2.4 GHz RF Front End
CC2590/CC2591

- 2.4 GHz Range Extender for low-power RF-ICs
- Up to +14 and +22 dBm output power (CC2590/CC2591 respectively)
- Up to 28 dB increased link budget
- >15 times the Line of Sight range

Description
CC2590/CC2591 is a range extender specially designed for all existing and future RF transceivers and System-on-Chip solutions from Texas Instruments. It is a cost-effective and high performance RF Front End for low-power and low-voltage wireless applications in the 2.4 GHz band.

CC2590/CC2591 increases the link budget by providing a power amplifier for improved output power and an LNA with low noise figure for improved receiver sensitivity. It contains PA, LNA, switches, RF-matching, and balun for simple design of high performance wireless applications.

CC2590/CC2591 provides a small size design with its 4x4mm QFN-16 package.

Key Specifications
CC2590
- Up to +14 dBm output power
- Up to +20 dB increased link budget
- 22 mA transmit current @ 3V and +12 dBm output power
- 4.6 dB LNA noise figure including RX/TX switch

CC2591
- Up to +22 dBm output power
- Up to +28 dB increased link budget
- 112 mA transmit current @ 3V and +20 dBm output power
- 4.8 dB LNA noise figure including RX/TX switch

CC2590/CC2591
- Seamless interface to TI Low-Power RF devices
- 6 dB Typ improved sensitivity on CC24xx and CC2500, CC2510 and CC2511
- Very few external components: Integrated PA, LNA, switches, inductors, balun and matching network
- Low receive current: 3.4 mA in HIGH gain mode, 1.7 mA in LOW gain mode
- 100 nA in power down
- Digital control of LNA gain by HGM pin
- RoHS compliant 4x4 mm QFN-16 package

Applications
- All 2.4 GHz ISM band systems
- Wireless sensor networks
- Wireless industrial systems
- ZigBee systems
- Wireless consumer application
- Wireless audio

Texas Instruments
IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI’s terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI’s standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of TI information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

TI products are not authorized for use in safety-critical applications (such as life support) where a failure of the TI product would reasonably be expected to cause severe personal injury or death. Buyers represent that they have all necessary expertise in the safety and regulatory ramifications of their applications, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of TI products in such safety-critical applications. Buyers acknowledge and agree that they are responsible for compliance with all laws and regulations governing their products, including export laws and regulations. Buyers represent and agree that they have obtained all necessary regulatory certifications and approvals for their products utilizing TI products.

TI products are neither designed nor intended for use in life support, aerospace, military, or other applications requiring fail-safe performance. Buyers acknowledge and agree that they assume sole responsibility and liability for any failure to meet such requirements.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

<table>
<thead>
<tr>
<th>Products</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amplifiers</td>
<td>amplifier.ti.com</td>
</tr>
<tr>
<td>Data Converters</td>
<td>dataconverter.ti.com</td>
</tr>
<tr>
<td>DSP</td>
<td>dsp.ti.com</td>
</tr>
<tr>
<td>Clocks and Timers</td>
<td><a href="http://www.ti.com/clocks">www.ti.com/clocks</a></td>
</tr>
<tr>
<td>Interface</td>
<td>interface.ti.com</td>
</tr>
<tr>
<td>Logic</td>
<td>logic.ti.com</td>
</tr>
<tr>
<td>Power Mgmt</td>
<td>power.ti.com</td>
</tr>
<tr>
<td>Microcontrollers</td>
<td>microcontroller.ti.com</td>
</tr>
<tr>
<td>RFID</td>
<td><a href="http://www.ti-ridf.com">www.ti-ridf.com</a></td>
</tr>
<tr>
<td>RF/IF and ZigBee® Solutions</td>
<td><a href="http://www.ti.com/rfr">www.ti.com/rfr</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.ti.com/audio">www.ti.com/audio</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.ti.com/automotive">www.ti.com/automotive</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.ti.com/broadband">www.ti.com/broadband</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.ti.com/digitalcontrol">www.ti.com/digitalcontrol</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.ti.com/medical">www.ti.com/medical</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.ti.com/military">www.ti.com/military</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.ti.com/opticalnetwork">www.ti.com/opticalnetwork</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.ti.com/security">www.ti.com/security</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.ti.com/telephony">www.ti.com/telephony</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.ti.com/video">www.ti.com/video</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.ti.com/wireless">www.ti.com/wireless</a></td>
</tr>
</tbody>
</table>

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265

Copyright © 2008, Texas Instruments Incorporated