

# 32.768kHz CMOS CERAMIC SMD CRYSTAL OSCILLATOR

ASHEK SERIES



ESD Sensitive



RoHS/RoHS II compliant



3.2 x 2.5 x 0.9 mm

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, Vdd=+ 3.3V
			1.8	2.5		no load, Vdd=+ 5.0V
			0.8	1.5		no load, Vdd=+ 2.8V
			0.6	1.5		no load, Vdd=+ 1.8V
			0.5	1.5		no load, Vdd=+ 1.5V
Output Load				15	pF	CMOS
Output Voltage	V <sub>OH</sub>	Vdd-0.4			V	
	V <sub>OL</sub>			0.4		
Tri-state function		"1" (VIH≥0.8*Vdd or open) : Oscillation "0" (VIH<0.2*Vdd) : Hi Z				
Aging		-5.0		+5.0	ppm	@+25°C First year
Symmetry @1/2Vdd		40	50	60	%	Standard
Start-up Time				1	s	0.9*Vdd @ +25°C
Rise/Fall Time (Tr/Tf)				200	ns	



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## OPTIONS & PART IDENTIFICATION:

(Left blank if standard)

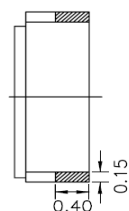
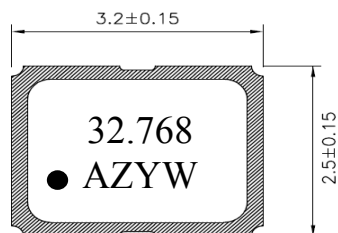
ASHEK  -32.768kHz -  -

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

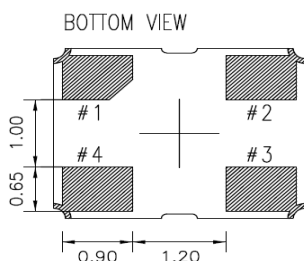
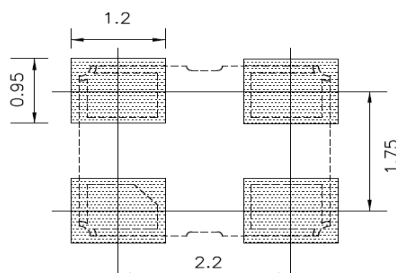
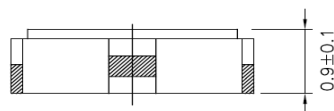
Packaging
Blank: Bulk
T: Tape and Reel (1kpcs)
T3: Tape and Reel (3kpcs)

## 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



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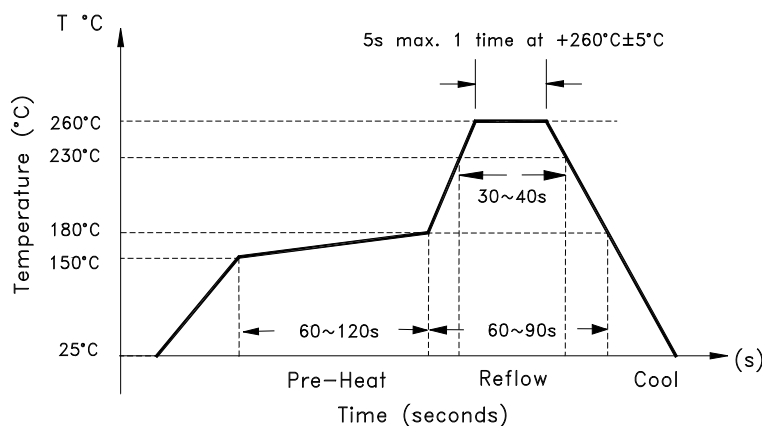


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## REFLOW PROFILE:

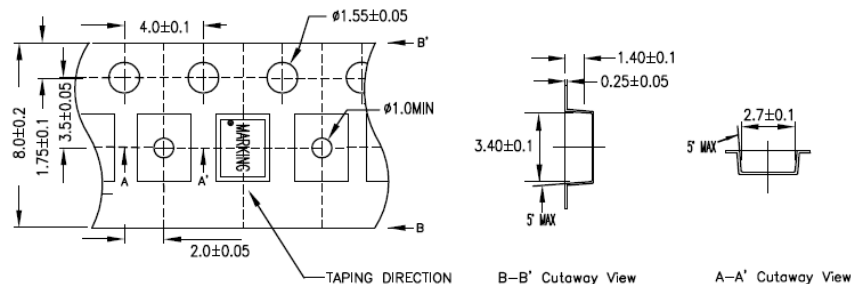


## TAPE & REEL:

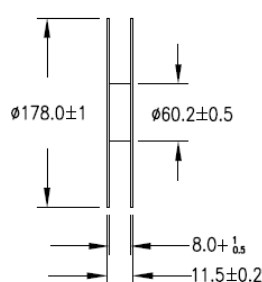
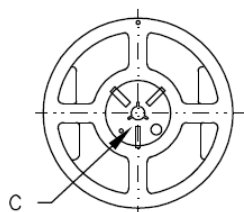
T= Tape and reel (1,000pcs/reel)

T3= Tape and reel (3,000pcs/reel)

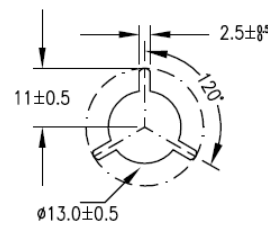
### 1.CARRIER TYPE



### 2.REEL



### C.ENLARGE



Dimensions: mm

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