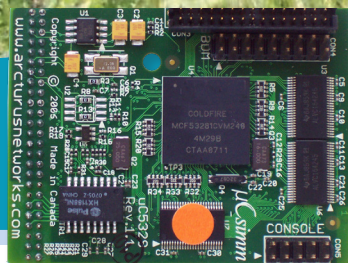


EMERGENCY PHONE



uC53281 - EVM

➤ embedded voice module

overview

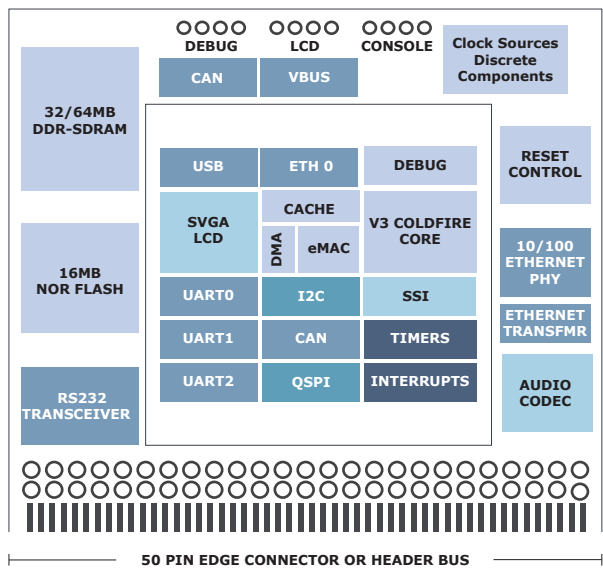
The uC53281 is a highly integrated system level solution for the development of full-duplex and broadcast voice systems. It is ideal for next generation digital voice applications or to replace legacy analog systems including; push-to-call, medical monitoring, intercom, paging, background music, building access or point-of-sale devices.

The module uses the powerful 240MHz NXP® ColdFire® MCF53281 processor and includes all the system memories, transceivers and terminations required to enable most applications with only minimal external circuitry. The module includes audio, Ethernet, CAN, serial, I/O and USB host communications systems as well as standard peripheral device connectivity using I2C or QSPI. The device also features an integrated SVGA LCD controller for applications that require high resolution display interfaces.

The uC53281 has an integrated software package that includes voice processing sub-system, middleware and open source uClinux BSP. This hybrid combination of software allows for a recreatable system that can be deeply customized. Complex services and sub-systems are abstracted by the middleware into easy-to-use API's helping developers focus on their core application without having to become signaling experts or developing management capabilities.

The development kit includes hardware, software, APIs, demos, example code, installation support and licenses for use. Middleware and voice processing subsystem components are bundled by NXP with the MCF53281 processor, making it possible to develop 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.



Intercom, Telephony and LCD Interface

Arcturus
➤ *empower embedded.*

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features

Core Processor

- NXP MCF53281 Microprocessor
- 240 MHz ColdFire v3 Core
- 16 Kbyte I/D-Cache
- 32 Kbyte SRAM
- EMAC - Enhanced Hardware Multiple Accumulate

Processor Peripherals

- USB - Host/Device and VBus supply
- CAN - Controller Area Network Bus
- Fast Ethernet Controller
- UARTS - Serial Ports 3 max
- RS232 Serial Console
- I2C - Peripheral Interface
- QSPI - Queued DMA SPI
- SSI - High Speed Synchronous Serial interface
- Timer/Counters/Interrupts
- 18 GPIO (max)

middleware

Voice and Media Middleware

- Certified SIP Signalling Stack
- Feature Rich Telephony Application
- Run time Configurable Signalling Abstraction Layer
- SIP, RTP, RTCP, STUN, NTP
- Stand Alone P2P and Proxy Infrastructure Modes
- SIP Failover Server Support
- Analog Audio Subsystem
- Digitmap and Config Files
- Simple Interactive Voice Response Tool
- File Play / Recorded Announcement Framework
- Consilient Voice Processing Subsystem

Telephony Features

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

API Module

- Simple Plain Text Command and Control
- Progress Messages and Caller ID
- Volume and Gain Controls
- Dynamic Broadcast and Account Configuration
- Status Queries and Messages
- Implementation Example
- LCD and Serial Mouse Pointer Support
- LCD "Click-to-Call" Demo

System Memory

- 16Mbyte NOR Flash
- 32Mbyte DDR-SDRAM

Audio Processing

- 16 KHz Voice Codec with Mic Preamp support
- Direct Analog Headset Compatible

Other Features

- 10/100 Ethernet Transceiver
- Auto MDI/MDX /PoE Compatible
- Reset Controller
- USB vBUS Power Controller
- CAN Transceiver
- Temperature range -40 to +85°C
- RoHS Compliant
- Compatible with SAMTEC® MB1-150 or Header Connector

