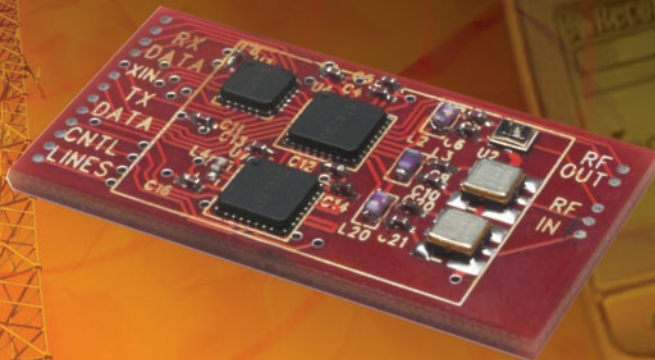


# Aero™ GSM Transceiver Chipset

INTEGRATED TRANSCIVER FOR GSM900,  
DCS1800 AND PCS1900 WIRELESS  
COMMUNICATIONS



SILICON LABORATORIES

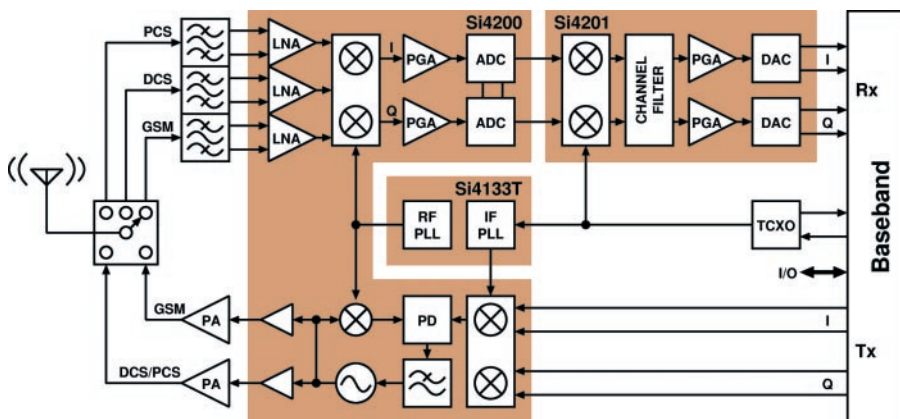


## PRODUCT DESCRIPTION

The Aero transceiver is the industry's most integrated RF front-end for dual and triple band GSM digital cellular handsets and wireless data modems. The highly integrated solution eliminates the IF SAW filter, low noise amplifiers (LNAs) for three bands, transmit and RF voltage controlled oscillator (VCO) modules, and more than 60 other discrete components found in conventional GSM handset designs.

The receive section uses a digital low-IF architecture which avoids the difficulties associated with direct conversion receivers while delivering on the promises of lower cost and reduced complexity. The universal analog baseband interface is compatible with any supplier's baseband subsystem. The transmit section is a complete up-conversion path from the baseband subsystem to the power amplifier, and uses an offset phase-locked loop (PLL) with a fully integrated transmit VCO. The frequency synthesizer uses Silicon Labs' proven technology, which includes integrated RF and IF VCOs, varactors, and loop filters.

## AERO TRANSCIVER BLOCK DIAGRAM



## FEATURES

- Complete triple-band GSM cellular radio front end using CMOS RF technology
- Unparalleled integration
  - 50% less board area
  - 80% fewer components
- Low-IF receiver
  - Dual or triple band LNA
  - Image-reject down-converter
  - High performance A/D converter
- Universal analog baseband interface
  - Digital IF to baseband converter
  - Digital channel select filter
  - Digital programmable gain control
  - Works with any baseband solution
- Offset PLL transmitter
  - High precision I/Q up-converter
  - Integrated transmit VCO
- Proven frequency synthesizer technology
  - Integrated RF and IF VCOs
- GPRS class 12 compliant
- EDGE downlink compatible
- 2.7 to 3.3V operation
- Low profile packages
  - Si4200: 5x5mm MLP32
  - Si4201: 4x4mm MLP20
  - Si4133T: 5x5mm MLP28

