



ADVANCED INFORMATION

March 2004

**LMX4268
Radio Transceiver for DECT**

1.0 General description

The LMX4268 is a radio transceiver integrated circuit optimized for the Digital Cordless Telecommunications (DCT) system. The transceiver, when combined with a power amplifier and a Tx/Rx switch, implements a complete 2.4GHz ISM band digital radio transceiver compliant with the FCC rules part 15. The LMX4268 interfaces directly to National Semiconductor's SC144XX DCT family of base-band processors.

The LMX4268 integrates a complete transmitter, consisting of a phase locked loop, VCO and PA driver. The receiver contains LNA, quadrature downconverter, polyphase filter, automatic gain control and demodulator.

The LMX4268 operates from a single 2.5V supply. The LMX4268 is manufactured in National's 0.25µm CMOS technology, and is packaged in a 44 pin LLP package.

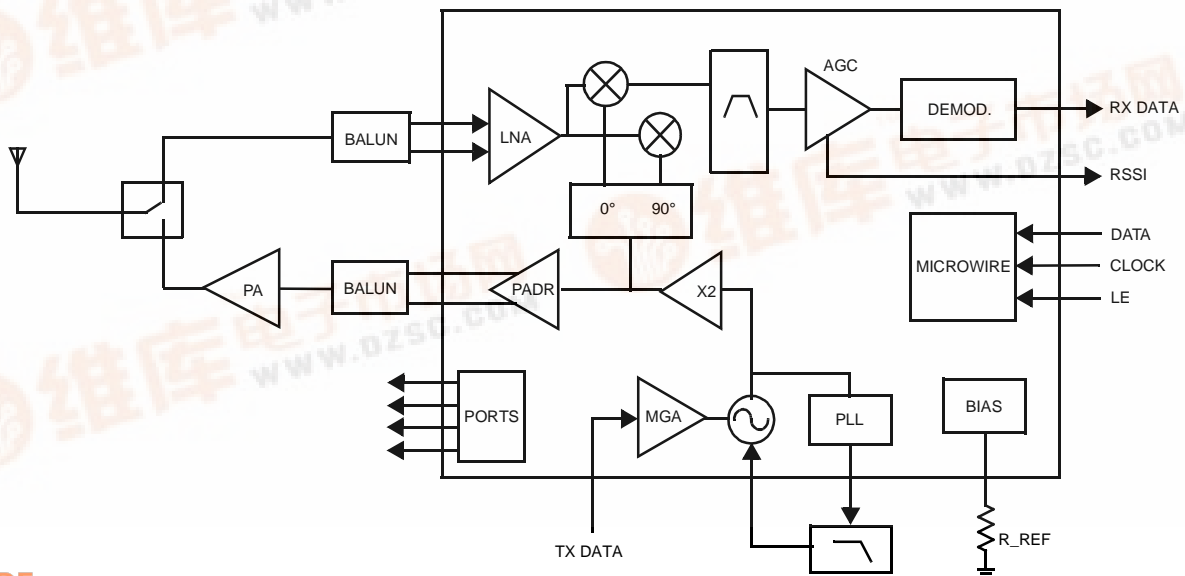
2.0 Features

- Fully integrated 2.4 GHz CMOS low-IF transceiver
- Low power consumption
- On-chip Voltage Controlled Oscillator (VCO)
- On-chip low noise amplifier (LNA)
- Open-loop modulation
- On chip Modulation Gain Amplifier (MGA)
- On-chip timing control
- Four digital (5 mA) output ports
- 0 dBm PA driver output
- dual bit rate 0.576 MHz (LR_b) / 1.152 MHz (HR_b)
- sensitivity -96 dBm (LR_b) / -93 dBm (HR_b)
- 2.5V operation
- Small 44 pin Leadless Leadframe Package

3.0 Applications

- (DCT) Digital Cordless Telecommunications

4.0 System Diagram



LMX4268 Radio Transceiver for DECT



5.0 Specifications

5.1 ABSOLUTE MAXIMUM RATINGS

Table 1. Absolute Maximum Ratings ^{1,2}

Parameter	Description	Min	Typ	Max	Units
V _{dd_max}	Power Supply Voltage (V _{dd_shield} , V _{dd_ADC} , V _{dd_mix} , V _{dd_LNA} , V _{dd_ESD} , V _{dd_PAdr} , V _{dd_presc} , V _{dd_PLL} , V _{dd_VCO} , V _{dd_bias} , V _{dd_dig} , V _{dd_RSSI})	-0.3	-	3.0	V
	Absolute difference between power supplies	-	-	0.3	V
V _{n_max}	Voltage on any pin	-0.3	-	V _{dd} +0.3	V
T _{storage}	Storage Temperature	-40	-	+150	°C
T _{Lead}	Lead Temp. (solder 4 sec) ³	-	-	+260	°C
V _{HBM}	ESD - human body model ⁴	-	-	2.0	kV
V _{MM}	ESD - machine model ⁴	-	-	200	V

