



## 22nA INDUSTRY LEADING POWER CONSUMPTION RTC

SERIES	PACKAGE SIZE (mm)	PACKAGE (mm)	FEATURES	INTERFACE	WIDEST AVAILABLE OPERATING TEMPERATURE RANGE
AB0805 / AB0815	3.0 x 3.0	16-QFN	Alarm, Leap Year, SRAM, Trickle-Charger, Watchdog Timer	12 C/SPI	-40°C to +85°C
AB1805 / AB1815	3.0 x 3.0	16-QFN	Power Management, Alarm, Leap Year, SRAM, Trickle-Charger, Watchdog Timer	12 C/SPI	-40°C to +85°C

22nA IDD

22nA IDD

## QUARTZ & WATCH-MEMS 32.768 kHz CLOCK OSCILLATORS

SERIES	PACKAGE SIZE (mm)	HEIGHT (mm)	TECHNOLOGY	WIDEST AVAILABLE OPERATING TEMPERATURE RANGE
ASTMK	2.0 x 1.2, 1.54 x 0.84	0.6	1.0 Hz to 32.768 kHz MEMS	-40°C to +85°C
ASTMKJ	1.54 x 0.84	0.6	32.768 kHz MEMS	-40°C to +85°C
ASTMTXK	1.54 x 0.84	0.6	32.768 kHz MEMS TCXO	-40°C to +85°C
ASTMK06	2.0 x 1.2, XTAL footprint compatible	0.6	32.768 kHz MEMS	-40°C to +85°C
ASTMKH	2.0 x 1.2	0.6	32.768 kHz MEMS	-40°C to +85°C
ASAK	2.0 x 1.6	0.7	32.768 kHz Quartz	-40°C to +85°C
ASDK	2.5 x 2.0	0.95	32.768 kHz Quartz	-40°C to +85°C
ASH7K	3.2 x 1.5	1	32.768 kHz Quartz	-40°C to +85°C
ASH7KW	3.2 x 1.5	1	32.768 kHz Quartz	-40°C to +85°C
ASEK	3.2 x 2.5	1.2	32.768 kHz Quartz	-40°C to +85°C
ASHEK	3.2 x 2.5	0.9	32.768 kHz Quartz	-40°C to +85°C

Smallest

Smallest

Smallest & ±5ppm Stability

## LOW ESR 32 kHz SMD QUARTZ CRYSTALS (TIMING FORK CRYSTALS)

SERIES	PACKAGE SIZE * (mm)	HEIGHT (mm)	FREQUENCY RANGE (kHz)	TOLERANCE OPTIONS (±PPM)	ESR MAX (kΩ)	WIDEST AVAILABLE OPERATING TEMPERATURE RANGE
ABS05	1.6 x 1.0	0.5	32.768	10	90	-40°C to +85°C
ABS06W	2.0 x 1.2	0.6	32.768	20	95 **	-40°C to +125°C
ABS06	2.0 x 1.2	0.6	32.768	10	90, 100	-55°C to +125°C
ABS06-107-32.768 kHz	2.0 x 1.2	0.6	32.768	20	80	-40°C to +85°C
ABS07W	3.2 X 1.5	0.9	32.768	10, 20	55 **	-40°C to +85°C
ABS07	3.2 x 1.5	0.9	32.768	10	60	-55°C to +125°C
ABS07-LR	3.2 x 1.5	0.9	32.768	20	50	-40°C to +85°C
ABS07L	3.2 x 1.5	0.4	32.768	20	80	-40°C to +85°C
ABS09	4.1 X 1.5	0.9	32.768	10	70	-40°C to +85°C

Lowest CL (3pF) Lowest ESR (<95)

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\* Note: Additional package and through-hole options available. See website for more information.  
 \*\* Note: -40°C to +85°C



## REAL TIME CLOCK WITH INTEGRATED QUARTZ CRYSTAL

SERIES	PACKAGE SIZE (mm)	PACKAGE (mm)	FEATURES	INTERFACE	WIDEST AVAILABLE OPERATING TEMPERATURE RANGE
AB-RTCMC-32.768kHz-AIGZ-S7	3.2 x 1.5	8-CLCC	Alarm, Leap Year, Watchdog Timer	12C, 2-Wire Serial	-40°C to +85°C
AB-RTCMC-32.768kHz	3.2 x 2.5	8-VDFN	Alarm, Leap Year, Square Wave Output, TCXO	12C, 2-Wire Serial	-40°C to +85°C
AB-RTCMC-32.768kHz-IBOZ-S3	3.7 x 2.5	10-VDFN	22nA IDD, Alarm, Leap Year, Trickle-Charger, Watchdog Timer, Countdown Timer, Century Flag, Square Wave Output	12C, 2-Wire Serial	-40°C to +85°C
AB-RTCMC-32.768kHz-EOZ9-S3	3.7 x 2.5	10-VDFN	Alarm, EEPROM, TCXO, Trickle-Charger	12C, 2-Wire Serial	-40°C to +125°C

±5ppm Stability

22nA IDD

±8ppm Stability

## FEATURED APPLICATION: Industry leading RTC solutions eliminate supercapacitors for holdover.

Many timekeeping applications require battery replacement. When the battery is disconnected, a backup or holdover solution must keep the RTC alive for a few minutes while the battery is fully replaced and power is restored. In other cases, accurate timekeeping must survive temporary power failures. The standard practice is to use expensive boutique technologies, such as supercapacitors, that can supply enough power to run the RTC while power is normalized. A better solution uses Abracon's industry leading ABx8x5 series RTCs with timekeeping power consumption of 22nA. With such low power, holdover is achieved for several minutes from standard low cost ceramic capacitors, saying goodbye to the need for supercaps.

Required Holdover Time	Capacitor Value (µF)	Package Case Code
100 Minutes	100	1206
55 Minutes	47	0805
21 Minutes	22	0603
7 Minutes	10	0402

Read the app note:

[www.abracon.com/Support/ABX8XX-Application-Note.pdf](http://www.abracon.com/Support/ABX8XX-Application-Note.pdf)

## ABRACON SUPPORTS APPLICATIONS REQUIRING LOW POWER, SMALL SIZE, AND HIGH ACCURACY

### ACCURACY

- Smart Meters
- Industrial Sensors
- Test and Measurement
- High Temperature and Automotive
- Health Monitoring
- Machine-to-Machine (M2M)

### SIZE SENSITIVE

- Wearables IoT
- Wireless Connectivity

### LOW POWER

- Wearables IoT
- Smart Meters
- RF Telemetry
- Industrial Sensors

## LONG TERM TIME KEEPING ERROR VS. PPM STABILITY

Ever wonder what ppm stability is needed to meet long term time keeping requirements? From appliances to wearables to IoT devices to industrial applications, this table shows you where your clock accuracy needs to be.

Type	Time Keeping Drift		Error / Day	Error / Month	Error / Year	
	PPM	Percent			Seconds	Hours
Quartz or MEMS TCXO	5	0.0005	0.43	13	160	0.04
	10	0.001	0.86	26	320	0.09
	20	0.002	1.7	53	630	0.20
Uncompensated Quartz XTAL	50	0.005	4.3	130	1600	0.40
	100	0.01	8.6	260	3200	0.9
	1000	0.1	86	2600	32000	9
Internal MCU Oscillator	10000	1	860	26000	320000	90

## IDEAL FOR AUTOMOTIVE

SERIES	TYPE	WIDEST TEMP OPTION
ABS07AIG	32.768 kHz XTAL	-40°C to 125°C
ASH7KAIG	32.768 kHz XO	-40°C to 85°C

