

32.768kHz CERAMIC SMD CRYSTAL OSCILLATOR

ASHK SERIES



RoHS
Compliant



4.0 x 2.5 x 0.9 mm

FEATURES:

- Ultra low μA current consumption with CMOS output
- Miniature ceramic package (4.0 x 2.5 x 0.9mm)
- Operating Temp -40°C to $+85^{\circ}\text{C}$
- Start up time less than 1 sec with supply voltage 1.5 to 5.5V
- Tri-state function
- Pb-free reflow capable

APPLICATIONS:

- General purpose clock generator for digital systems
- Clock drivers for Real Time Clocks
- Timekeeping in network servers and computers
- Electricity, gas and water metering
- Portable field communication
- Mobile phone
- Clock & Data recovery
- CCD clock for VTR camera
- Computers and peripherals
- Portable MP3 players & games

STANDARD SPECIFICATIONS:

PARAMETERS	
ABRACON P/N	ASHK Series
Frequency range:	32.768kHz
Operating temperature:	-20°C to $+70^{\circ}\text{C}$ (see options)
Storage temperature:	-55°C to $+125^{\circ}\text{C}$
Frequency tolerance:	$\pm 5 \pm 20\text{ppm}$ @ $+25^{\circ}\text{C}$ Vdd=3.3V; referenced to 32.768kHz
Overall frequency stability:	-120 to $+10$ ppm over -20 to $+70^{\circ}\text{C}$; referenced to frequency measured @ 25°C
Supply voltage (Vdd):	$3.3\text{V} \pm 5\%$ (see options. 1.5 to 5.5V)
Supply current:	Please see Table 1
Symmetry:	40/60 % @ $1/2\text{Vdd}$
Rise and fall time (Tr/Tf):	200ns max. (10% to 90%Vdd, CL=15pF)
Startup time:	1 sec max. for Vdd=3.3V @ $+25^{\circ}\text{C}$
Output load:	CMOS (15 pF max.)
Output voltage (CL=15pF @ $+25^{\circ}\text{C}$):	VOH = Vdd-0.4V min. VOL = 0.4V max.
Tri-state function:	"1" (VIH $\geq 0.9\text{Vdd}$) (Pin must be set "1" to oscillate) "0" (VIL $< 0.1\text{Vdd}$) : Hi Z
Stand-by current:	250nA max. @ $+25^{\circ}\text{C}$
Aging (first year) $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$:	$\pm 5\text{ppm}$ max.
Aging (10 years) $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$:	$\pm 10\text{ppm}$ max.

TABLE 1

Vdd (V)	Supply Current (μA typ.)	Supply Current (μA max.)
3.3 (STD)	1.4	1.5
5.5	2.2	2.4
2.8	1.2	1.4
1.8	1.0	1.2
1.5	0.8	1.0

OPTIONS & PART IDENTIFICATION:

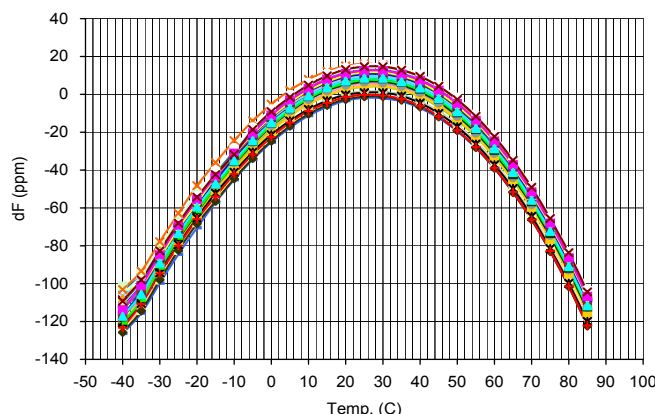
[Left blank if standard]

ASHK - 32.768kHz - -

Supply Voltage		Frequency Temp Characteristics		Packaging	
Blank	3.3V	Blank	-20°C to $+70^{\circ}\text{C}$ / -90 to $+10$ ppm	Blank	Bulk
2	5.5V	L	-40°C to $+85^{\circ}\text{C}$ / -140 to $+10$ ppm	T	Tape and Reel
3	2.8V				
4	1.8V				
5	1.5V				

Please contact ABRACON for more information.

