



NXP TECHNOLOGIES

Developing Winning Accessories
for Today's Gaming Market

NXP: YOUR GAMING TECHNOLOGY PARTNER

Several trends are driving continued growth in the gaming market. Advances in cloud technology and streaming for both AAA and indie games, digital distribution, and increased diversity have expanded the universe of cloud-based multiplayer gaming and even professional Esports competitions. Social media has contributed to growth in mobile gaming, providing a popular virtual platform which allows convenient access anywhere and anytime. Lastly, the introduction of cross-platform play enables avid gamers using different hardware to play with each other simultaneously.

Gaming accessories, from AR/VR headsets to wireless gamepads, have also kept pace with the latest technology innovations. Whether you're a casual gamer who enjoys playing with friends or a top gun competing in Esports, you need a variety of gaming accessories to enhance your enjoyment and performance. And if you want a truly interactive gaming experience, acquiring accessories available based on the latest processing, wireless, audio and video technologies is important.

NXP has provided enabling processor and wireless technology for gaming accessories since the early days of home and handheld console platforms pioneered by key gaming console makers and other leading names in the global gaming market. Today, NXP's scalable EdgeVerse™ [computing portfolio](#) addresses a broad range of gaming accessory requirements with purpose-built system-on-chip (SoC) platforms. These solutions offer a combination of high performance, low power, increased levels of integration and enhanced security, backed by a comprehensive development ecosystem geared to streamline product design and speed time to market.





COVERING ALL THE BASES FOR GAMING ACCESSORIES

Developers require a wide array of processor, wireless connectivity, USB, audio, video and power management technologies to create gaming accessories that meet the diverse needs of today's players and their desktop, mobile and cloud-based platforms.

NXP's comprehensive edge computing portfolio extends across [general-purpose MCUs](#), [i.MX RT crossover MCUs](#) and [i.MX applications processors](#). These processing platforms cover diverse accessory design possibilities with a range of multicore architectures based on Arm® Cortex®-M and A class cores, hardware accelerators, co-processors, on-chip USB controllers, multimedia interfaces and rich peripheral sets. Additional wireless SoCs and ICs support a wide array of connectivity options including [Bluetooth Low Energy \(BLE\)](#), [Wi-Fi](#), [ultra-wideband \(UWB\)](#), [near field communication \(NFC\)](#), and [MiGLO technology with near field magnetic induction \(NFMI\)](#).