OS and Tools

- uClinux 2.6.x, uClibc, GNU Tools, BDM support

Multicast Audio Paging (MCPG) Module

- One-to-Many Multicast Audio Paging
- Multicast RTP Support
- Up to 99 Broadcast Groups with Last-In-Wins Arbitration
- Dynamically Configurable Broadcast Permissions per Group
- Definable Command Packet Port/Address, Call-ID and Name
- Definable Priorities, voCoder, Answer Settings and Alert Tone
- Automatic Keep Alive, Late Arrival and Termination
- Config File for Advanced Settings
- Co-existence with other SIP Elements
- SIP Unicast-to-Multicast Rebroadcaster Mode

Consilient Voice Processing Subsystem

- G.711a, G.711u, G.726-32, G721-RFC3551, iLBC, G.722
- AEC (Acoustic Echo Canceller)
- DTMF Detect and Generate
- Call Progress Tones

Management Middleware

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

Bootloader Module

- Flash Support, Partitioning, Wear Leveling
- Persistent Object and Database Support
- Firmware Failover Framework
- Definable Serial Port and Boot Parameters
- Low-level Command Shell and 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 and Deny Simultaneous Users
- Auto Redirect to Secure Port

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- **BUNDLED, SYSTEM LEVEL SOLUTION**
- **MODULES AVAILABLE OFF-THE-SHELF**
- **OPEN SOURCE UCLINUX™ DISTRIBUTION**

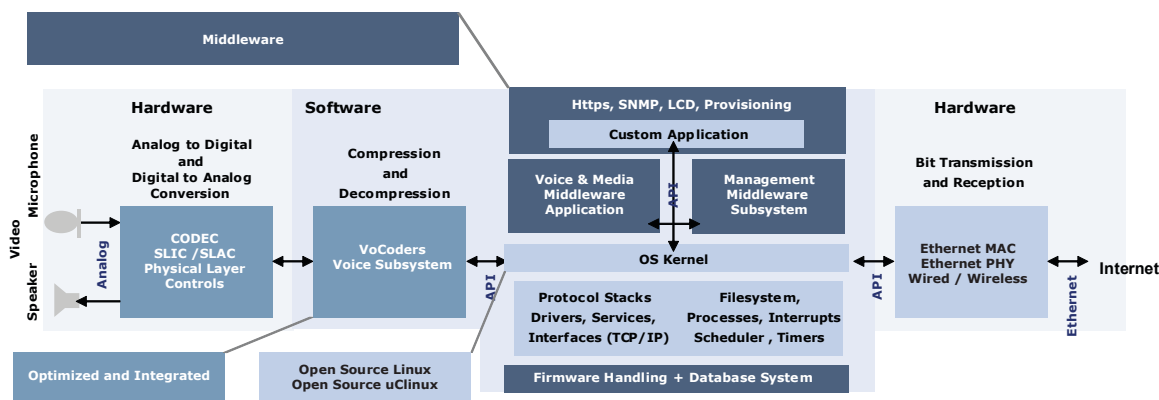
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middleware (cont.)

Remote Provisioning Module

- End-point Initiated Remote Management
- Https Transport with SSL v2 and v3 Cryptography
- Compatible with Standard Secure Webserver
- Simple Script Configuration File
- Automated with CRON Process
- Configurable with Unique Authentication Credentials
- Post-parsed Compatibility with Dynamic Webservers

software



development kits

Kit Includes:

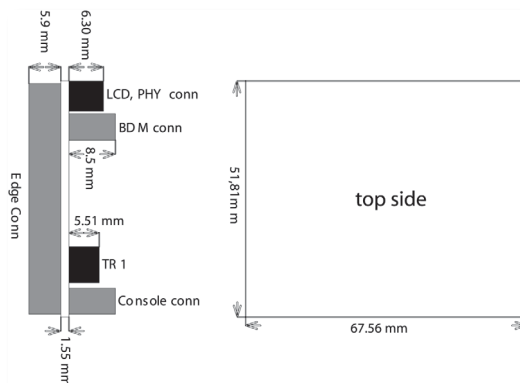
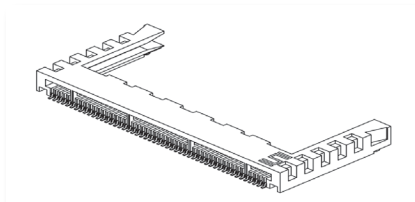
- uC53281EVM Module (uC53281-16E32UVC240-XR)
- Host Board with GPIO and Connectors
- LCD-to-VGA Daughter Card
- Cable Kit
- Headset with Mic
- Power Supply
- Getting Started Guide
- Support Site Access to Schematics and Documentation
- Installation Support
- Full Software Distribution (download)



