

# 32.768kHz CERAMIC SMD LVC MOS CRYSTAL OSCILLATOR

ASAK



2.0 x 1.6 x 0.7mm

ASAK



ESD Sensitive



RoHS/RoHS II Compliant

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

## FEATURES:

- 32.768kHz in 2.0 x 1.6 x 0.7mm package
- Seam sealed package assures high reliability performance
- Low current consumption 240  $\mu$ A max.
- Suitable for RoHS compliant reflow

## APPLICATIONS:

- Laptop
- Digital camera
- Wireless LAN
- Bluetooth and mobile communication
- LCD
- PDA and MP3 player
- Electricity, gas and water metering

## STANDARD SPECIFICATIONS:

Parameters	Minimum	Typical	Maximum	Units	Notes
Frequency Range	32.768			kHz	
Operating Temperature	-10		+60	$^{\circ}$ C	See options
Storage Temperature	-55		+125	$^{\circ}$ C	
Overall Frequency Stability*	-100		+100	ppm	See options
Supply Voltage (Vdd)	2.97	3.3	3.63	V	Standard
	2.375	2.5	2.625		Option 1
	1.71	1.8	1.89		Option 2
Supply Current ( $I_{dd}$ )		120	240	$\mu$ A	
Output Load			15	pF	LVC MOS
Output Voltage	$V_{OH}$	0.9*Vdd		V	
	$V_{OL}$		0.1*Vdd		
Tri-state Function	"1" ( $V_{IH} \geq 0.7 * V_{dd}$ ) : Oscillation "0" ( $V_{IL} \leq 0.3 * V_{dd}$ ) : Hi Z				
Aging	-3		+3	ppm	@+25 $^{\circ}$ C First year
Symmetry @1/2Vdd	40	50	60	%	Standard
	45	50	55		Option S
Start-up Time			5	ms	
Rise/Fall Time ( $T_r/T_f$ )			60	ns	
Disable Current			10	$\mu$ A	

## OPTIONS AND PART IDENTIFICATION: (Left blank if standard)

ASAK  - 32.768kHz -    -

Supply Voltage
Blank: 3.3V $\pm$ 10%
1: 2.5 V $\pm$ 5%
2: 1.8 V $\pm$ 5%

Operating Temp.*
Blank: -10 $^{\circ}$ C ~ +60 $^{\circ}$ C
E: -20 $^{\circ}$ C ~ +70 $^{\circ}$ C
F: -30 $^{\circ}$ C ~ +70 $^{\circ}$ C
N: -30 $^{\circ}$ C ~ +85 $^{\circ}$ C
L: -40 $^{\circ}$ C ~ +85 $^{\circ}$ C

Overall Freq. Stability
Blank: $\pm$ 100ppm
J: $\pm$ 20ppm (**)
R: $\pm$ 25ppm
K: $\pm$ 30 ppm
C: $\pm$ 50 ppm

Symmetry
Blank: 40/60%
S: 45/55%

Packaging
Blank: Bulk
T: Tape & Reel
T3: 3k/reel

\*Contact ABRACON for extended temperature range

\*\* For standard temp. range -10 $^{\circ}$  C to + 60 $^{\circ}$  C only



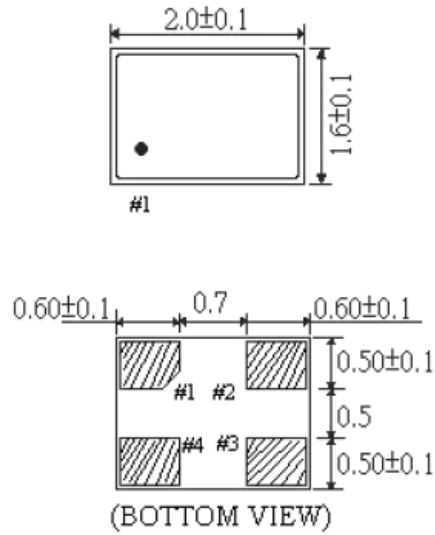
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2.0 x 1.6 x 0.7mm

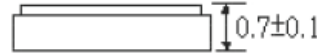
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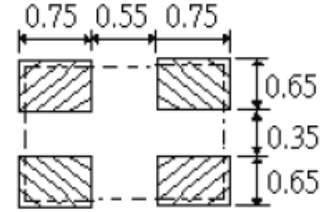
## OUTLINE DIMENSIONS:



