ConnectCard™ for i.MX28

Compact Core Module with Wireless and Wired Connectivity

Cost-effective small-footprint System-on-Module solution delivers performance, low-power operation and integrated 802.11a/b/g/n, Bluetooth 4.0 and Ethernet connectivity.

Overview

Based on the Freescale i.MX28 processor family, the ConnectCard for i.MX28 is an ideal embedded platform solution for connected applications in medical and healthcare, energy, transportation and industrial/building automation.

It offers easy design integration and unique peripheral/interface flexibility in an extremely compact and cost-effective form factor. This module is suitable for a wide range of different devices, including battery powered product designs.

The module is equipped with a highly integrated 32-bit ARM core running at up to 454 MHz, on-chip power management, dual Ethernet and 802.11a/b/g/n networking options, Bluetooth 4.0 connectivity, dual FlexCAN options, GPIO, ADC, UART, USB high-speed, SPI, I²C, I2S, 1-Wire, PWM and JTAG/ETM.

The Digi JumpStart® Kits for Digi Embedded Linux provides a complete turnkey embedded development solution allowing immediate and successful product development with significantly accelerated time-to-market and reduced design risk.

Related Items

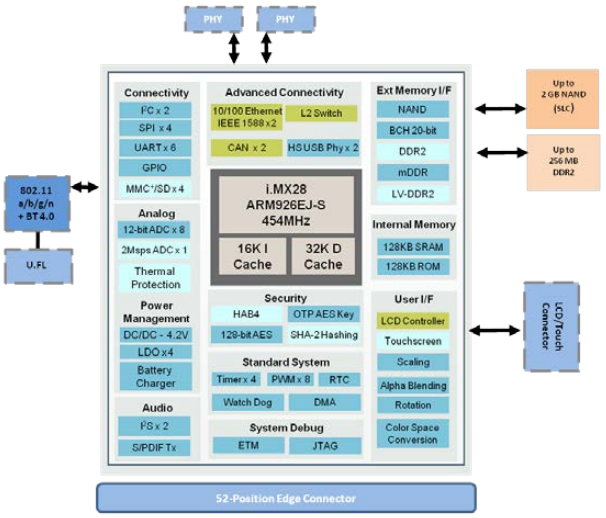
Design Services

Accessory Kits

Support

Supported Software Platforms

Block Diagram



Features/Benefits

- Cost-effective design in compact form factor
- 32-bit ARM processor at up to 454 MHz
- Single/dual 10/100 Ethernet connectivity options
- Pre-approved 802.11a/b/g/n Wi-Fi + Bluetooth 4.0
  - Includes Wi-Fi® Access Point mode + Wi-Fi Direct™
  - Support for Bluetooth 3.0 + HS and Bluetooth LE
  - Ready for Cisco CCX and Wi-Fi Logo certification
- Digi Embedded Linux platform
  - Digi Device Cloud enabled
  - Includes complete Digi BSP source code
- Long-term product availability
- Additional ZigBee®, 802.15.4, cellular and satellite connectivity options (off-module)

Digi JumpStart Kit® Overview

Digi JumpStart Kit for Digi Embedded Linux

Built on a standard Linux 2.6 kernel distribution, the Digi JumpStart Kit for Embedded Linux is tailored to the specific needs of embedded Linux product development and provides an easy-to-use, complete off-the-shelf embedded development platform. It integrates all relevant software components required to build secure network-enabled products, including extended capabilities such as fast system startup, secure boot, enterprise-grade Wi-Fi security, Wi-Fi Direct, Wi-Fi Access Point mode, Bluetooth stack (with HDP), Sun Java SE for Embedded, HAPI HL7 parser and fully integrated Device Cloud support for remote device management and web services for cloud based applications.

The Digi JumpStart Kit for Digi Embedded Linux also provides Digi ESP™ for Embedded Linux, a fully Linux-hosted Integrated Development Environment (IDE) based on the open Eclipse™ framework. Ideal for new and powerful enough for experienced Linux developers, Digi ESP significantly improves the overall software design productivity by accelerating and greatly simplifying driver and application development through a user-friendly and graphically oriented development environment.

- Complete Linux development platform for embedded systems
- Royalty-free and with optimized 2.6 kernel and services support
- Linux-based Digi ESP IDE for rapid product development
- Full Linux and Digi Board Support Package (BSP) source code included

