SKY12207-478LF: 0.9 to 4.0 GHz 50 W High Power Silicon PIN Diode SPDT Switch

Applications

- Transmit/receive switching and failsafe switching in TD-SCDMA, WiMAX, and LTE base stations
- Transmit/receive switching in land mobile radios and military communication systems

Features

- High power handling: 50 W CW, 300 W peak
- Low insertion loss: 0.4 dB typical
- High antenna-to-receive isolation: 42 dB @ 2.6 GHz typical
- Controlled with positive power supply
- Bias driver circuit available on request
- Small, QFN (16-pin, 4 x 4 mm) Pb-free package (MSL1, 260 °C per JEDEC J-STD-020)

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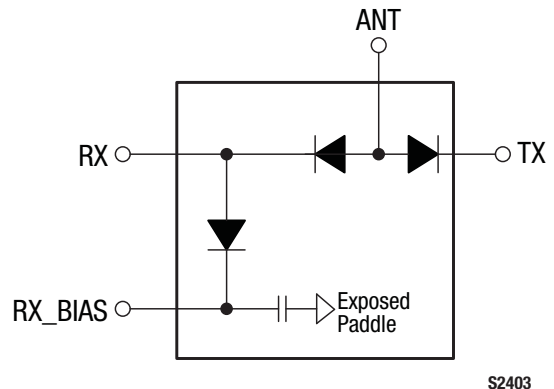
Figure 1. SKY12207-478LF Block Diagram

Description

The SKY12207-478LF is a high power handling, Single-Pole, Double-Throw (SPDT) silicon PIN diode switch. The device operates over the 900 MHz to 4 GHz band. It features low insertion loss, excellent power handling, and superb linearity with low DC power consumption.

The SKY12207-478LF is well-suited for use as a high power transmit/receive switch in a variety of telecommunication systems such as WiMAX, TD-SCDMA, or LTE base stations.

The device is provided in a 4 x 4 mm, 16-pin Quad Flat No-Lead (QFN) package. A functional block diagram is shown in Figure 1. The pin configuration and package are shown in Figure 2. Signal pin assignments and functional pin descriptions are provided in Table 1.
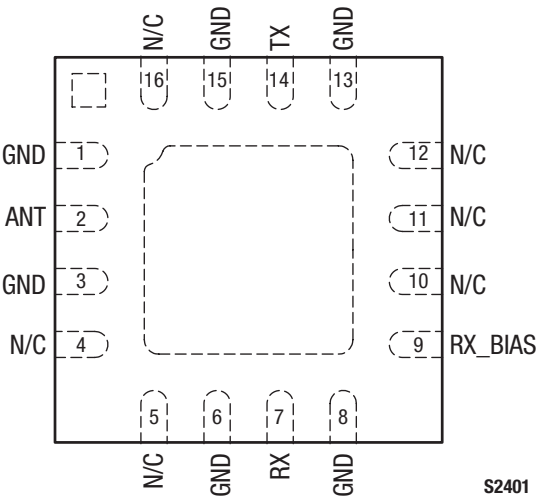
Figure 2. SKY12207-478LF Pinout – 16-Pin QFN
(Top View)

Table 1. SKY12207-478LF Signal Descriptions

Pin	Name	Description	Pin	Name	Description
1	GND	Ground. Must be connected to ground using lowest possible impedance.	9	RX_BIAS	RF ground port and DC bias input port
2	ANT	Antenna RF port and DC bias input port	10	N/C	No connection
3	GND	Ground. Must be connected to ground using lowest possible impedance.	11	N/C	No connection
4	N/C	No connection	12	N/C	No connection
5	N/C	No connection	13	GND	Ground. Must be connected to ground using lowest possible impedance.
6	GND	Ground. Must be connected to ground using lowest possible impedance.	14	TX	Transmit RF input port and DC bias input port
7	RX	Receive output port and DC bias input port	15	GND	Ground. Must be connected to ground using lowest possible impedance.
8	GND	Ground. Must be connected to ground using lowest possible impedance.	16	N/C	No connection

Electrical and Mechanical Specifications

The absolute maximum ratings of the SKY12207-478LF are provided in Table 2. Recommended operating conditions are specified in Table 3 and electrical specifications are provided in Table 4.

Typical performance characteristics of the SKY12207-478LF are illustrated in Figures 3 through 9.

The state of the SKY12207-478LF is determined by the logic provided in Table 6. Table 7 provides the logic for use with the SKY12207-478LF Evaluation Board.

Power derating data is plotted against temperature in Figures 10 and 11. Equivalent circuit diagrams for transmit and receive are shown in Figure 12.

Table 2. SKY12207-478LF Absolute Maximum Ratings

Parameter	Symbol	Minimum	Maximum	Units
RF CW input power, TX and ANT ports ($T_{SUBSTRATE}$ = 25 °C)	P_{IN}		75	W
RF peak input power, TX and ANT ports ($T_{SUBSTRATE}$ = 25 °C, RF burst width = 10 µs, RF burst repetition rate = 25 kHz)	P_{IN}		300	W
RF CW input power, RX port ($T_{SUBSTRATE}$ = 25 °C)	P_{IN}		60	W
RF peak input power, RX port ($T_{SUBSTRATE}$ = 25 °C, RF burst width = 10 µs, RF burst repetition rate = 25 kHz)	P_{IN}		240	W
Control port reverse voltage	V_{CTL}		200	V
Control port forward current	I_{CTL}		200	mA
Operating temperature	T_{OP}	−55	+175	°C
Storage temperature	T_{STG}	−55	+200	°C
Electrostatic discharge: Charged Device Model (CDM), Class 4 Human Body Model (HBM), Class 1C Machine Model (MM), Class B	ESD		 1000 1000 200	 V V V

Note: 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.

