

Feature Phone

Product Brief

Feature Phone Software Application

- Fully functional DSP-based telephone with speakerphone and CLASS feature support
- High quality full duplex speakerphone with performance optimization tools
- Support for on-hook GR-30-CORE services:
 - Calling Number & Name Delivery
 - Dialable Directory Number
 - Visual Message Waiting Indicator
 - Call Qualifier
- Support for off-hook GR-30-CORE services:
 - Calling Identity Delivery on Call Waiting
 - Call Waiting Deluxe
- Adaptive Line and Acoustic Echo Cancellation
- Multi-line & VoIP conference bridge ready
- Telcordia SR-3004 & SR-TSV-002476 compliant
- Motorola SDK compliant

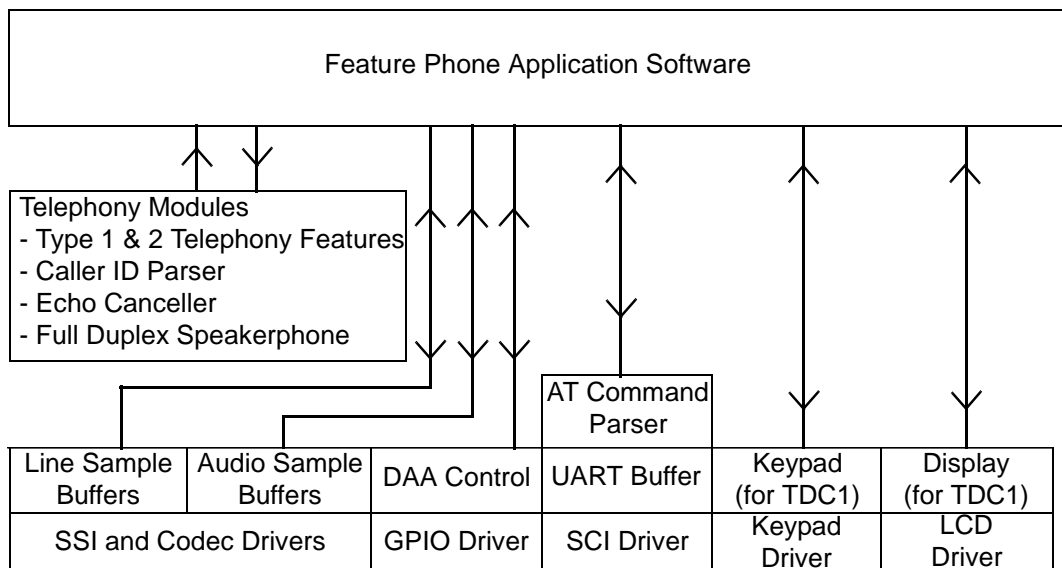


Figure 1. Software System Block Diagram

Product Description

The feature phone application is a fully functional telephone based on the DSP5685x family that incorporates a high quality full duplex speakerphone and CLASS feature support compliant with Telcordia SR-3004 and SR-TSV-002476. The feature phone application provides a highly flexible framework for screenphone and telco service products that permits device manufacturers to quickly add a custom user interface and value-added convenience features, such as number and call log directories, voice announce for caller ID, and digital answering/paging functions. The feature phone application can be expanded to support multi-line applications with multi-line conferencing. Feature phone compatibility with telephone networks

is worldwide for call origination, call termination and speakerphone operation. Feature phone CLASS features are compatible with GR-30-CORE compliant networks (North America). **Figure 1** illustrates the system diagram of the feature phone.

The feature phone application is a customizable framework that uses four telephony DSP modules. The application software contains the main control loop and a real-time kernel that manages the telephone state and makes calls to dedicated SDK modules to perform various functions. The application software performs all start-up initialization and buffer allocation for the telephony modules and hardware drivers. It implements the communications between device and peripheral drivers and the telephony modules.

