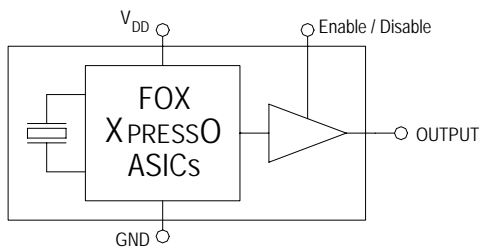


## Features

- XTREMELY Low Jitter
- Low Cost
- XPRESS Delivery
- Frequency Resolution to six decimal places
- Stabilities to  $\pm 20$  PPM
- -20 to +70°C or -40 to +85°C operating temperatures
- Tri-State Enable / Disable Feature
- Industry Standard Package, Footprint & Pin-Out
- Fully RoHS compliant
- Gold over Nickel Termination Finish
- Serial ID with Comprehensive Traceability



For more information -- Click on the drawing

## Description

The Fox XPRESSO Crystal Oscillator is a breakthrough in configurable Frequency Control Solutions. XPRESSO utilizes a family of proprietary ASICs, designed and developed by Fox, with a key focus on noise reduction technologies.

The 3<sup>rd</sup> order Delta Sigma Modulator reduces noise to the levels that are comparable to traditional Bulk Quartz and SAW oscillators. The ASICs family has ability to select the output type, input voltages, and temperature performance features.

With the XPRESS lead-time, low cost, low noise, wide frequency range, excellent ambient performance, XpressO is an excellent choice over the conventional technologies.

Finished XPRESSO parts are 100% final tested.



## Applications

- ANY application requiring an oscillator
- SONET
- Ethernet
- Storage Area Network
- Broadband Access
- Microprocessors / DSP / FPGA
- Industrial Controllers
- Test and Measurement Equipment
- Fiber Channel

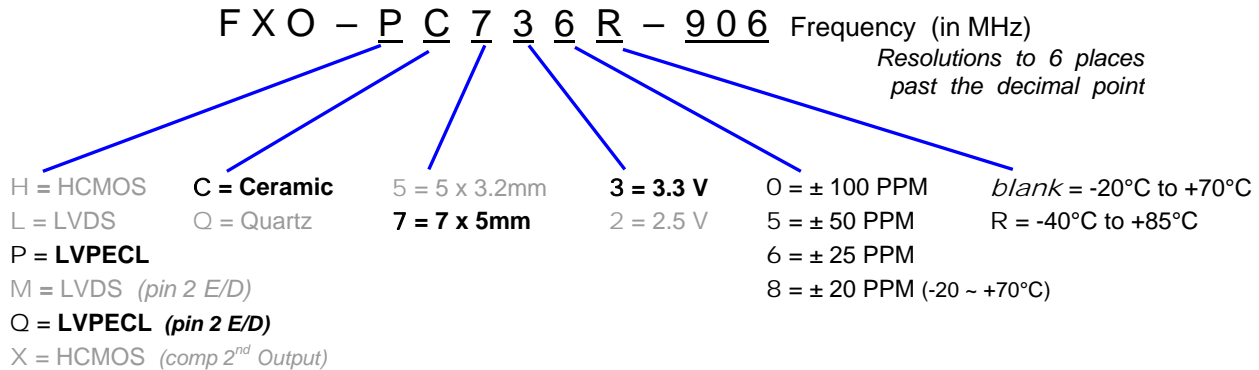
## Contents

	page
Model Selection & Part Number Guide	2
Electrical Characteristic	3
Absolute Maximums	3
Output Wave Characteristics	4
Phase Noise	5
Jitter	5
Pin Assignment	6
Recommended Circuit	6
Reflow	6
Mechanical Drawing and Pad Layout	7
Tape and Reel Specification	8
Label	8
Traceability – LOT Number & Serial Identification	9
RoHS Material Declaration	10
SGS Report	11 & 12
Mechanical Test	13
Burn-In Test	13
MTTF / FITS calculations	14
Other XPRESSO Links	15
Fox Contact Information	15

**Model Selection Guide & Fox Part Number**

**STEP #1:** Customer selects the Model Description and provides to Fox Customer Service

Model Description



**STEP #2:** The Fox Customer Service team provides a customer specific Part Number for use on their Bill Of Materials (BOM).

