The uC53017 is a highly integrated system level solution for the development of two way voice, broadcast audio and voice control systems. It is ideal for next generation digital applications or to replace circuit switched systems including; push-to-call systems, medical monitoring, intercom and paging equipment, building access or wireless devices. All system components are provided to help developer’s create product without the necessity of becoming media, audio or signaling experts.

The uC53017 includes complete Voice and Management middleware and an open source uClinux BSP, eliminating the need to integrate multiple software components from various vendors. This hybrid combination of software provides complete voice support while retaining the ability to customize and recreate the system.

The module uses the powerful 240MHz Freescale® ColdFire® MCF53017 processor, specifically designed for voice applications. It includes an integrated on-chip voice codec, dual fast Ethernet as well as various I/O, peripheral and communication systems. The uC53017 module includes all required system memory, transceivers and terminations to enable most applications with only minimal external circuitry.

The development kit includes hardware, software and licenses for use. All components are integrated together to form a system-level solution with APIs, demos and example code. Middleware and voice processing subsystem components are bundled by Freescale with the MCF53017 processor, making it possible to create custom software and hardware applications, with no additional NRE or licensing charges.

The module integrates into end product with a simple 50 pin connector and is available in various quantities. It is FCC prequalified, RoHS compliant and suitable for harsh environments.

### Digital Voice - Command Recognition - Controls

The uC53017 is an ideal solution for next generation digital applications or to replace circuit switched systems.
features

- Freescale MCF53017 Microprocessor
- 240 MHz ColdFire v3 Core
- 16 Kbyte I/D-Cache
- 128 Kbyte Internal Processor SRAM
- 16Mbyte NOR Flash
- 32Mbyte DDR-SDRAM
- USB - Host/Device and VBus supply
- SDHC - Secure Digital Host Controller for SDCARD™ / SDIO
- SIM - Module Card Support
- 3 - Serial UARTS (max)
- RS232/RS485 Selectable Serial UART
- I2C - Peripheral Interface
- SPI - DMA SPI
- SSI - High Speed Synchronous Serial interface
- RTC - Real-time Clock
- EMAC - Enhanced Hardware Multiple Accumulate
- Timer/Counters/Interrupts
- 20 GPIO (max)
- 8KHz Voice Codec with Mic Preamp support
- Direct Headset Compatible
- 2 - 10/100 Ethernet Ports
- Dual Ethernet Transceiver
- IEEE1588 Time Stamping In Hardware
- Auto MDI/MDX /PoE Compatible
- Reset Controller
- Temperature range -25 to +85ºC
- RoHS Compliant
- Compatible with Samtec MB1-150 or Header

OS and Tools

- uClinux 2.6.x, uClibc, GNU Tools, BDM support
- Definable Answer Settings
- Configurable Alert Tone Generation
- Keep alive, Late Arrival and Termination
- Config file for Advanced Settings
- Co-existence with other SIP Elements
- Definable Answer Settings
- Configurable Alert Tone Generation
- Keep alive, Late Arrival and Termination
- Config file for Advanced Settings
- Co-existence with other SIP Elements

Encore Voice Processing Subsystem

- G.711a, G.711u, G.729, iLBC
- AEC (Acoustic Echo Cancel)
- DTMF Detect and Generate
- Call Progress Tones

Management Middleware

- Core Middleware Engine
- Management Database System
- API, Tools and Software Modules Listed Below

Bootloader Module

- Flash Support, Partitioning, Wear Leveling
- Persistent Object and Database Support
- Firmware Failover Framework
- Definable Serial Port and Boot Parameters
- Command Shell
- TFTP server
- Kernel API

WebUI Module

- Complete Web Interface for Configuration
- SSL v2 and v3 Cryptography Support (https)
- Login Authentication
- Post-parsing CGI Support
- Auto Log Out on Idle
- Deny Simultaneous Users
- Auto Redirect to Secure Port

Remote Provisioning Module

- End-point Initiated Remote Management
- HTTPS Transport
- SSL v2 and v3 Cryptography Support
- Host Webserver Authentication
- Simple Script Configuration File
- Automated with CRON Process
- Configurable with Unique Credentials
- Compatible with Post-parsed Webservers for
- Dynamic File Creation

Voice and Media Middleware

- Certified SIP Signalling Stack
- Feature Rich Telephony Application
- Run time Configurable Signalling Abstraction Layer
- SIP, RTP, STUN, NTP
- Analog Audio Subsystem
- Digimaps and Config Files
- Demo Applications
- Integrated with Management Middleware
- Simple Interactive Voice Response
- Play / Record Announcements
- Integration of Encore Voice Processing Subsystem
- Features and Software Modules

Telephony Features

- Configurable voCoder Preferences
- Caller-ID, Call Waiting, Cancel Call Wait
- Unattended/Attended Call Transfers
- Hotline, Speed dials, Push-to-Call
- Call Blocking Rules
- Auto Call Back on Busy
- Do Not Disturb
- Anonymous Calling / Call Rejection
- Call Hold and Retrieve, Held Call Ringback
- Intercom, Auto-answer/Hangup
- IVR - Announce IP address / Call Return

API Module

- Simple Command Based Control
- Volume and Gain Controls
- Call Progress Messages
- Call ID messages
- Status Queries and Messages
- Reference Application for Easy Integration

Broadcast and Mass Notification Module

- Multicast RTP Support
- Up to 99 Configurable Broadcast Groups
- Configurable permissions per group
- Definable command Packet port/address
- Definable Caller-ID and Caller Name
- Definable Broadcast Priorities
- Definable voCoder Payload