TYPICAL TEMP CHARACTERISTICS



ABRACON IS
ISO 9001 / QS 9000
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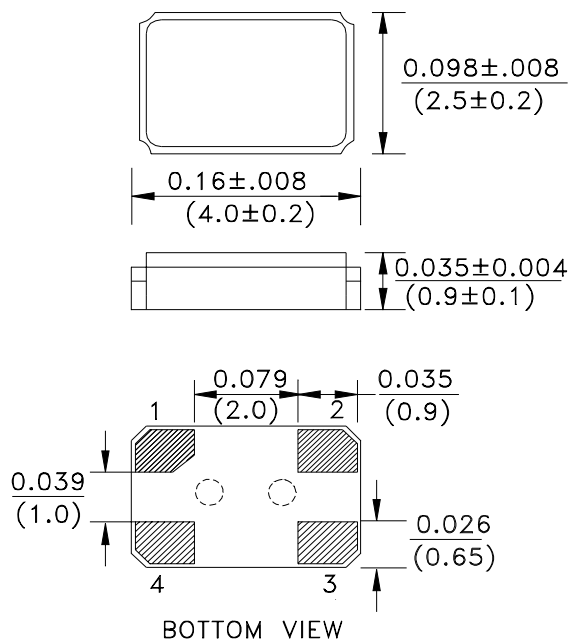


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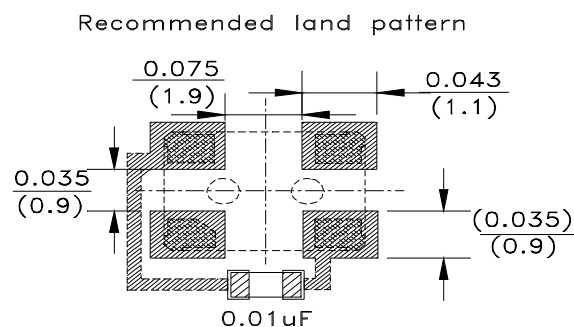
4.0 x 2.5 x 0.9 mm

OUTLINE DRAWING:



Dimensions: Inches (mm)

Sealing Method: Seam Sealing

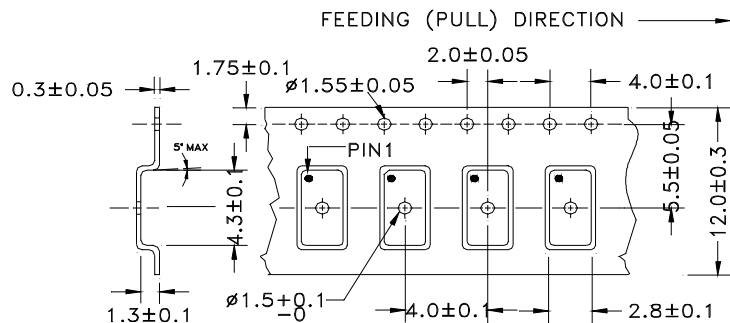


Note: Recommend using an approximately 0.01uF bypass capacitor between PIN 2 and 4.

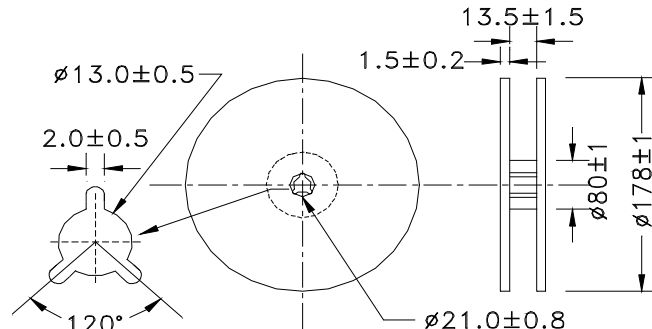
PIN	FUNCTION
1	Tristate
2	GND/Case
3	Output
4	Vdd

Please remain pin 1 "High" if you do not use the Tri-state function.

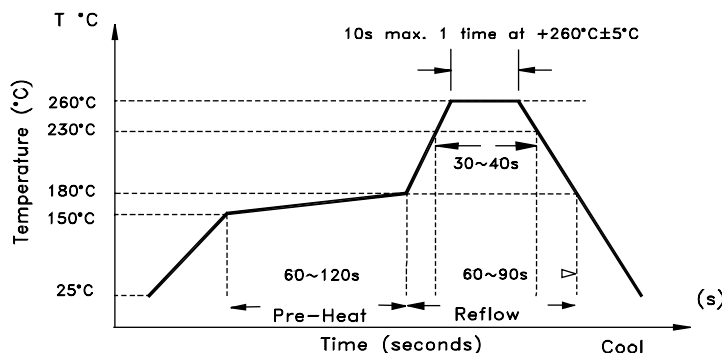
TAPE & REEL: Tape and reel 1,000pcs/reel



Dimensions: mm



REFLOW PROFILE



NOTE: Abracon manufactured products are intended for general commercial and industrial use. For applications requiring high reliability and/or presenting extreme operating environment, written consent & authorization from Abracon is required.

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