RF6	2.0	–43	–30	–41	–24	–36	
RF6	2.7	–39	–27	–37	–21	–33	
RF6	3.8	–30	–27	–27	–24	–23	

Table 6. Insertion Loss (IL) and Return Loss (RL) Matrix

"On" Throw	Frequency (GHz)	IL (dB)	RL_Pole (dB)	RL_Throw (dB)
RF1	1.0	–0.38	–20	–21
RF1	2.0	–0.47	–18	–19
RF1	2.7	–0.47	–18	–19
RF1	3.8	–0.66	–13	–14
RF2	1.0	–0.36	–20	–21
RF2	2.0	–0.44	–19	–18
RF2	2.7	–0.45	–18	–20
RF2	3.8	–0.63	–13	–14
RF3	1.0	–0.38	–20	–20
RF3	2.0	–0.47	–17	–17
RF3	2.7	–0.49	–16	–18
RF3	3.8	–0.71	–12	–13
RF4	1.0	–0.38	–20	–20
RF4	2.0	–0.47	–17	–17
RF4	2.7	–0.48	–17	–18
RF4	3.8	–0.72	–12	–12
RF5	1.0	–0.40	–19	–20
RF5	2.0	–0.50	–17	–17
RF5	2.7	–0.53	–15	–18
RF5	3.8	–0.80	–11	–12
RF6	1.0	–0.36	–19	–20
RF6	2.0	–0.47	–16	–16
RF6	2.7	–0.49	–16	–17
RF6	3.8	–0.76	–11	–12

Table 7. Isolation Matrix (Common Port RFC ↔ Output Port N)

(V_{DD} = 2.6 V, V1 = V2 = V3 = 0 / 1.8 V, P_{IN} = 0 dBm, T_{OP} = +25 °C, Characteristic Impedance [Z_O] = 75 Ω, Unless Otherwise Noted)

Selected Output Port	Frequency (MHz)	Isolation (Common Port RFC ↔ Output Port N) (typical) (dB)					
		RF1	RF2	RF3	RF4	RF5	RF6
RF1	50	Insertion loss	–75	–72	–70	–66	–65
RF1	250	Insertion loss	–61	–62	–57	–53	–52
RF1	500	Insertion loss	–54	–53	–50	–47	–45
RF1	750	Insertion loss	–52	–48	–48	–44	–44
RF1	1000	Insertion loss	–49	–44	–46	–41	–42
RF1	1250	Insertion loss	–45	–41	–42	–37	–39
RF1	1500	Insertion loss	–46	–45	–42	–37	–39
RF2	50	–75	Insertion loss	–69	–71	–65	–68
RF2	250	–60	Insertion loss	–55	–59	–51	–55
RF2	500	–54	Insertion loss	–48	–50	–44	–48
RF2	750	–51	Insertion loss	–47	–47	–43	–45
RF2	1000	–49	Insertion loss	–45	–44	–41	–42
RF2	1250	–45	Insertion loss	–41	–42	–38	–37
RF2	1500	–45	Insertion loss	–42	–46	–38	–38
RF3	50	–69	–75	Insertion loss	–71	–76	–66
RF3	250	–57	–60	Insertion loss	–57	–73	–52
RF3	500	–48	–54	Insertion loss	–50	–56	–46
RF3	750	–45	–51	Insertion loss	–48	–48	–44
RF3	1000	–43	–49	Insertion loss	–46	–43	–43
RF3	1250	–42	–45	Insertion loss	–42	–38	–39
RF3	1500	–47	–45	Insertion loss	–43	–38	–39
RF4	50	–73	–68	–70	Insertion loss	–66	–74
RF4	250	–59	–55	–56	Insertion loss	–52	–73
RF4	500	–53	–47	–48	Insertion loss	–45	–57
RF4	750	–51	–44	–47	Insertion loss	–43	–49
RF4	1000	–48	–43	–45	Insertion loss	–41	–43
RF4	1250	–44	–42	–42	Insertion loss	–38	–38
RF4	1500	–45	–49	–42	Insertion loss	–38	–39
RF5	50	–77	–75	–69	–72	Insertion loss	–68
RF5	250	–72	–61	–57	–58	Insertion loss	–54
RF5	500	–61	–54	–49	–51	Insertion loss	–47
RF5	750	–54	–52	–45	–49	Insertion loss	–45

