

# 32.768kHz CMOS CERAMIC SMD CRYSTAL OSCILLATOR



3.2 x 2.5 x 0.9 mm

**ASHEK SERIES**



**RoHS/RoHS II compliant**

Moisture Sensitivity Level (MSL) – This product is Hermetically Sealed and not Moisture Sensitive - MSL = N/A: Not Applicable

## FEATURES:

- Ultra low uA current consumption with CMOS output
- Miniature ceramic package (3.2 x 2.5 x 0.9mm)
- Operating Temp -40°C to +85°C
- Start up time less than 1 sec with supply voltage 1.5 to 5.0V
- 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	Minimum	Typical	Maximum	Units	Notes
Frequency	32.768			kHz	
Operating Temperature	-20		+70	°C	See options
Storage Temperature	-55		+125	°C	
Frequency Tolerance @ +25°C	-15	+5	+25	ppm	
Frequency Stability	-90		+10	ppm	- 20 to + 70 °C; referenced to frequency measured @ +25°C See options
Supply Voltage (Vdd)	3.135	3.3	3.465	V	Standard
	4.75	5.0	5.25		Option 2
	2.66	2.8	2.94		Option 3
	1.71	1.8	1.89		Option 4
	1.425	1.5	1.575		Option 5
Supply Current (I <sub>dd</sub> )		0.9	1.5	uA	no load, V <sub>dd</sub> =+ 3.3V
		1.8	2.5		no load, V <sub>dd</sub> =+ 5.0V
		0.8	1.5		no load, V <sub>dd</sub> =+ 2.8V
		0.6	1.5		no load, V <sub>dd</sub> =+ 1.8V
		0.5	1.5		no load, V <sub>dd</sub> =+ 1.5V
Output Load			15	pF	CMOS
Output Voltage	V <sub>OH</sub>	V <sub>dd</sub> -0.4		V	
	V <sub>OL</sub>		0.4		
Tri-state function	"1" (V <sub>IH</sub> ≥0.8*V <sub>dd</sub> or open) : Oscillation "0" (V <sub>IH</sub> <0.2*V <sub>dd</sub> ) : Hi Z				
Aging	-5.0		+5.0	ppm	@+25°C First year
Symmetry @1/2V <sub>dd</sub>	40	50	60	%	Standard
Start-up Time			1	s	0.9*V <sub>dd</sub> @ +25°C
Rise/Fall Time (Tr/Tf)			200	ns	

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## OPTIONS & PART IDENTIFICATION:

(Left blank if standard)

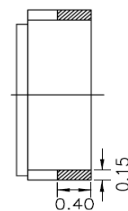
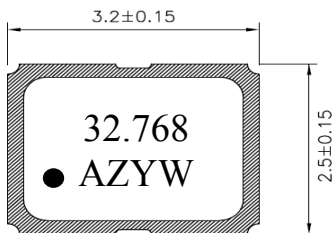
ASHEK  -32.768kHz -  -

Supply Voltage
Blank: 3.3V
2: 5.0V
3: 2.8V
4: 1.8V
5: 1.5V

Frequency Temp Characteristics
Blank: -20°C to +70°C / -90 to +10 ppm
L: -40°C to +85°C / -140 to +10 ppm

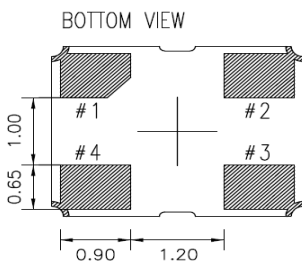
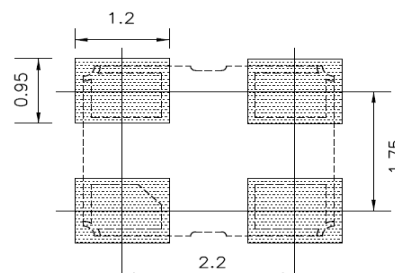
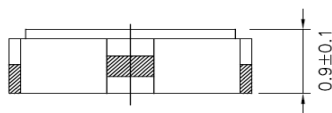
Packaging
Blank: Bulk
T: Tape and Reel (1kpcs)
T3: Tape and Reel (3kpcs)

## OUTLINE DIMENSION:



PIN #	Name
1	Tri-state or NC
2	GND
3	Output
4	Vdd

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



Dimensions: mm

