

## MAX2679/MAX2679B Evaluation Kits

Evaluates: MAX2679, MAX2679B

### General Description

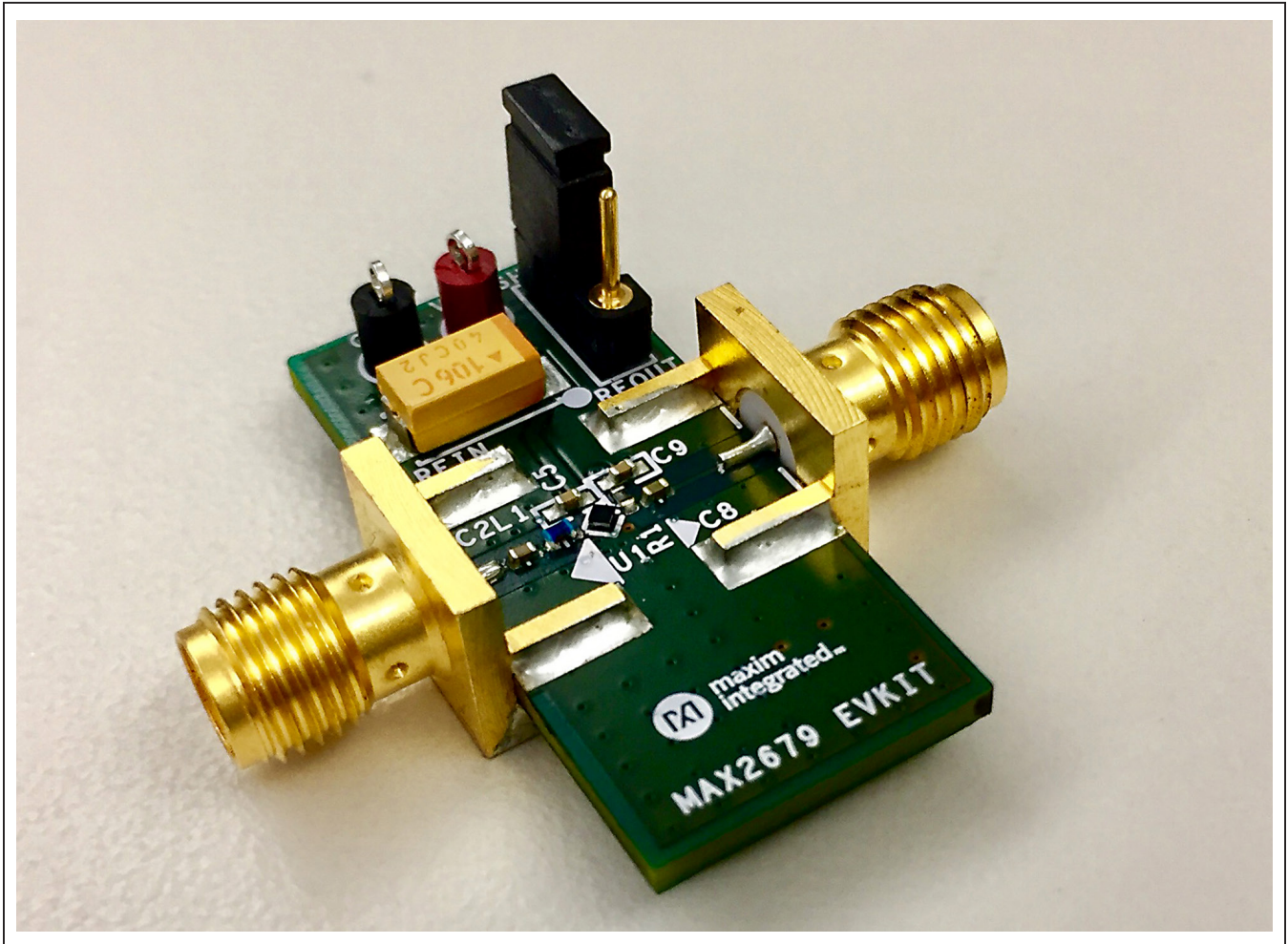
The MAX2679/MAX2679B evaluation kits (EV kits) simplify the evaluation of the MAX2679/MAX2679B GPS/GNSS ultra-low current low-noise amplifier (LNAs). They enable testing of the device's RF performance and require no additional supporting circuitry. The EV kits provide 50Ω SMA connectors for inputs and outputs.

### Benefits and Features

- Easy Evaluation of MAX2679/MAX2679B IC
- 1.08V to 1.98V Single-Supply Operation
- RF Input and Output Matched to 50Ω
- Fully Assembled and Tested

*Ordering Information appears at end of data sheet.*

### MAX2679 EV Kit Photo



## Quick Start

The MAX2679/MAX2679B EV kits are fully assembled and factory tested. Follow the instructions in the [Connections and Setup](#) section to test the devices.

## Required Equipment

This section lists the recommended test equipment to verify the operation of the MAX2679/MAX2679B. The equipment's listed are intended as suggestions and substitutions are possible:

- MAX2679/MAX2679B EV kit
- One DC power supply capable of delivering 10mA of current from +1.0V to 2.0V
- One ammeter (optional)
- One RF signal generator capable of producing 1GHz to 2GHz (Agilent E4433B or equivalent)
- One RF spectrum analyzer that covers the MAX2679/MAX2679B operating frequency range (R&S FSEB20 or equivalent)
- One RF power meter capable of measuring up to 0dBm at 1575.42MHz (Agilent E4419B or equivalent) and one power sensor (HP 346A or equivalent)
- One noise figure meter (optional)
- One network analyzer (optional)

## Connections and Setup

This section is a step-by-step guide to operating the EV Kit and its function.