Arcturus uC53017 - EVM
**development kits**

Kit Includes:
- uC53017EVM Module
- Host Board, Cable kit, Power Supply, Headset
- Installation Support
- Access to Dedicated Online Support Site
  - Documentation, Schematics
  - Software, Demo’s
  - How-To’s, Forums, FAQ’s
- License to use Middleware
- License to use Voice Processing Subsystem

**physical**

Edge / Mating Connector Options
- SAMTEC® MB1-150 Socket Connector
  - Gas Tight / CAD Object Available
- 50 Pin Header Connector
  - No host board required

- Voice, Command Recognition, Controls
- No Prohibitive Licensing or NRE
- Bundled, System Level Solution
- Modules Available Off-the-Shelf
- Open Source uCLinux™ Distribution
### Bus Description

<table>
<thead>
<tr>
<th>PIN</th>
<th>SIGNAL</th>
<th>ALT FUNCTIONS</th>
<th>DIRECTION (signal)</th>
<th>DESCRIPTION</th>
</tr>
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<td>-</td>
<td>Power</td>
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<td>+3.3V</td>
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<td>Power</td>
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<td>3</td>
<td>USB_D+</td>
<td>USB_D+ / USB_D+</td>
<td>1/O</td>
<td>USB</td>
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<td>USB_D-</td>
<td>USB_D- / USB_D-</td>
<td>1/O</td>
<td>USB</td>
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<td>MIC</td>
<td>MIC/USB_I</td>
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<td>Microphone input/Serial bit clock</td>
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<td>14</td>
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<td>Ground</td>
</tr>
<tr>
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<td>-</td>
<td>Ground</td>
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<td>19</td>
<td>A1_OUT</td>
<td>AMP_HOUT/AMP_HIN/AMP_SPKR/SSI_FS</td>
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<td>Headphone output/Headset output/Speaker output/Serial frame sync</td>
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<td>AMP_HOUT/AMP_HIN/AMP_SPKR/SSI_TXD</td>
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<tr>
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<tr>
<td>22</td>
<td>A1_IN</td>
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<td>RXD</td>
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<td>Ground</td>
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<tr>
<td>27</td>
<td>RTS</td>
<td>-</td>
<td>-</td>
<td>Ground</td>
</tr>
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<td>-</td>
<td>Ground</td>
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<td>DREQ2</td>
<td>#IRQ2/PIRQ2/#DREQ2</td>
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<td>DREQ3</td>
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<td>UART1 request to send Smart card interface/SDA/GPIO</td>
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<td>DREQ4</td>
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<td>UART1 request to send Smart card interface/SDA/GPIO</td>
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<tr>
<td>33</td>
<td>T0_IN/O</td>
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<td>Timer0 input/output</td>
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<td>T0_IN/O</td>
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<td>Timer0 input/output</td>
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<tr>
<td>35</td>
<td>T1_IN</td>
<td>PTMST/PTMSA</td>
<td>0</td>
<td>Timer1 input/output</td>
</tr>
<tr>
<td>36</td>
<td>T1_IN</td>
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<td>Timer1 input/output</td>
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<td>37</td>
<td>T1_IN</td>
<td>PTMST/PTMSA</td>
<td>0</td>
<td>Timer1 input/output</td>
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<tr>
<td>38</td>
<td>T1_TP</td>
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<td>Ethernet TX+</td>
</tr>
<tr>
<td>39</td>
<td>T1_RC</td>
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<td>0</td>
<td>Ethernet RX-</td>
</tr>
<tr>
<td>40</td>
<td>T1_TP</td>
<td>-</td>
<td>0</td>
<td>Ethernet TX+</td>
</tr>
<tr>
<td>41</td>
<td>T1_RC</td>
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<td>Ethernet RX-</td>
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<tr>
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<td>Ethernet TX+</td>
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<tr>
<td>43</td>
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<td>Ethernet RX-</td>
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<tr>
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<td>Ethernet TX+</td>
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<td>Ethernet RX-</td>
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<tr>
<td>46</td>
<td>T3_TP</td>
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<td>0</td>
<td>Ethernet TX+</td>
</tr>
<tr>
<td>47</td>
<td>T3_RC</td>
<td>-</td>
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<td>48</td>
<td>T4_TP</td>
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<td>Ethernet TX+</td>
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<tr>
<td>49</td>
<td>T4_RC</td>
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<tr>
<td>50</td>
<td>T5_TP</td>
<td>-</td>
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<td>Ethernet TX+</td>
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<tr>
<td>51</td>
<td>T5_RC</td>
<td>-</td>
<td>0</td>
<td>Ethernet RX-</td>
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</table>

### Ratings & Parts

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<thead>
<tr>
<th>Voltage</th>
<th>Module</th>
<th>Condition</th>
<th>Part Number</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>3.3VDC</td>
<td>460mA</td>
<td>Non Power Save</td>
<td>uC53017-Dev Kit</td>
<td>uC53017-EVM Development Kit</td>
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<tr>
<td>3.3VDC</td>
<td>490mA</td>
<td>Power Save Mode/Idle</td>
<td>uC53017-EVM Module (superset)</td>
<td>uC53017-EVM Module (superset)</td>
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<tr>
<td>3.3VDC</td>
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<td>Power Save Mode/Idle</td>
<td>uC53017-EVM Module (superset)</td>
<td>uC53017-EVM Module (superset)</td>
</tr>
</tbody>
</table>

**Arcturus**

uC53017 - EVM

- Voice, Command Recognition, Controls
- No Prohibitive Licensing or NRE
- Bundled, System Level Solution
- Modules Available Off-the-Shelf
- Open Source uCLinux" Distribution

www.arcturusnetworks.com