Fox Part Number (The assigned Fox Part Number must be on the BOM – not the above Model Description)  
(This will ensure receipt of the proper part)

**The 1<sup>st</sup> Field**

- Product Code #
- 793 = FVXO-HC5
- 792 = FVXO-HC7
- 797 = FVXO-LC5
- 794 = FVXO-LC7
- 795 = FVXO-PC5
- 796 = FVXO-PC7

**7 7 4 - 9 0 6 - 2**

**The 2<sup>nd</sup> Field**  
The Customer's Frequency

**The 3<sup>rd</sup> Field**

Fox Internally Generated Number  
(If any specification changes, the last digits change)  
(The same specs for a different customer also changes the last digits)

**This example, FXO-PC736R-906 = LVPECL Output, Ceramic, 7 x 5mm Package, 3.3V, ±25 PPM Stability, -40 to +85°C Temperature Range, at 906 MHz**



<b>Electrical Characteristics</b>			
<b>Parameters</b>	<b>Symbol</b>	<b>Condition</b>	<b>Maximum Value</b> (unless otherwise noted)
Frequency Range	F <sub>O</sub>		0.750 MHz to 1.35 GHz
Frequency Stability <sup>1</sup>			100, 50, 25, & 20 ppm
Temperature Range	T <sub>O</sub> T <sub>STG</sub>	Standard operating <i>Optional operating</i> Storage	-20°C to +70°C -40°C to +85°C -55°C to +125°C
Supply Voltage	V <sub>DD</sub>	Standard	3.3 V ± 5%
Input Current (@ Standard Load)	I <sub>DD</sub>	Standard Load	120 mA
Output Load	I	Standard	50 Ohms into V <sub>DD</sub> -2V <sub>DC</sub> . TYP.
Start-Up Time	T <sub>S</sub>		10 mS
Output Enable / Disable Time			100 nS
Moisture Sensitivity Level	MSL	JEDEC J-STD-20	1
Termination Finish			Au

Note 1 – Stability is inclusive of 25°C tolerance, operating temperature range, input voltage change, load change, aging, shock and vibration.

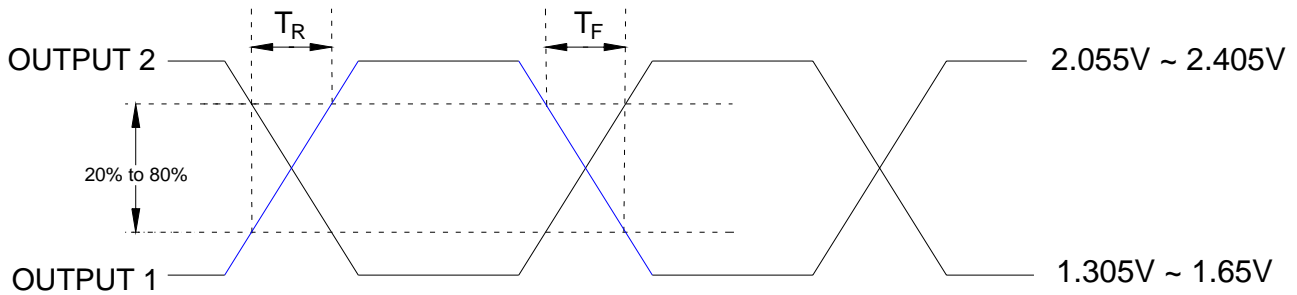
<b>Absolute Maximum Ratings</b> <i>(Useful life may be impaired. For user guidelines only, not tested)</i>			
<b>Parameters</b>	<b>Symbol</b>	<b>Condition</b>	<b>Maximum Value</b> (unless otherwise noted)
Input Voltage	V <sub>DD</sub>		-0.5V to +5.0V
Operating Temperature	T <sub>AMAX</sub>		-55°C to +105°C
Storage Temperature	T <sub>STG</sub>		-55°C to +125°C
Junction Temperature			150°C
ESD Sensitivity	HBM	Human Body Model	1 kV

**Output Wave Characteristics**

Parameters	Symbol	Condition	Maximum Value (unless otherwise noted)
Low Output Voltage	$V_{OL}$	0.75 MHz to 1.35 GHz	1.305V ~ 1.65V
High Output Voltage	$V_{OH}$	0.75 MHz to 1.35 GHz	2.055V ~ 2.405V
Typical Complimentary Difference	$V_{P-P}$	0.75 MHz to 1.35 GHz	0.750 $V_{P-P}$ Typ
Output Symmetry (See Drawing Below)		@ 50% $V_{P-P}$ Level	45% ~ 55%
Output Enable <sup>Note1</sup> (PIN # 1) Voltage	$V_{IH}$		> 70% $V_{DD}$
Output Disable <sup>Note1</sup> (PIN # 1) Voltage	$V_{IL}$		< 30% $V_{DD}$
Cycle Rise Time (See Drawing Below)	$T_R$	0.75 MHz to 1.35 GHz	400 pS (20%~80%)
Cycle Fall Time (See Drawing Below)	$T_F$	0.75 MHz to 1.35 GHz	400 pS (80%~20%)

