

Helping Customers Innovate, Improve & Grow



## Preliminary

### Features

4-Pin package  
Fast Warm-up  
TCXO Replacement for better short term stability

### Typical Applications

Base Stations  
Test Equipment  
Synthesizers  
Military Communication Equipment

**Frequency Range**  
**Standard Frequencies**

7 MHz – 40 MHz  
20 MHz (SC); 13 MHz (AT)

### Frequency stabilities<sup>1</sup> [AT Cut Crystal-Standard- 7 to 20 MHz]

Parameter	Min	Typ	Max	Units	Operating temperature range	Options <sup>5</sup>
vs. operating temperature range (Referenced to +25°C)	-100		+100	ppb	-20 ... +70°C	
	-250		+250	ppb	-20 ... +70°C	
	-250		+250	ppb	-40... +85°C	
Parameter	Min	Typ	Max	Units	Condition	
Initial tolerance	-0.5		+0.5	ppm	at time of shipment, nominal EFC	
vs. supply voltage change	-40		+40	ppb	$V_s \pm 5\%$ static	
vs. load change	-40		+40	ppb	Load $\pm 5\%$ static	
vs. aging / day	-20		+20	ppb	after 30 days of operation	
vs aging / year	-1		+1	ppm	after 30 days of operation	
Warm-up Time			2	minutes	to $\pm 200$ ppb of final frequency (1 hour reading) @ +25°C	

## Frequency stabilities<sup>1</sup> [SC Cut Crystal-Option- 20 to 40 MHz]

Parameter	Min	Typ	Max	Units	Operating temperature range
vs. operating temperature range (Referenced to +25°C)	-25		+25	ppb	-20 ... +70°C
	-50		+50	ppb	-40... +85°C
Parameter	Min	Typ	Max	Units	Condition
Initial tolerance	-0.2		+0.2	ppm	at time of shipment, nominal EFC
vs. supply voltage change	-20		+20	ppb	$V_s \pm 5\%$ static
vs. load change	-20		+20	ppb	Load $\pm 5\%$ static
vs. aging / day	-5.0		+5.0	ppb	after 30 days of operation
vs aging / year	-100		+100	ppb	$\leq 60\text{MHz}$ ; after 30 days of operation
Warm-up Time			2	minutes	to $\pm 100\text{ppb}$ of final frequency (1 hour reading) @ +25°C

## Supply Voltage (Vs)

Parameter	Min	Typ	Max	Units	Condition
Supply voltage [Standard]	3.135	3.3	3.465	VDC	
Power consumption			2.0	Watts	during warm-up
			0.65	Watts	steady state @ +25°C

## RF Output

Parameter	Min	Typ	Max	Units	Condition
Signal [Standard]	HCMOS				with $V_s=3.3\text{V}$ and 15pF load with $V_s=3.3\text{V}$ and 15pF load @ $(V_{oh}-V_{ol})/2$
Load		15		pF	
Signal Level (Vol)			0.4	VDC	
Signal Level (Voh)	2.4			VDC	
Duty cycle	45		55	%	

## Frequency Tuning (EFC)

Parameter	Min	Typ	Max	Units	Condition	
Tuning Range	Fixed OCXO; No adjust				Options <sup>5</sup>	
Tuning Range	$\pm 5.0$		$\pm 12$	ppm		with AT cut Crystal
	$\pm 1.0$		$\pm 3$	ppm		with SC cut Crystal
Linearity	10%					
Tuning Slope	Positive					
Control Voltage Range	0.0	1.4	2.8	VDC	with $V_s=3.3\text{V}$	

## Additional Parameters

Parameter	Min	Typ	Max	Units	Condition		
Phase Noise <sup>3</sup>			-	dBc/Hz	1	Hz	@ 10 MHz
			-	dBc/Hz	10	Hz	
			-	dBc/Hz	100	Hz	
			-	dBc/Hz	1	kHz	
			-	dBc/Hz	10	kHz	
Weight			6.0	g			
Processing & Packing	Handling & Processing Note						

## Absolute Maximum Ratings

Parameter	Min	Typ	Max	Units	Condition
Supply voltage (Vs)			5.5	V	with Vs=3.3VDC
Output Load			50	pF	
Operable temperature range	-55		+85	°C	
Storage temperature range	-55		+125	°C	

### Notes:

- 1 Contact factory for improved stabilities or additional product options. Not all options and codes are available at all frequencies.
- 2 Unless otherwise stated all values are valid after warm-up time and refer to typical conditions for supply voltage, frequency control voltage, load, temperature (25°C)
- 3 Phase noise degrades with increasing output frequency.
- 4 Subject to technical modification.
- 5 Contact factory for availability.

## Enclosure

OX-500		
Height "H" 9.5	Pin Length "L" 5.85min.	
Pin Connections		
<ul style="list-style-type: none"> <li>1 Electronic Frequency Control Input (EFC)</li> <li>7 Ground (Case)</li> <li>8 RF Output</li> <li>14 Supply Voltage Input</li> </ul>		

### How to order this product:

Use this worksheet to forward the following information to your factory representative :										
Model	Height	-	Supply Voltage Code	RF Output Code	Temperatur Range	-	Stability	Frequency Control	-	Frequency
OX-40X	0	-	B	A	E	-	108	0	-	10MHz

Model Code:

500: THT Version

Height:

0: 9,5 mm

Supply Voltage Code:

D: 5 V

E: 3,3 V

RF Output Code:

A: HCMOS

Temperature Range:

E: -40...+85°C

J: -20...+70°C

P: 0...+50°C

Frequency Control:

0: No Tuning

1: ±5.0...±12 ppm

2: ±1.0...±3.0 ppm

Stability Code:

258: ±25ppb

508: ±50ppb

107: ±100ppb

257: ±250ppb