Dimensions: mm



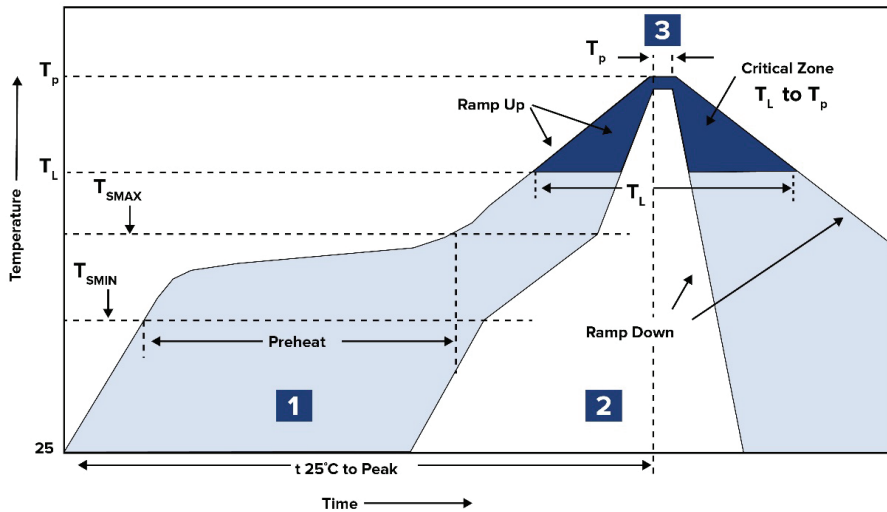
## Recommended Land Pattern



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

PIN #	Function
1	Enable/Disable
2	GND
3	Output
4	Vdd

## REFLOW PROFILE:



Zone	Description	Temperature	Time
1	Preheat	$T_{SMIN} \sim T_{SMAX}$ 170°C ~ 190°C	60 ~ 120 sec.
2	Reflow	$T_L$ 220°C±10°C	30 sec. MAX
3	Peak heat	$T_P$ 260°C	10 sec. MAX



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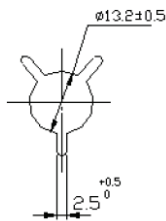
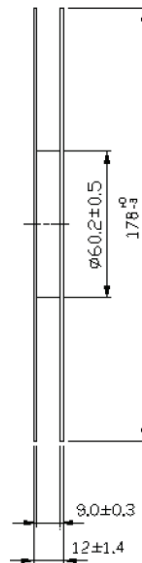
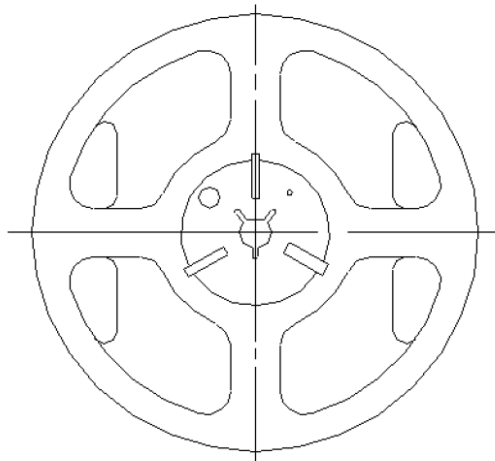
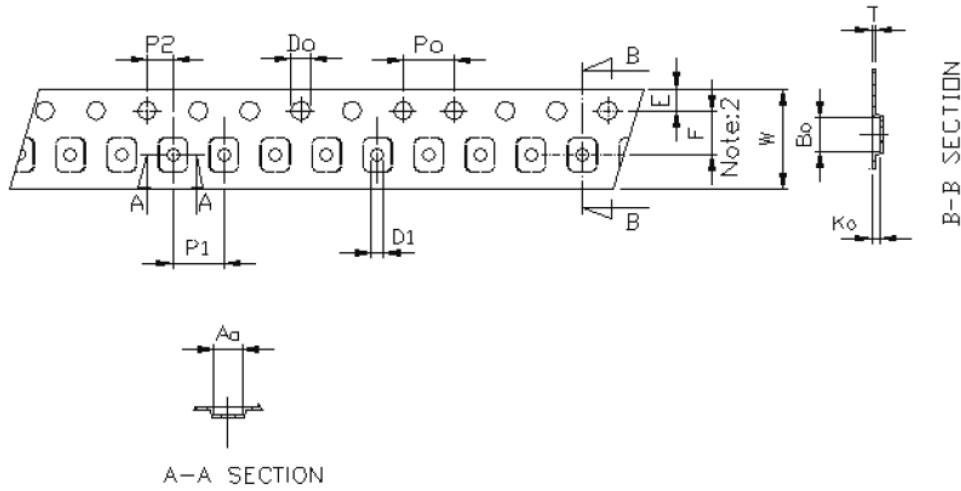
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## TAPE & REEL:

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

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



Symbol	Dimensions (mm)	Symbol	Dimensions (mm)
A0	1.85±0.10	D0	1.50±0.05
B0	2.25±0.10	D1	1.05±0.05
K0	0.95±0.10	E	1.75±0.10
P0	4.0±0.10	F	3.50±0.05
P1	4.0±0.10	W	8.0±0.20
P2	2.0±0.05	T	0.25±0.05

Dimensions: mm

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