FEATURED PROCESSING SOLUTIONS FOR GAMING ACCESSORY DEVICES

	LPC5500 MCUS	i.MX RT500 MCUS	i.MX RT600 MCUS	i.MX RT 4 DIGIT MCUS i.MX RT10xx i.MX RT11xx	i.MX 8M MINI APPLICATION PROCESSORS
Core	Up to 150 MHz Arm®Cortex®-M33	Up to 275 MHz Cortex-M33	Up to 300 MHz Cortex-M33	Up to 1 GHz Cortex-M7	Up to 4x 1.8 GHz Cortex-A53
Co-Processor	<ul style="list-style-type: none"> Up to 150 MHz Cortex-M33 PowerQuad Math Accelerator 	<ul style="list-style-type: none"> PowerQuad Math Accelerator Casper Crypto Engine 	<ul style="list-style-type: none"> PowerQuad Math Accelerator Casper Crypto Engine 	Up to 400 MHz Cortex-M4	Up to 400 MHz Cortex-M4
DSP Hardware Coprocessor		Up to 275 MHz Cadence Tensilica Fusion F1 for lowest energy IoT sensing, computing and voice/audio processing	Up to 600 MHz Cadence Tensilica HiFi 4 for advanced audio, voice and ML processing		
On-chip Memory	<ul style="list-style-type: none"> Up to 640 KB Flash Up to 320 KB SRAM 	<ul style="list-style-type: none"> Up to 5 MB SRAM 	<ul style="list-style-type: none"> Up to 4.5 MB SRAM 	<ul style="list-style-type: none"> Up to 2MB SRAM 	<ul style="list-style-type: none"> Boot ROM (256 KB) On-chip RAM (256 KB + 32 KB)
External Memory Interfaces	1 x Quad/Octal NOR/NAND/PSRAM/HyperRAM	<ul style="list-style-type: none"> 2x Quad/Octal NOR/NAND/PSRAM/HyperBus Memory interface 2x SD/eMMC, one supports eMMC5.0 	1x Quad/Octal NOR/NAND/PSRAM/HyperBus Memory interface 2x SD/eMMC, one supports eMMC5.0	<ul style="list-style-type: none"> 2x Quad/Octal NOR/NAND/PSRAM/HyperBus Memory interface 1x SEMC with up to 32-bit SDRM, 16-bit NAND/NOR/SRAM 2x SD3.0/eMMC5.0 	<ul style="list-style-type: none"> 2x SD/eMMC LPDDR4/DDR4/DDR3L 3. 3x SPI NOR Flash, 1x NAND Flash, FlexSPI interface for XIP
Multimedia (GPU & Video)		<ul style="list-style-type: none"> 2.5D GPU with vector graphic support 2-lane MIPI DSI 		<ul style="list-style-type: none"> 2.5D GPU with vector graphic support 2D graphic accelerator PXP 2-lane MIPI DSI Up to 24-bit RGB LCD interface 2-lane MIPI CSI Up to 24-bit RGB CSI interface 	<ul style="list-style-type: none"> GPU: 2D and 3D GPU Video Processing Unit: 1080p60 HEVC/H.265, H.264, VP9, VP8 Decoder 2. 1080p60 H.264, VP8 Encoder
Operating System	<ul style="list-style-type: none"> Azure RTOS FreeRTOS Zephyr 	<ul style="list-style-type: none"> FreeRTOS, RT-Thread for CM33 XOS for DSP 	<ul style="list-style-type: none"> FreeRTOS Zephyr for CM33 XOS for DSP 	<ul style="list-style-type: none"> FreeRTOS Azure RTOS Zephyr MbedOS NuttX RT-Thread AliOS Things 	<ul style="list-style-type: none"> Linux Android FreeRTOS Little Kernel
Advanced Security	Secure boot, AES-256 encryption/decryption engine, SHA2, PUF, RNG	Secure boot, AES256, RSA 4096, SHA-256, ECC, TEE, PUF, RNG, eFuse, RTC, Secure debug	Secure boot, AES256, RSA 4096, SHA-256, ECC, TEE, PUF, RNG, eFuse, RTC, Secure debug	Secure boot, AES256, RSA 4096, SHA-512, 3DES, DES, ECC, MD5, RDC, XRDC, PUF, RNG, eFuse, RTC, Code WDOG, Tamper, secure debug	Secure boot, AES256, RSA 4096, SHA-256, 3DES, DES, ECC, ARC4, MD5, RTC, eFuse, RNG
Package	<ul style="list-style-type: none"> HVQFN48 VFBGA98 HTQFP64 HLQFP100 	<ul style="list-style-type: none"> 249 FOWLP 141 WLCSP 	<ul style="list-style-type: none"> 249 FOWLP 176 VFBGA 114 WLCSP 	<ul style="list-style-type: none"> 289 MAPBGA 	<ul style="list-style-type: none"> FCBGA 14 x 14 mm
Evaluation Kit(s)	LPC55S06-EVK LPC55S16-EVK LPC55S28-EVK LPC55S69-EVK	MIMXRT595-EVK	MIMXRT685-EVK	MIMXRT1170-EVK	i.MX8M Mini-EVK MCIMX8M-Audio Board

APPLICATION	SUB APPLICATION	RECOMMENDED DEVICE(S)	NXP INNOVATION
Gaming Peripherals (Wired & Wireless)	<ul style="list-style-type: none"> • Keyboard • Mice • Controller / Gamepad • Stylus 	<ul style="list-style-type: none"> • LPC5500 • i.MX RT 4 Digit MCUs • i.MX RT500 MCUs • i.MX RT600 MCUs 	<ul style="list-style-type: none"> • Innovative multi-core architecture with low power design • Co-processor for acceleration • HS USB with PHY built-in
Audio Related (Wired & Wireless)	<ul style="list-style-type: none"> • Soundbar • Headset • Portable / Chargeable 	<ul style="list-style-type: none"> • LPC5500 • i.MX RT 4 Digit MCUs • i.MX RT500 • i.MX RT600 • i.MX 8M Mini 	<ul style="list-style-type: none"> • High-performance MCU/MPU • HW DSP Integrated • Mainstream software support
General LED Control & Other Accessories	<ul style="list-style-type: none"> • Gaming VGA Card • Motherboard • Capture Card • Gaming Case/Deck 	<ul style="list-style-type: none"> • LPC5500 • i.MX RT500 • i.MX RT 4 Digit MCUs 	<ul style="list-style-type: none"> • High performance & low power • MIPI I/F integrated • HS USB with PHY built-in