**Caution: Do not turn on the DC Power or RF signal generators until all connections are completed.**

## Checking Power Gain

- 1) With the DC supply output disabled, connect a +1.8V power supply to the VCC header and the power supply ground to the GND header of the EV kit (route the positive terminal of the power supply through an ammeter, if desired).
- 2) Place a jumper between pins 2 and 3 on SHDNB (pin 1 closest to the RFOUT SMA port).
- 3) With the RF signal generator output disabled, connect the generator output to the RFIN SMA connector on the EV kit through an SMA Cable. Set the output of the RF signal generator frequency to 1575.42MHz and power level to -50dBm.
- 4) Connect a spectrum analyzer to the RFOUT SMA connector on the EV kit through an SMA Cable. Set the spectrum analyzer center frequency to 1575.42MHz, reference level to 0dBm, and span to 1MHz.

- 5) Enable the DC supply output. The supply current should read approximately 1000 $\mu$ A for MAX2679 EV kit and 650 $\mu$ A for MAX2679B EV Kit.
- 6) Enable the RF signal generator output. The spectrum analyzer should display a tone at 1575.42MHz with power level at approximately -31dBm for MAX2679 EV Kit and -34dBm for MAX2679B EV Kit.

## Checking Noise Figure

**Note:** *It is highly recommended to measure noise figure inside a screen room or Faraday enclosure to avoid environmental noise from increasing the noise figure artificially.*

- 1) With the DC supply output disabled, connect a +1.8V power supply to the VCC header and the power supply ground to the GND header of the EV kit (route the positive terminal of the power supply through an ammeter, if desired).
- 2) Place a jumper between pins 2 and 3 on SHDNB (pin 1 closest to the RFOUT SMA port).
- 3) Calibrate the noise figure meter per the instructions for that instrument.
- 4) Connect the noise head to the RFIN SMA connector and the RFOUT SMA to the meter using a SMA cable.
- 5) Enable the DC supply output.
- 6) Enable the noise figure measurement. The MAX2679 EV kit should measure approximately 0.95dB and the MAX2679B should measure approximately 1.03dB.

## Application Information

### Printed Circuit Board (PCB) Design

A properly designed PCB is essential to any RF microwave circuit. Use controlled-impedance lines on all high frequency inputs and outputs. Bypass VCC with decoupling capacitors located close to the device. For long VCC lines it may be necessary to add decoupling capacitors. Locate these additional capacitors further away from the device package. Proper grounding of the GND bump is essential. If the PCB uses a topside RF ground, connect it directly to the GND bump. For a board where the ground is not on the component layer, connect the GND bump to the board with multiple vias close to the package. For general layout guidelines, refer to [www.maximintegrated.com/app-notes/index.mvp/id/5100](http://www.maximintegrated.com/app-notes/index.mvp/id/5100).

Refer to the MAX2679 EV kit schematic, Gerber data, PADS layout file, and BOM information for best practices.

## Ordering Information

PART	TYPE
MAX2679EVKIT#	EV Kit
MAX2679BEVKIT#	EV Kit

#Denotes RoHS compliant.

## Component Suppliers

SUPPLIER	WEBSITE
AVX	<a href="http://www.avx.com/">http://www.avx.com/</a>
Murata	<a href="http://www.murata.com/">http://www.murata.com/</a>
TDK	<a href="http://www.tdk.com/">http://www.tdk.com/</a>
Keystone Electronics	<a href="http://www.keyelco.com/">http://www.keyelco.com/</a>
Vishay Dale	<a href="http://www.vishay.com/">http://www.vishay.com/</a>
Del-Tron	<a href="http://deltron.com/">http://deltron.com/</a>
Johnson Components (Cinch Connectivity Solutions)	<a href="https://cinchconnectivity.com/">https://cinchconnectivity.com/</a>
Mill-Max	<a href="https://www.mill-max.com/">https://www.mill-max.com/</a>

