

# 32.768kHz SMD CRYTAL OSCILLATOR

ASH7K

3.2 x 1.5 x 1.0mm

ASH7K



RoHS  
Compliant

## FEATURES:

- Ultra-miniature size 3.2x1.5x1.0mm [max.]
- Low Voltage Operation (Min:1.5V)
- Low Current Consumption (3.5uA Max @1.5V)
- Operating temperature : -40 to +85 °C
- VDD controls the output amplitude
- Tri-state function

## APPLICATIONS:

- Factory Automation
- PC Sever
- W-LAN/GPS Chipset
- 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

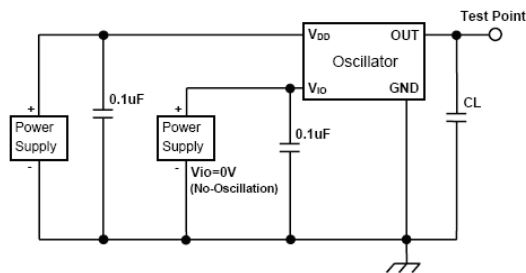
Parameters	Minimum	Typical	Maximum	Units	Notes
Center Frequency	-----	32.768	-----	kHz	
Operating Temperature	-40	-----	+85	°C	
Storage Temperature	-55	-----	+125	°C	Store as bare product after unpacking
Frequency Tolerance	-18	+5	+28	ppm	Ref: Ta=+25±2°C; V <sub>dd</sub> =3.3V; Preset frequency after 2 times reflow
Overall Frequency Stability	-120	-----	+10	ppm	-20~70°C (+25°C is reference)
	-170	-----	+10		-40~85°C (+25°C is reference)
Supply Voltage Range (V <sub>dd</sub> )	1.5	-----	3.6	V	V <sub>dd</sub> =3.3V
Supply Voltage Range (V <sub>IO</sub> )	1.5	-----	3.6	V	Input Voltage on pin 1
V <sub>dd</sub> Current Consumption	-----	-----	0.7	μA	
V <sub>IO</sub> Current Consumption	-----	-----	0.8	μA	No Load, V <sub>IO</sub> =3.3V±0.3V
	-----	-----	3.5	μA	Load=15pF, V <sub>IO</sub> =3.3V±0.3V
Output Load (CMOS)	-----	-----	15	pF	CMOS Load
Output Voltage	V <sub>OH</sub>	V <sub>IO</sub> -0.4	-----	V	IOH=-0.4mA
	V <sub>OL</sub>	-----	0.4		IOL=+0.4mA
Aging	-3.0	-----	+3.0	ppm/year	@+25±2°C
Symmetry	45	-----	55	%	@50% V <sub>IO</sub>
Disable Delay Time	-----	-----	1.0	μs	
Start-up Time	-----	-----	0.6	s	
Rise Time	-----	-----	50.0	ns	Load=15pF, 0.2V <sub>IO</sub> to 0.8V <sub>IO</sub>
Fall Time	-----	-----	50.0	ns	Load=15pF, 0.8V <sub>IO</sub> to 0.2V <sub>IO</sub>

## PART IDENTIFICATION:

ASH7K-32.768kHz-T

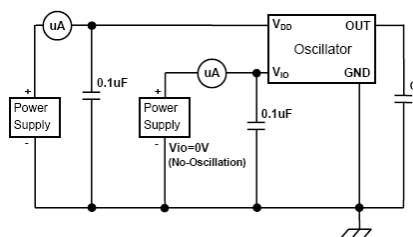
## RECOMMENDED TEST CIRCUIT

Waveform measurement



Note: CL include probe and wiring capacitance

Current consumption measurement



Note: CL include wiring capacitance  
Please measure the probe without connecting

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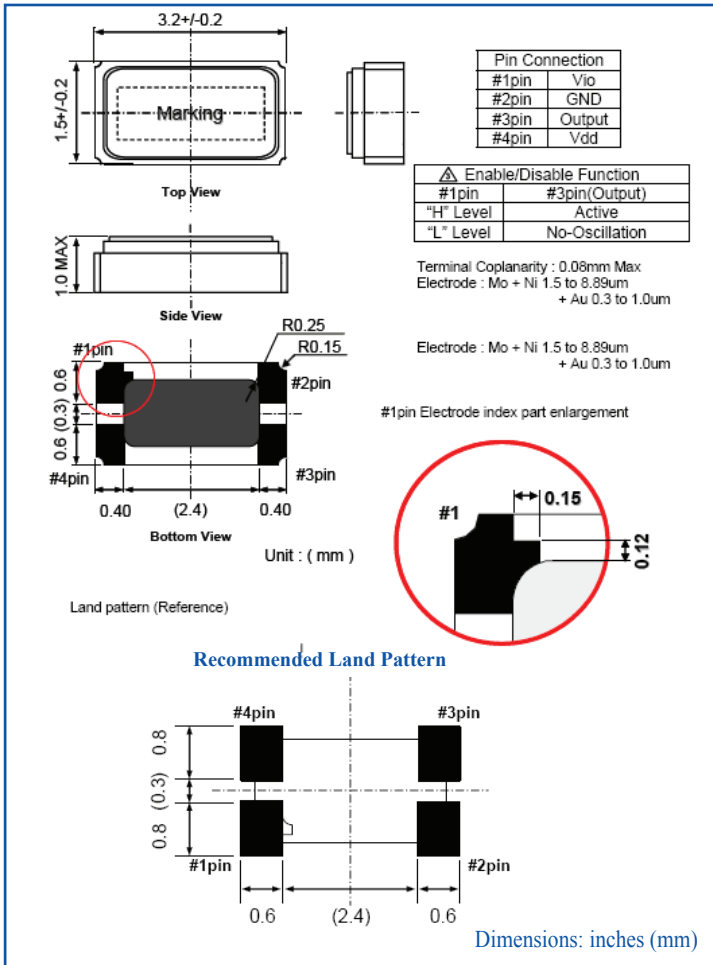


