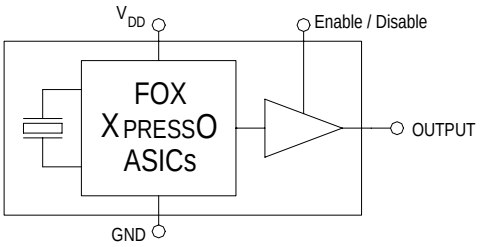
Model: FXO-HC53 SERIES

HCMOS 5 x 3.2mm 3.3V Oscillator

Freq: 0.75 MHz to 250MHz

Features

- XTREMELY Low Jitter
- Low Cost
- XPRESS Delivery
- Frequency Resolution to six decimal places
- Stabilities to ± 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

Need a Sample

RoHS Compliant

Applications

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

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 3rd 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.

Contents

Model Selection Guide & Fox Part Number

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

Model Description

F X O – H C 5 3 6 R – 1 0 6 . 2 5 — Frequency (in MHz)
Resolutions to 6 places past the decimal point

- H = HCMOS
- L = LVDS
- P = LVPECL
- M = LVDS *(pin 2 E/D)*
- Q = LVPECL *(pin 2 E/D)*
- X = HCMOS *(comp 2nd Output)*

C = Ceramic
Q = Quartz

5 = 5 x 3.2mm
7 = 7 x 5mm

3 = 3.3 V
2 = 2.5 V

- 0 = ± 100 PPM
- 5 = ± 50 PPM
- 6 = ± 25 PPM
- 8 = ± 20 PPM (-20 ~ +70°C)

- *blank* = -20°C to +70°C
- R = -40°C to +85°C

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)

7 6 7 – 1 0 6 . 2 5 – 8

The 1st Field
Product Code #
767 = FXO–HC5
768 = FXO–HC7
770 = FXO–LC5
771 = FXO–LC7
773 = FXO–PC5
774 = FXO–PC7

The 2nd Field
The Customer's Frequency

The 3rd 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-HC536R-106.25 = HCMOS Output, Ceramic 5 x 3.2mm Package, 3.3V, ±25 PPM Stability, -40 to +85°C Temperature Range, at 106.25 MHz

Electrical Characteristics

Parameters	Symbol	Condition	Maximum Value (unless otherwise noted)
Frequency Range	F_O		0.750 to 250.000 MHz
Frequency Stability [1]			100, 50, 25, & 20 ppm
Temperature Range	T_O T_{STG}	Standard operating *Optional operating* Storage	-20°C to +70°C *-40°C to +85°C* -55°C to +125°C
Supply Voltage	V_{DD}	Standard	3.3 V ± 5%
Input Current (@ 15pF LOAD)	I_{DD}	0.75 ~ 20 MHz 20+ ~ 50 MHz 50+ ~ 130 MHz 130+ ~ 200 MHz 200+ ~ 250 MHz	32 mA 35 mA 47 mA 55 mA 60 mA
Output Load	HCMOS	Standard *Operational To 125MHz*	15 pF 30 pF
Start-Up Time	T_S		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.

Absolute Maximum Ratings *(Useful life may be impaired. For user guidelines only, not tested)*

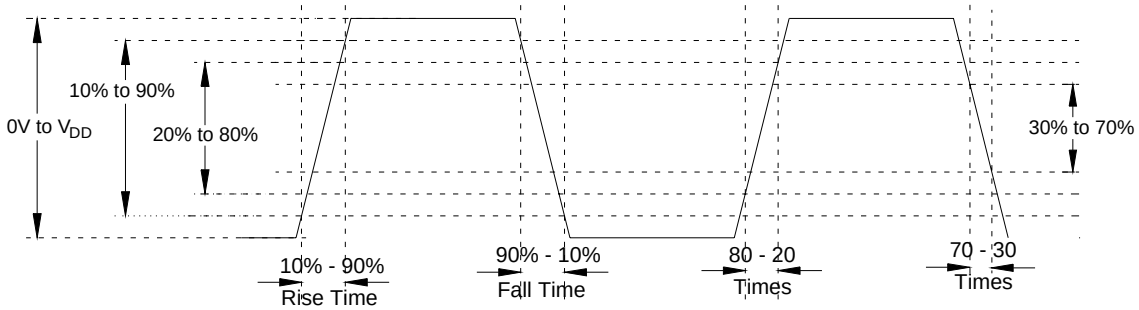
Parameters	Symbol	Condition	Maximum Value (unless otherwise noted)
Input Voltage	V_{DD}		–0.5V to +5.0V
Operating Temperature	T_{AMAX}		–55°C to +105°C
Storage Temperature	T_{STG}		–55°C to +125°C
Junction Temperature			150°C
ESD Sensitivity	HBM	Human Body Model	1 kV