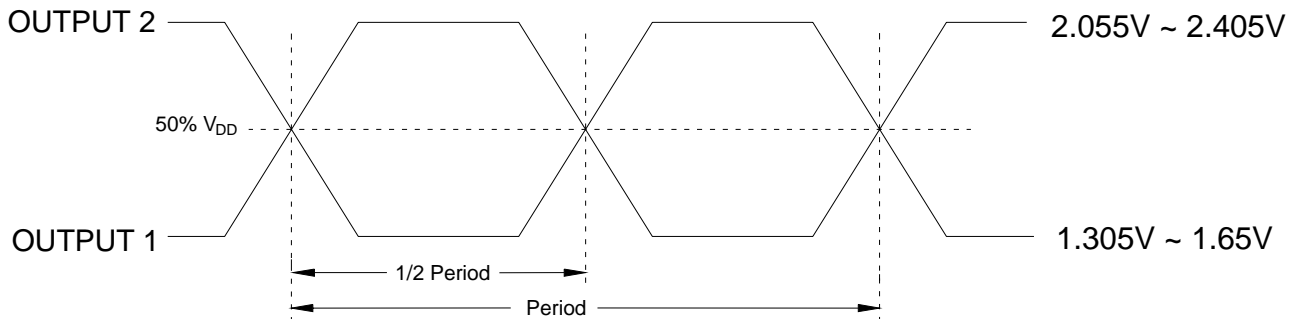
<sup>Note1</sup> An optional PIN # 2 as Enable / Disable is available – see Model Selection Guide (page 2)

**Rise Time / Fall Time Measurements**

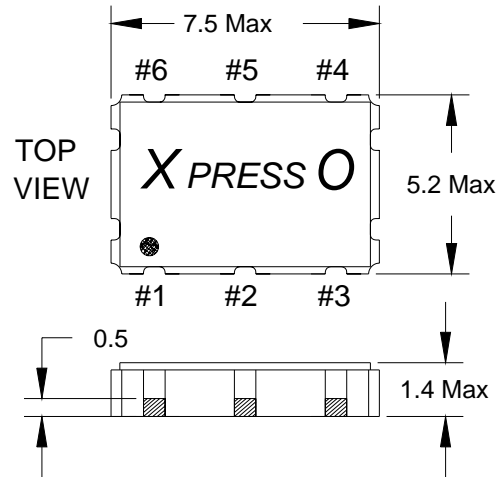


**Oscillator Symmetry**

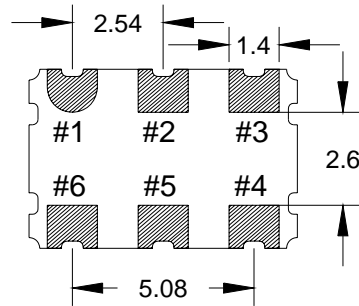
Ideally, Symmetry should be 50/50 for 1/2 period -- Other expressions are 45/55 or 55/45



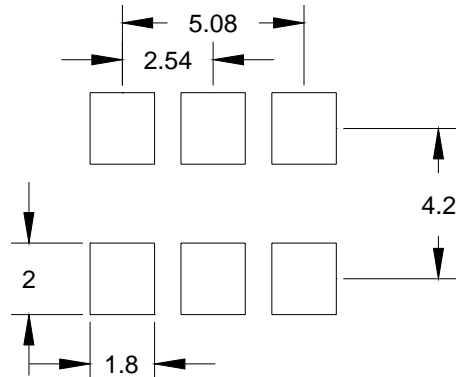
**Mechanical Dimensional Drawing & Pad Layout**



