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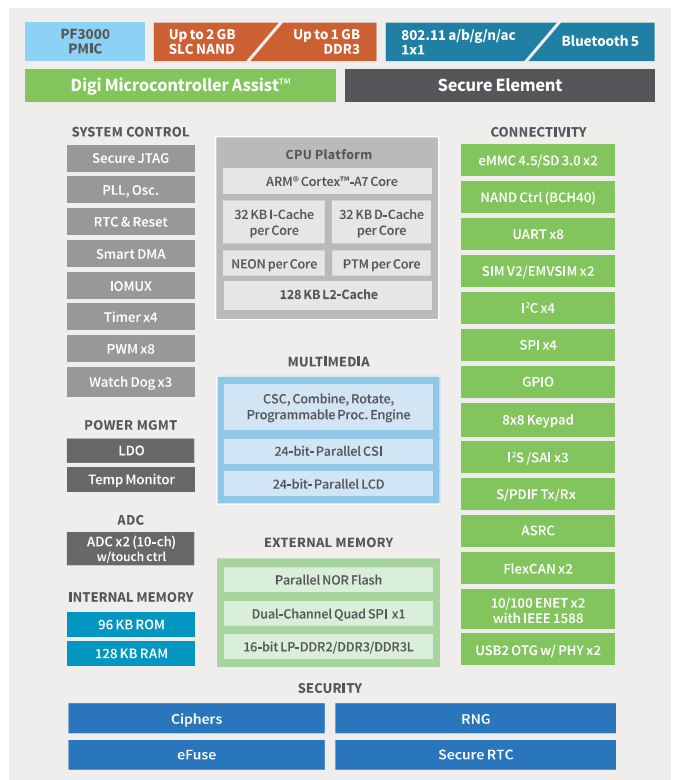
Built on the NXP® i.MX6UL application processor, the module is the intelligent communication engine for today's secure connected devices. It seamlessly integrates dual-Ethernet and pre-certified dual-band Wi-Fi (802.11a/b/g/n/ac) with Bluetooth® 5 connectivity.

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 Digi TrustFence®, a fully integrated secure module platform with complete Linux® software support.

BLOCK DIAGRAM

BENEFITS

– Stamp-sized, secure, connected System-on-Module platform
  – NXP i.MX6UL-2, Cortex®-A7 at 528 MHz
  – Up to 1 GB NAND flash, up to 1 GB DDR3
– Patent-pending low-profile Digi SMTplus form factor
– Integrated Digi Microcontroller Assist™ for 2.5 µA ultra-low power modes
– Pre-certified 802.11a/b/g/n/ac + Bluetooth 5 option
– Integrated dual 10/100 Ethernet connectivity
– Digi TrustFence embedded device security framework
– Remote management with Digi ConnectCore® Cloud Services
– Digi Embedded Yocto Linux® support
– Turnkey development available from Digi WDS

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 at 528 MHz, 128 KB L2 cache, with NEON™ MPE (Media Processor Engine) co-processor and programmable smart DMA (SDMA) controller
MEMORY	256 MB / 512 MB / 1 GB NAND flash, 256 MB / 512 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	Wi-Fi 5 802.11a/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	Industrial: -40 °C to 85 °C (-40 °F to 185 °F); depending on use case and enclosure/system design
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, Brazil
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 at 5 V Idle Mode (Linux® up, with 25% Wi-Fi transmit): 118 mA at 5 V Standby Mode (with memory refresh): 6 mA at 5 V
ULTRA LOW-POWER MODES	Event Trigger Mode: 2.5 µA at 3 V (i.MX6UL off, MCA LLS w/HS Comparator active)** Scheduled Wake-Up Mode: 25 µA at 3 V (i.MX6UL off, MCA LLS w/HS Comparator active)**
MAXIMUM RADIO-FREQUENCY POWER	63.1 mW
OPERATING FREQUENCY BAND	2402 - 2480 MHz; 5.250 - 5.350 GHz; 5.470 - 5.725 GHz
PRODUCT WARRANTY	3-year

