# MAXQ616

# Infrared Remote Control System-on-Chip

## Save Power, Cost and Board Space: 16-Bump WLP Reduces Board Space Requirements by 50%

*Description*

The MAXQ616 is a low-power, 16-bit MAXQ® microcontroller designed for low-power applications including universal remote controls, consumer electronics, and white goods. The device combines a powerful 16-bit RISC microcontroller and integrated peripherals including a universal synchronous/asynchronous receiver-transmitter (USART), an SPI master/slave and I²C communications ports, along with an IR module with carrier frequency generation and flexible port I/O capable of multiplexed keypad control. An internal amplifier eliminates the need for external circuitry to drive the IR receiver pin.

The device includes 80KB of flash memory and 2KB of data SRAM.

For the ultimate in low-power battery-operated performance, the device includes an ultra-low-power stop mode (0.2µA typ). In this mode, the minimum amount of circuitry is powered. Wake-up sources include external interrupts, the power-fail interrupt, and a timer interrupt. The microcontroller runs from a wide 1.67V to 3.6V operating voltage.

*Key Features*

- High-Performance, Low-Power, 16-Bit RISC Core
- Internal 12MHz Oscillator Requires no External Components
- 1.67V to 3.6V Operating Voltage
- 33 Total Instructions for Simplified Programming
- Three Independent Data Pointers Accelerate Data Movement with Automatic Increment/Decrement
- Dedicated Pointer for Direct Read from Code Space
- 16-Bit Instruction Word, 16-Bit Data Bus
- 16 x 16-Bit General-Purpose Working Registers
- Memory Features
    - 80KB Flash Memory
    - 2KB Data SRAM
- Additional Peripherals
    - Power-Fail Warning
    - Power-On Reset (POR)/Brownout Reset
    - Automatic IR Carrier Frequency Generation and Modulation
    - IR Learning Amplifier
    - IR Transit Driver with 200mA (min) Sink Current at 1.8V
    - Two 16-Bit Programmable Timers/Counters with Prescaler and Capture/Compare
    - One SPI, One I²C, and One USART Port
    - Programmable Watchdog Timer

    - 8kHz Nanopower Ring Oscillator Wake-Up Timer
    - Up to 10 General-Purpose I/Os
- Low Power Consumption
    - 0.2µA (typ), 2.0µA (max) in Stop Mode, $T_A$ = +25°C, Power-Fail Monitor Disabled
    - 2.0mA (typ) at 12MHz in Active Mode

*Applications/Uses*

- Universal Remote Controls for Smartphones
- Universal Remote Controls for Tablets

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