

nanoWatt XLP™ is eXtreme Low Power

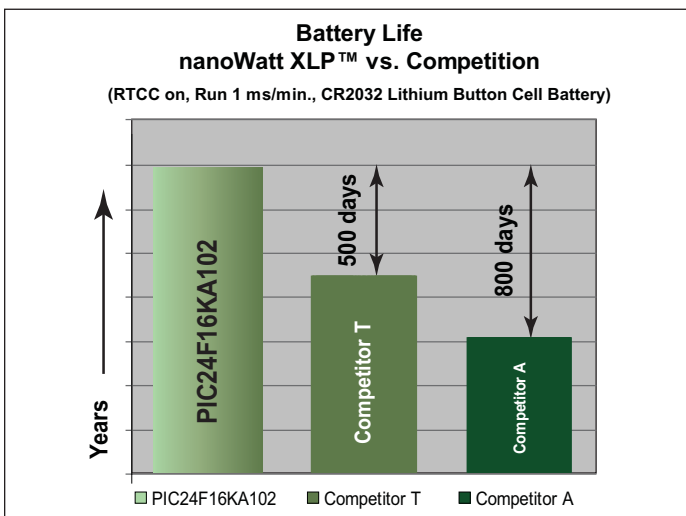
Beyond Low Power

As more electronic applications require low power or battery power, energy conservation becomes paramount. Today's applications must consume little power, and in extreme cases, last for up to 15-20 years, while running from a single battery. To enable applications like these, Microchip has introduced nanoWatt XLP™ Technology.

Products with nanoWatt XLP Technology offer the industry's lowest currents for Sleep, where extreme low power applications spend 90%-99% of their time.

Benefits of nanoWatt XLP Technology:

- Sleep currents down to 20 nA
- Brown-out Reset down to 45 nA
- Watch-dog Timer down to 400 nA
- Real-time Clock/Calendar down to 500 nA



Example Applications

Battery

- Utility Metering
- Asset Tracking
- Electronic Locks
- Portable Medical
- Smoke/CO2 Detectors
- Irrigation Systems
- Security Systems/Sensors
- Remote Keyless Entry
- Battery-less Sensors

Green Initiatives

- Compliance with Regulations
- Appliances
- Home Electronics

Energy Harvesting

- Wireless Switches
- Battery-less Sensors



Low Power Integration

Many of today's low power products need advanced peripherals. Microchip offers low power devices with peripherals like USB, LCD, RTCC and mTouch™ capacitive sensing. This eliminates the need for additional parts in the application, saving cost, current and complexity.

Low Power Safety

In addition to peripherals, products with nanoWatt XLP have system supervisory circuits specially designed for battery powered products.

- The Deep Sleep Brown-out Reset protects applications when batteries are depleted or changed, yet consumes a tiny 45 nA of current
- The Real-time Clock Calendar module can provide precise timekeeping for less than 500 nA
- Using a dedicated on-chip oscillator, the WDT provides protection against system failure for less than 400 nA

Low Power Support

Microchip offers excellent support for your extreme low power design. With a global sales and technical support team, 24/7 phone support, and a training center close to you, we can help with your next low power design.

On-line resources include:

- Webinars, design tips, white papers and more at www.microchip.com/XLP
- Free software stacks: USB, mTouch, ZigBee®, IrDA®, KEELoq®, Graphics



MICROCHIP

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nanoWatt XLP™ Portfolio

With many pin, memory and peripheral combinations available, Microchip's nanoWatt XLP products have the right combination features for your low power application.

Device	Memory KB	Pins	Sleep nA	Current Adders, ΔIpd		1MHz Run μA
				WDT nA	RTC nA	
PIC16F72X	3.5-14	28/44	60	500	600	110
PIC16F193X	7-28	28/44	60	500	600	150
PIC18F14K50	8-16	20	60	500	600	170
PIC18F14K22	8-16	20	60	500	600	170
PIC18F46K20	8-64	28/44	100	500	500	350
PIC18F46J11*	16-64	28/44	24	800	800	272
PIC18F46J50*	16-64	28/44	24	800	800	272
PIC24F16KA102*	4-16	14/20/28	20	400	500	195

*Sleep current is with Deep Sleep Mode, RTC is with Hardware RTCC module.
All numbers are typical values at minimum VDD, taken from the data sheet.

Development Tools from Microchip

Part Number	Development Tool	Description
SW007002	MPLAB® IDE – includes: MPASM™ Assembler, MPLINK™ Linker/MPLIB™ Librarian and MPLAB SIM Software Simulator	Integrated Development Environment (download free of charge at www.microchip.com)
DM183032	PIC18 Explorer	Low-cost Development Board for PIC18 MCUs
DM240001	16-bit Explorer	Low-cost Development Board for 16-bit PIC MCUs
MA240017	PIC24F16KA102 PIM	Plug-in Module for Explorer 16
MA180023	PIC18F46J11 PIM	Plug-in Module for PIC18 Explorer
MA180024	PIC18F46J50 FS USB Development Board	Stand Alone USB Evaluation Board, can be used with PIC18 Explorer
DV164131	PICKIT™ 3 Debug Express	In-Circuit Debugger/Programmer
DV164035	MPLAB ICD 3 In-Circuit Debugger Kit	In-Circuit Debugger/Programmer
DV007004	MPLAB PM3 Universal Device Programmer	Full-featured Modular Device Programmer
DV244005	MPLAB REAL ICE™ In-Circuit Emulator	High Speed Emulation System



MICROCHIP
www.microchip.com/XLP

Visit our web site for additional product information and to locate your local sales office.

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