**Note:** Indicate that you are using the MAX2679 when contacting these component suppliers.

## MAX2679 EV Kit Bill of Materials

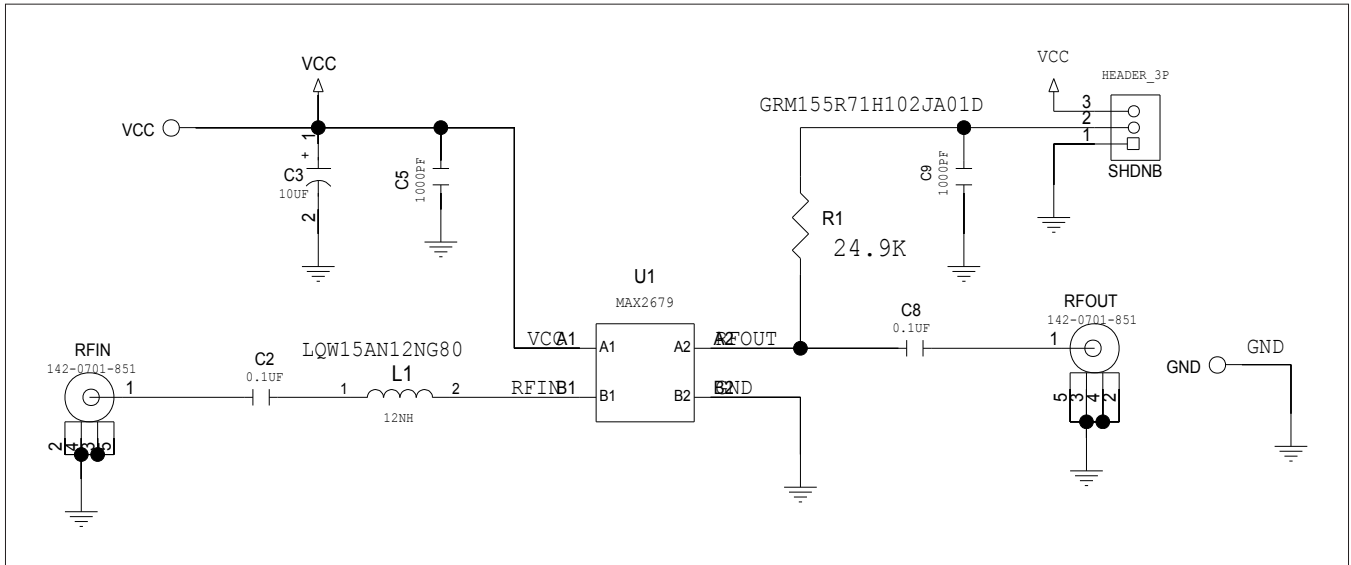
ITEM	REF_DES	QTY	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION
1	C2, C8	2	CGA2B3X7R1H104K; C1005X7R1H104K050BB; GRM155R71H104KE14	TDK; MURATA	0.1UF	CAPACITOR; SMT (0402); CERAMIC CHIP; 0.1UF; 50V; TOL = 10%; TG = -55°C TO +125°C; TC = X7R
2	C3	1	TAJC106K016RNJ	AVX	10UF	CAPACITOR; SMT (6032); TANTALUM CHIP; 10UF; 16V; TOL = 10%; MODEL = TAJ SERIES; TG = -55°C TO +125°C
3	C5, C9	2	GRM155R71H102JA01D	MURATA	1000PF	CAPACITOR; SMT (0402); CERAMIC CHIP; 1000PF; 50V; TOL = 5%; MODEL = GRM SERIES; TG = -55°C TO +125°C; TC = X7R
4	GND	1	5001	KEYSTONE	N/A	TEST POINT; PIN DIA = 0.1IN; TOTAL LENGTH = 0.3IN; BOARD HOLE = 0.04IN; BLACK; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;
5	L1	1	LQW15AN12NG80	MURATA	12NH	INDUCTOR; SMT (0402); WIREWOUND CHIP; 12NH; TOL = ±2%; 1.24A
6	R1	1	CRCW040224K9FKEDHP	VISHAY DALE	24.9K	RESISTOR; 0402; 24.9K OHM; 1%; 100PPM; 0.125W; THICK FILM
7	RFIN, RFOUT	2	142-0701-851	JOHNSON COMPONENTS	142-0701-851	CONNECTOR; END LAUNCH JACK RECEPTACLE; BOARDMOUNT; STRAIGHT THROUGH; 2PINS;
8	SHDNB	1	800-10-003-10-001000	MILLMAX	HEADER_3P	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT THROUGH; 3PINS;
9	U1	1	MAX2679	MAXIM	MAX2679	EVKIT PART - IC; MAX2679L; PACKAGE CODE W40A0+1; PACKAGE OUTLINE 21-0480
10	VCC	1	5000	KEYSTONE	N/A	TEST POINT; PIN DIA = 0.1IN; TOTAL LENGTH = 0.3IN; BOARD HOLE = 0.04IN; RED; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;
11	PCB	1	MAX2679	MAXIM	PCB	PCB:MAX2679
TOTAL		14				