Output Wave Characteristics

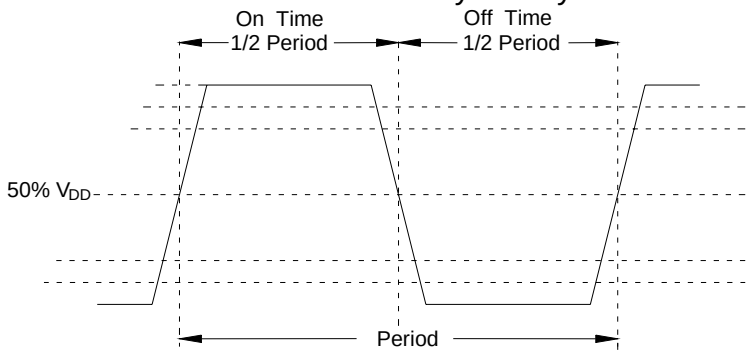
Parameters	Symbol	Condition	Maximum Value (unless otherwise noted)
Output LOW Voltage	V_{OL}	0.75 to 150 MHz 150+ to 250 MHz	10% V_{DD} 20% V_{DD}
Output HIGH Voltage	V_{OH}	0.75 to 150 MHz 150+ to 250 MHz	90% V_{DD} MIN 80% V_{DD} MIN
Output Symmetry (See Drawing Below)		@ 50% V_{DD} Level	45% ~ 55%
Output Enable (PIN # 1) Voltage	V_{IH}		> 70% V_{DD}
Output Disable (PIN # 1) Voltage	V_{IL}		< 30% V_{DD}
Cycle Rise Time (See Drawing Below)	T_R	0.75 to 150 MHz 150+ to 250 MHz	3 nS (10%~90%) 3 nS (20%~80%)
Cycle Fall Time (See Drawing Below)	T_F	0.75 to 150 MHz 150+ to 250 MHz	3 nS (90%~10%) 3 nS (80%~20%)

If 30% to 70% times are used, Rise and Fall times change to 1.5 nS from 0.75 to 250MHz
If 20% to 80% times are used, Rise and Fall times change to 2 nS from 0.75 to 150MHz

Rise Time / Fall Time Measurements

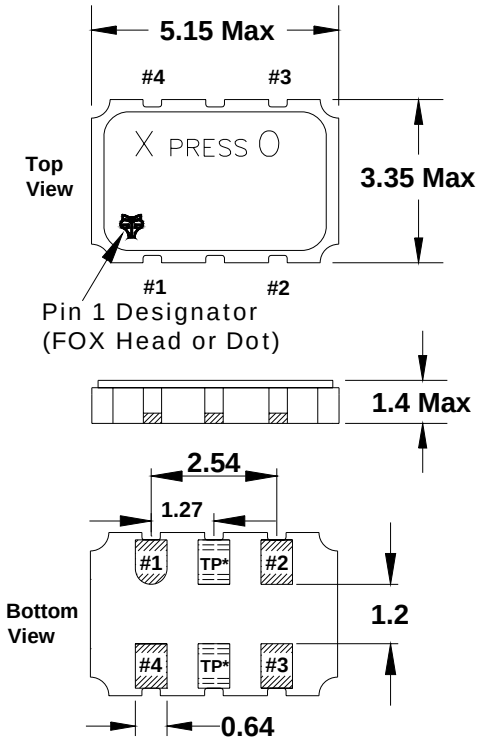


Oscillator Symmetry



Ideally, Symmetry should be 50/50 -- Other expressions are 45/55 or 55/45

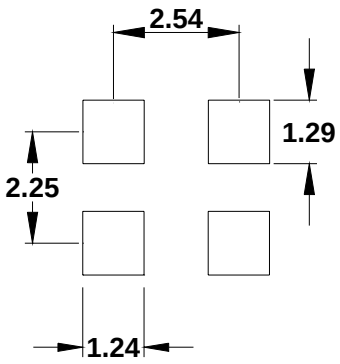
Mechanical Dimensional Drawing & Pad Layout



Actual part marking is depicted.