Table 7. Isolation Matrix (Common Port RFC ↔ Output Port N) (Continued)

((V$_{DD}$ = 2.6 V, V1 = V2 = V3 = 0 / 1.8 V, P$_{IN}$ = 0 dBm, T$_{OP}$ = +25 °C, Characteristic Impedance [Z$_O$] = 75 Ω, Unless Otherwise Noted)

Selected Output Port	Frequency (MHz)	Isolation (Common Port RFC ↔ Output Port N) (typical) (dB)					
		RF1	RF2	RF3	RF4	RF5	RF6
RF5	1000	–48	–49	–43	–47	Insertion loss	–43
RF5	1250	–43	–45	–41	–43	Insertion loss	–40
RF5	1500	–44	–46	–45	–43	Insertion loss	–40
RF6	50	–72	–77	–70	–70	–67	Insertion loss
RF6	250	–60	–72	–56	–56	–53	Insertion loss
RF6	500	–53	–62	–49	–48	–46	Insertion loss
RF6	750	–51	–53	–48	–45	–44	Insertion loss
RF6	1000	–49	–48	–46	–44	–42	Insertion loss
RF6	1250	–45	–44	–42	–42	–39	Insertion loss
RF6	1500	–45	–45	–42	–48	–39	Insertion loss

Table 8. Isolation Matrix (Selected Output Port ↔ Output Port N)

Selected Output Port	Frequency (MHz)	Isolation (Selected Output Port ↔ Output Port N) (typical) (dB)					
		RF1	RF2	RF3	RF4	RF5	RF6
RF1	50	Common port terminated	–83	–59	–83	–72	–71
RF1	250	Common port terminated	–69	–45	–73	–58	–60
RF1	500	Common port terminated	–62	–39	–63	–51	–52
RF1	750	Common port terminated	–57	–37	–59	–48	–50
RF1	1000	Common port terminated	–53	–35	–55	–44	–49
RF1	1250	Common port terminated	–49	–31	–52	–39	–48
RF1	1500	Common port terminated	–50	–32	–54	–40	–54
RF2	50	–85	Common port terminated	–79	–59	–68	–69
RF2	250	–71	Common port terminated	–67	–45	–57	–57
RF2	500	–63	Common port terminated	–58	–38	–50	–49
RF2	750	–58	Common port terminated	–55	–36	–48	–46
RF2	1000	–54	Common port terminated	–53	–34	–47	–43

Table 8. Isolation Matrix (Selected Output Port ↔ Output Port N) (Continued)

Selected Output Port	Frequency (MHz)	Isolation (Selected Output Port ↔ Output Port N) (typical) (dB)					
		RF1	RF2	RF3	RF4	RF5	RF6
RF2	1250	–49	Common port terminated	–52	–31	–47	–39
RF2	1500	–50	Common port terminated	–56	–32	–52	–39
RF3	50	–58	–85	Common port terminated	–83	–62	–73
RF3	250	–45	–70	Common port terminated	–74	–47	–61
RF3	500	–38	–63	Common port terminated	–64	–40	–53
RF3	750	–36	–59	Common port terminated	–58	–38	–51
RF3	1000	–34	–54	Common port terminated	–55	–36	–49
RF3	1250	–31	–50	Common port terminated	–51	–32	–49
RF3	1500	–31	–51	Common port terminated	–53	–33	–54
RF4	50	–95	–58	–81	Common port terminated	–71	–61
RF4	250	–75	–44	–68	Common port terminated	–58	–47
RF4	500	–66	–37	–60	Common port terminated	–50	–40
RF4	750	–60	–35	–57	Common port terminated	–49	–38
RF4	1000	–55	–33	–54	Common port terminated	–47	–36
RF4	1250	–50	–31	–52	Common port terminated	–47	–32
RF4	1500	–51	–31	–55	Common port terminated	–51	–33
RF5	50	–64	–85	–58	–92	Common port terminated	–76
RF5	250	–50	–68	–45	–81	Common port terminated	–64
RF5	500	–44	–61	–38	–66	Common port terminated	–56
RF5	750	–42	–58	–36	–59	Common port terminated	–53
RF5	1000	–40	–53	–34	–54	Common port terminated	–50
RF5	1250	–36	–49	–31	–50	Common port terminated	–48
RF5	1500	–37	–50	–31	–51	Common port terminated	–51