CAUTION: *Although this device is designed to be as robust as possible, Electrostatic Discharge (ESD) can damage this device. This device must be protected at all times from ESD. Static charges may easily produce potentials of several kilovolts on the human body or equipment, which can discharge without detection. Industry-standard ESD precautions should be used at all times.*

Table 3. Recommended Operating Conditions (Per ANT, TX, RX, and RX_BIAS Inputs)

Parameter	Symbol	Min	Typical	Max	Units
Control port reverse voltage	V_{CTL}	5	28	100	V
Control port forward current	I_{CTL}	20	50	100	mA

Table 4. SKY12207-478LF Electrical Specifications, Bias Voltage = 28 V (1 of 2) (Note 1)
(T$_{OP}$ = +25 °C, Characteristic Impedance [Z$_0$] = 50 Ω, EVB Optimized for 2.6 GHz Operation, Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Min	Typical	Max	Units
Insertion loss, TX to ANT ports	IL$_{TX-ANT}$	V$_{PIN\_2}$ = 1 V, I$_{PIN\_14}$ = −50 mA, I$_{PIN\_9}$ = −50 mA, V$_{PIN\_7}$ = 28 V, TX port P$_{IN}$ @ pin 14 = 0 dBm:				
		900 MHz		0.25		dB
		1.80 GHz		0.29		dB
		2.01 GHz		0.31		dB
		2.60 GHz		0.32	0.55	dB
		3.50 GHz		0.41		dB
Insertion loss, ANT to RX ports	IL$_{ANT-RX}$	V$_{PIN\_2}$ = 1 V, V$_{PIN\_14}$ = 28 V, I$_{PIN\_7}$ = −50 mA, V$_{PIN\_9}$ = 28 V, ANT port P$_{IN}$ @ pin 2 = 0 dBm:				
		900 MHz		0.28		dB
		1.80 GHz		0.32		dB
		2.01 GHz		0.33		dB
		2.60 GHz		0.39	0.60	dB
		3.50 GHz		0.70		dB
Isolation, TX to RX ports	Iso$_{TX-RX}$	V$_{PIN\_2}$ = 1 V, I$_{PIN\_14}$ = −50 mA, I$_{PIN\_9}$ = −50 mA, V$_{PIN\_7}$ = 28 V, TX port P$_{IN}$ @ pin 14 = 0 dBm:				
		900 MHz		34.0		dB
		1.80 GHz		37.0		dB
		2.01 GHz		38.5		dB
		2.60 GHz	37.0	42.0		dB
		3.50 GHz		32.0		dB
Isolation, ANT to TX ports	Iso$_{ANT-TX}$	V$_{PIN\_2}$ = 1 V, V$_{PIN\_14}$ = 28 V, I$_{PIN\_7}$ = −50 mA, V$_{PIN\_9}$ = 28 V, ANT port P$_{IN}$ @ pin 2 = 0 dBm:				
		900 MHz		26.0		dB
		1.80 GHz		22.0		dB
		2.01 GHz		21.0		dB
		2.60 GHz	17.0	20.0		dB
		3.50 GHz		16.0		dB
Isolation, ANT to RX ports	Iso$_{ANT-RX}$	V$_{PIN\_2}$ = 1 V, I$_{PIN\_14}$ = −50 mA, I$_{PIN\_9}$ = −50 mA, V$_{PIN\_7}$ = 28 V, ANT port P$_{IN}$ @ pin 2 = 0 dBm:				
		900 MHz		33		dB
		1.80 GHz		37		dB
		2.01 GHz		38		dB
		2.60 GHz	39	42		dB
		3.50 GHz		30		dB

Table 4. SKY12207-478LF Electrical Specifications, Bias Voltage = 28 V (2 of 2) (Note 1)
(T$_{OP}$ = +25 °C, Characteristic Impedance [Z$_0$] = 50 Ω, EVB Optimized for 2.6 GHz Operation, Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Min	Typical	Max	Units
Input return loss	RL	1.8 to 2.5 GHz:				
		RX insertion loss state, ANT port (@ pin 2)		28		dB
		TX insertion loss state, TX port (@ pin 14)		26		dB
Transmit 2nd harmonic	2fo	TX insertion loss state, TX port P$_{IN}$ @ pin 14 = +30 dBm:				
		900 MHz		−72		dBc
		1.80 GHz		−66		dBc
		2.01 GHz		−84		dBc
		2.60 GHz		−68		dBc
		3.50 GHz		−71		dBc
Transmit 3rd harmonic	3fo	TX insertion loss state, TX port P$_{IN}$ @ pin 14 = +30 dBm:				
		900 MHz		−88		dBc
		1.80 GHz		−80		dBc
		2.01 GHz		−84		dBc
		2.60 GHz		−81		dBc
		3.50 GHz		−74		dBc
Transmit 3rd Order Input Intercept Point	IIP3	V$_{PIN\_2}$ = 1 V, I$_{PIN\_14}$ = −50 mA, I$_{PIN\_9}$ = −50 mA, V$_{PIN\_7}$ = 28 V, TX port P$_{IN}$ @ pin 14 = +30 dBm/tone, tone spacing = 1 MHz, @ 2.60 GHz		+78		dBm
Transmit 0.1 dB Compression Point	IP0.1dB	V$_{PIN\_2}$ = 1 V, I$_{PIN\_14}$ = −50 mA, I$_{PIN\_9}$ = −50 mA, V$_{PIN\_7}$ = 28 V, @ 2.60 GHz		+47		dBm
Receive 0.1 dB Compression Point	IP0.1dB	V$_{PIN\_2}$ = 1 V, V$_{PIN\_14}$ = 28 V, I$_{PIN\_7}$ = −50 mA, V$_{PIN\_9}$ = 28 V, @ 2.60 GHz		+46		dBm
Maximum transmit CW input power	P$_{IN\_CW}$	V$_{PIN\_2}$ = 1 V, I$_{PIN\_14}$ = −50 mA, I$_{PIN\_9}$ = −50 mA, V$_{PIN\_7}$ = 28 V, 0.9 to 3.5 GHz		50		W
Maximum receive CW input power	P$_{IN\_CW}$	V$_{PIN\_2}$ = 1 V, V$_{PIN\_14}$ = 28 V, I$_{PIN\_7}$ = −50 mA, V$_{PIN\_9}$ = 28 V, 0.9 to 3.5 GHz		40		W
Transmit RF switching time	tsw	10% to 90% RF on, repetition rate = 0.1 MHz, @ 2.6 GHz		170		ns
Thermal resistance (junction to case)	Θ$_{JC}$			32		°C/W

Note 1: Performance is guaranteed only under the conditions listed in this Table.

