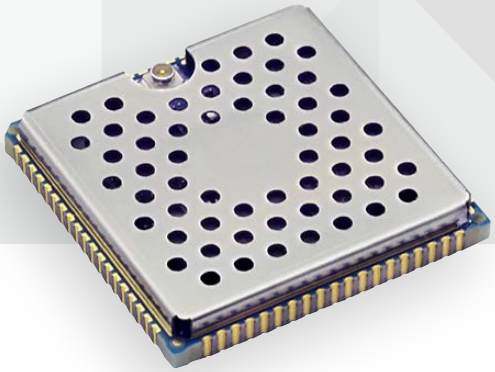
SECURE, CONNECTED
SYSTEM-ON-MODULE



DIGI CONNECTCORE 6UL

Intelligent and connected embedded system-on-module based on the NXP i.MX6 UL, with turnkey Linux software support in a stamp-sized form factor

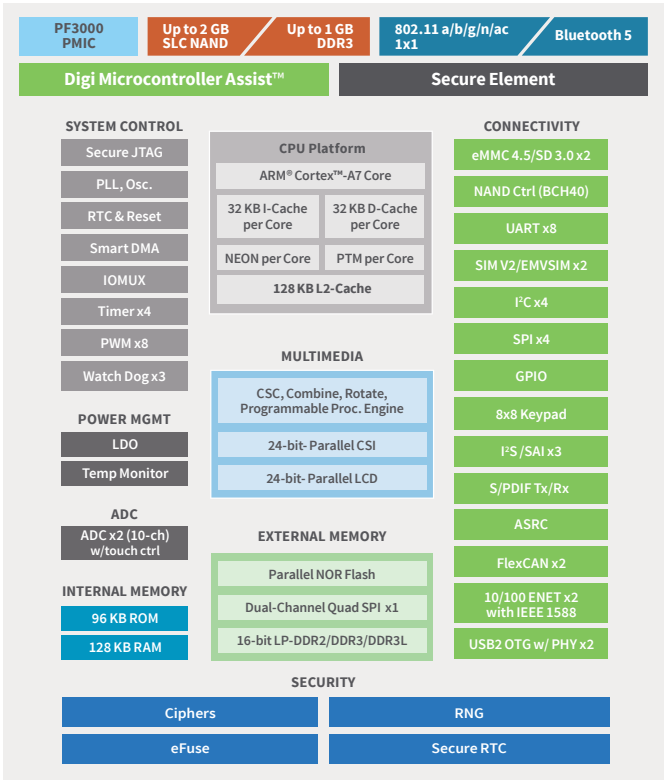
The ConnectCore 6UL module delivers a secure and extremely cost-effective connected System-on-Module platform that is slightly bigger than a postage stamp.

Its patent-pending Digi SMTplus™ surface mount form factor allows you to choose simplified design integration leveraging proven and easy-to-use edge-castellated SMT technology, or a versatile LGA option for ultimate design flexibility with access to virtually all interfaces.

Built on the NXP i.MX6UL application processor, the module is the intelligent communication engine for today's secure connected devices. It seamlessly integrates dual-Ethernet and pre-certified dual-band Wi-Fi (802.11a/b/g/n/ac) with Bluetooth 5 connectivity.

Embedded device security is a critical design aspect for the growing number of connected applications ("IoT") and the ConnectCore 6UL removes the implementation barriers by providing you with a fully integrated, secure module platform with complete Linux software support.

BLOCK DIAGRAM



BENEFITS

- Secure, connected, highly cost-effective system-on-module
  - NXP i.MX6UL-2, Cortex-A7 @ 528 MHz
  - 256MB/1GB NAND flash, 256MB/1GB DDR3
- Stamp-sized and flexible Digi SMTplus form factor
- Pre-certified 802.11a/b/g/n/ac + Bluetooth 5 option
- Integrated dual 10/100 Ethernet connectivity
- Dedicated on-module security + authentication controller
- Unique ultra-low power and wake-up state management
- Turnkey embedded Linux software platform with Digi TrustFence® embedded device security framework
- Long-term availability and 5-year warranty

