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MOTOROLA

Semiconductor Products Sector

Information Brief

New Motorola Cordless Telephone Combo ICs Offer Wider Tuning, Improved Sensitivity and Lower Power

Simplifies Implementation of the 25-Channel Standard

The MC13110A and MC13111A Universal Cordless Telephone Subsystem ICs integrate nearly all the major functions required for a cordless telephone on a single integrated circuit. These devices integrate a number of analog and discrete RF functions to achieve significantly reduced component count, lower board space requirements, and fewer external adjustments, all with very low power dissipation.

All versions of the MC13110A and MC13111A cordless combo ICs integrate a dual conversion FM receiver, compander, dual universal programmable PLL, and low battery detect in a family of single ICs with a variety of functional and package options. The MC13110A also integrates a frequency inversion voice scrambler/descrambler to provide increased cordless phone privacy. On-chip digitally-programmable features integrate several tuning functions to eliminate manual tuning during the customers' manufacturing process.

These new A suffixed devices provide several improved specifications and additional features that were not available in the older MC13110 and MC13111 ICs. The newer family has improved the input sensitivity by 3.0 dB, lowered the drain current from 12 mA to 10.5 mA maximum, and increased the gain of the reference oscillator. Internal capacitor selections have increased from five to sixteen to simplify the implementation of 25 channel applications.

FEATURES

- Designed for use in both the handset and base of universal cordless telephones
- Dual universal programmable PLL
- Supports new 25 channel U.S. standard with no external switches
- Universal design for domestic and foreign cordless telephone standards
- Complete dual conversion FM receiver
- Operates with either a quadrature coil or ceramic discriminator
- Compander includes mute, programmable low pass filter, and gain block
- Frequency inversion voice scrambler in MC13110A
- MPU clock outputs eliminate need for MPU crystal
- Low battery detect senses and provides indicator output
- Supply voltage from 2.7 to 5.5 V (15 µA drain current in “Inactive Mode”)

MC13110A and MC13111A Improved Specifications & Features

- Additional 3.0 dB SINAD improvement for increased input sensitivity
- Power supply current reduced from 12 mA to 10.5 mA maximum
- Reference oscillator gain increased to further reduce external adjustments
- Internal capacitor selections increased from 5 to 16 to ease implementation of the new 25 channel U.S. standard with no external switches

TYPES OF APPLICATIONS

These highly integrated devices are designed to be universally applicable in cordless phones per the new 25 channel U.S. standard, as well as other Asian, European and U.S. cordless telephone standards.

BENEFITS TO YOU

- Maximized design flexibility and efficiency with a multitude of programmable features.
- Increased privacy on cordless phones with frequency inversion voice scrambler/descrambler in the MC13110A.
- Improved voice quality and clarity with on-chip compander technology.
- Extended battery life due to low power consumption and standby mode on A-suffix devices.
- Simplifies design with higher levels of system integration.
- Lowers system cost and manufacturing costs by reducing component count and circuit complexity over other solutions.
- Can be used in three-cell battery-powered applications with a power supply voltage as low as 2.7 V.
- Higher circuit density with surface mount plastic flat pack package.

A SOLUTION FOR THESE QUESTIONS

- Do you want to design and build a variety of cordless phones to multiple worldwide cordless telephone standards?
- Do you want to offer more secure cordless phones with a built-in voice scrambler/descrambler feature?
- Do you need to improve the voice quality and clarity of your cordless phones with on-chip compander technology?
- Do you want to reduce the pc board area in your cordless phone handset and base?
- Do you need to extended the battery life in your cordless phone handset by reducing the drain current at a supply voltage of 2.7 V?
- Do you want to reduce the parts count and lower your manufacturing costs by using a highly integrated universal cordless phone subsystem IC?

ORDERING INFORMATION

Device	Tested Operating Temperature Range	Package
MC13110AFB	T_A = -40°C to +85°C	QFP-52
MC13110AFTA		LQFP-48
MC13111AFB		QFP-52
MC13111AFTA		LQFP-48

LITERATURE

One data sheet covers the MC13110A *and* the MC13111A. This document contains full specifications, complete characteristic curves, pin descriptions, detailed applications information, timing diagrams, and many applications circuits for both devices. The data sheet is available through Motorola's LDC as MC13110A/D. Alternately, call Mfax at 602/244-6609 and key-in MC13110A.

Application Note AN1658 is entitled "Converting MC13110/13111 Based Designs to the MC13110A/13111A" and provides the design engineer with information and techniques to modify existing MC13110/13111 designs to incorporate the new MC13110A and MC13111A.

Application Note AN1575/D is entitled "Worldwide Cordless Telephone Frequencies" and provides tables containing all of the channel frequencies for Asia Pacific, European, and U.S. cordless telephone standards. Both of the application notes are also available through Motorola's LDC and Mfax at 602/244-6609.

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