Table 5. SKY12207-478LF Electrical Specifications, Bias Voltage = 5 V (1 of 2) (Note 1)
(T_{OP} = +25 °C, Characteristic Impedance [Z_0] = 50 Ω, EVB Optimized for 2.6 GHz Operation, Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Min	Typical	Max	Units
Insertion loss, TX to ANT ports	IL_{TX-ANT}	V_{PIN_2} = 1 V, I_{PIN_14} = −50 mA, I_{PIN_9} = −50 mA, V_{PIN_7} = 5 V, TX port P_{IN} @ pin 14 = 0 dBm:				
		900 MHz		0.25		dB
		1.80 GHz		0.30		dB
		2.01 GHz		0.32		dB
		2.60 GHz		0.34	0.55	dB
		3.50 GHz		0.43		dB
Insertion loss, ANT to RX ports	IL_{ANT-RX}	V_{PIN_2} = 1 V, V_{PIN_14} = 5 V, I_{PIN_7} = −50 mA, V_{PIN_9} = 5 V, ANT port P_{IN} @ pin 2 = 0 dBm:				
		900 MHz		0.28		dB
		1.80 GHz		0.31		dB
		2.01 GHz		0.33		dB
		2.60 GHz		0.41	0.60	dB
		3.50 GHz		0.72		dB
Isolation, TX to RX ports	Iso_{TX-RX}	V_{PIN_2} = 1 V, I_{PIN_14} = −50 mA, I_{PIN_9} = −50 mA, V_{PIN_7} = 5 V, TX port P_{IN} @ pin 14 = 0 dBm:				
		900 MHz		33.0		dB
		1.80 GHz		36.4		dB
		2.01 GHz		38.0		dB
		2.60 GHz	40.0	43.0		dB
		3.50 GHz		31.0		dB
Isolation, ANT to TX ports	Iso_{ANT-TX}	V_{PIN_2} = 1 V, V_{PIN_14} = 5 V, I_{PIN_7} = −50 mA, V_{PIN_9} = 5 V, ANT port P_{IN} @ pin 2 = 0 dBm:				
		900 MHz		25.0		dB
		1.80 GHz		22.0		dB
		2.01 GHz		21.0		dB
		2.60 GHz	17.0	19.0		dB
		3.50 GHz		15.0		dB
Isolation, ANT to RX ports	Iso_{ANT-RX}	V_{PIN_2} = 1 V, I_{PIN_14} = −50 mA, I_{PIN_9} = −50 mA, V_{PIN_7} = 5 V, ANT port P_{IN} @ pin 2 = 0 dBm:				
		900 MHz		33		dB
		1.80 GHz		36		dB
		2.01 GHz		37		dB
		2.60 GHz	39	42		dB
		3.50 GHz		31		dB

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**Table 5. SKY12207-478LF Electrical Specifications, Bias Voltage = 5 V (2 of 2) (Note 1)**
(T_{OP} = +25 °C, Characteristic Impedance [Z_0] = 50 Ω, EVB Optimized for 2.6 GHz Operation, Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Min	Typical	Max	Units
Input return loss	RL	1.8 to 2.5 GHz:				
		RX insertion loss state, ANT port (@ pin 2)		28		dB
		TX insertion loss state, TX port (@ pin 14)		26		dB
Transmit 2nd harmonic	2fo	TX insertion loss state, TX port P_{IN} @ pin 14 = +30 dBm:				
		900 MHz		−36		dBc
		1.80 GHz		−43		dBc
		2.01 GHz		−61		dBc
		2.60 GHz		−51		dBc
		3.50 GHz		−58		dBc
Transmit 3rd harmonic	3fo	TX insertion loss state, TX port P_{IN} @ pin 14 = +30 dBm:				
		900 MHz		−57		dBc
		1.80 GHz		−55		dBc
		2.01 GHz		−59		dBc
		2.60 GHz		−59		dBc
		3.50 GHz		−52		dBc
Transmit 3rd Order Input Intercept Point	IIP3	V_{PIN_2} = 1 V, I_{PIN_14} = −50 mA, I_{PIN_9} = −50 mA, V_{PIN_7} = 5 V, TX port P_{IN} @ pin 14 = +30 dBm/tone, tone spacing = 1 MHz, @ 2.60 GHz		+74		dBm
Transmit 0.1 dB Compression Point	IP0.1dB	V_{PIN_2} = 1 V, I_{PIN_14} = −50 mA, I_{PIN_9} = −50 mA, V_{PIN_7} = 5 V, @ 2.60 GHz		+33		dBm
Receive 0.1 dB Compression Point	IP0.1dB	V_{PIN_2} = 1 V, V_{PIN_14} = 5 V, I_{PIN_7} = −50 mA, V_{PIN_9} = 5 V, @ 2.60 GHz		+34		dBm
Maximum transmit CW input power	P_{IN_CW}	V_{PIN_2} = 1 V, I_{PIN_14} = −50 mA, I_{PIN_9} = −50 mA, V_{PIN_7} = 5 V, 0.9 to 3.5 GHz		15		W
Maximum receive CW input power	P_{IN_CW}	V_{PIN_2} = 1 V, V_{PIN_14} = 5 V, I_{PIN_7} = 50 mA, V_{PIN_9} = 5 V, 0.9 to 3.5 GHz		10		W
Transmit RF switching time	t_{SW}	10% to 90% RF on, repetition rate = 0.1 MHz, @ 2.60 GHz		170		ns
Thermal resistance (junction to case)	Θ_{JC}			32		°C/W

Note 1: Performance is guaranteed only under the conditions listed in this Table.

