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APPLICATION NOTE 957

# The MAX2681 SiGe Downconverter Mixer Tuned for GPS Front Ends

*Abstract: This application note presents the component values and measured performance for the MAX2681 mixer IC when tuned for GPS operation at 1575MHz. The evaluation kit schematic is provided. Conversion gain is 10.5dB, and the input third order intercept is -0.8dBm.*

Additional Information:

- Wireless Product Line Page
- Quick View Data Sheet for the MAX2680/MAX2681/MAX2682
- Applications Technical Support

The MAX2681 is a miniature, low-cost, low-noise downconverter mixer designed for low-voltage, low-current operation, and is ideal for portable communications equipment. The MAX2681 can be used with input radio frequencies (RFs) between 400MHz and 2500MHz, to downconvert to intermediate frequencies (IF) between 10MHz to 500MHz. The input RF for a global positioning system (GPS) receiver is 1575MHz. Assuming a 70MHz IF, and high-side local oscillator (LO) injection ($f_{LO}$ = 1645MHz), the MAX2681 achieves +10.5dB of gain, has a noise figure of 9.6dB, an input third-order intercept point (IIP3) of -0.8dBm and draws 8.8mA of supply current from a +3.0V supply. See **Figure 1** for component values and the schematic.

For application of the MAX2681 at 900MHz, 1950MHz of 2450MHz, or for further device information, consult the MAX2680/MAX2681/MAX2682 data sheet. For higher input IP3 performance, refer to the application note 890, "Silicon Germanium (SiGe) Downconverter Tuned for GPS Receivers."

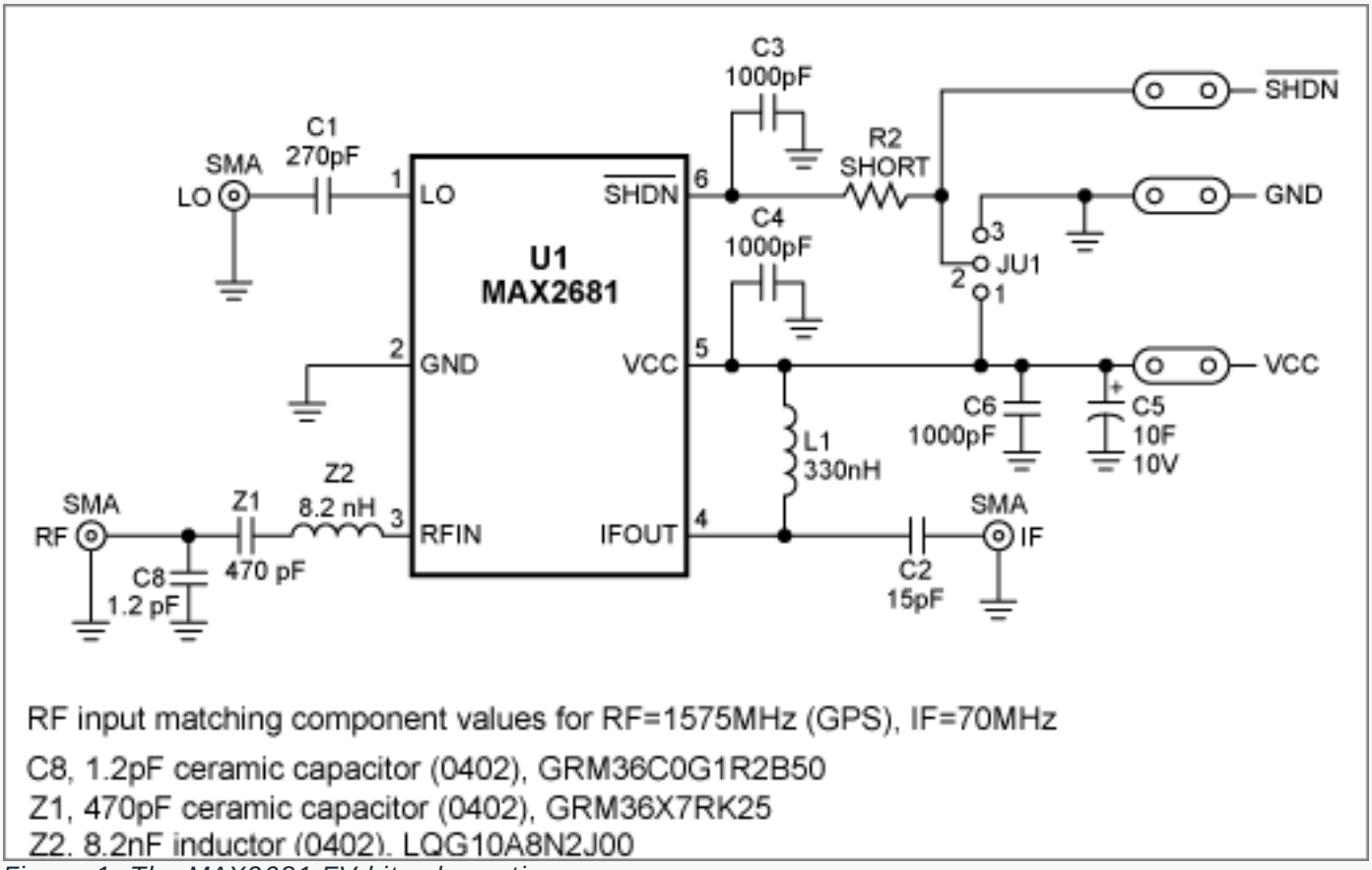


*Figure 1. The MAX2681 EV kit schematic.*

**Table 1. The MAX2681 GPS Performance**

$V_{CC}$ = +3.0V, $f_{RF1}$ = 1575MHz, $f_{RF2}$ = 1576MHz, $f_{LO}$ = 1645MHz, $P_{LO}$ = -5dBm, $f_{IF}$ = 70MHz

| Parameter | Measure Performance |
|---|---|
| Conversion Gain | +10.5dB |
| Noise Figure | 9.6dB |
| Input Third-Order Intercept Point | -0.8dBm |
| RF Input Return Loss | -19.3dB |
| Supply Current | 8.8mA |

**NOTE**: PCB losses are not taken into account.



Application note 957: www.maxim-ic.com/an957

**More Information**

For technical support: www.maxim-ic.com/support

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