The feature phone application communicates with the telephony modules through a well-defined API. All input commands and data samples are passed to the modules through one of three data structures contained within the function calls. These data structures are used by the modules to perform their function and pass telephony events such as Caller ID information back to the application software. A simple serial control interface using AT commands is provided to simplify integration into existing products that contain a host controller.

Other features include:

- An adaptive line echo canceller with a preset tail length of 16 ms that is adjustable in 8ms intervals up to 64ms
- An acoustic echo canceller with a preset tail length of 24ms that is adjustable in 8ms intervals up to 64ms
- EIA-470B DTMF dialer
- Extension-in-use detection control
- Tonal Ringing Generator
- Command/Control Interface via AT commands or direct function calls

Performance

Application	Program (words)	Data (words)	MIPS
Caller ID Type 1-2 software module	2820	257	9.6
Caller ID Parser software module	1440	550	--
Generic Echo Canceller software module (with 8ms tail length)	850	800	12.0
Full Duplex Speaker Phone software module (with 24ms tail length)	1650	930	15.0
Feature Phone application software	1760	1310	1.0

“Best in Class” Development Environment

The Software Development Kit (SDK) provides fully-debugged peripheral drivers, libraries and interfaces that allow a programmer to create his own unique C application code independent of component architecture. The Feature Phone Application is a premium component of the SDK. The CodeWarrior Integrated Development Environment is a sophisticated tool for code navigation, compiling, and debugging. A complete set of evaluation modules (EVMs) and development system cards will support concurrent engineering. The Feature Phone Application is supported with either the DSP56852EVM or the DSP56858EVM and the Telecommunications Daughter Card (TDC1). Together, the SDK, CodeWarrior, and EVMs create a complete, scalable tools solution for easy, fast, and efficient development.

Product Documentation

The following documents are required for a complete description and proper design with the Feature Phone Application and modules. Documentation is available from local Motorola distributors, Motorola semiconductor sales offices, Motorola Literature Distribution Centers, or online at www.motorola.com/semiconductors/.

Topic	Description	Order Number
DSP56800E Reference Manual	Detailed description of the 56800E architecture, 16-bit DSP core processor and the instruction set	DSP56800ERM/D
Targeting Motorola DSP5685x Platform	Focuses on specifics of target configuration for Motorola's DSP56852 and DSP56858 devices	Available on SDK CD Order # RE10118SI
DSP56852 User's Manual	Detailed description of the memory, peripherals, and interfaces of the DSP56852	DSP56852UM/D
DSP5685x User's Manual	Detailed description of the memory, peripherals, and interfaces of the DSP5685x family of devices	DSP5685XUM/D
DSP5685x Evaluation Module User's Manual	Describes in detail the hardware on the DSP56852EVM and DSP56858EVM	DSP56852EVMUM/D DSP56858EVMUM/D
Feature Phone Application	Application documented in Targeting manuals	Available on SDK CD Order # RE10118SI
Programmer's Guide	Describes the development environment, software modules and tools for the DSP568xx devices and the Application Programming Interfaces (APIs)	SDK101/D
GR-30-CORE	GR-30-CORE, <i>LSSGR: Voiceband Data Transmission Interface Section 6.6 (a module of LSSGR, FR-64)</i> , Telcordia Technologies, December 1998.	www.telcordia.com
SR-3004	SR-3004, <i>Testing Guidelines for Analog Type 1, 2, and 3 CPE as Described in SR-INS-002726 (a module of ADSI, FR-12)</i> , Telcordia Technologies, January 1995.	www.telcordia.com
SR-TSV-002476	SR-TSV-002476, <i>CPE Compatibility Considerations For The Voiceband Data Transmission Interface</i> , Telcordia Technologies, December 1999	www.telcordia.com

Ordering Information

Part	Order Number
DSP56852 with Feature Phone Application	DSP56852SFP
DSP56858 with Feature Phone Application	DSP56858SFP

Contact your Motorola Sales Representative or authorized distributor for ordering information.

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