Table 8. Isolation Matrix (Selected Output Port ↔ Output Port N) (Continued)

Selected Output Port	Frequency (MHz)	Isolation (Selected Output Port ↔ Output Port N) (typical) (dB)					
		RF1	RF2	RF3	RF4	RF5	RF6
RF6	50	–90	–63	–82	–58	–73	Common port terminated
RF6	250	–72	–50	–72	–44	–61	Common port terminated
RF6	500	–64	–43	–63	–38	–53	Common port terminated
RF6	750	–59	–41	–58	–36	–50	Common port terminated
RF6	1000	–54	–39	–54	–34	–49	Common port terminated
RF6	1250	–50	–36	–51	–31	–47	Common port terminated
RF6	1500	–51	–37	–53	–31	–52	Common port terminated

Evaluation Board Description

The SKY13416-485LF evaluation board (EVB) is used to test the performance of the SKY13416-485LF SP6T switch. An EVB schematic diagram for 50 Ω applications is provided in Figure 3. An assembly diagram for the EVB for 50 Ω applications is shown in Figure 4.

An EVB schematic diagram for 75 Ω applications is provided in Figure 5. An assembly diagram for the Evaluation Board for 75 Ω applications is shown in Figure 6. Table 9 lists the Bill of Materials (BoM) for the Evaluation Board for 75 Ω applications.

