

# Ultra Low Noise Crystal Oscillator

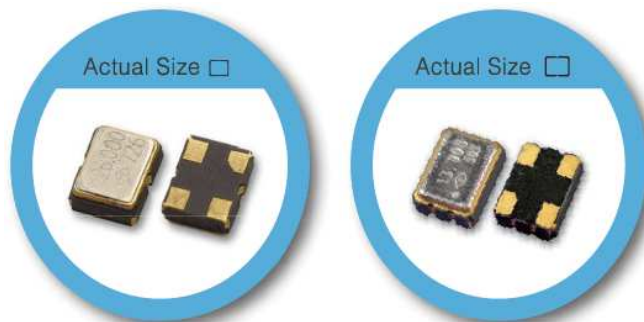
## OX-U/OY-U Series - 3.2 x 2.5 / 2.5 x 2.0 mm SMD Crystal Oscillator

### FEATURE

- Ultra Low Phase Noise designed specifically for Hi-Resolution Audio (HiFi, HD Audio)
- F=45.1584MHz (@1.8V, 25°C): typical low close-in phase noise of -100dBc/Hz@10Hz-offset, -127dBc/Hz@100Hz-offset, and a noise floor of -157dBc/Hz
- F=49.152MHz (@1.8V, 25°C): typical low close-in phase noise of -100dBc/Hz@10Hz-offset, -128dBc/Hz@100Hz-offset, and a noise floor of -157dBc/Hz
- Wide operating temperature range: -40 to +105°C

### TYPICAL APPLICATION

- Automotive multimedia, Automotive radar
- DACs and ADCs for Hi-Fi, Digital Audio Broadcasting (DAB), Professional audio equipment
- Smartphone, Tablet, Wireless module



ROHS Compliant

### DIMENSION (mm)

### SOLDER PAD LAYOUT (mm)

<p><b>[ TOP VIEW ]</b></p> <p><b>[ SIDE VIEW ]</b></p> <p><b>[ BOTTOM VIEW ]</b></p> <table border="1"> <thead> <tr> <th>Pin#</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Tri-state</td> </tr> <tr> <td>2</td> <td>GND</td> </tr> <tr> <td>3</td> <td>Output</td> </tr> <tr> <td>4</td> <td>VDD</td> </tr> </tbody> </table>	Pin#	Function	1	Tri-state	2	GND	3	Output	4	VDD	<p>To ensure optimal oscillator performance, place a by-pass capacitor of 0.1µF as close to the part as possible between Vdd and GND pads.</p>
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### ELECTRICAL SPECIFICATION

Parameter	3.3V		2.5V		1.8V		Unit
	Min.	Max.	Min.	Max.	Min.	Max.	
Supply Voltage Variation (VDD) ±10%	2.97	3.63	2.25	2.75	1.62	1.98	V
Frequency Range	20	60	20	60	20	60	MHz
Supply Current 20 ≤ Fo ≤ 60MHz	--	8	--	7	--	5	mA
Duty Cycle	45	55	45	55	45	55	%
Output Level (CMOS)	Output High (Logic "1")		2.25		1.62		V
	Output Low (Logic "0")		0.33		0.25		
Transition Time: Rise/Fall Time+	6		6		6		nSec
Start Time	2		2		2		mSec
Tri-State(Input to Pin 1)	Enable (High voltage or floating)		1.75		1.26		V
	Disable (Low voltage or GND)		0.99		0.54		
RMS Phase Jitter (integrated 12kHz ~ 20MHz)	0.5		0.5		0.5		pSec
Aging (@25°C, 1st year)	±3		±3		±3		ppm
Storage Temp. Range	-55	125	-55	125	-55	125	°C
Phase Noise (Typ.)	F=20MHz		F=40MHz		F=60MHz		dBc/Hz
1.8V, 25°C	1 kHz offset		-147		-139		
	100 kHz offset		-156		-150		
2.5 to 3.3V, 25°C	1 kHz offset		-148		-142		
	100 kHz offset		-157		-156		

Standard frequencies are frequencies which the crystal has been designed and does not imply a stock position  
 +Transition times are measured between 10% and 90% of VDD, with an output load of 15pF

### FREQ. STABILITY vs. TEMP. RANGE

Temp. (°C)	ppm	ppm			
		±20	±25	±30	±50
-10~+60	○	○	○	○	○
-20~+70	△	○	○	○	○
-40~+85	×	○	○	○	○
-40~+105	×	×	△	○	○

\* O: Available △: Conditional X: Not available  
 \*Inclusive of calibration @ 25°C, operating temperature range, input voltage variation, load variation, aging (1st year), shock, and vibration

Note: not all combination of options are available. Other specifications may be available upon request.