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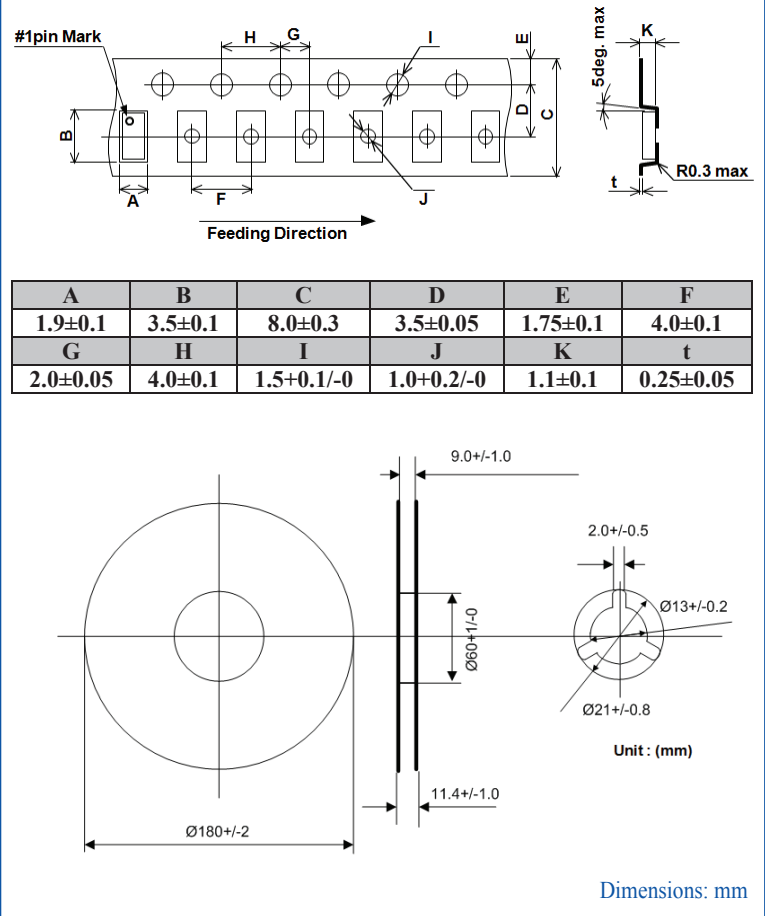


## OUTLINE DIMENSIONS

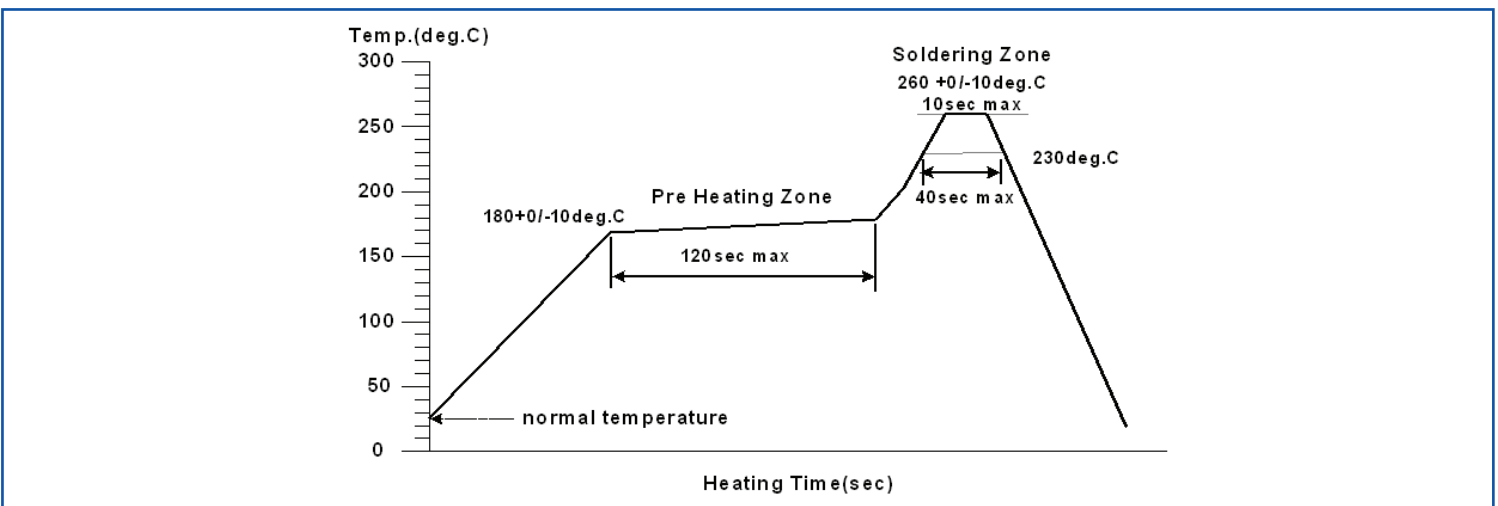


## TAPE & REEL

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



## REFLOW PROFILE



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