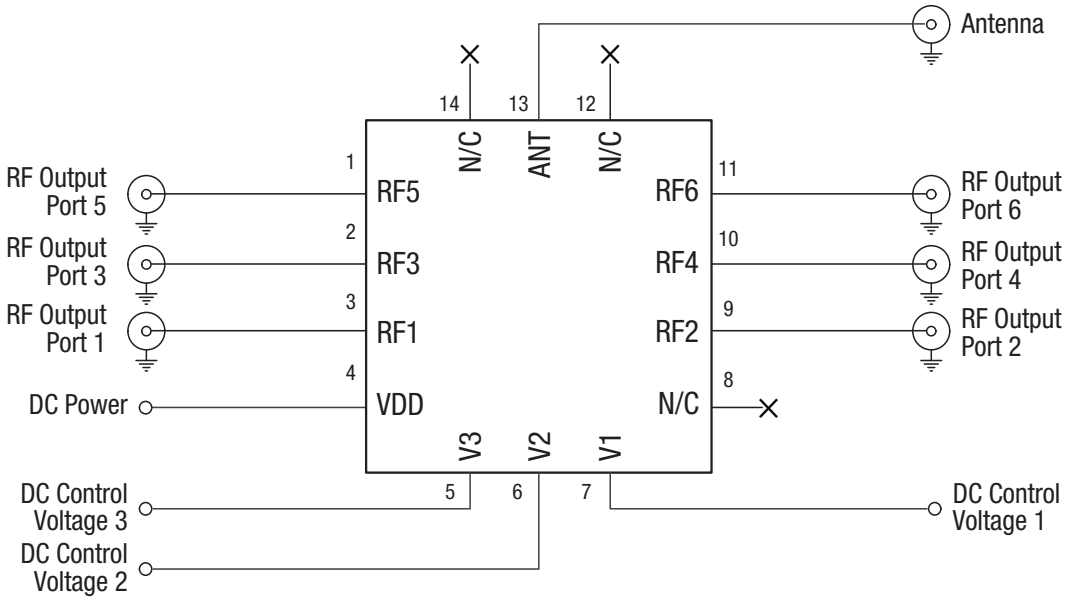


Figure 3. Evaluation Board Schematic for 50 Ω Applications

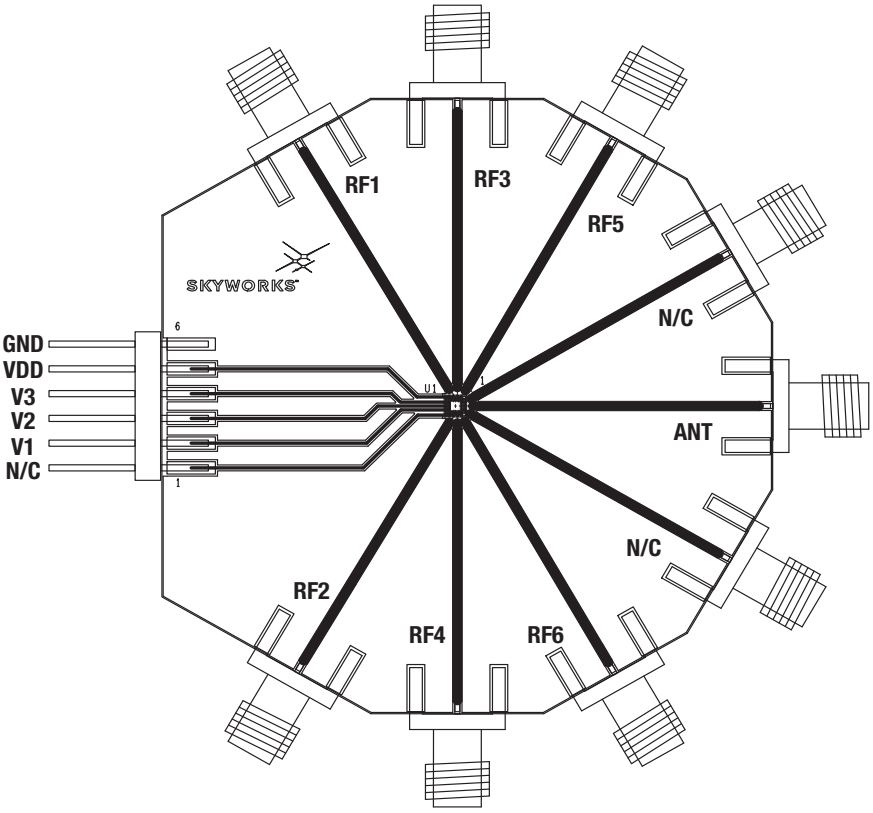


Figure 4. Evaluation Board Assembly Diagram for 50 Ω Applications

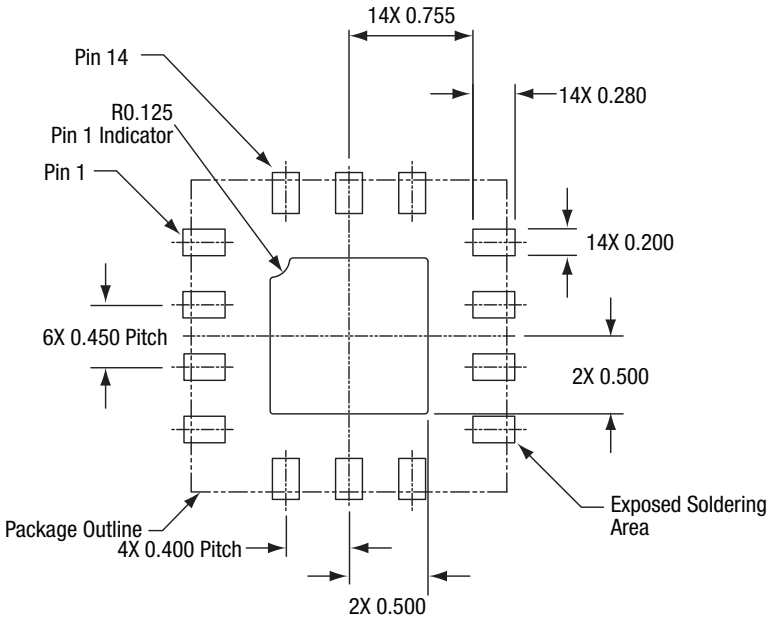


Figure 5. Evaluation Board Schematic for 75 Ω Applications

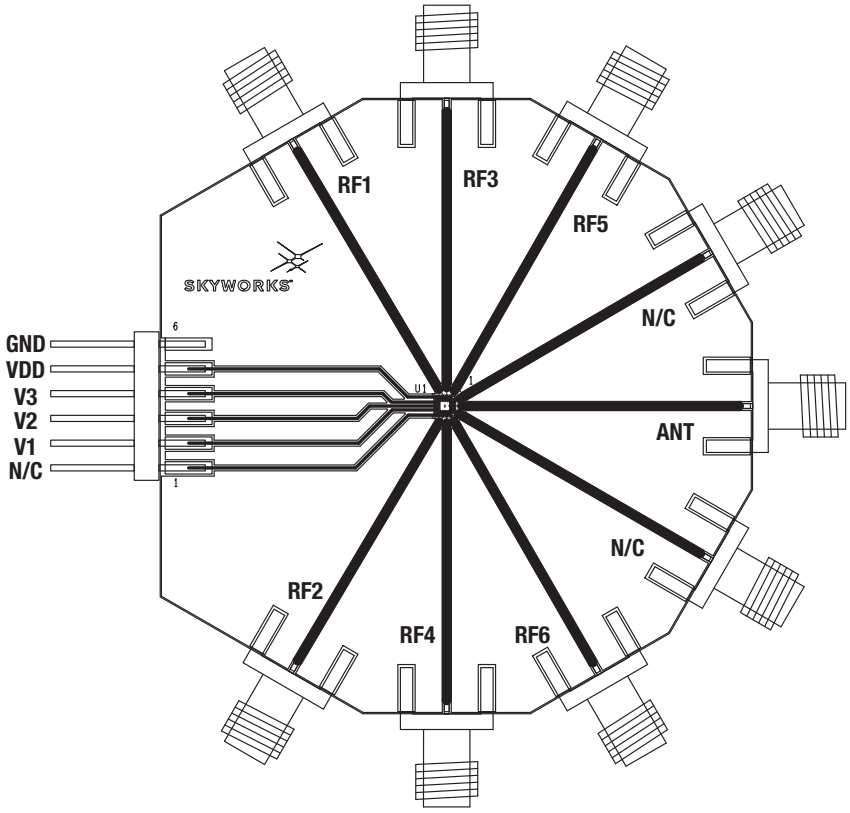


Figure 6. Evaluation Board Assembly Diagram for 75 Ω Applications

Table 9. Evaluation Board Bill of Materials (BOM) for 75 Ω Applications

Component	Description	Value	Mfr Part Number	Vendor
J1	Header, in-line	5 pos.	5-146280-5	TE Connectivity
L1 - L7	Inductor, 0201	3.3 nH	LQP03TN3N3B00D	Murata
RFC - RF7	Connector, F	75 Ω	861V509ER6	Bomar Interconnect
PCB			PTW23-D755-001	South Coast Circuits
U1	RF Switch, SP6T	75 Ω	SKY13642-485LF	Skyworks

Package and Handling Information

Instructions on the shipping container label regarding exposure to moisture after the container seal is broken must be followed. Otherwise, problems related to moisture absorption may occur when the part is subjected to high temperature during solder assembly.

The SKY13416-485LF is rated to Moisture Sensitivity Level 1 (MSL1) at 260 °C. It can be used for lead or lead-free soldering. For additional information, refer to the Skyworks Application Note, *PCB Design & SMT Assembly/ Rework Guidelines for MCM-L Packages*, document number 101752.

Care must be taken when attaching this product, whether it is done manually or in a production solder reflow environment. Production quantities of this product are shipped in a standard tape and reel format.