Typical Performance Characteristics

(T$_{OP}$ = +25 °C, Characteristic Impedance [Z$_0$] = 50 Ω, EVB Optimized for 2.6 GHz Operation, Unless Otherwise Noted)
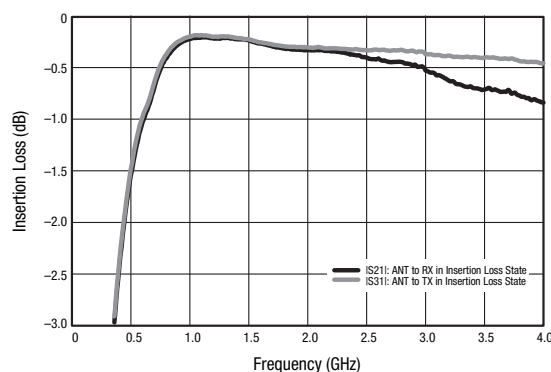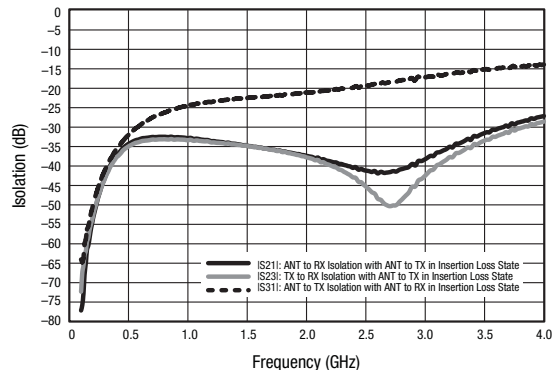

Figure 3. Insertion Loss vs Frequency
(ANT to RX and ANT to TX Ports; V$_{CTL}$ = 28 V, I$_{CTL}$ = −50 mA)
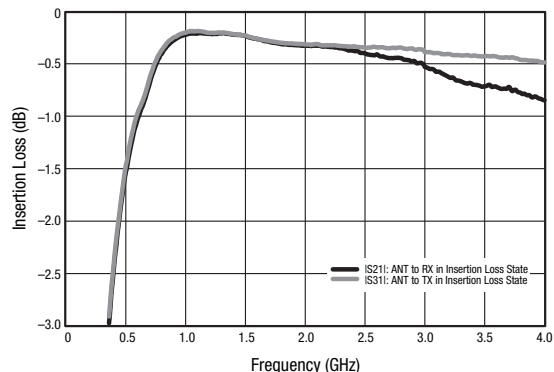
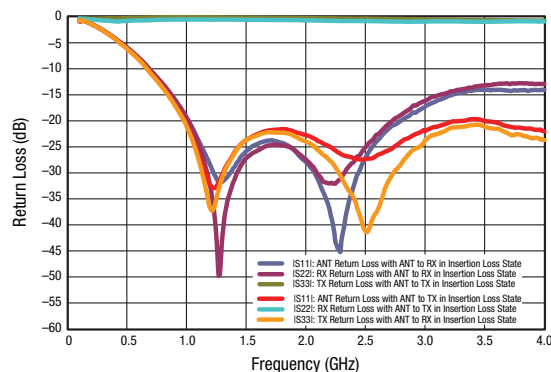**Figure 4. Insertion Loss vs Frequency**
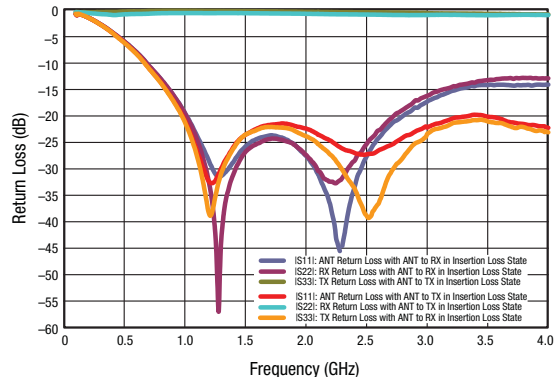**(ANT to RX and ANT to TX Ports; V$_{CTL}$ = 5 V, I$_{CTL}$ = −50 mA)**
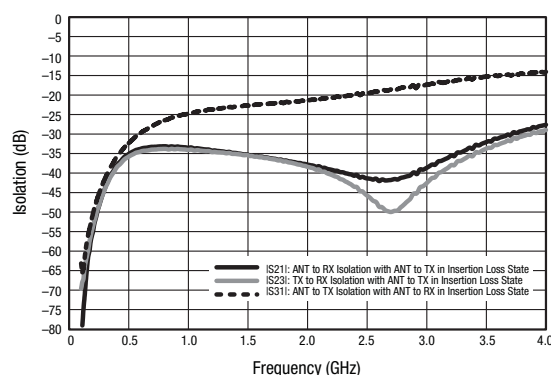
Figure 5. Isolation vs Frequency
(ANT to RX, TX to RX, and ANT to TX Ports;
V$_{CTL}$ = 28 V, I$_{CTL}$ = −50 mA)

Figure 6. Isolation vs Frequency
(ANT to RX, TX to RX, and ANT to TX Ports;
V$_{CTL}$ = 5 V, I$_{CTL}$ = −50 mA)

Figure 7. Return Loss vs Frequency
(ANT, TX, and RX Ports; V$_{CTL}$ = 28 V, I$_{CTL}$ = −50 mA)

Figure 8. Return Loss vs Frequency
(ANT, TX, and RX Ports; V$_{CTL}$ = 5 V, I$_{CTL}$ = −50 mA)

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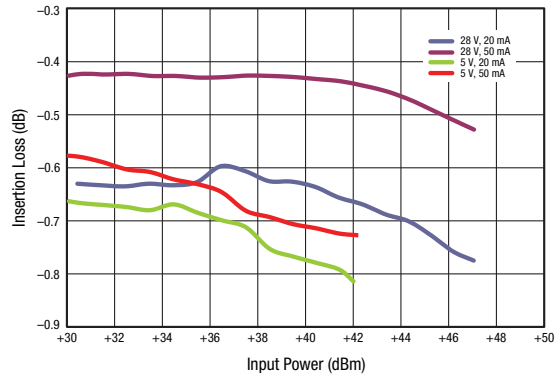
**Figure 9. Insertion Loss vs CW Input Power
(TX to ANT Port, f = 2.6 GHz)**

Table 6. SKY12207-478LF Truth Table

Switch State	Path		Control Conditions			
	Antenna-to-Receiver Port (Pin 2 to Pin 7)	Transmitter-to-Antenna Port (Pin 14 to Pin 2)	Antenna Port Bias Input (Pin 2)	Nominal Receiver Output Port (Pin 7)	Nominal Transmitter Port Bias Input (Pin 14)	RX_BIAS Input (Pin 9)
Receive (see Figure 12)	Low insertion loss	High isolation	1 V	−50 mA	28 V	28 V
Transmit (see Figure 12)	High isolation	Low insertion loss	1 V	28 V	−50 mA	−50 mA