## APPLICATIONS

- Dual and triple band GSM cellular handsets
- GPRS voice and data modems

## PRODUCT BRIEF

SILICON LABORATORIES'

AERO TRANSCIVER:

RAISING CMOS

TO THE POWER OF RF



SILICON LABORATORIES

**INTEGRATED. CMOS.  
UNIVERSAL. INNOVATIVE.**

### Unparalleled Integration:

The Aero transceiver's innovative architecture eliminates the IF SAW filter, transmit and RF VCO modules and more than 60 other discrete components found in conventional GSM handset designs. This level of integration is an enabling force in lowering the cost, simplifying the design and manufacturing, and shrinking the form factor of the RF circuitry in next-generation GSM voice and data terminals.

### 100% CMOS Technology:

While conventional solutions use BiCMOS or other bipolar process technologies, the Aero chipset is the industry's first cellular transceiver to be implemented in a 100% CMOS process. This brings the dramatic cost savings and extensive manufacturing capacity of CMOS to the GSM market.

### Universal Baseband Interface:

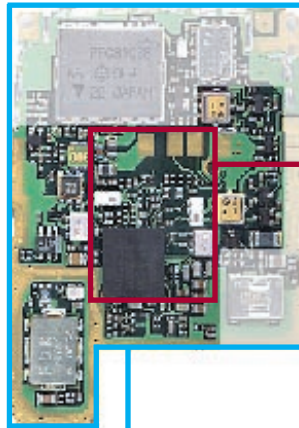
A software-programmable baseband interface enables the Aero transceiver to operate with any baseband subsystem. This programmability gives the handset designer the ability to use the latest RF technology without redesigning the baseband portion of the phone.

### Digital Low-IF Receiver:

The Aero transceiver uses a patented digital low-IF receive architecture which avoids the difficult problems associated with direct conversion while delivering the promises of lower cost and reduced complexity.

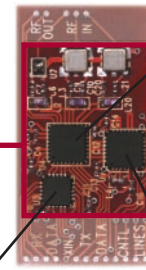
## 50% Area Reduction / 80% Fewer Components

### Today's Leading Technology



**RF Subsection**

### Aero Transceiver



#### Si4200 Transceiver

- 5x5 mm MLP32
- Integrates the entire transmit and receive paths including the LNAs and transmit VCO.

#### Si4201 Universal Baseband Interface

- 4x4mm MLP20
- Software programmable to interface to any baseband subsystem

#### Si4133T RF Synthesizer

- 5x5mm MLP28
- Uses Silicon Labs' proven RF synthesizer technology
- Provides the industry's fastest settling times available using a stable integer-N architecture

### TYPICAL SIZE COMPARISON

	Total Area	Modules	Components
<b>Silicon Laboratories Aero</b>	<b>400 mm<sup>2</sup></b>	<b>0</b>	<b>25</b>
<b>Conventional RF Front End</b>	<b>900 mm<sup>2</sup></b>	<b>2</b>	<b>130</b>

**CMOS<sup>RF</sup>**  
Raising CMOS to the Power of RF

## CONTACT INFORMATION



**SILICON LABORATORIES**

**Silicon Laboratories Inc.**  
4635 Boston Lane • Austin, TX 78735  
**Toll Free:** 1(877)444-3032  
**Email:** Aeroinfo@silabs.com  
**Web site:** www.silabs.com

*"Raising CMOS to the Power of RF," Silicon Laboratories, Aero, and the Silicon Laboratories logo are trademarks of Silicon Laboratories Inc.*  
PB:Aero; MER-8,000, Jan 01, R1

## ORDERING INFORMATION

Product	Description
Si4200-BM	GSM/DCS/PCS Triple-band Aero Transceiver Chipset (Includes Si4200, Si4201 & Si4133T)
Si4200GD-BM	GSM/DCS Dual-band Aero Transceiver Chipset
Si4200GP-BM	GSM/PCS Dual-band Aero Transceiver Chipset
Si4200-EVB	Aero Transceiver Evaluation Board
Si4200-DS	Aero Transceiver Data Sheet (Includes Si4200/Si4201)
Si4133T-DS	RF Synthesizer Data Sheet