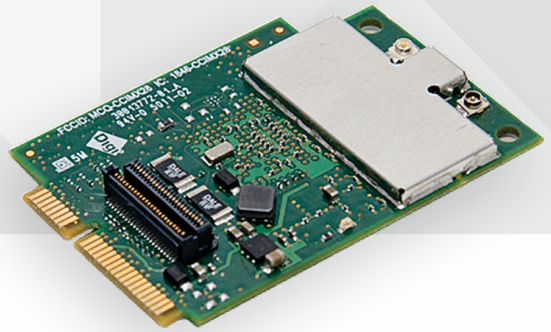
COMPACT CORE MODULE WITH WIRELESS AND WIRED CONNECTIVITY



DIGI CONNECTCARD FOR i.MX28

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

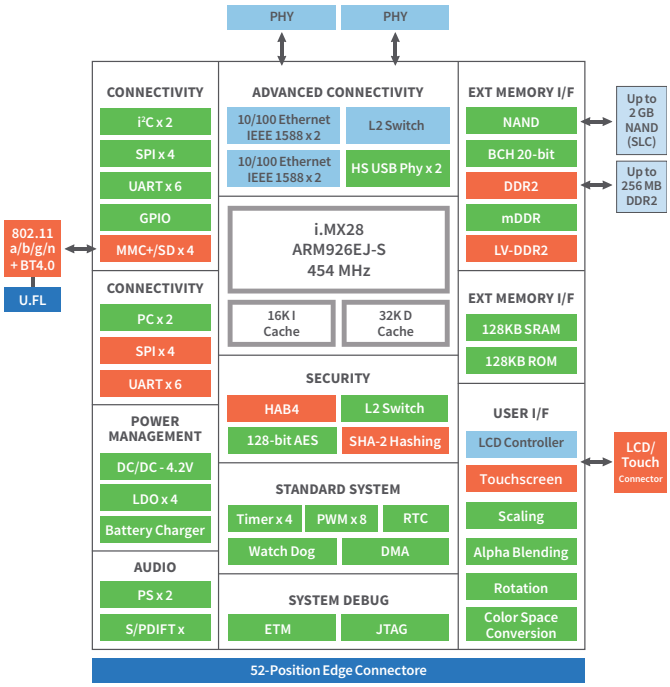
Based on the NXP i.MX28 processor family, **Digi ConnectCard™ for i.MX28** is an ideal embedded platform solution for connected applications in medical and healthcare, energy, transportation and industrial/building automation.

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

BLOCK DIAGRAM



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 Remote Manager®** enabled
  - Includes complete Digi BSP source code
- Long-term product availability
- Additional Zigbee, 802.15.4, cellular and satellite connectivity options (off-module)