Table 7. SKY12207-478LF Evaluation Board Truth Table

Switch State	Path		Control Conditions			
	Antenna-to-Receiver Port	Transmitter-to-Antenna Port	Antenna Port Bias Input	Receiver Output Port	Transmitter Port Bias Input	RX_BIAS Input
Receive (see Figure 12)	Low insertion loss	High isolation	5 V	0 V (ground)	28 V	28 V
Transmit (see Figure 12)	High isolation	Low insertion loss	5 V	28 V	0 V (ground)	0 V (ground)
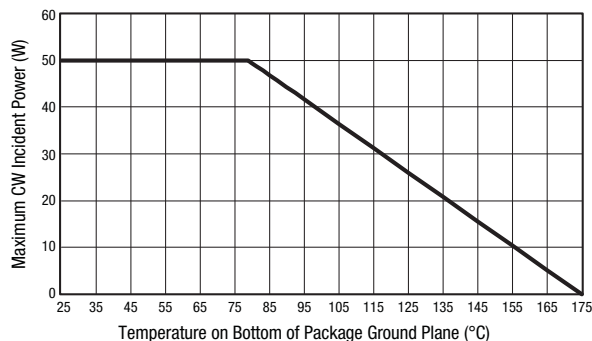
Figure 10. Transmit Power Derating, Maximum CW Incident Power (Insertion Loss = 0.3 dB) vs Temperature on Bottom of Package Ground Plane
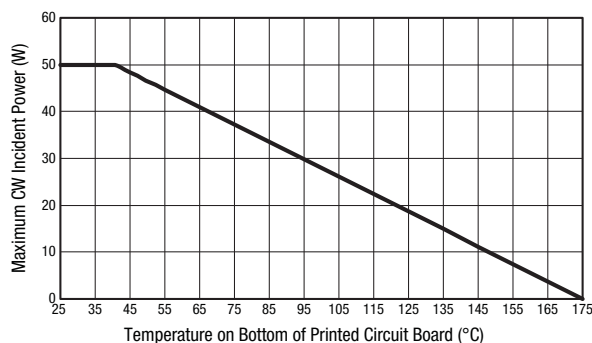
Figure 11. Transmit Power Derating, Maximum CW Incident Power (Insertion Loss = 0.3 dB) vs Temperature on Bottom of Printed Circuit Board

Figure 12. SKY12207-478LF Equivalent Circuit Diagrams

Evaluation Board Description

The SKY12207-478LF Evaluation Board is used to test the performance of the SKY12207-478LF PIN Diode SPDT switch. An assembly drawing for the Evaluation Board is shown in Figure 13. The layer detail is provided in Figure 14.

The SKY12207-478LF is designed to handle very large signals. Sufficient power may be dissipated by this switch to cause heating of the PIN diodes contained in the switch. It is very important to use a printed circuit board design that provides adequate cooling capability to keep the junction temperature of the PIN diodes below their maximum rated operating temperature.

As indicated in Figure 10, the x-axis temperature is referenced to the bottom of the QFN package. A printed circuit board with a very low thermal resistance and external heat sink design must be used to achieve the results shown in this Figure. The power derating curve with the x-axis temperature referenced to the bottom of the printed circuit board is provided in Figure 11.

The evaluation circuit is designed to facilitate control of the SKY12207-478LF transmit/receive switch with bias signals

derived from positive voltages. The state of the PIN diodes within the SKY12207-478LF is controlled with 5 V applied to the ANT port and bias voltages of either 28 V or 0 V applied to the remaining bias inputs (RX and TX ports). The switch state circuit diagrams are shown in Figure 12.

The value of resistor R1, 80 Ω, is selected to provide 50 mA of forward current through the "on" series diode with 5 V applied to the ANT port bias pin. The R2 resistance value of 540 Ω is selected to produce approximately 50 mA of forward bias current in the RX shunt diode with a source voltage of 28 V.

The magnitudes of the voltages applied to the TX and RX ports determine which of the RX or TX series diodes is biased into forward conduction. For example, to place the SKY12207-478LF into the transmit state, 0 V is applied to the TX port (which forward biases the diode between pins 2 and 14), 28 V is applied to the RX port (which reverse biases the diode between pins 2 and 7), and 0 V is applied to the RX_BIAS port (which applies a forward bias through R2 to the diode connected between pins 7 and 9).

The component values shown in the Evaluation Board circuit diagram (Figure 15) were selected to optimize performance in the 2.0 to 3.5 GHz band.

Refer to Table 8 for the Evaluation Board Bill of Materials. Table 9 provides voltage, current, and resistor values for bias adjustments.
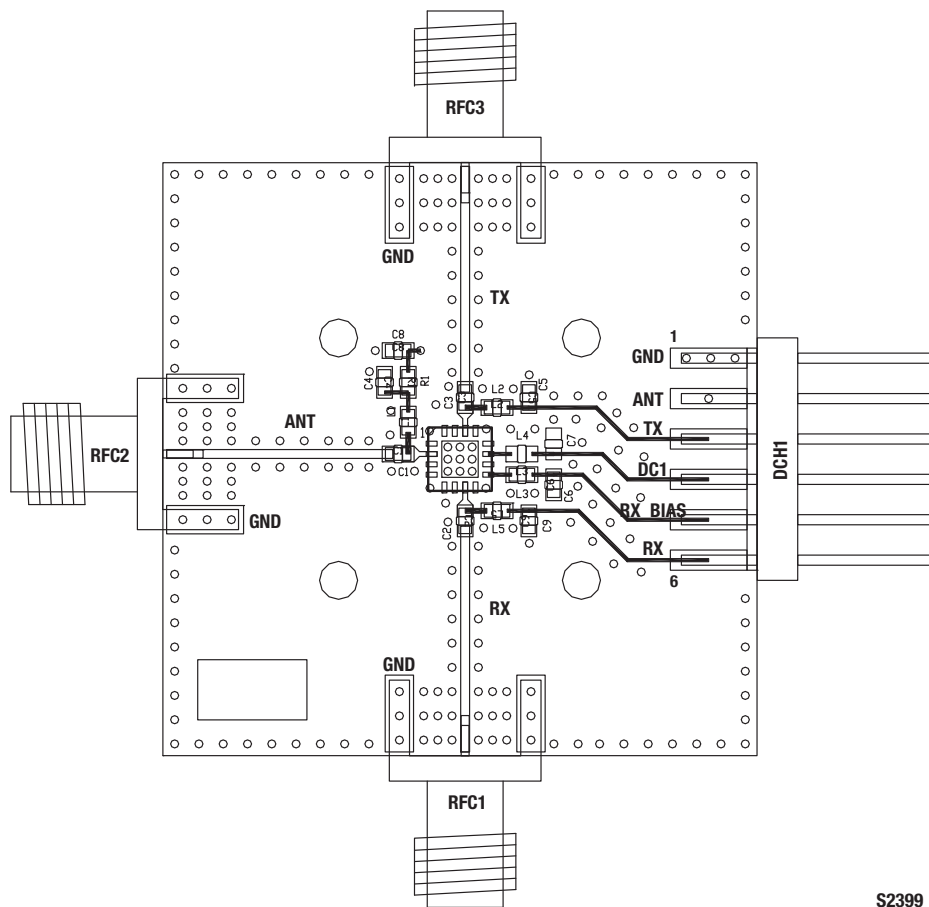
Package Dimensions

