



2.5 x 2.0mm Ceramic SMD

### Product Features

- AT Cut 32.768 kHz XO
- CMOS compatible logic levels
- Ultra low active current ( $< 10\mu\text{A}$ )
- Very tight temperature stability
- Designed for standard reflow and washing techniques
- Pb-free and RoHS/Green compliant

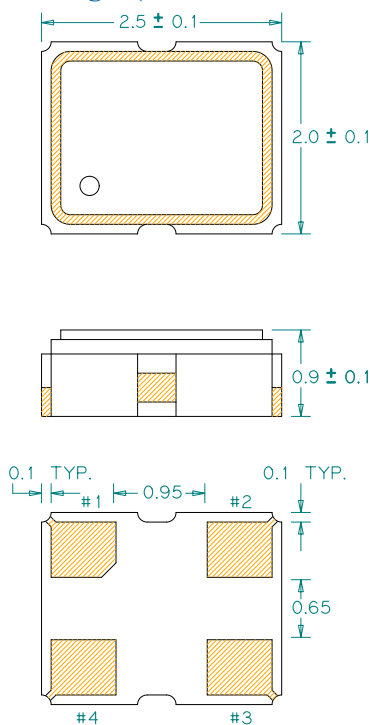
### Product Description

The KX251 Series real time clock oscillator achieves superb stability over a broad range of operating conditions. It utilizes Pericom proprietary technology to achieve ultra low current less than  $10\mu\text{A}$ . The output clock signal is compatible with LVCMOS/LVTTL logic levels. The device, available on tape and reel, is contained in a 2.5 x 2.0mm surface-mount ceramic package.

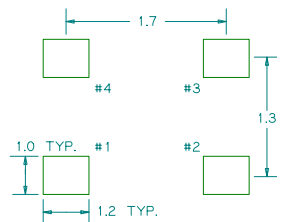
### Applications

- Real-Time Clock Oscillator where low current and tight stability are needed

### Package: (Scale: none; Dimensions are in mm)



### Recommended Land Pattern:



### Pin Functions:

Pin	Function
1	OE Function
2	Ground
3	Clock Output
4	V <sub>DD</sub>

### Part Ordering Information:

**KX 251** **V I S** **032.768000**

<p><b>Voltage:</b> 1 = +3.3V 2 = +2.5V 3 = +1.8V B = +3.0V</p>	<p><b>Stability and Temp Range:</b></p> <table border="1"> <thead> <tr> <th>Stability</th> <th>Temp Range</th> </tr> </thead> <tbody> <tr><td>A = +/-20 ppm</td><td>-20/+70°C</td></tr> <tr><td>B = +/-25 ppm</td><td>-20/+70°C</td></tr> <tr><td>C = +/-50 ppm</td><td>-20/+70°C</td></tr> <tr><td>D = +/-25 ppm</td><td>-40/+85°C</td></tr> <tr><td>E = +/-50 ppm</td><td>-40/+85°C</td></tr> <tr><td>F = +/-20 ppm</td><td>0/+70°C</td></tr> <tr><td>G = +/-25 ppm</td><td>0/+70°C</td></tr> <tr><td>H = +/-25 ppm</td><td>0/+85°C</td></tr> <tr><td>I = +/-25 ppm</td><td>-20/+85°C</td></tr> <tr><td>Z = Reference Design</td><td></td></tr> </tbody> </table>	Stability	Temp Range	A = +/-20 ppm	-20/+70°C	B = +/-25 ppm	-20/+70°C	C = +/-50 ppm	-20/+70°C	D = +/-25 ppm	-40/+85°C	E = +/-50 ppm	-40/+85°C	F = +/-20 ppm	0/+70°C	G = +/-25 ppm	0/+70°C	H = +/-25 ppm	0/+85°C	I = +/-25 ppm	-20/+85°C	Z = Reference Design		<p><b>Internal #:</b> 0 ~ 9</p>	<p><b>Frequency:</b> FFFFFFFF kHz, "3 digits/decimal/6 digits" format</p>
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Following the above format, Saronix-eCera part numbers will be assigned upon confirmation of exact customer requirements.

### Electrical Performance

Parameter	Min.	Typ.	Max.	Units	Notes
Output Frequency		32.768		kHz	
Supply Voltage	+1.71	+1.8	+1.89	V	See part ordering options
	+2.25	+2.5	+2.75	V	
	+2.85	+3.0	+3.15	V	
	+3.0	+3.3	+3.6	V	
Supply Current, Output Enabled		10	15	μA	At 15pF load
Supply Current, Standby Mode			0.5	μA	Output Hi-Z
Frequency Stability			±50	ppm	See part ordering options, and note 1
Operating Temperature Range	-40		+85	C	See part ordering options
Output Logic 0, V <sub>OL</sub>			0.1 V <sub>DD</sub>	V	
Output Logic 1, V <sub>OH</sub>	0.9 V <sub>DD</sub>			V	
Output Load			15	pF	See Note 2
Duty Cycle	45		55	%	measured 50% of V <sub>DD</sub>
Rise and Fall Time		35	50	ns	measured 20/80% of V <sub>DD</sub>
Start-up time			10	ms	

**Notes:**

- Stability includes all combinations of operating temperature, load changes, rated input (supply) voltage changes, initial calibration tolerance (25°C), aging (1 year at 25°C average effective ambient temperature), shock and vibration.
- For specifications other than those listed, please contact sales.

### Output Enable / Disable Function

Parameter	Min.	Typ.	Max.	Units	Notes
Input Voltage (pin 1), Output Enable	0.7 V <sub>DD</sub>			V	or open
Input Voltage (pin 1), Output Disable (low power standby)			0.3 V <sub>DD</sub>	V	Output is Hi-Z
Internal Pullup Resistance		100		kΩ	
Output Disable Delay			100	ns	
Output Enable Delay			10	ms	

### Absolute Maximum Ratings

Parameter	Min.	Typ.	Max.	Units	Notes
Storage Temperature	-55		+125	°C	

For the latest product information visit: <http://www.pericom.com/products/timing/oscillators/KX251/>

For test circuit go to: [http://www.pericom.com/pdf/sre/tc\\_hcmos2.pdf](http://www.pericom.com/pdf/sre/tc_hcmos2.pdf)

For soldering reflow profile and reliability test ratings go to: <http://www.pericom.com/pdf/sre/reflow.pdf>

For tape and reel information go to: [http://www.pericom.com/pdf/sre/tr\\_2520\\_xo.pdf](http://www.pericom.com/pdf/sre/tr_2520_xo.pdf)