## MAX2679B EV Kit Bill of Materials

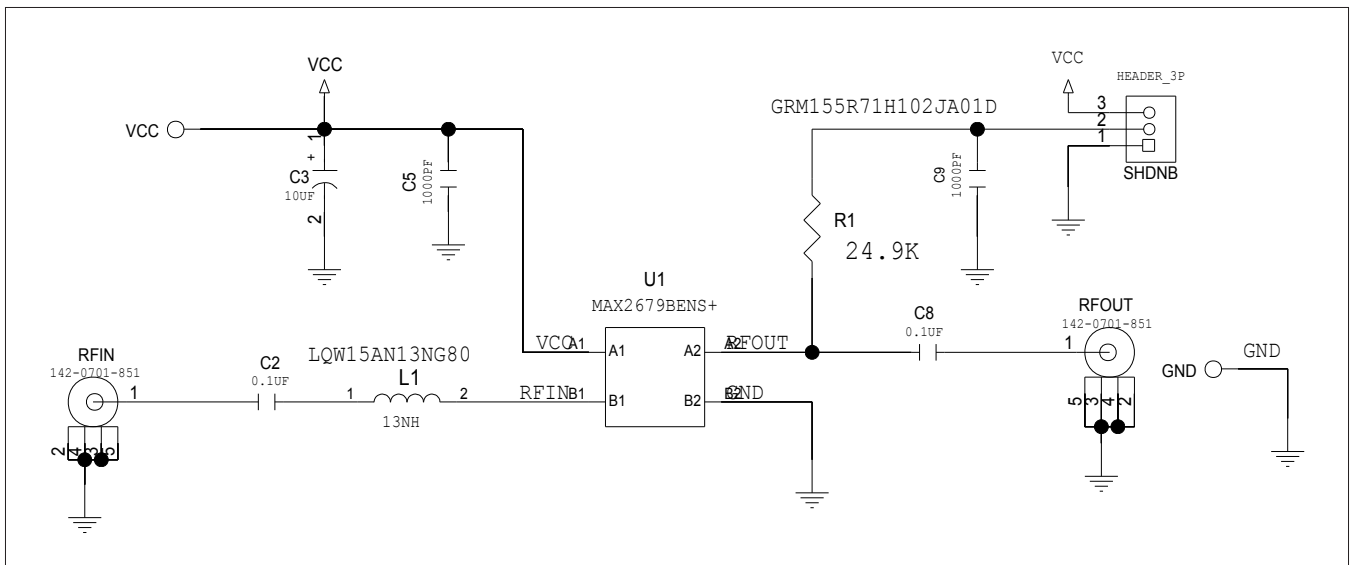
ITEM	REF_DES	QTY	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION
1	C2, C8	2	CGA2B3X7R1H104K; C1005X7R1H104K050BB; GRM155R71H104KE14	TDK; MURATA	0.1UF	CAPACITOR; SMT (0402); CERAMIC CHIP; 0.1UF; 50V; TOL = 10%; TG = -55°C TO +125°C; TC = X7R
2	C3	1	TAJC106K016RNJ	AVX	10UF	CAPACITOR; SMT (6032); TANTALUM CHIP; 10UF; 16V; TOL = 10%; MODEL = TAJ SERIES; TG = -55°C TO +125°C
3	C5, C9	2	GRM155R71H102JA01D	MURATA	1000PF	CAPACITOR; SMT (0402); CERAMIC CHIP; 1000PF; 50V; TOL = 5%; MODEL = GRM SERIES; TG = -55°C TO +125°C; TC = X7R
4	GND	1	5001	KEYSTONE	N/A	TEST POINT; PIN DIA = 0.1IN; TOTAL LENGTH = 0.3IN; BOARD HOLE = 0.04IN; BLACK; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;
5	L1	1	LQW15AN13NG80	MURATA	13NH	INDUCTOR; SMT (0402); WIREWOUND CHIP; 13NH; TOL = ±2%; 1.24A
6	R1	1	CRCW040224K9FKEDHP	VISHAY DALE	24.9K	RESISTOR; 0402; 24.9KΩ; 1%; 100PPM; 0.125W; THICK FILM
7	RFIN, RFOUT	2	142-0701-851	JOHNSON COMPONENTS	142-0701-851	CONNECTOR; END LAUNCH JACK RECEPTACLE; BOARDMOUNT; STRAIGHT THROUGH; 2PINS;
8	SHDNB	1	800-10-003-10-001000	MILLMAX	HEADER_3P	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT THROUGH; 3PINS;
9	U1	1	MAX2679BENS+	MAXIM	MAX2679BENS+	EVKIT PART - IC; GPS/GNSS ULTRA-LOW CURRENT LOW-NOISE AMPLIFIER; MAX2679B; PACKAGE CODE N40D0+1; PACKAGE OUTLINE 21-100107
10	VCC	1	5000	KEYSTONE	N/A	TEST POINT; PIN DIA=0.1IN; TOTAL LENGTH=0.3IN; BOARD HOLE = 0.04IN; RED; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;
11	PCB	1	MAX2679B	MAXIM	PCB	PCB:MAX2679B