The PCB layout footprint for the SKY12207-478LF is shown in Figure 15. Typical case markings are noted in Figure 17. Package dimensions for the 16-pin QFN are shown in Figure 18, and tape and reel dimensions are provided in Figure 19.

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 SKY12207-478LF 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, *Solder Reflow Information*, document number 200164.

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.

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Figure 13. SKY12207-478LF Evaluation Board Assembly Diagram

Cross Section	Name	Thickness (in)	Material
	Top Soldermask		
	L1	(0.0028)	Cu foil
	Laminate	0.012 ± 0.0006	Rogers RO4003C Core
	L2	(0.0014)	Cu foil
	Laminate	(Note 1)	FR4 Prepreg
	L3	(0.0014)	Cu foil
	Laminate	0.010 ± 0.0006	FR4 Core
	L4	(0.0028)	Cu foil
	Bottom Soldermask		

Note 1: Adjust this thickness to meet total thickness goal of 0.062 ± 0.005 inches.

S2531
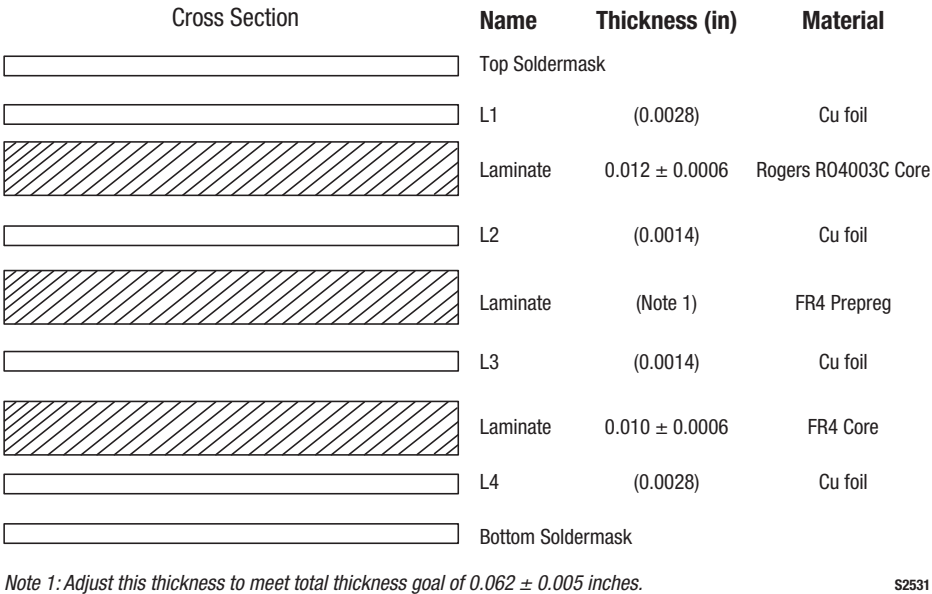
Figure 14. Layer Detail Physical Characteristics

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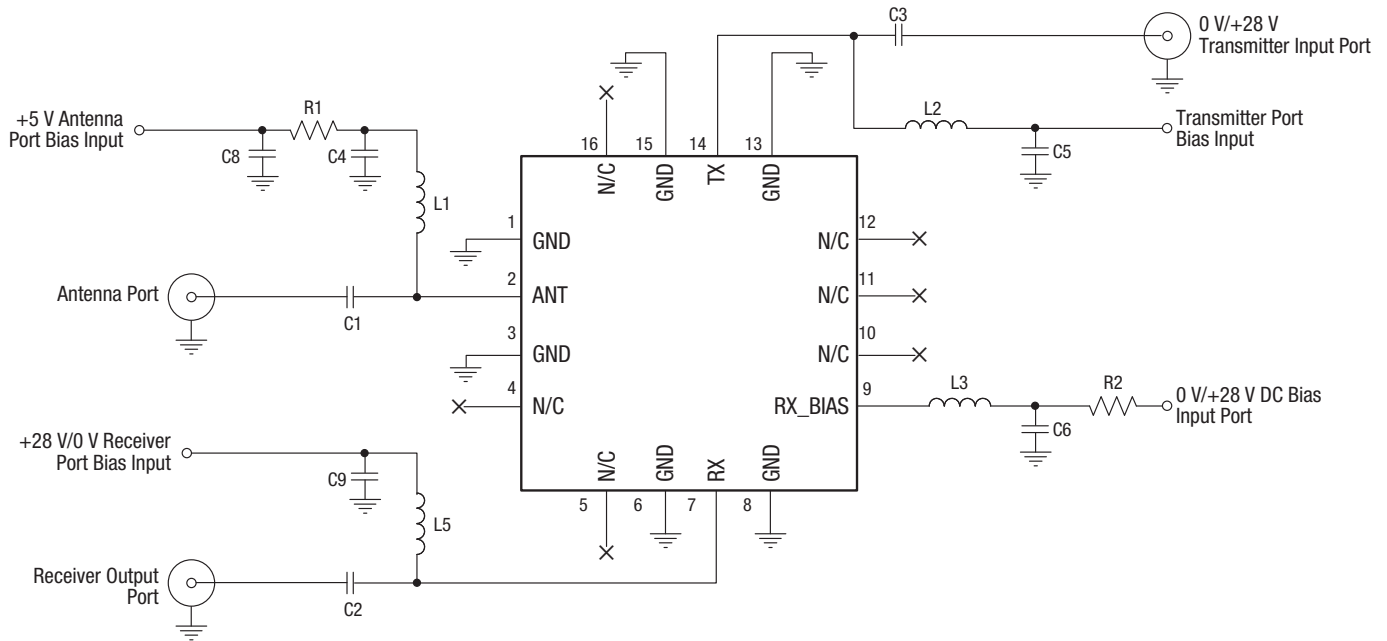
NOTE: The N/C pins (4, 5, 10, 11, 12, and 16) are not internally connected, so they can be left open or grounded.