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

PART NUMBERS	DIGI CONNECTCORE 6UL 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

PART NUMBERS	DIGI CONNECTCORE 6UL SYSTEM-ON-MODULES
CONNECTCORE 6UL – SECURE WIRELESS MODULE	
CC-WMX-JN7A-NE	ConnectCore 6UL — 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-JN69-NN	ConnectCore 6UL — 528 MHz, industrial temp, 512 MB SLC NAND, 512 MB DDR3, dual 10/100 Ethernet, 802.11a/b/g/n/ac, Bluetooth 5
CC-WMX-JN59-NN	ConnectCore 6UL — 528 MHz, industrial temp, 512 MB SLC NAND, 256 MB DDR3, dual 10/100 Ethernet, 802.11a/b/g/n/ac, Bluetooth 5
CC-WMX-JN58-NE	ConnectCore 6UL — 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 — 528 MHz, industrial temp, 1 GB SLC NAND, 1 GB DDR3, dual 10/100 Ethernet
CC-MX-JN69-ZN	ConnectCore 6UL — 528 MHz, industrial temp, 512 MB SLC NAND, 512 MB DDR3, dual 10/100 Ethernet
CC-MX-JN58-Z1	ConnectCore 6UL — 528 MHz, industrial temp, 256 MB SLC NAND, 256 MB DDR3, dual 10/100 Ethernet

PART NUMBERS	DIGI CONNECTCORE 6UL ACCESSORIES
CC-ACC-LCDH-10	LCD Application Kit, including 10 in WXGA (high resolution) LCD panel

PART NUMBERS	DIGI CONNECTCORE CLOUD SERVICES
CC-CS-ESS-1-1YR	Digi ConnectCore Cloud Services — Essential 1-year (1 device)
CC-CS-ESS-100-1YR	Digi ConnectCore Cloud Services — Essential 1-year (100 devices)
CC-CS-ESS-100-3YR	Digi ConnectCore Cloud Services — Essential 3-year (100 devices)
CC-CS-ESS-100-5YR	Digi ConnectCore Cloud Services — Essential 5-year (100 devices)
CC-CS-PRM-1-1YR	Digi ConnectCore Cloud Services — Premium 1-year (1 device)
CC-CS-PRM-100-1YR	Digi ConnectCore Cloud Services — Premium 1-year (100 devices)
CC-CS-PRM-100-3YR	Digi ConnectCore Cloud Services — Premium 3-year (100 devices)
CC-CS-PRM-100-5YR	Digi ConnectCore Cloud Services — Premium 5-year (100 devices)

PART NUMBERS	DIGI CONNECTCORE SECURITY SERVICES
CC-SEC-ESS	Digi ConnectCore Security Services — Essential 1-year
CC-SEC-PRM	Digi ConnectCore Security Services — Premium 1-year
CC-SEC-ENT	Digi ConnectCore Security Services — Enterprise 1-year
CC-SEC-ENT-ADD	Digi ConnectCore Security Services — Additional product (same duration as main contract)

PART NUMBERS	EXPERT SUPPORT
DG-EXPE-12	Expert 12x5 support for end users
DG-EXPE-24	Expert 24x7 support for end users

FOR MORE INFORMATION
PLEASE VISIT DIGI.COM

91003241
C7/323

DIGI INTERNATIONAL WORLDWIDE HQ
877-912-3444 / 952-912-3444 / www.digi.com

DIGI INTERNATIONAL JAPAN
+81-3-5428-0261 / www.digi-intl.co.jp

DIGI INTERNATIONAL GERMANY
+49-89-540-428-0

DIGI INTERNATIONAL SINGAPORE
+65-6213-5380

DIGI INTERNATIONAL CHINA
+86-21-50492199 / www.digi.com.cn