PE188200

Document Category: Product Brief

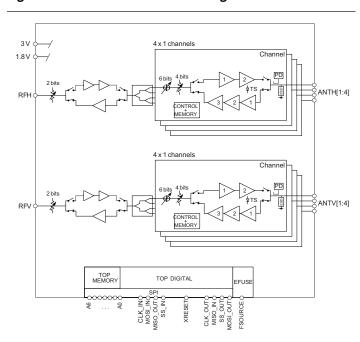### 8-channel Beamforming Front End, 26.5–29.5 GHz

pSemi®
A Murata Company

Features

- Covering the n257 band
- Integrated power amplifiers and low-noise amplifiers
- Supports four dual-polarity antennas
- 50Ω impedance at RF ports
- 6-bit phase and 6-bit attenuation control
- High linearity: 18.5 dBm output P1dB
- Low noise figure: 3.3 dB
- 3.15V and 1.8V dual-supply voltage
- High linear P_{OUT} supporting CP-OFDM 64 QAM
- Fast beam switching
- On-chip memory for 512 beams
- Independent control via SPI of all paths
- Packaging – 4.355 × 4.355 mm flip-chip die

Applications

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

Figure 1 ▪ PE188200 Functional Diagram

Product Description

The PE188200 is an 8-channel beamforming front-end for 5G applications. It is organized as two independently controllable RF chains of four channels supporting four dual-polarity antennas or eight single-polarity antennas. Time division duplex (TDD) mode operation switches power amplifier/low noise amplifier (PA/LNA) branches connected to each antenna port. Integrated splitter/combiners and a phase and amplitude beamformer for each channel complete each chain.

All control is performed via a 4-wire serial peripheral interface (SPI) bus. On-chip memory holds 512 sets of 8-channel beamforming coefficients. These sets may be allocated in any way between RX and Tx. To enable rapid beam steering, each stored value can be selected by a short two-byte Beam Preset command, or individual beamformer coefficients may be written separately by ordinary write register commands. Similarly, on-chip storage is provided for up to 32 state modes, providing control of all amplifiers and switches for each channel. This allows flexible definition of modes such as RX, TX, idle and sleep. The desired state mode is selected by a one-byte Mode Preset command. Mode lookup tables are read from and written to via the SPI bus like ordinary registers. The SPI bus supports pass-through operation to control several chips on the same bus for ease of multi-chip control in large antenna arrays.

Ordering Information

Table 1 lists the available ordering codes for the PE188200 as well as available shipping methods.

Table 1 ▪ Order Codes for PE188200

Order Codes	Description	Packaging	Shipping Method
PE188200A-Z	PE188200 8-channel beamforming front end	Die on tape and reel	3000 die / T&R
EK188200-01	PE188200 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.

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