1. *tbc* = To be characterized

2. Absolute Maximum Ratings indicate limits beyond which damage to the device may occur. Operating Ratings indicate conditions for which the device is intended to be functional, but do not guarantee specific performance limits. For guaranteed specifications and test conditions, see the Electrical Characteristics. The guaranteed specifications apply only to the test conditions listed.

3. MSL 2 (Moisture Sensitivity Level) is valid when the standard reflow process (235°C) is used. MSL 2 means 1 year shelf life after opening dry-pack. MSL 2(1 year shelf life) is also valid when the leadfree reflow process (260°C) is used. Storage conditions are max. 30°C / 60% rel. humidity.

4. ESD STATEMENT

This device is a high performance RF integrated circuit and is ESD sensitive. Handling and assembly of this device should be performed at ESD free workstations.

5.2 ELECTRICAL CHARACTERISTICS

Table 2. Recommended Operating Conditions

Parameter	Description	Min	Typ	Max	Units
V _{dd}	Power Supply Voltage (V _{dd_shield} , V _{dd_ADC} , V _{dd_mix} , V _{dd_LNA} , V _{dd_ESD} , V _{dd_PAdr} , V _{dd_presc} , V _{dd_PLL} , V _{dd_VCO} , V _{dd_bias} , V _{dd_dig} , V _{dd_RSSI})	2.25	2.5	2.75	V
V _{TXout}	PA driver output biasing voltage on pins TXoutZ, TXout	-	2.0	-	V
T _a	Operating ambient temperature	-20	-	+70	°C
R _{ref}	Reference resistor connected from pin 31 to V _{ss} (see Table 1)	61	62	63	kΩ

6.0 Product Status Definitions

Datasheet Status	Product Status	Definition
Advance Information	Formative or in Design	This data sheet contains the design specifications for product development. Specifications may change in any manner without notice.
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7.0 Package Information inches (millimeters) unless otherwise noted

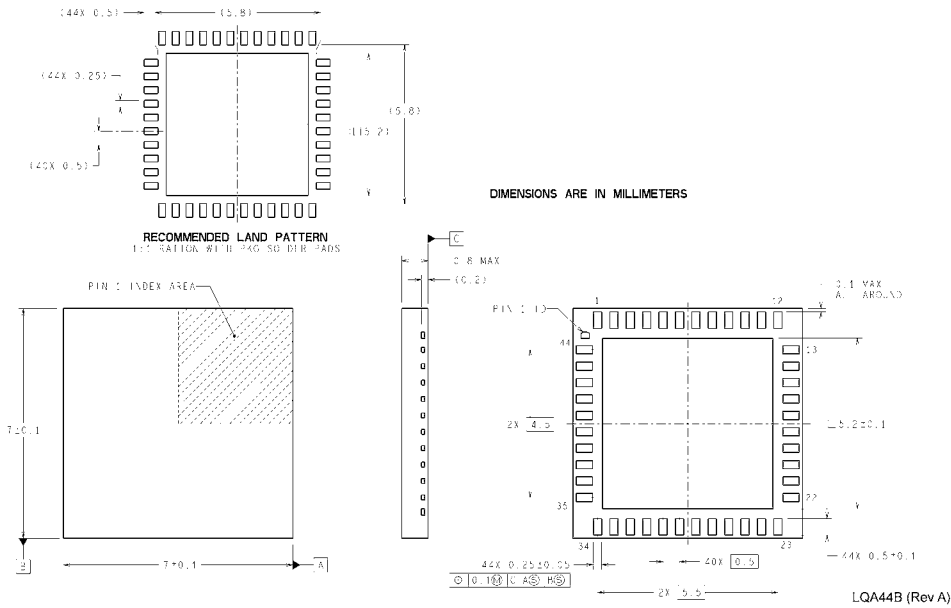


Figure 1. 44 pins Leadless Leadframe Package - NS Package Number LQA44

Note: Refer to the application note AN-1187 for relevant soldering information.
 This document can be downloaded from <http://www.national.com/an/AN/AN-1187.pdf>


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