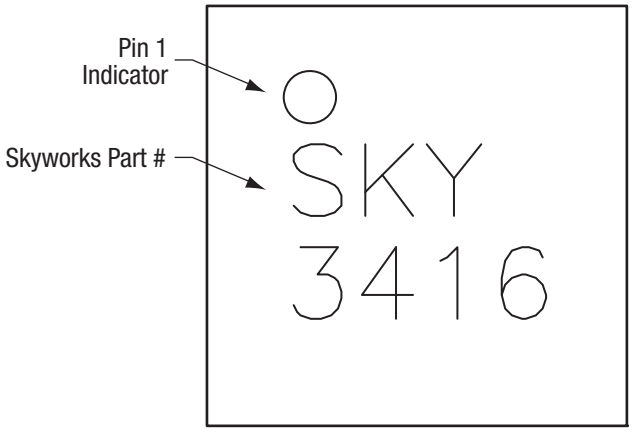
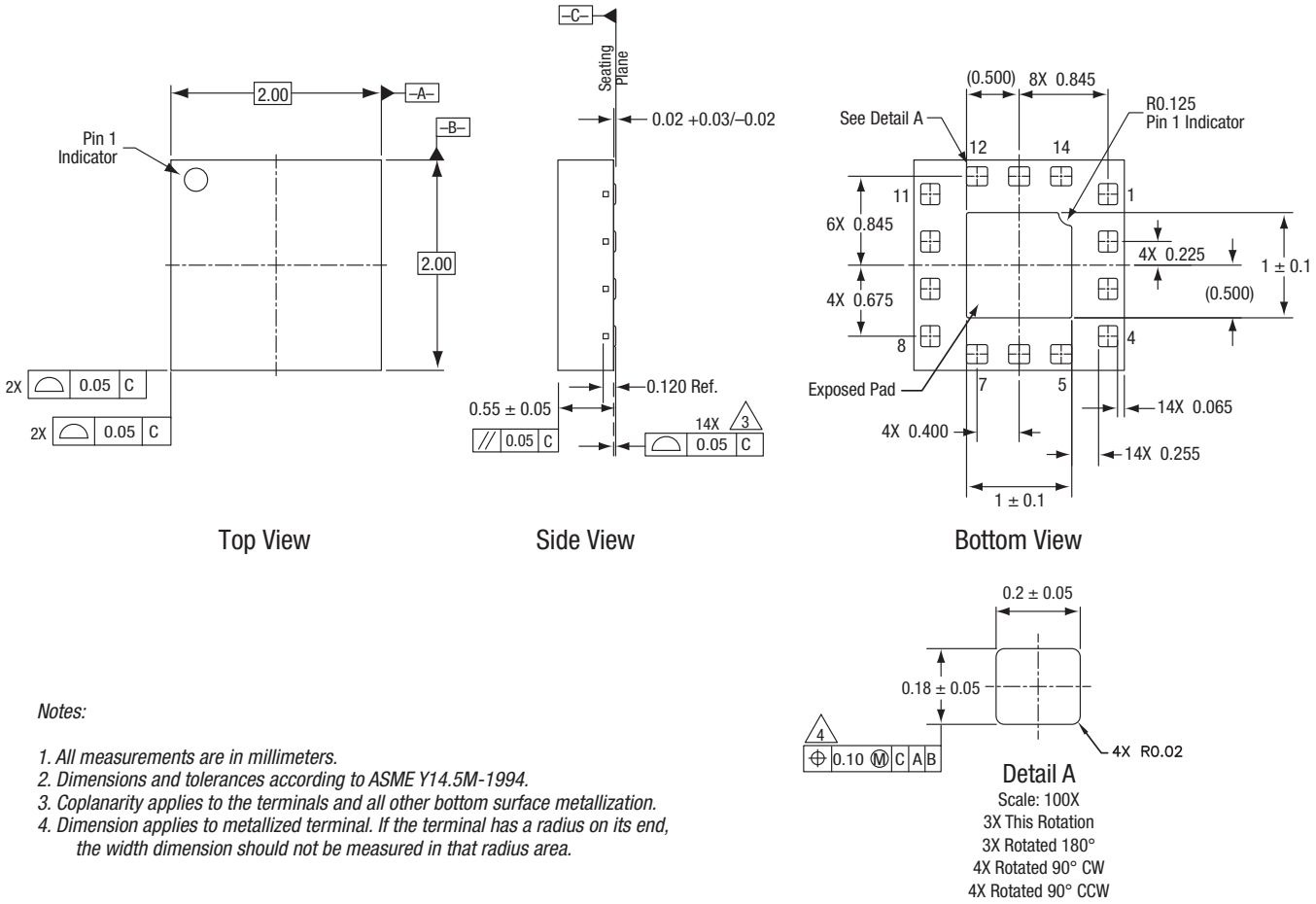


Figure 7. Typical Part Marking



Notes:

1. All measurements are in millimeters.
2. Dimensions and tolerances according to ASME Y14.5M-1994.
3. Coplanarity applies to the terminals and all other bottom surface metallization.
4. Dimension applies to metallized terminal. If the terminal has a radius on its end, the width dimension should not be measured in that radius area.

