

Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from, Europe, America and south Asia, supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts, Customers Priority, Honest Operation, and Considerate Service", our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip, ALPS, ROHM, Xilinx, Pulse, ON, Everlight and Freescale. Main products comprise IC, Modules, Potentiometer, IC Socket, Relay, Connector. Our parts cover such applications as commercial, industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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MICROCHIP PIC16F1827

> MICROCHIP PIC12F1822

# nanoWatt XLP Technology

MICROCHIP PIC24FJ64GB004



www.microchip.com/XLP

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



#### **Looking Beyond Low Power MCUs**

Microchip has introduced nanoWatt XLP eXtreme Low Power Technology to address the needs of your next product. Benefits include:

- Sleep currents below 20 nA
- Brown-out Reset down to 45 nA
- Watch-dog Timer down to 220 nA
- Real-time Clock/Calendar down to 470 nA
- Run currents down to 50 µA/MHz
- Full analog and self-write capability down to 1.8V

#### **Low Power Peripheral Integration**

Today's low power products require integrated advanced peripherals. nanoWatt XLP MCUs are available with:

- USB Connectivity
- LCD Controllers
- Hardware RTCC
- mTouch<sup>™</sup> Capacitive Touch Sensing

#### **Low Power Safety**

Reliability is a primary concern for battery powered products. Integrated low power supervisory circuit benefits:

- Brown-out Reset guards against low batteries, power loss
- Watchdog Timer with on-chip clock source for dependable operation
- Real Time Clock/Calendar for precise time keeping

#### **Low Power Design Support**

Full support for your extreme low power design:

- Global Sales and Technical Support (24/7)
- Regional Training Centers
- Low Cost Development Tools
- Free MPLAB® IDE and C Compiler
- Free software stacks: USB, mTouch, ZigBee®, IrDA®
- On-line Design Center: www.microchip.com/XLP

#### **Example XLP PIC® MCUs**

Device		Flash Memory (KB)	Pins	Sleep (nA)	WDT* (nA)	RTC* (nA)	1 MHz Run (μA)
PIC16LF182X	CAP SENSE	3.5-7	8-28	20	300	600	50
PIC16LF72X	CAP SENSE	3.5-14	28/44	20	500	600	110
PIC16LF193X	CAP SENSE	7-28	28/44	60	500	600	150
PIC18LF1XK50	CAP SENSE	8-16	20	24	450	790	170
PIC18LF14K22	CAP SENSE	8-16	20	34	460	650	150
PIC18LF4XK22	CAP SENSE	8-64	28/44	50	600	500	250
PIC18F46J11	CAP SENSE	16-64	28/44	13	813	813	272
PIC18F46J50	CAP SENSE USB	16-64	28/44	13	813	813	272
PIC18F87K90	CAP SENSE	32-128	64/80	25	350	720	181
PIC24F04KA201	CAP SENSE	4	14/20	20	370	470	195
PIC24F16KA102	CAP SENSE	8-16	20/28	20	420	520	195
PIC24FJ64GB004	CAP SENSE	32-64	28/44	20	220	520	250

<sup>\*</sup>Base sleep current included in WDT and/or RTC numbers. Typical I/O pin leakage current ±5 nA. All numbers are typical values at minimum Vpp, taken from the data sheet.

## 75 PRODUCTS

# Example Applications Battery

- Consumer
- Utility Metering
- Asset Tracking
- Electronic Locks
- Portable Medical
- Smoke/CO<sub>2</sub> Detectors
- Irrigation Systems
- Security Systems/ Sensors
- Remote Keyless Entry

#### **Green Initiatives**

- Compliance with Regulations
- Appliances
- Home Electronics

#### **Energy Harvesting**

- Wireless Switches
- Battery-free Sensors
- Wireless Sensor Networks
- RF Powered Sensors

## XLP 16-bit Development Board (DM240311)



Designed with extreme Low Power in mind, this board enables development with the PIC24F family of 16-bit PIC XLP MCUs.

Functionality

PIC16LF19XX

PIC16LF72X

PIC16LF18XX

8-bit

- Supports 20-/28-pin devices
- Flexible power options
- CR2032 coin cell
- -2xAAA lithium\*\* or alkaline cells
- Energy harvesting: solar, vibration, RF, etc.
- External/USB
- Easy Prototyping:
  - PICtail™ connector supports RF Modules, SD/MMC storage, speech playback modules and more

20 Years

**Broad Low-Power Product Offering** 

LCD

PIC24FJ64GB00X

PIC24FJ64GA10X

PIC24F16KA10X

PIC24F04KA20X

16-bit

800 days

Competitor A

PIC18F8XK90

PIC18F8XK22

PIC18F4XJ50

PIC18F4XJ11

PIC18LF1XK50

PIC18LF1XK22

PIC24F16KA102

8-bit

**Performance** 

**Battery Life** 

nanoWatt XLP vs. Competition

(RTCC on, Run 1 ms/min., CR2032 Lithium Button Cell Battery)

500 days

Competitor T

PIC18LF4XK22 mTouck

PIC18LF4XK20 mTouch

- LEDs, capacitive and mechanical buttons, resistive pot, temperature sensor and EEPROM
- Generic prototyping area
- USB communication to PC



www.microchip.com/XLP



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<sup>\*\*</sup> Microchip recommends Energizer® Ultimate Lithium AAA Batteries for the XLP 16-bit Development Board.