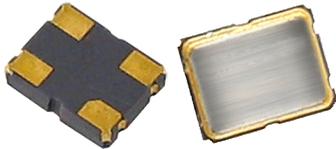


**1.8V/2.5V/3.3V CMOS XO**

**HX251**



2.5 x 2.0mm Ceramic SMD

**Product Features**

- Support high temperature up to 125°C
- Low phase jitter - < 1ps RMS max.
- Wide frequency range - 1~162MHz
- AEC-Q200 (Grade 1) compliant
- Pb-free & RoHS compliant

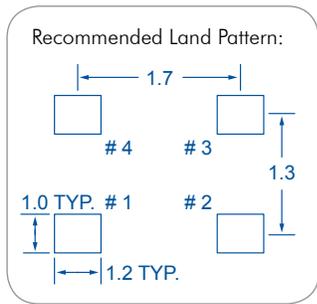
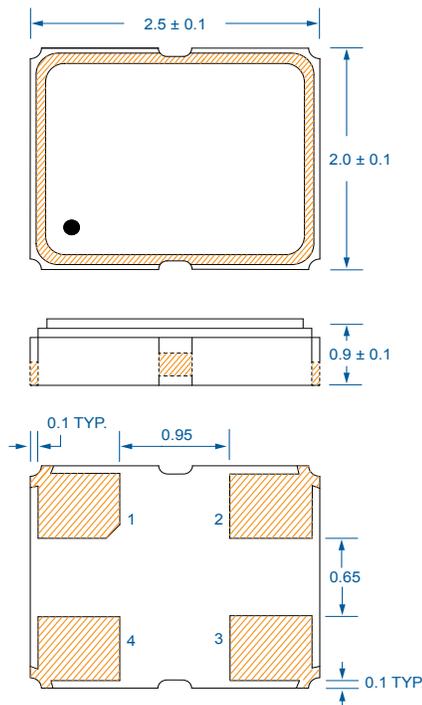
**Product Description**

The HX251 XO series is a high performance CMOS crystal oscillator family that supports high temperature with very low jitter performance. It supports various options including wider frequency range, 1.8V/2.5V/3.3V voltage, and various stabilities over wide temperature range. It is designed to meet the clock source specifications for communication systems, Industrial applications and other high performance equipment.

**Applications**

- Networking and communication systems
- Industrial and outdoor systems
- Storage and server systems
- Automotive devices
- Fanless systems in harsh environment
- Profession video equipments
- Test and measurement equipments

**Package:** (Scale: none; dimensions are in mm)



**Pin Functions:**

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

\*Extended high frequency power decoupling is recommended (see test circuit for minimum recommendation). To ensure optimal performance, do not route RF traces beneath the package.

**Part Ordering Information:**

**HX 251** V I FFFF.FFFFFF

Voltage:  
1 = +3.3V  
2 = +2.5V  
3 = +1.8V

Stability and Temp Range:

Stability	Temp Range
A = +/-25 ppm	-40/+90°C
B = +/-30 ppm	-40/+100°C
C = +/-30 ppm	-40/+105°C
D = +/-50 ppm	-40/+90°C
E = +/-50 ppm	-40/+100°C
F = +/-50 ppm	-40/+105°C
G = +/-70 ppm	-40/+125°C
H = +/-100 ppm	-40/+125°C

Frequency:  
FFFF.FFFFFF  
MHz, "4 digits/decimal/6 digits" format

## Electrical Performance

Parameter	Min.	Typ.	Max.	Units	Notes
Output Frequency	1		162	MHz	For 2.5V / 3.3V
	1		135	MHz	For 1.8V
Supply Voltage	3.135	3.3	3.465	V	See ordering options
	2.375	2.5	2.625		
	1.71	1.8	1.89		
Supply Current, Output Enabled			20	mA	1.75MHz to 60MHz
			40		> 60MHz
Supply Current, Output Disabled only			100	uA	
Frequency Stability			±50	ppm	See ordering options
Operating Temperature Range	-40		+125	°C	See 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	
Duty Cycle	45		55	%	Measured 50% V <sub>DD</sub>
Rise and Fall Time, Measured 20/80% of waveform			8	ns	1.75MHz to 60MHz
			4		> 60MHz
Jitter, Accumulated, RMS (1-σ)			4	ps	20,000 adjacent periods
Jitter, Phase, RMS	< 40MHz		1	ps	12kHz to 5 MHz frequency band
	≥40MHz		1		12kHz to 20 MHz frequency band
Jitter, pk-pk			40	ps	100,000 random periods

### 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
Output Disable Delay			200	ns	
Output Enable Delay			10	ms	
Start up Time			10	ms	

## Absolute Maximum Ratings

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

For the latest product information visit: <https://www.diodes.com/part/HX251>

For test circuit go to: [https://www.diodes.com/assets/sre/tc\\_cmos2.pdf](https://www.diodes.com/assets/sre/tc_cmos2.pdf)

For soldering reflow profile and reliability test ratings go to: <https://www.diodes.com/assets/sre/reflow.pdf>

For tape and reel information go to: <https://www.diodes.com/assets/sre/tr-2520-xo.pdf>



A product Line of  
Diodes Incorporated



High Temperature Crystal Oscillator  
2.5 x 2.0mm

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