Figure 8. Package Dimensions

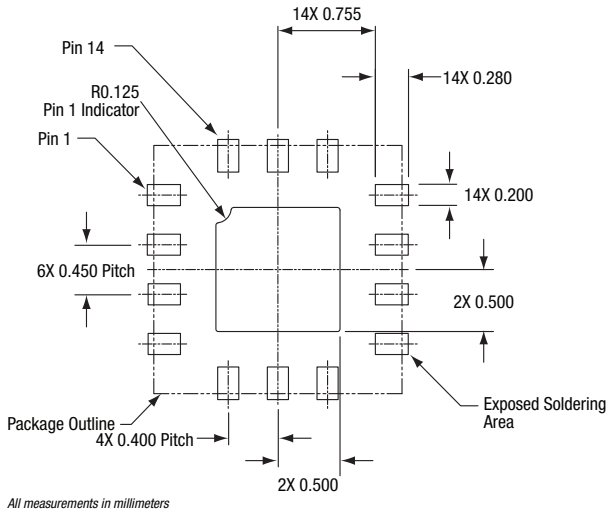
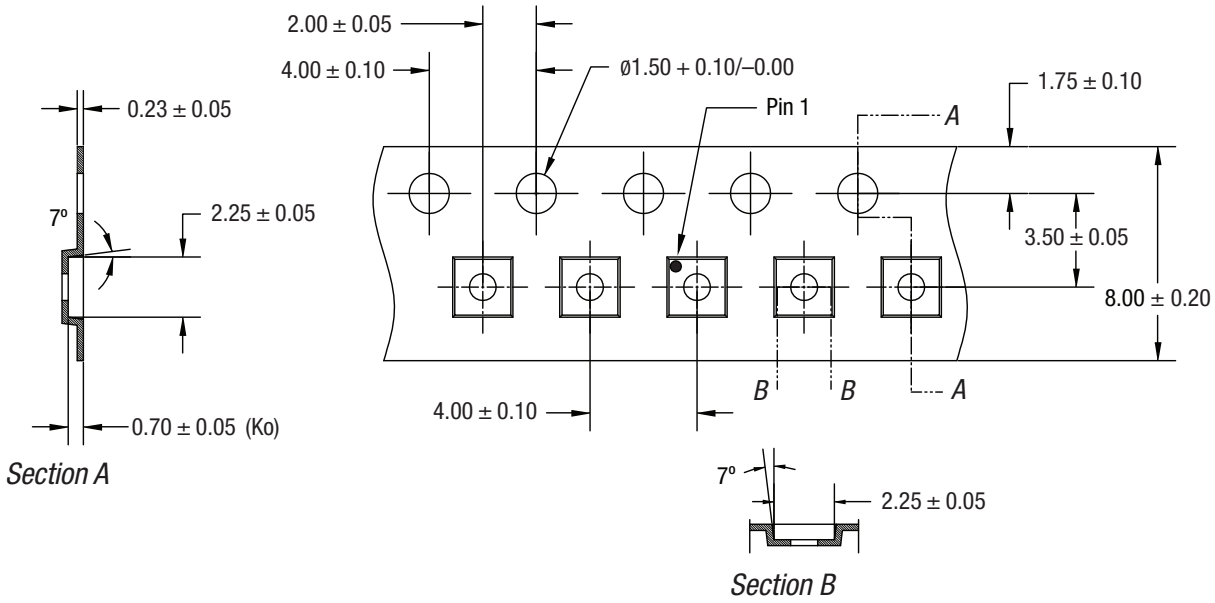


Figure 9. PCB Layout Footprint (Top View)



Notes:

1. *Carrier tape must meet all requirements of Skyworks GP01-D232 procurement spec for tape and reel shipping.*
2. *Carrier tape shall be black conductive polycarbonate bakeable material at 125 ˚C temperature.*
3. *Cover tape shall be transparent conductive with 5.40 mm width.*
4. *ESD-surface resistivity must meet all ESD requirements of Skyworks specified on GP01-D232.*
5. *All measurements are in millimeters.*

Figure 10. Tape and Reel Information

Ordering Information

Part Number	Description	Evaluation Board Part Number
SKY13416-485LF	0.1 to 6.0 GHz SP6T Antenna Switch	SKY13416-485LFEK1 (50 Ω board) SKY13416-485LFEK2 (75 Ω board)