development kits

Edge / Mating Connector Options

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



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bus description

PIN	SIGNAL	ALT FUNCTIONS	DIRECTION	Signal	ALT Functions
1	+3.3V	-	-	Power	-
2	+3.3V	-	-	Power	-
3	USB_P	-	I/O	USB	-
4	USB_M	-	I/O	USB	-
5	VBUS	-	O	USB VBUS Out	-
6	+5V	-	-	+5V in for USB VBUS	-
7	GND	-	-	Ground	-
8	GND	-	-	Ground	-
9	A1_OUT	SSI_FS	O	Audio Out – Left	Serial Frame Sync
10	A2_OUT	SSI_TXD	O	Audio Out – Right	Serial Transmit Data
11	A1_IN	SSI_RXD	I	Audio In – Mic / Bias	Serial Receive Data
12	A2_IN	SSI_BCLK	I	Audio In – Mic	Serial Bit Clock
13	#MR	-	I	Master Reset In	-
14	CAN_L	I2C_SDA	O	CAN Bus	Serial Data Line
15	CAN_H	I2C_SCL	O	CAN Bus	Serial Clock Line
16	#RSTOUT	-	O	Reset Out	-
17	QSPL_CS0	GPIO/PWM5	O	QSPI Chip Select 0	-
18	QSPL_CS1	GPIO/PWM7/USBOTG_PU_EN	O	QSPI Chip Select 1	-
19	QSPL_CS2	GPIO / #UART 2RTS	O	QSPI Chip Select 2	-
20	QSPL_DIN	GPIO / #UART 2CTS	I	QSPI Data In	-
21	QSPL_CLK	GPIO / I2C_SCL	O	QSPI Clock	-
22	QSPL_DOUT	GPIO / I2C_SDA	O	QSPI Data Out	-
23	U1_RXD	GPIO / SSI_RXD	I	UART 1 Receive	-
24	U1_TXD	GPIO / SSI_TXD	O	UART 1 Transmit	-
25	U1_RTS	GPIO / SSI_FS	O	UART 1 Request To Send	-
26	U1_CTS	GPIO / SSI_BCLK	I	UART 1 Clear To Send	-
27	U2TXD	GPIO / DT2IN / DT2OUT	O	UART 2 Transmit	-
28	U2RXD	GPIO / DT3IN / DT3OUT	I	UART 2 Receive	-
29	IRQ1	GPIO /#DREQ1/SSI_CLKIN	I	External Interrupt	-
30	IRQ2	GPIO /USB_CLKIN	I	External Interrupt	-
31	IRQ3	GPIO	I	External Interrupt	-
32	IRQ4	GPIO /SSI_MCLK	I	External interrupt	-
33	PWM1	GPIO / D2OUT / D2IN	I/O	Pulse Width Modulator 1	-
34	PWM3	GPIO / D3OUT / D3IN	I/O	Pulse Width Modulator 3	-
35	PHY_LED	-	-	Ethernet Link / Activity	-
36	N/C	-	-	Not Connected	-
37	N/C	-	-	Not Connected	-
38	T1_TP	-	O	Ethernet TX+	-
39	T1_TC	-	-	Ethernet Center	-
40	T1_TN	-	O	Ethernet TX-	-
41	T1_RP	-	I	Ethernet RX+	-
42	T1_RC	-	-	Ethernet Center	-
43	T1_RN	-	I	Ethernet RX-	-
44	N/C	-	-	Not Connected	-
45	N/C	-	-	Not Connected	-
46	CTS	U0_CTS/GPIO	I	UART 0 Clear to Send(RS-232 Level)	UART 0 Clear to Send(TTL/CMOS Level)
47	RTS	U0_RTS/GPIO	O	UART 0 Request to Send(RS-232 level)	UART 0 Request to Send(TTL/CMOS level)
48	TXD	U0_TXD/GPIO	O	UART 0 Transmit(RS-232 level)	UART 0 Transmit(TTL/CMOS level)
49	N/C	-	-	Not Connected	Not Connected
50	RXD	U0_RXD/GPIO	I	UART 0 Receive(RS-232 level)	UART 0 Receive (TTL/CMOS level)

ratings & parts

Voltage	Module	Condition
3.3VDC	530mA	Non Power Save
3.3VDC	Not Rated	Power Save Mode/Idle
3.3VDC	630mA	Theoretical Max.

Part Number	Description	Revision	Status
uC53281-Dev Kit	Development Kit	N/A	Available
uC53281-16E32UVC240-XR	Module - with LM4930 Codec	Rev.1.2	Not Recommended
uC53281-8E16UTC240-XR	Module - Minimal Connectors	Rev.1.2	Not Recommended
uCCF53281S50-16E32UACDL240-XR	Module - with LM4931 Codec	Rev.2.0	Not Recommended
uC53281-16E32UAC240-XR	Module - with LM4931 Codec	Rev.2.4	Available
uC53281-16E32UPC240-XR-BN4	Module - PCM Only / No Codec	Rev.2.4	Available
uC53281-16E32UAC240-XR-BN6	Module - Minimal Connectors	Rev.2.4	Special Order

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