

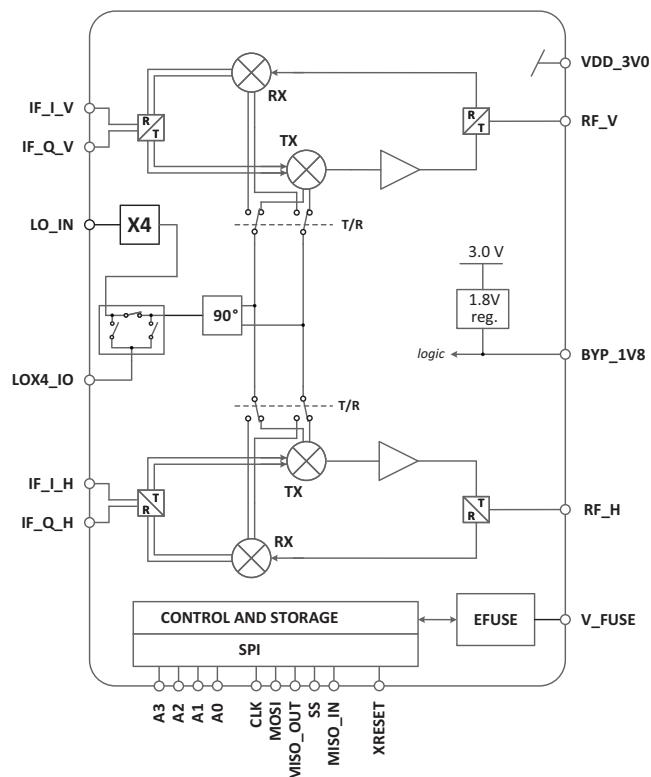
Features

- Supports bands n258 and n257: 24.25–29.50 GHz
- Compatible with PE188100 and PE188200 8-channel beamforming front ends
- Fast TDD switching in < 800 ns
- Separate V and H channels use a single X4 LO multiplier
- Image reject up and down converters with I/Q balance adjustment
- IF, LO I/Q phase and IF amplitude adjustment
- Up to 16 pre-stored modes selected by a single-byte SPI command

Applications

- 5G base stations
- 5G customer premises equipment (CPE)
- Point-to-point radio

Figure 1 • PE128300 Functional Diagram



Product Description

The PE128300 is dual-channel TDD up-down converter designed for 5G FR2 n258 and n257 frequency bands.

In transmit mode, the input to a channel is applied to IF_I and IF_Q 50Ω impedance ports. The signal passes through circuits which adjust the relative amplitude and phase of the I/Q signals. T/R switches route the IF signal to the transmit image reject mixer. Next, the up-converted signal is either directly connected to an RF amplifier, or, in the packaged case, is routed through a bandpass filter inside the package and amplified afterward. The RF amplifier outputs route through T/R switches to IC bump contacts.

In receive mode, the input arrives at the RF 50Ω port and is then routed to the RX image reject mixer by a T/R switch. After the down-conversion, the signal passes through the I/Q quadrature correction circuits. The I/Q correction digital control is multiplexed between TX and RX stored coefficients depending upon the active mode.

The chip supports both fundamental and sub-harmonic inputs of the internal local oscillator drive signals to the mixers. As shown in Figure 1, there are two dedicated inputs. The LO_IN port includes a 4x multiplier chain in its path to create the internal mixer drive signal frequency in support of low-side conversion. The LOX4_IO permits direct drive of the internal mixers at the required switching frequency.

Up to 16 different mode definitions are pre-stored and selectable via a single-byte SPI command. Mode definitions contain seven elements: LO power on/off, V/H RX power on/off, V/H TX power on/off and V/H T/R switch state. Typical modes used are TX, RX, idle, sleep, and loopback.

Ordering Information

Table 1 lists the available ordering codes for the PE128300 as well as available shipping methods.

Table 1 • Order Codes for PE128300

Order Codes	Description	Packaging	Shipping Method
PE128300A-Z	PE128300 Dual-channel up-down converter	Die on tape and reel	3000 die / T&R
EK128300-01	PE128300 Evaluation kit	Evaluation kit	1 / box

Document Categories

Advance Information

The product is in a formative or design stage. The datasheet contains design target specifications for product development. Specifications and features may change in any manner without notice.

Preliminary Specification

The datasheet contains preliminary data. Additional data may be added at a later date. pSemi reserves the right to change specifications at any time without notice in order to supply the best possible product.

Product Specification

The datasheet contains final data. In the event pSemi decides to change the specifications, pSemi will notify customers of the intended changes by issuing a CNF (Customer Notification Form).

Product Brief

The product brief contains summary product information.

Sales Contact

For additional information, contact Sales at sales@psemi.com.

Disclaimers

The information in this document is believed to be reliable. However, pSemi assumes no liability for the use of this information. Use shall be entirely at the user's own risk. No patent rights or licenses to any circuits described in this document are implied or granted to any third party. pSemi's products are not designed or intended for use in devices or systems intended for surgical implant, or in other applications intended to support or sustain life, or in any application in which the failure of the pSemi product could create a situation in which personal injury or death might occur. pSemi assumes no liability for damages, including consequential or incidental damages, arising out of the use of its products in such applications.

Patent Statement

pSemi products are protected under one or more of the following U.S. patents: patents.psemi.com

Copyright and Trademark

©2022, pSemi Corporation. All rights reserved. The Peregrine Semiconductor name, Peregrine Semiconductor logo and UltraCMOS are registered trademarks and the pSemi name, pSemi logo, HaRP and DuNE are trademarks of pSemi Corporation in the U.S. and other countries.