TOTAL 14

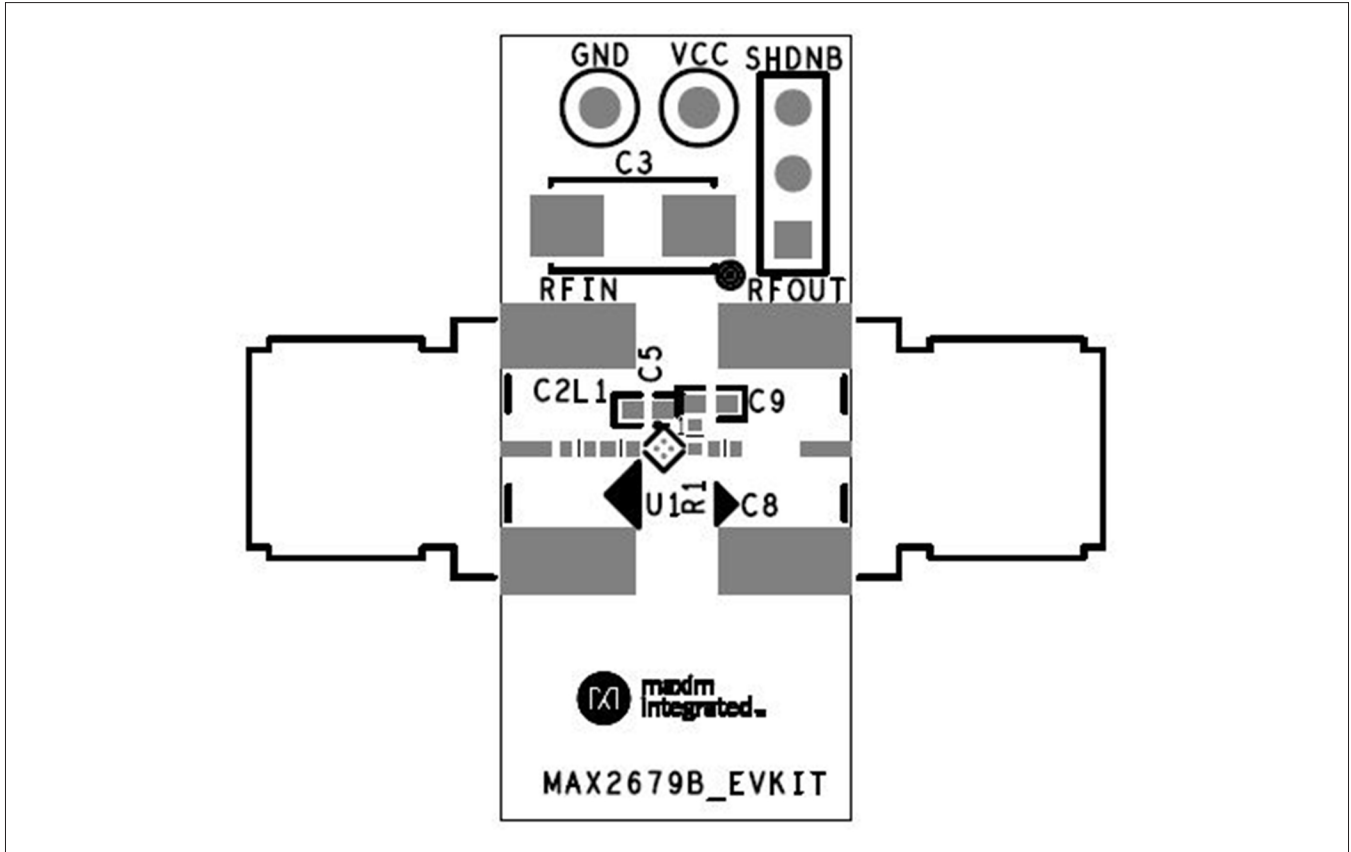
MAX2679 EV Kit Schematic



MAX2679B EV Kit Schematic

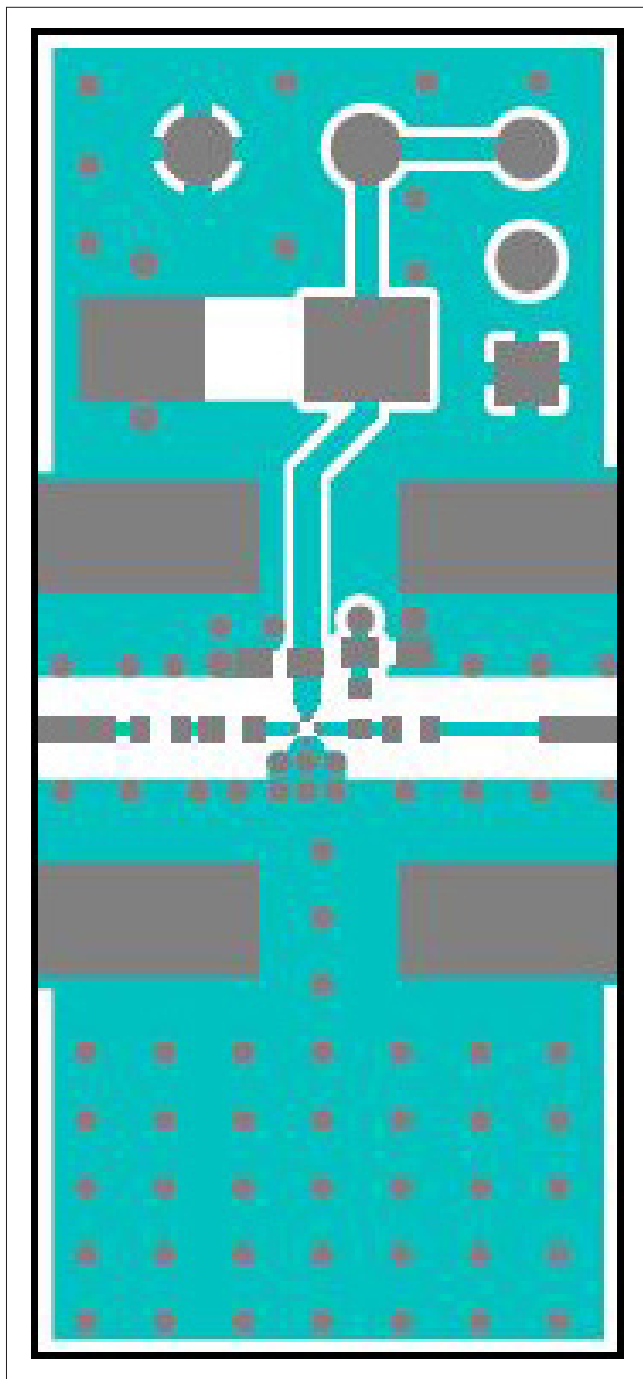