S2402

Figure 15. Evaluation Board Schematic

Table 8. Evaluation Board Bill of Materials (Note 1)

Component	Value	Size	Product Number	Manufacturer	Mfrr Part Number	Characteristics
C1, C2, C3, C4, C5, C6, C9	1000 pF	0603	5404R23-057	TDK	C1608C0G1H102JT	COG, 50 V, ±5%
C8	1 μF	0603	5404R29-070	TDK	C2012X7R1H104K	X7R, 50 V, ±10%
L1, L2, L5	22 nH	0603	55332R34-028	Taiyo-Yuden	HK160822NJ-T	SRF, 1600 MHz, ±5%
L3	560 nH	0603		Coil Craft	0603LS-561XJLB	SRF, 525 MHz, ±5%
R1 (Note 2)	80 Ω	0603		Panasonic	ERJ-3GEYJ161V	0.1 W, 5%
R2 (Note 3)	540 Ω					Axial leaded (off board)

Note 1: Component values selected are based on the desired frequency and bias level. Values may be adjusted for a specific response.

Note 2: Two 160 Ω resistors are combined in parallel to achieve a minimum power handling requirement and an 80 Ω resistance.

Note 3: Evaluation Board does not include resistor R2. Operating at 28 V and 50 mA requires the R2 resistor with a power dissipation greater than 1.35 W.

Table 9. Component Calculation Values

V_S (V)	V_{DIODE} (V)	V_{RES} (V)	Current (A)	Resistance (Ω)	Power Dissipation (W)
28	1	27	0.05	540	1.35
28	1	27	0.02	1350	0.54
5	1	4	0.05	80	0.20
5	1	4	0.02	200	0.08

Notes: V_S = supply voltage; V_{DIODE} = voltage drop across the diode; V_{RES} = voltage drop across the resistor.
R1 and R2 values are calculated by $(V_S - V_{DIODE})/I$, where I is the desired bias current.
The power dissipation in R1 or R2 is calculated by $I \times (V_S - V_{DIODE})$. The resistor selected must be safely rated with a power greater than the dissipated power.

16X 1.45
(To Metal Pads)

0.508

Pitch 0.65

0.762

Typ. 0.325

9X Plated Thru Vias

See Detail A

Metal GND Pad (Sq.) 2.15

0.30

Exposed Soldering Area

0.75

Detail A
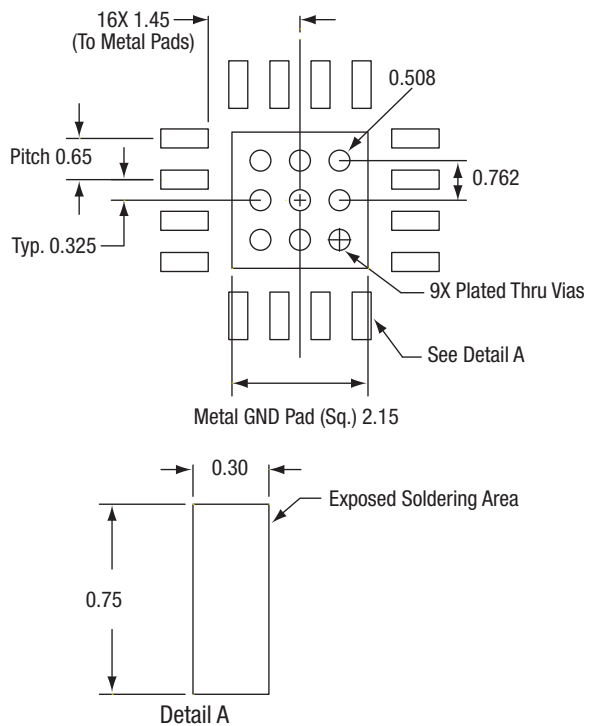
All measurements in millimeters   **S2274**

Figure 16. SKY12207-478LF PCB Layout Footprint

Pin 1
Indicator

S207

XXXX

YYWW

Skyworks Part #

Lot #

Date Code:
(YY = Calendar Year
WW = Week)
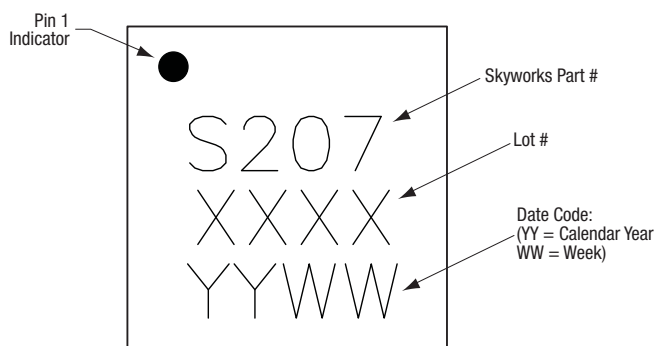
Figure 17. Typical Case Markings