**Actual part marking is depicted.**  
See **Traceability** (pg. 9) for more information



**Recommended Solder Pad Layout**



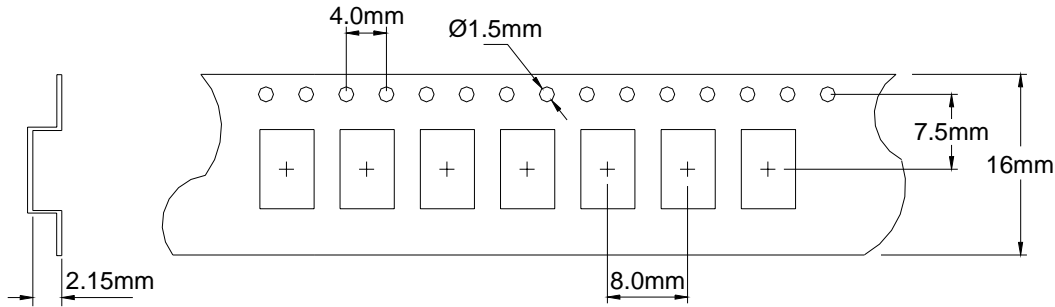
Note: XPRESSO LVPECL XOs are designed to fit on Industry standard, 6 pad, layouts.

**Pin Connections**

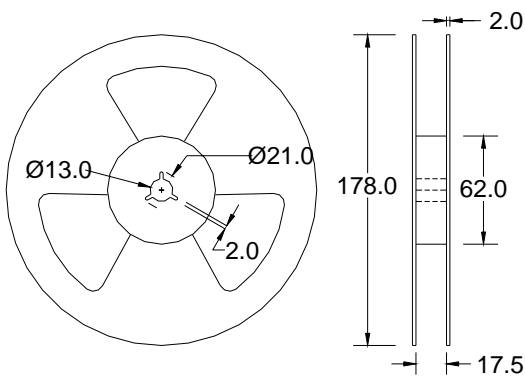
- |                |                           |
|----------------|---------------------------|
| <b>#1) E/D</b> | <b>#4) Output</b>         |
| <b>#2) NC</b>  | <b>#5) Output 2</b>       |
| <b>#3) GND</b> | <b>#6) V<sub>DD</sub></b> |

Drawing is for reference to critical specifications defined by size measurements. Certain non-critical visual attributes, such as side castellations, reference pin shape, etc. may vary

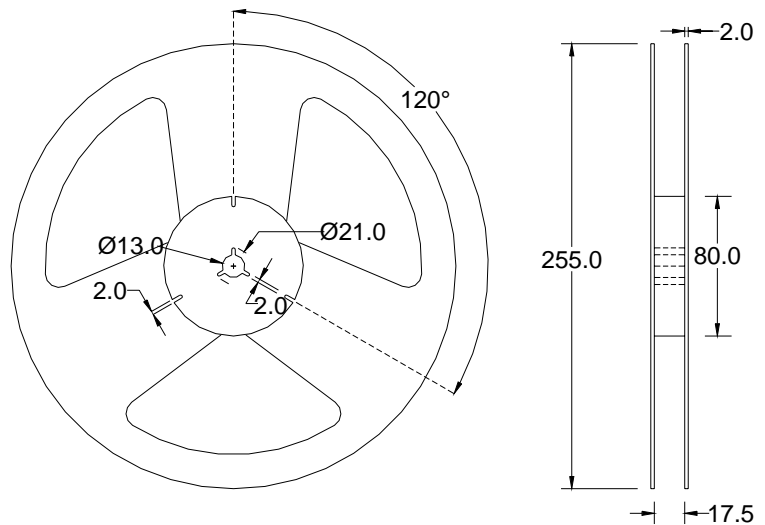
**Tape and Reel Dimensions**



**1k Reel Dimensions in mm**



**2k Reel Dimensions in mm**



**Labeling (Reels and smaller packaging are labeled with the below)**

- Fox Part Number: **774-906-2** →
- Quantity: **2000** pieces →
- Description: **FXO-PC736R-906** →
- Date Code: **0745** (YYWW 2007 45<sup>th</sup> wk) →
- LOT #: **24435** →  
*If traceability should become necessary*

**SKU 774-906-2**

QTY: 2000

DESC: FXO-PC736R-906

DATE CODE: 0745

LOT: 24435

**Pb-Free  
RoHS Compliant  
Category (e4)**

**FOX**  
Xpresso®

Covered by one or more of listed  
U.S. Patents: 6,664,860, 5,960,403  
5,960,405 5,952,890 6,188,290  
Foreign Patents:  
China ZL 98802217.6 Mexico 23277  
R.S.A. 98/0806, ROC 120851,  
Singapore 67081; 67082,  
EP 0958052 Hong Kong HK1026079  
Malaysia MY-118540-A  
Philippines Patent: 1-1998-000246  
US and Foreign Patents Pending  
Xpresso® is a Registered Trademark of Fox Electronics

An additional identification code is contained internally if tracking should ever be necessary