MAX2679/MAX2679B EV Kit PCB Layout Diagrams

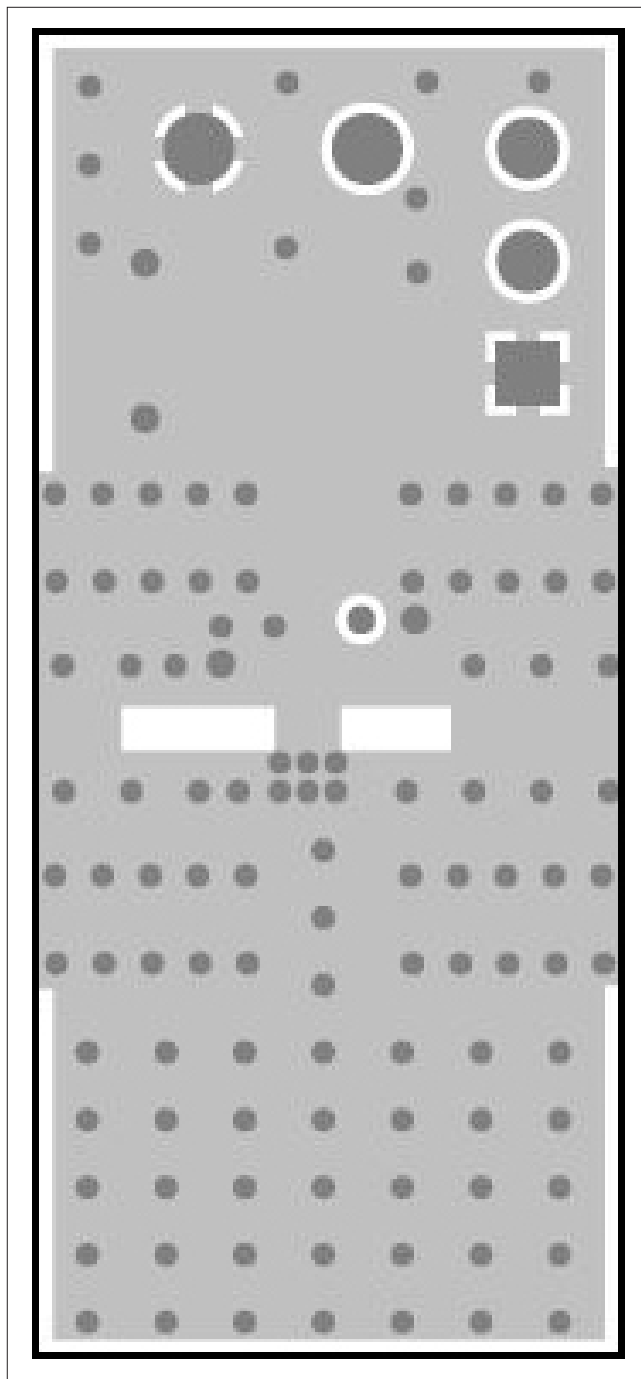


MAX2679/MAX2679B EV Kit—Gerber Top Silkscreen

MAX2679/MAX2679B EV Kit PCB Layout Diagrams (continued)