Top View

Side View

Bottom View

Detail A
Scale: 40X
16 Places

Detail B
Scale: 20X
Even Terminal Side

Option A
Pin 1 Indicator
Scale: 10X

Option B
Pin 1 Indicator
Scale: 20X
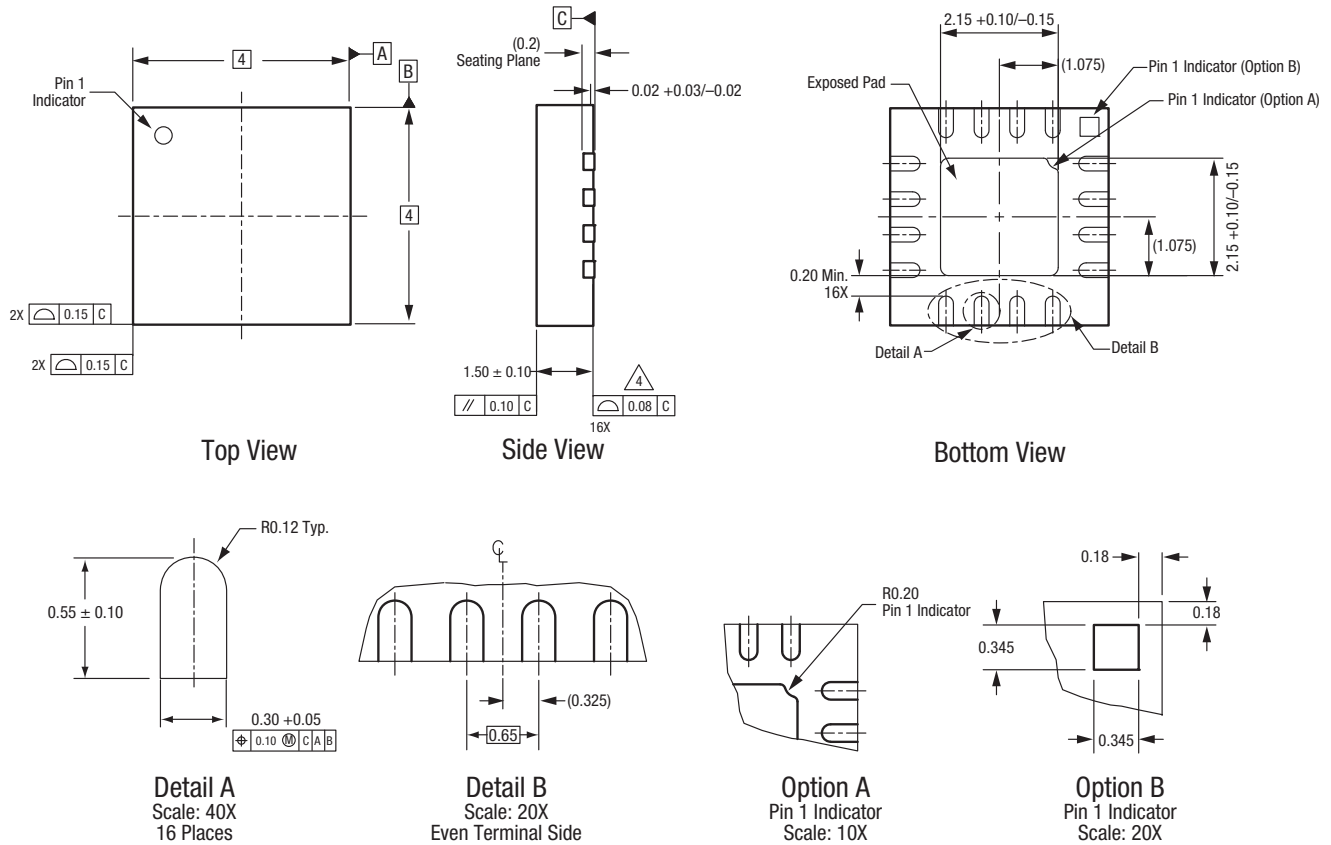
All measurements are in millimeters.
Dimensioning and tolerancing according to ASME Y14.5M-1994.
Coplanarity applies to the exposed heat sink slug as well as the terminals.
Package may have option A or option B pin 1 indicator.

S2400a

Figure 18. SKY12207-478LF 16-Pin QFN Package Dimensions

Figure 19. SKY12207-478LF Tape and Reel Dimensions
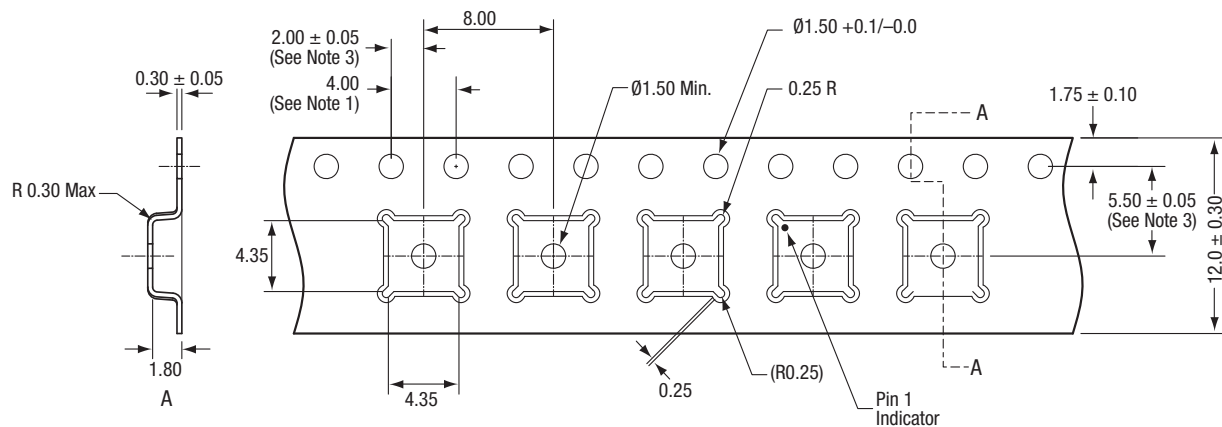
Notes:

1. Sprocket hole pitch cumulative tolerance: ±0.2 mm
2. Carrier tape: black conductive polystyrene.
3. Pocket position relative to sprocket hole, measure as true position of pocket, not pocket hole.
4. Cover tape material: transparent conductive adhesive.
5. ESD surface resistivity must meet all ESD requirements of Skyworks, specified in GP01-D232.
6. All dimensions are in millimeters.

S2817

Ordering Information

Model Name	Manufacturing Part Number	Evaluation Board Part Number
SKY12207-478LF PIN Diode SPDT Switch	SKY12207-478LF	SKY12207-478LF-EVB