RELATED PRODUCTS


ConnectCard® for i.MX28


ConnectCore® 6


Digi Connect®


Rabbit®


Digi XBee® Modules

SPECIFICATIONS — Digi ConnectCore® 6UL

FEATURES	
APPLICATION PROCESSOR	NXP i.MX6UL-2, ARM® Cortex®-A7 @ 528 MHz, 128 KB L2 cache, with NEON™ MPE (Media Processor Engine) co-processor and programmable smart DMA (SDMA) controller
MEMORY	256MB / 1 GB NAND flash, 256 MB / 1 GB DDR3
PMIC	NXP PF3000
VIDEO/GRAPHICS	2D Pixel Processing Pipeline (PXP) for color-space conversion, scaling, alpha-blending, and rotation, 8-/16-/18-/24-bit parallel LCD Display up to WXGA (1366x768), 8/10/16/24-bit Parallel CSI with BT.656 support
SECURITY	Dedicated cryptographic co-processor (Secure Element) with hardware assisted Eliptic Curve support: FIPS 186-4 Elliptic Curve Digital Signature (ECDSA), NIST SP800-56A Elliptic Curve Diffie-Hellman (ECDH), NIST Standard P256 Elliptic Curve, 256-bit SHA/HMAC, X.509 certificate support, Multilevel RNG (NIST SP 800-90A DRBG), Tamper Monitor, 72-bit unique device ID, i.MX6UL Cryptographic Acceleration and Assurance Module (CAAM): AES 128/256, DES/3DES, ARC4, RSA (4096), MD5, SHA-1/224/256, HMAC, AES-CMAC, AES-XCBC-MAC, AES-CCM, TRNG with hardware entropy source (NIST SP-800-90A), Digi TrustFence™ Embedded Security Framework
PERIPHERALS/INTERFACES	1 x dedicated MMC 4.5/SD 3.0/SDIO Port (1-/2-4-bit), 2 x USB 2.0 OTG with PHY, 3x I2S/SAI, 1 x S/PDIF Tx/Rx, 2 x FlexCAN (2.0b), 4 x I2C, 4 x SPI, 7 x UART, 4 x Timer, 8 x PWM, 3 x Watchdog, 2 x 12-bit ADC (10 channels) with 4-wire/5-wire touch controller, up to 103 GPIOs
EXTERNAL BUS	16-bit address / up to 16-bit data (multiplexed and non-multiplexed modes)
ETHERNET	Dual 10/100 Mbit Ethernet MAC + IEEE 1588
WIRELESS	802.11a/b/g/n/ac 1x1 (MCS 0-9), Bluetooth 5 with strong WPA2-Enterprise authentication/encryption for Wi-Fi connections
MCA™ MICROCONTROLLER ASSIST	Ultra-low power ARM® Cortex®-M0+, up to 48 MHz (NXP Kinetis KL03: KL03P24M48SF0)
OPERATING TEMPERATURE	-40° C to +85° C (-40° F to 185° F)
STORAGE TEMPERATURE	-50° C to +125° C (-58° F to 257° F)
RELATIVE HUMIDITY	Relative humidity 5% to 90% (non-condensing)
RADIO APPROVALS***	US, Canada, EU, Japan, Australia/New Zealand
EMISSIONS / IMMUNITY / SAFETY	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, EN 55024, EN 301 489-3, Safety UL/UR (or equivalent)
DESIGN VERIFICATION	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, HALT
MOUNTING / PIN COUNT	Common Digi SMTplus* surface mount footprint using 76-pad edge castellated pads (1.27 mm pitch) or 245-pad LGA (1.27 mm pitch) option
MECHANICAL DIMENSIONS	29 mm x 29 mm x 3.5 mm (1.14 in x 1.14 in x 0.14 in)
POWER CONSUMPTION	Idle Mode (Linux up, no networking): 100 mA @ 5 V Idle Mode (Linux up, with 25% Wi-Fi transmit): 118 mA @ 5 V Standby Mode (w/memory refresh): 6 mA @ 5 V
ULTRA LOW-POWER MODES	Event Trigger Mode: 2.5 µA @ 3 V (i.MX6UL off, MCA LLS w/HS Comparator active)** Scheduled Wake-Up Mode: 25 µA @ 3 V (i.MX6UL off, MCA LLS w/HS Comparator active)**
PRODUCT WARRANTY	3 years

PART NUMBERS — DESCRIPTION

KITS	
CC-WMX6UL-START	ConnectCore 6UL SBC Express, 87 x 63 mm, Industrial temp, 256 MB SLC NAND, 256 MB DDR3, single 10/100 Ethernet, 802.11a/b/g/n/ac, Bluetooth 5, PCB antenna, USB , UART, microSD, Pi HAT and Grove connectors, power (USB + header), and accessories
CC-WMX6UL-KIT	ConnectCore 6UL SBC Pro, Pico-ITX (100 x 72 mm), Industrial Temp, 256 MB SLC NAND, 256 MB DDR3, Dual 10/100 Ethernet, 802.11a/b/g/n/ac, Bluetooth 5, XBee socket, cellular connectivity support via PCI Express Mini Card, SIM, NFC, microSD, USB Host, USB OTG, UART, DualCAN, SPI, I²C, LVDS, camera, antenna connector, battery connector, power supply, and accessories
CONNECTCORE 6UL – SECURE WIRELESS MODULE	
CC-WMX-JN7A-NE	ConnectCore 6UL-2, 528 MHz, Industrial Temp, 1 GB SLC NAND, 1 GB DDR3, Dual 10/100 Ethernet, 802.11a/b/g/n/ac, Bluetooth 5
CC-WMX-JN58-NE	ConnectCore 6UL-2, 528 MHz, Industrial Temp, 256 MB SLC NAND, 256 MB DDR3, Dual 10/100 Ethernet, 802.11a/b/g/n/ac, Bluetooth 5
CONNECTCORE 6UL – SECURE ETHERNET MODULE	
CC-MX-JN7A-Z1	ConnectCore 6UL-2, 528 MHz, Industrial Temp, 1 GB SLC NAND, 1 GB DDR3, Dual 10/100 Ethernet
CC-MX-JN58-Z1	ConnectCore 6UL-2, 528 MHz, Industrial Temp, 256 MB SLC NAND, 256 MB DDR3, Dual 10/100 Ethernet

* Patent-Pending ** Estimated, based on use-case *** Final certifications pending

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