Development Kit Contents

Module	Freescale i.MX287, up to 454 MHz, 256 MB NAND flash (SLC), 256 MB DDR2, Dual Ethernet, 802.11a/b/g/n + BT 4.0, dual CAN Bus, on-module LCD + touchscreen connector, JTAG/ETM
Development Board	4 serial ports (2 x RS-232 Tx/RX, 2 x TTL Tx/Rx), 2 FlexCAN (DB9), VGA connector, external LCD/Touchscreen connectors, user/application connectors, Ethernet RJ-45 connectors, Wi-Fi/Bluetooth antenna connectors (RP-SMA), MicroSD slot, USB OTG connector (micro-B), 1 x USB Host (Type A), I²C/SPI/ADC/PWM headers, 1-Wire connector, Audio: line in/out and headphone in (3.5 mm), user push-buttons, user LEDs, Digi XBee® module sockets (SMT and through-hole) with antenna connector option, 802.3af (PoE) module socket (PoE module sold separately), JTAG connector, 9-30VDC power supply, battery connector, power switch
CD/DVD	Digi Embedded Linux with Live DVD support, Eclipse-based Digi ESP IDE, Linux and platform specific source code, Universal boot loader source code (U-Boot), sample code, documentation
Documentation	Quick start guide, Digi Embedded Linux users guide, hardware reference manual, development board schematics and BOM
Accessories	External wall power supply with interchangeable outlet adapters (North America, EU, UK, Australia), Ethernet cable, antennas and serial cable
Part Numbers	CC-WMX28-LX

Specifications | ConnectCard™ i.MX28 | ConnectCard™ Wi-i.MX28

Processor	
Processor Models	Freescale® i.MX280, i.MX287
Speed Grade	Up to 454 MHz
Core Type	ARM926EJ-S
Cache Memory	16k I-Cache, 32k D-Cache
Internal RAM	128 KB SRAM
Internal ROM (OCOTP)	1,280 Bits
Memory	
Flash	Up to 2 GB NAND flash
RAM	Up to 256 MB DDR2
Debug	
JTAG	•
ETM/ETB	•

••Module Feature

Specifications	ConnectCard™ i.MX28	ConnectCard™ Wi-i.MX28
Power Management		
Power Modes	Run, Standby, Deep Sleep	
Wake-up Events	RTC, GPIO, CAN, USB, Ethernet	
Auto Slow	•	
Li-Ion Battery Charger / Monitor	•	
Clock and Watchdog		
Real-Time Clock	•	
Alarm	•	
Watchdog	•	
Security		
Data Co-Processor (DCP)	128-bit AES encryption SHA-1 / SHA256 hashing	
Fusebox (OCOTP)	1280 bits	
High-Assurance Boot (HAB4)	•	
Secure Boot	128-bit AES decryption	
Peripherals		
UART	Up to 4 channels with bit rates up to 3.25 Mbps (AUART) Up to 1 channel with bit rate up to 115 kbps (DUART)	
CAN Bus	Up to 2 channels, CAN Bus 2.0B, bit rates up to 1 Mbps, 64 message buffers (0-8 bytes), low-power modes with wake-up	
SPI	Up to 2, master/slave modes	
I2S	Up to 1	
I^2C	Up to 2 channels, master/slave (7-/10-bit addressing), standard (100 kbps) and fast (400 kbps) mode	
SD/SDIO/MMC	Up to 4 ports, 1-/4-/8-bit modes, up to 48 MHz	
USB 2.0 High-Speed	Up to 1 USB 2.0 High-Speed Host (with PHY) Up to 1 USB 2.0 OTG port (with PHY)	
1-Wire	Maxim DS2482-100+	
PWM	Up to 4	
ADC	HSADC: Up to 1 channel, up to 2 Mbps sample rate, 8-/10-/12-bit resolution LRADC: Up to 6 channels, 12-bit resolution	
GPIO	Up to 128 GPIOs, selectable voltage (1.8/3.3V), interrupt capable	
Display		
Resolution	800x480 (WVGA)	
Refresh Rate	Up to 60 Hz	
Color Depth	8/16/24 bpp	
Modes	RGB/DOTCK/SYSTEM	
Color Space Conversion	•	
Scaling	•	
Rotation	•	
Touch Screen		
Touch Screen Controller	4-/5-wire (LRADC)	