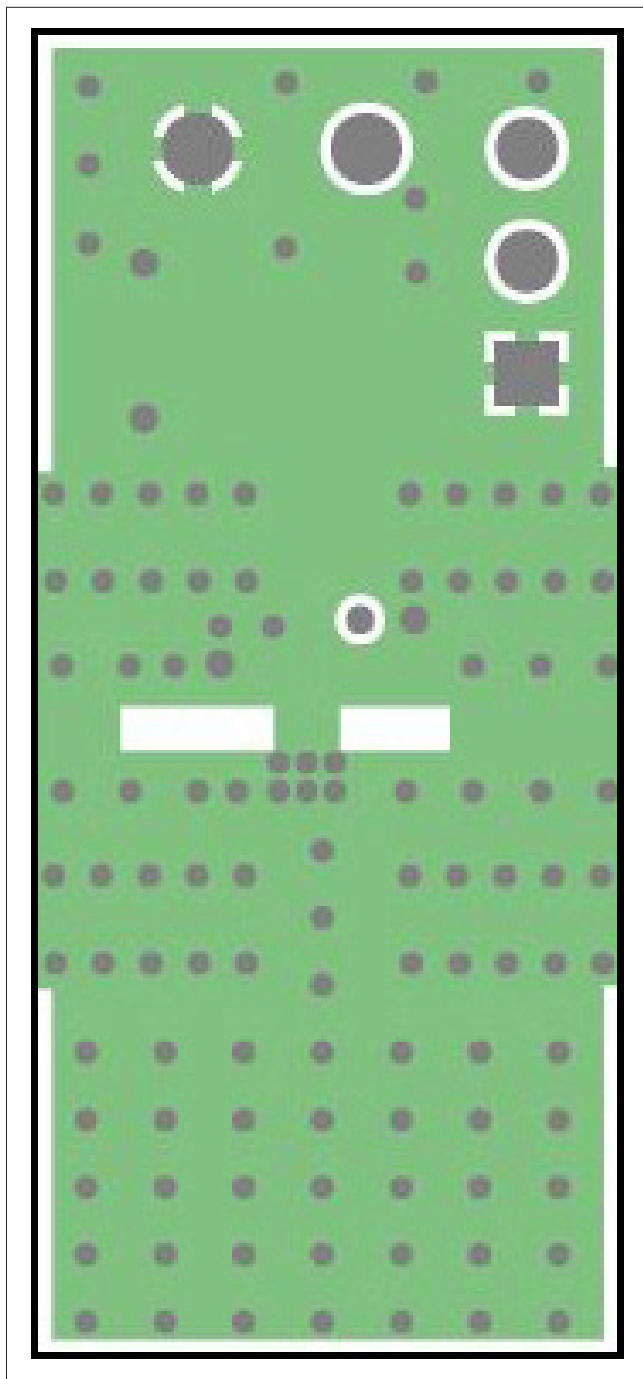
MAX2679/MAX2679B EV Kit—Gerber Top



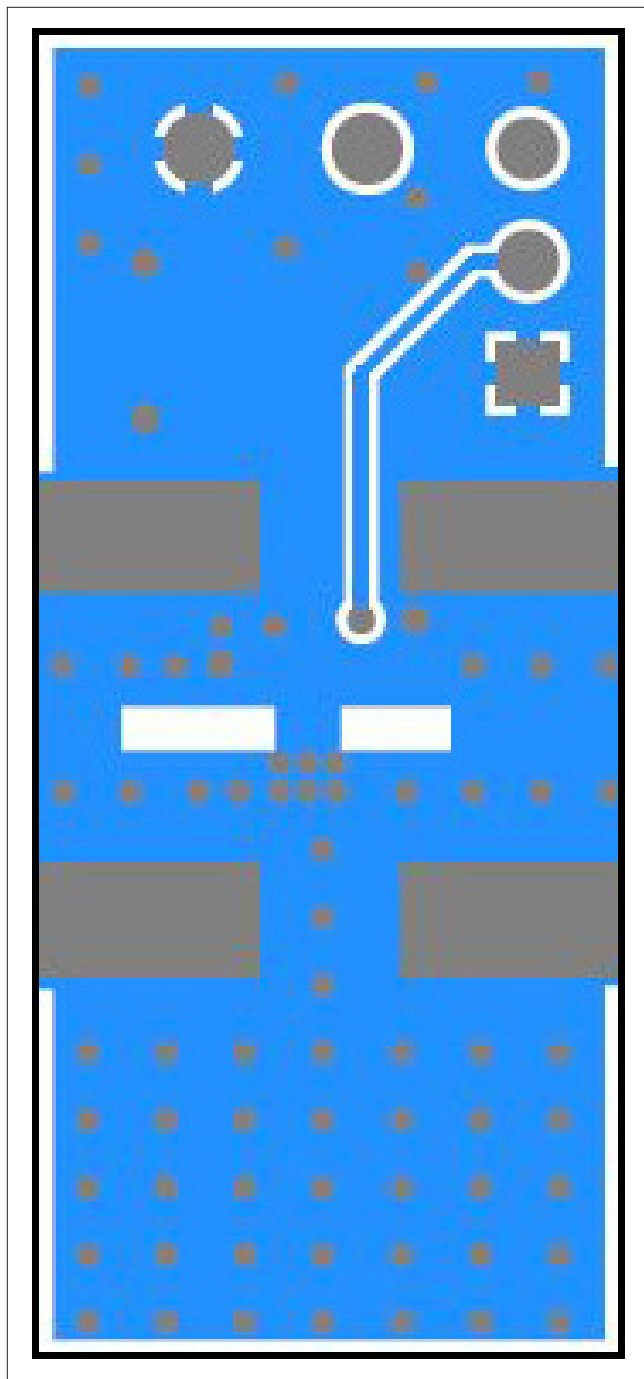
MAX2679/MAX2679B EV Kit—Gerber L2\_GND



MAX2679/MAX2679B EV Kit PCB Layout Diagrams (continued)



