

# OY Type Ultra Low Power 2.5 x 2.0mm SMD CMOS Output Crystal Oscillator

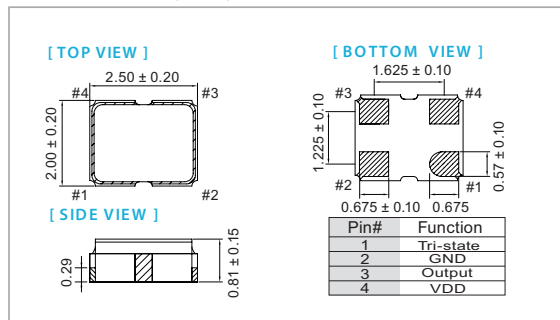
## FEATURE

- Ultra Low Power Supply Voltage: 0.9V, 1.2V, 1.5V Supply Options
- Singled-end Output: CMOS
- Frequency Support from 1MHz to 50MHz
- Low Noise Typical: 0.3ps at 12kHz to 20MHz Frequency Offsets
- Temperature Range: -40 to 85°C Operation
- Pb-free/RoHS Compliant

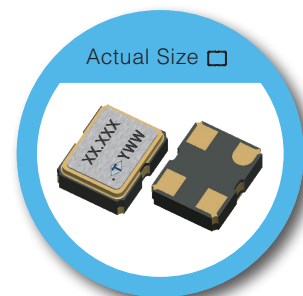
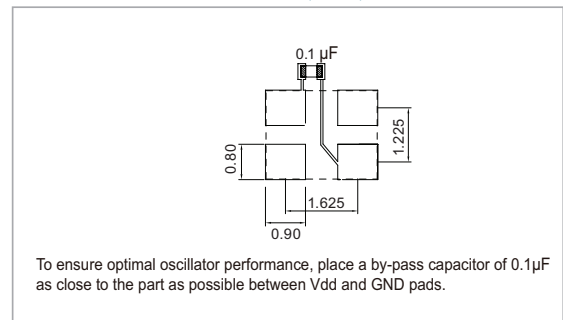
## TYPICAL APPLICATION

- IoT
- Game Console
- Smartphone
- Wearable Device
- Digital Camera
- Digital Consumer Electronics

## DIMENSION (mm)



## SOLDER PAD LAYOUT (mm)



**RoHS Compliant**

## ELECTRICAL SPECIFICATION

Parameter	0.9V		1.2V		1.5V		Unit		
	Min.	Max.	Min.	Max.	Min.	Max.			
<b>Supply Voltage Variation (V<sub>DD</sub>)</b>	V <sub>DD</sub> -5%	V <sub>DD</sub> +5%	V <sub>DD</sub> -5%	V <sub>DD</sub> +5%	V <sub>DD</sub> -5%	V <sub>DD</sub> +5%	V		
<b>Frequency Range</b>	1	50	1	50	1	50	MHz		
<b>Supply Current</b>	<b>At 15pF Load</b>		-	1.5	-	2	3	mA	
	<b>No Load Condition, 1MHz ≤ Fo &lt; 10MHz</b>		-	0.9	-	1	1.2	mA	
	<b>No Load Condition, 10MHz ≤ Fo &lt; 20MHz</b>		-	1	-	1.2	1.2	mA	
	<b>No Load Condition, 20MHz ≤ Fo &lt; 50MHz</b>		-	1.2	-	1.5	1.5	mA	
<b>Duty Cycle</b>	45	55	45	55	45	55	%		
<b>Output Level</b>	<b>Output High</b>	90% V <sub>DD</sub>	-	90% V <sub>DD</sub>	-	90% V <sub>DD</sub>	-	V	
	<b>Output Low</b>	-	10% V <sub>DD</sub>	-	10% V <sub>DD</sub>	-	10% V <sub>DD</sub>	V	
<b>Transition Time: Rise / Fall Time*</b>	<b>1MHz ≤ Fo &lt; 10MHz</b>	-	4	-	3	-	3	nSec	
	<b>10MHz ≤ Fo &lt; 20MHz</b>	-	3	-	3	-	3	nSec	
	<b>20MHz ≤ Fo &lt; 50MHz</b>	-	2	-	2	-	2	nSec	
<b>Startup Time</b>	-	4	-	4	-	4	mSec		
<b>Tri-State (Input to Pin 1)</b>	<b>Enable (High Voltage or Floating)</b>	0.7xV <sub>DD</sub>	-	0.7xV <sub>DD</sub>	-	0.7xV <sub>DD</sub>	-	V	
	<b>Disable (Low Voltage or GND)</b>	-	0.3xV <sub>DD</sub>	-	0.3xV <sub>DD</sub>	-	0.3xV <sub>DD</sub>	V	
<b>Output Loading</b>	15		15		15		pF		
<b>Stand by Current</b>	-	100	-	100	-	100	µA		
<b>Aging (@ 25°C, 1<sup>st</sup> Year)</b>	-	±3	-	±3	-	±3	ppm		
<b>Storage Temp. Range</b>	-55	+125	-55	+125	-55	+125	°C		
<b>Phase Noise</b>	<b>Typ.</b>	<b>Max.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Typ.</b>	<b>Max.</b>	dBc/Hz		
	<b>At V<sub>DD</sub>=1.2V, F<sub>out</sub>=24MHz</b>	<b>1kHz offset</b>	-130	-	-133	-		-135	-
	<b>10kHz offset</b>	-140	-	-143	-	-143		-	
	<b>100kHz offset</b>	-148	-	-150	-	-150		-	
	<b>1MHz offset</b>	-152	-	-155	-	-155		-	
<b>Period Jitter (Pk-Pk)</b>	-	40	-	40	-	40	pSec		
<b>RMS Phase Jitter (Integrated 12kHz to 20MHz)</b>	-	1	-	1	-	1	pSec		

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 V<sub>DD</sub> within output load of 15pF

## FREQ. STABILITY vs. TEMP. RANGE

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

\* O: Available △:Conditional X: Not available

\*Inclusive of calibration @ 25°C, operating temperature range, input voltage variation, load variation, aging (1<sup>st</sup> year), shock, and vibration load variation

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