



**THE DATASHEET OF  
ADMV1018BCCZ**



**FEATURES**

- RF input/output frequency range: 24.0 GHz to 29.5 GHz**
- 2 upconversion modes**
  - Direct conversion from differential baseband I/Q**
  - Single-ended, complex IF to RF, single-sideband upconversion**
- 2 downconversion modes**
  - Direct conversion from RF to differential baseband I/Q downconversion**
  - Single-ended complex IF image rejection conversion**
- LO input frequency range: 5 GHz to 15 GHz**
- LO doubler or quadrupler for up to 30 GHz**
- Matched, 50  $\Omega$  impedance, single-ended RF input and output**
- Matched, 50  $\Omega$  impedance single-ended LO input**
- Temperature compensation circuits to minimize temperature variations**
- Programmable baseband I/Q common-mode voltage**
- Receiver and transmitter gain and power control through fast settling DSA**
- Low phase variation vs. gain control**
- Fast TDD switching time via external pins**
- Upconversion mode**
  - Sideband rejection and carrier feedthrough optimization**
  - Envelope detector for LO feedthrough calibration**
- Downconversion mode**
  - Image rejection and I/Q imbalance optimization**
  - Baseband I/Q dc offset correction**
- Receiver mixer power detector for receiver gain setting**
- LO chain features**
  - $\times 2$  and  $\times 4$  modes**
  - Variable gain to accommodate various LO drive strength values**
- $>360^\circ$  phase control shifter for LO synchronization, separate settings for receiver and transmitter modes**
- Programmable via a 3-wire SPI interface**
- 60-terminal, 9 mm  $\times$  8 mm, LGA package**
- Common-mode input pin to track desired common mode to ADC, 0.75 V to 2.15 V voltage range**

**APPLICATIONS**

- 5G applications**
- Point to point microwave radios**
- Radar and electronic warfare systems**
- Instrumentation and automatic test equipment (ATE)**

**GENERAL DESCRIPTION**

The ADMV1018 is a silicon germanium (SiGe), microwave, upconverter and downconverter optimized for 5G radio designs operating in the 24.0 GHz to 29.5 GHz frequency range.

The upconverter offers two modes of frequency translation. The device is capable of direct conversion to RF from differential baseband inphase/quadrature (I/Q) input signals, as well as single-sideband upconversion from complex intermediate frequency (IF) inputs. The differential baseband I/Q input path can be disabled, and modulated, single-ended, complex IF signals from 2 GHz to 9.5 GHz can be fed to the IF path. These signals can then be upconverted to 24.0 GHz to 29.5 GHz while rejecting the unwanted sideband by typically greater than 25 dBc. The serial port interface (SPI) provides adjustment of the quadrature phase to allow optimum sideband rejection. In addition, the SPI interface allows powering down the output envelope detector to reduce power consumption when carrier feedthrough optimization is not necessary.

The downconverter offers two modes of frequency translation. The device is capable of direct quadrature demodulation to differential baseband I/Q output signals, as well as image rejection downconversion to a single-ended complex IF output carrier frequency. The I/Q baseband output common-mode voltage is programmable between 0.75 V and 2.15 V. The SPI provides fine adjustment of the quadrature phase to optimize I/Q demodulation performance. Alternatively, the baseband I/Q outputs can be disabled, and the I/Q signals can be passed through an on-chip, active balun to provide two, single-ended, complex IF outputs between 2 GHz and 9.5 GHz. When the device is used as an image rejecting downconverter, the unwanted image term is typically rejected to greater than 25 dBc. The ADMV1018 offers a square law power detector to allow monitoring of the power levels at the mixer inputs. The detector output provides closed-loop control of the RF digital step attenuator (DSA) via an external automatic gain control (AGC) loop.

The ADMV1018 upconverter and downconverter is housed in a compact, thermally enhanced, 9 mm  $\times$  8 mm, land grid array (LGA) package. This LGA package enables the ability to heat-sink the ADMV1018 from the top of the package for the most efficient thermal heatsinking. The ADMV1018 operates over the  $-40^\circ\text{C}$  to  $+85^\circ\text{C}$  case temperature range.

Throughout the figures in this data sheet, Rx means receiver and Tx means transmitter.

For more information about the [ADMV1018](#), contact Analog Devices, Inc., at [mmWave5G@analog.com](mailto:mmWave5G@analog.com).

Rev. SpA **Document Feedback**  
Information furnished by Analog Devices is believed to be accurate and reliable. However, no responsibility is assumed by Analog Devices for its use, nor for any infringements of patents or other rights of third parties that may result from its use. Specifications subject to change without notice. No license is granted by implication or otherwise under any patent or patent rights of Analog Devices. Trademarks and registered trademarks are the property of their respective owners.

One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106, U.S.A.  
Tel: 781.329.4700 ©2019–2021 Analog Devices, Inc. All rights reserved.  
**Technical Support** [www.analog.com](http://www.analog.com)

**NOTES**

## Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

 [View ADMV1018BCCZ on WIN SOURCE](#)

 [Analog Devices Inc. Information](#)

## Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management