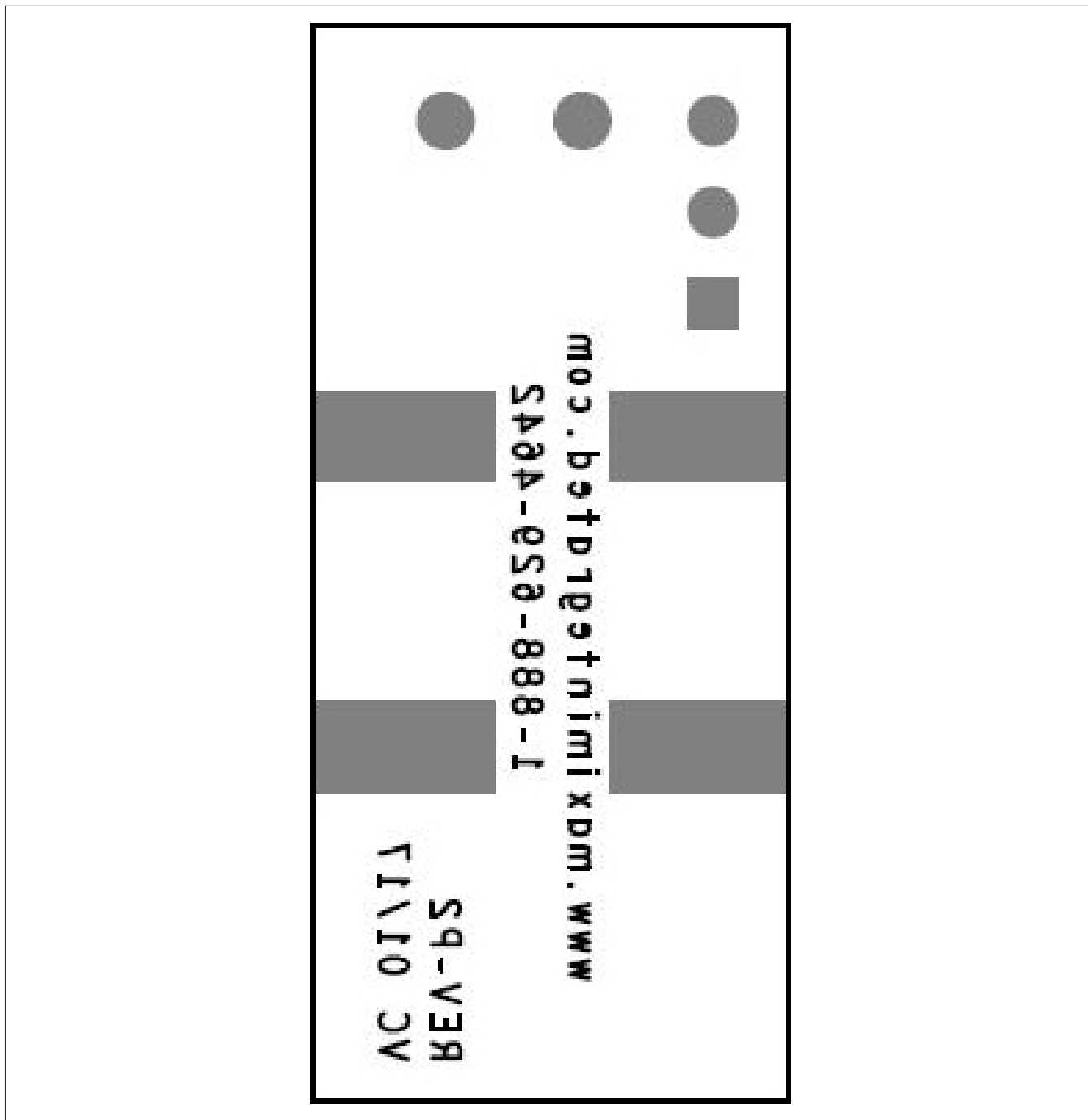
MAX2679/MAX2679B EV Kit—Gerber L3\_GND



MAX2679/MAX2679B EV Kit—Gerber Bottom

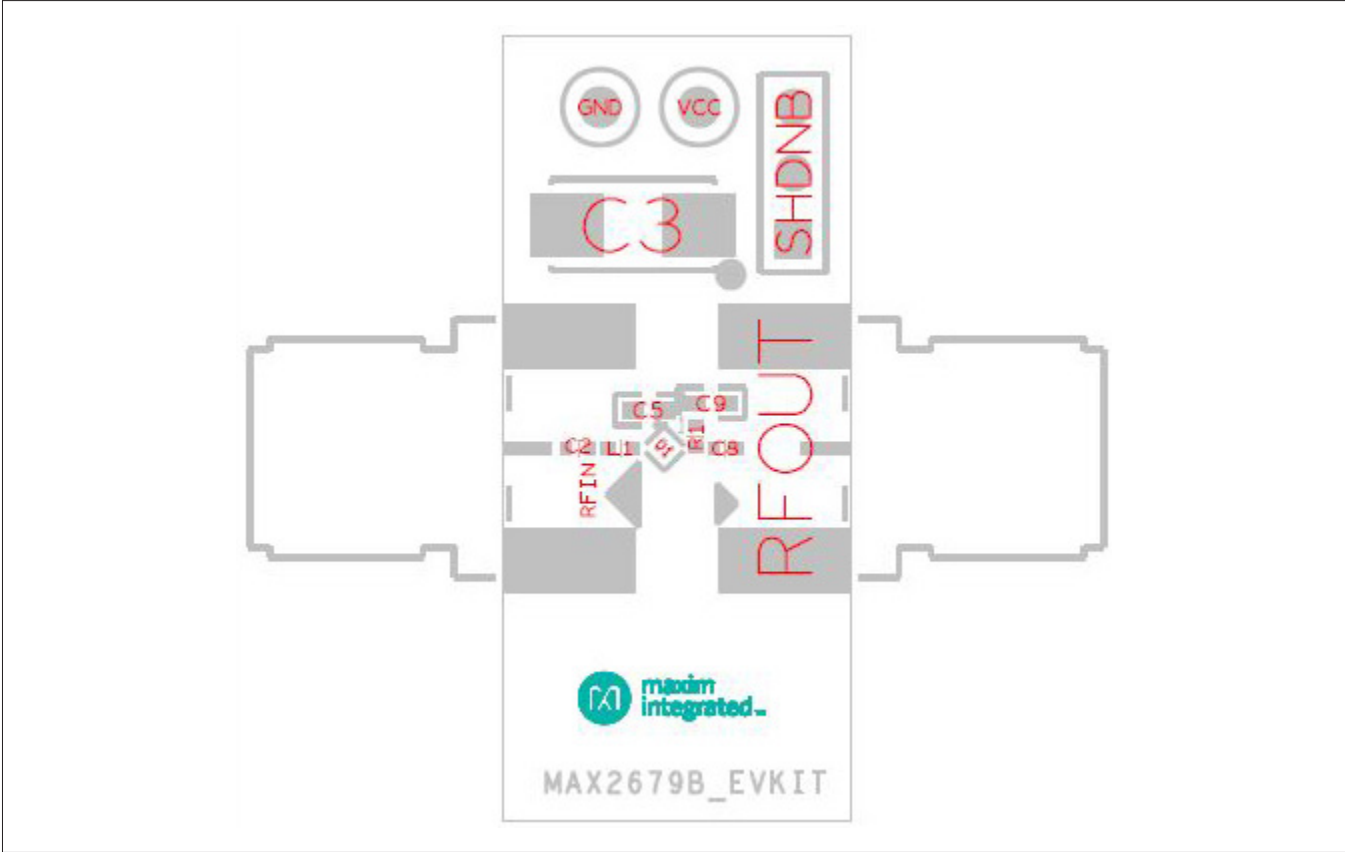


MAX2679/MAX2679B EV Kit PCB Layout Diagrams (continued)



MAX2679/MAX2679B EV Kit—Gerber Silk\_Bottom

MAX2679/MAX2679B EV Kit PCB Layout Diagrams (continued)



MAX2679/MAX2679B EV Kit—Assembly Top

## Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	5/17	Initial release	—

For pricing, delivery, and ordering information, please contact Maxim Direct at 1-888-629-4642, or visit Maxim Integrated's website at [www.maximintegrated.com](http://www.maximintegrated.com).

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