RELATED PRODUCTS

ConnectCore® 6

ConnectCore® for i.MX53

ConnectCore® 6 SBC

Digi XBee®

Development Kits

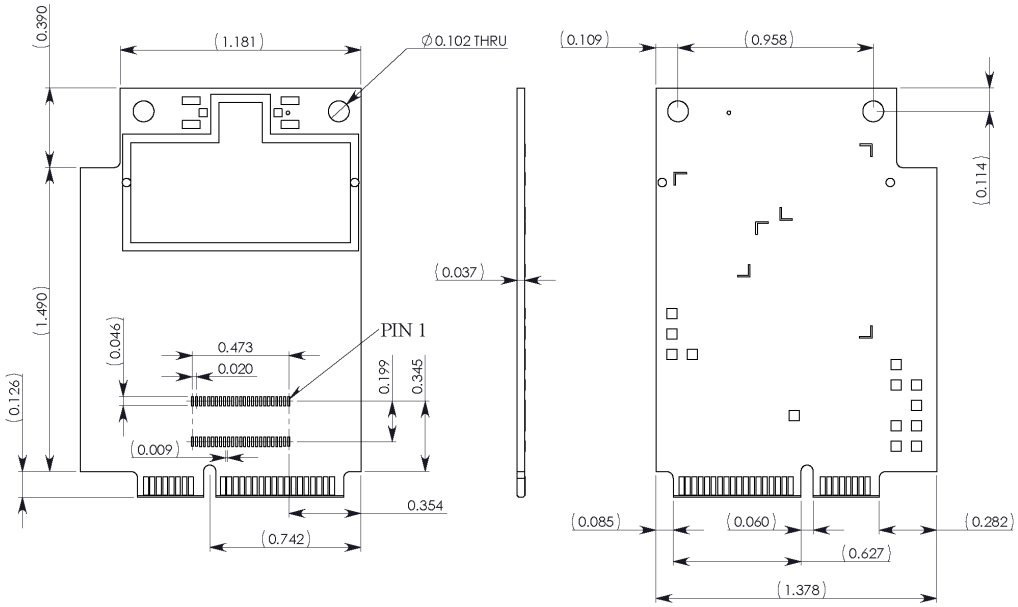
OVERVIEW	ConnectCard i.MX28 | ConnectCard Wi-i.MX28
PROCESSOR	
PROCESSOR MODELS	NXP® i.MX280, i.MX287
SPEED GRADE	Up to 454 MHz
CORE TYPE	ARM926EJ-S
CACHE MEMORY	16k I-Cache, 32k D-Cache
INTERNAL RAM	128 KB SRAM
INTERNAL ROM (OCOTP)	1,280 Bits
MEMORY	
FLASH	Up to 2 GB NAND flash
RAM	Up to 256 MB DDR2
DEBUG	
JTAG	Yes
ETM/ETB	Yes
POWER MANAGEMENT	
POWER MODES	Run, Standby, Deep Sleep
WAKE-UP EVENTS	RTC, GPIO, CAN, USB, Ethernet
AUTO SLOW	Yes
LI-ION BATTERY CHARGER / MONITOR	Yes
CLOCK AND WATCHDOG	
REAL-TIME CLOCK	Yes
ALARM	Yes
WATCHDOG	Yes
SECURITY	
DATA CO-PROCESSOR (DCP)	128-bit AES encryption; SHA-1 / SHA256 hashing
FUSEBOX (OCOTP)	1280 bits
HIGH-ASSURANCE BOOT (HAB4)	Yes
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
I2C	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 (1.8/3.3 V), interrupt capable

SPECIFICATIONS	ConnectCard i.MX28	ConnectCard Wi-i.MX28
DISPLAY		
RESOLUTION	800x480 (WVGA)	
REFRESH RATE	Up to 60 Hz	
COLOR DEPTH	8/16/24 bpp	
MODES	RGB/DOTCK/SYSTEM	
COLOR SPACE CONVERSION	Yes	
SCALING	Yes	
ROTATION	Yes	
TOUCH SCREEN		
TOUCH SCREEN CONTROLLER	4-/5-wire (LRADC)	
ETHERNET		
PHYSICAL LAYER	10/100Base-T	
DATA RATES	10/100 Mbps, auto-sensing	
DUPLEX MODE	Full or half duplex, auto-sensing	
IEEE 1588	Yes (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	Yes
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	Yes

SPECIFICATIONS	ConnectCard i.MX28	ConnectCard Wi-i.MX28
POWER REQUIREMENTS (USE-CASE ESTIMATES)		
WI-FI 2.4 GHZ TRANSMIT, CPU 454 MHZ @ 50%, UART ACTIVE	406 mA at 5V	
WI-FI 2.4 GHZ RECEIVE, CPU IDLE (AUTO SLOW)	100 mA at 5V	
WI-FI STANDBY (SLEEP), CPU STANDBY (IRQ)	8 mA at 5V	
WI-FI STANDBY (HOST OFF), CPU DEEP SLEEP (RTC)	112 µA at 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	
MECHANICAL		
DIMENSIONS (L X W X H) W/O JTAG/LCD CONNECTOR	51 mm x 35 mm x 2.6 mm (2.01 in x 1.38 in x 0.1 in)	51 mm x 35 mm x 3 mm (2.01 in x 1.38 in x 0.12 in)
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)	
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	
WARRANTY		
PRODUCT WARRANTY	3-year	

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.

PRODUCT DIMENSIONS



PART NUMBERS	DESCRIPTION
KITS	
CC-WMX28-ANDRD	ConnectCore for i.MX28 JumpStart Kit for Android (ICS), installation and setup support package, 7” WVGA LCD panel with capacitive touch screen
MODULES	
CC-WMX-PF47-VM	ConnectCard for i.MX28 module, i.MX287, 454 MHz, up to 85 °C, 128 MB flash, 128 MB DDR2, 802.11a/b/g/n, Ethernet, LCD
CC-MX-PF58-ZK	ConnectCore for i.MX28 module, i.MX287, 454 MHz, up to 85 °C, 256 MB flash, 256 MB DDR2, dual Ethernet, LCD

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