ENABLING HARDWARE TECHNOLOGIES

TECHNOLOGY	DESCRIPTION
BLE	<ul style="list-style-type: none"> • Low power design with rich peripheral integration • In-house BLE stack with BLE compliance • Advanced security integrated for OTA upda
USB-C	<ul style="list-style-type: none"> • Delivering data rates up to 10 Gbit/s and up to 100W of power • High-speed signal switches • USB Redrivers – signal conditioners • USB PD-PHY & CC-Logic Controllers • USB Type-C Load Switches • USB Type-C Overvoltage Port Protectors
Power Management Integrated Circuits (PMICs)	<ul style="list-style-type: none"> • Companion PMIC for gaming processors • Integrated switching and linear regulators • Integrated battery management functions • Configured via OTP
High Speed Switch	<ul style="list-style-type: none"> • High performance, differential switches (>5Gbps) <ul style="list-style-type: none"> – 1, 2, and 4 channel options – Crossbar switches for USB Type-C, DisplayPort, and HDMI applications • General-purpose, low-ohmic, and analog-specific switches <ul style="list-style-type: none"> – SPST, SPDT, DPDT, SP3T, SP8T, etc. – USB 2.0, MIPI / CSI / DSI, Audio applications
LED Controllers	<ul style="list-style-type: none"> • Blinking, dimming, and color mixing capabilities • Pulse-width modulation (PWM) for LED brightness control • Independent control of LEDs • Different output drive types (push-pull, open-drain voltage switch or constant-current driver)



ECOSYSTEM FOR NXP'S GAMING ACCESSORY SOLUTIONS

TECHNOLOGY	DESCRIPTION
Retune DSP	DSP software solutions for voice control and speech communications <ul style="list-style-type: none"> • Conversa – Handsfree Telephony Suite • VoiceSeeker – Voice Control Audio Front End Suite • VoiceSpot – Wake Word Engine
MCUXpresso	Comprehensive development solutions designed to optimize, ease and help accelerate embedded system development of applications based on general purpose, crossover and Bluetooth™-enabled MCUs

OPTIMAL PERFORMANCE AT LOW POWER

- Multi-core architectures that provide new dimensions in balancing workload and efficiency
- Processors that offer ultra-low power standby and sleep modes to enable long battery life
- Ultra-low-power Cortex-M0+ and Cortex-M33 cores offering power consumption as low as 32uA/Mhz in very low power mode and 1.96uA in deep sleep mode with SRAM and RTC retention
- MCUs designed with dedicated co-processors for signal processing and security, combining low latency and robust operation

HIGHLY INTEGRATED SOLUTIONS TO REDUCE DESIGN COMPLEXITY AND COST

- Built-in audio features, [voice capabilities](#) and integrated digital signal processing (DSP) for voice control and speech communications
- Heterogeneous graphics support including 2D graphics processing units (GPUs) and 2D pixel processing pipeline (PxP) accelerators
- BLE low power design with rich peripheral integration and in-house BLE stack
- Parallel and MIPI CSI/DSI interfaces for low-power, low-cost applications
- On-chip USB high-speed controllers including [MCUXpresso SDK](#) support for a variety of USB host and device composite profiles and comprehensive hardware and software libraries
- [Integrated power management ICs](#) (PMICs) for flexible power control and simplified hardware design
- Integrated capacitive touch solutions included in LPC84x, KL1x and KE1xZ MCUs

BUILT-IN SECURITY ENABLING EASY IMPLEMENTATION

- Secure boot, unique key storage, and cryptographic hardware acceleration for symmetric and asymmetric key infrastructures
- [EDGELOCK®ASSURANCE](#) product offering that meets industry standards and security certifications
- Remote over the air (OTA) firmware updates across wired and wireless products

LEARN MORE ABOUT NXP'S GAMING ACCESSORY SOLUTIONS AND SUPPORT

NXP offers a variety of support options to best suit your gaming accessory design needs. Our comprehensive hardware and software solutions, connectivity stacks, evaluation kits, reference designs, documentation, engineering services, third-party ecosystems and open NXP communities can help you streamline the development process and accelerate time to market. For more information, visit www.nxp.com/gaming.





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Document Number: GAMINGACCESSORIESBR REV 0