••Module Feature

Specifications	ConnectCard™ i.MX28	ConnectCard™ Wi-i.MX28
Ethernet		
Physical Layer	10/100Base-T	
Data Rates	10/100 Mbps, auto-sensing	
Duplex Mode	Full or half duplex, auto-sensing	
IEEE 1588	• (i.MX287 only)	
Power over Ethernet (802.3af)		
Power over Ethernet	Development board ready for 802.3af PoE application kit (sold separately)	
Wi-Fi[2]		
Standard	N/A	802.11a/b/g/n
Antenna Connectors	N/A	2 x U.FL
Dual Diversity	N/A	•
Frequency Bands	N/A	2.412 - 2.484 GHz 4.900 - 5.850 GHz
Data Rates	N/A	802.11b: 1, 2, 5.5, 11 Mbps 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: 15, 30, 45, 60, 90, 120, 135, 150 Mbps (HT40, MCS 0-7)
Modulation	N/A	DBPSK, DQPSK, CCK, BPSK, QPSK, 16-QAM, 64-QAM
Transmit Power (±2 dBm)	N/A	802.11b: 17 dBm typical 802.11g/n: 15 dBm typical 802.11a/n: 12 dBm typical
Security	N/A	WEP, WPA-PSK/WPA2-Personal, WPA/WPA2 Enterprise, 802.11i
Wi-Fi Logo Certification	N/A	Ready
CCXv4 ASD	N/A	Ready
Bluetooth[2]		
Modes	N/A	Bluetooth 4.0 (Bluetooth 2.1 + EDR, Bluetooth 3.0 + HS 802.11 AMP, Bluetooth Low Energy)
Class	N/A	1.5
Profiles	N/A	GAP, SPP, HSP, HFP, FTP, PAN, OPP, HID, A2DP, AVRCP, HDP
Coexistence	N/A	•
Power Requirements (Use-Case Estimates)		
Wi-Fi 2.4 GHz Transmit, CPU 454 MHz @ 50%, UART active	406mA @ 5V	
Wi-Fi 2.4 GHz Receive, CPU Idle (Auto Slow)	100mA @ 5V	
Wi-Fi Standby (Sleep), CPU Standby (IRQ)	8mA @ 5V	
Wi-Fi Standby (Host off), CPU Deep Sleep (RTC)	112µA @ 5V	
Module Variants[1]		
Population Options	Processor models (i.MX280, i.MX281, i.MX283, i.MX285, i.MX286, i.MX287), flash, RAM, Single 10/100 Ethernet, dual 10/100 Ethernet w/1588, 802.11a/b/g/n Wi-Fi with Bluetooth 4.0, 1-Wire, LCD connector, CAN bus	

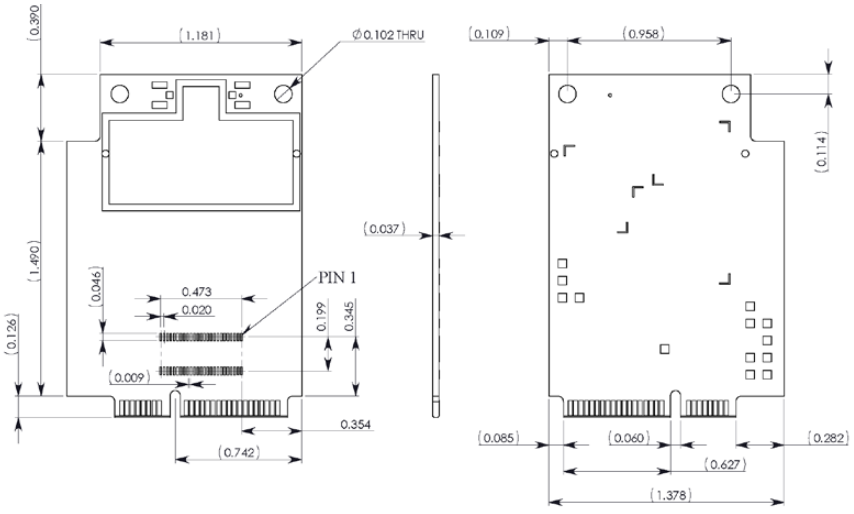
[1] All options available on development module. Production modules may require custom variants. Contact your local distributor or Digi sales office for details.

[2] Transmit power and channel availability depending on regulatory requirements and corresponding module variants.

••Module Feature

Specifications	ConnectCard™ i.MX28	ConnectCard™ Wi-i.MX28
Mechanical		
Dimensions (L x W x H) w/o JTAG/LCD connector	51 mm x 35 mm x 2.6 mm	51 mm x 35 mm x 3 mm
Mating Connector for Module	Molex, P/N 67910-5700 Tyco, P/N 2041119-x	
Retaining Clip for Module (Optional)	Molex, P/N 480995701 Tyco, P/N 1717832	
JTAG/LCD Connector on Module (Optional)	FCI, P/N SFV31R-1STE1LF Tyco, P/N 3-1734839-1	
Environmental		
Operating Temperature	-40° C up to +85° C (-40° F to +185° F) Upper temperature ceilings may require active and/or passive thermal management such as lower clock speed, thermal pads, airflow, etc.	
Storage Temperature	-40° C up to +85° C (-40° F to +185° F)	
Relative Humidity	5% to 90% (non-condensing)	
Altitude	12,000 feet (3,658 meters)	
Approvals and Certifications		
Emissions	FCC Part 15 Class B, EN 55022 Class B, EN 61000-3-2, EN 61000-3-3, ICES-003 Class B, VCCI Class II, AS 3548, FCC Part 15 Subpart C Section 15.247, IC (Industry Canada), RSS-210 Issue 5 Section 6.2.2(o), EN 300 328, EN 301 489-17	
Immunity	EN 55024, EN 301 489-3	
Safety	UL/UR, or equivalent	
Radio	US, Canada, EU, Japan, Australia/New Zealand	
Temperature	IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-78	
Vibration/Shock	IEC 60068-2-6, IEC 60068-2-64, IEC 60068-2-27	
Design Test	HALT	

••Module Feature



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