See **Traceability** *(pg. 8)* for more information

Recommended
Solder Pad Layout

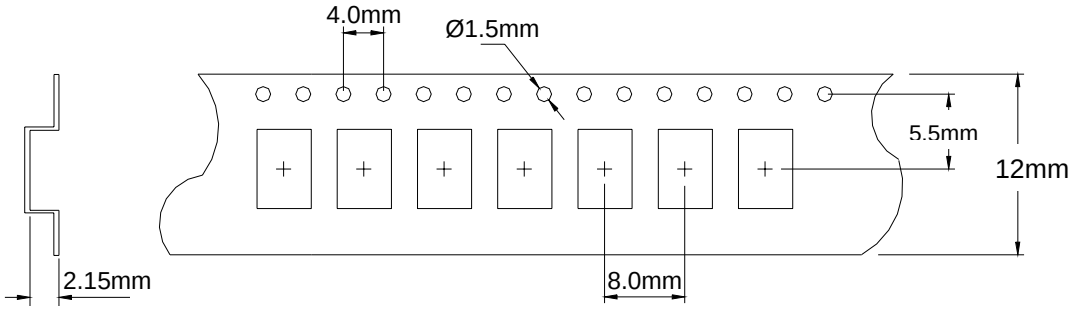


Note: XPRESSO HCMOS XOs are designed to fit on industry standard, 4 pad, layouts.

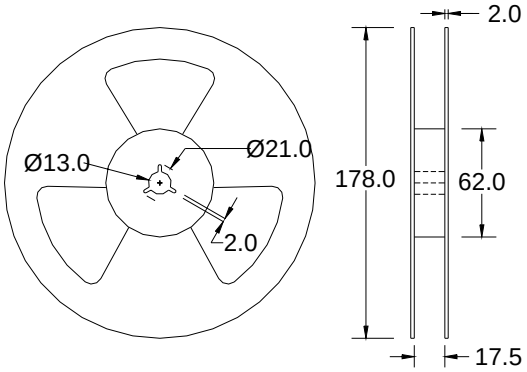
Pin Connections
#1) E/D #3 Output
#2 GND #4 VDD
***TP are test points and are NC**

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

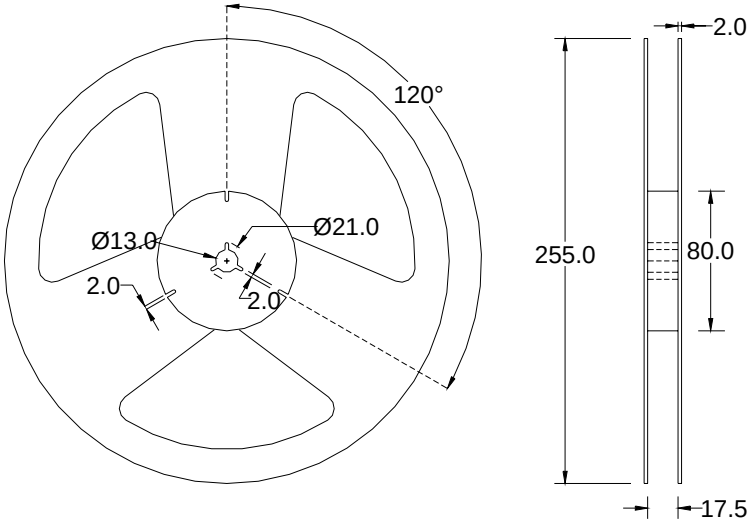
Tape and Reel Dimensions



1k Reel Dimensions in mm

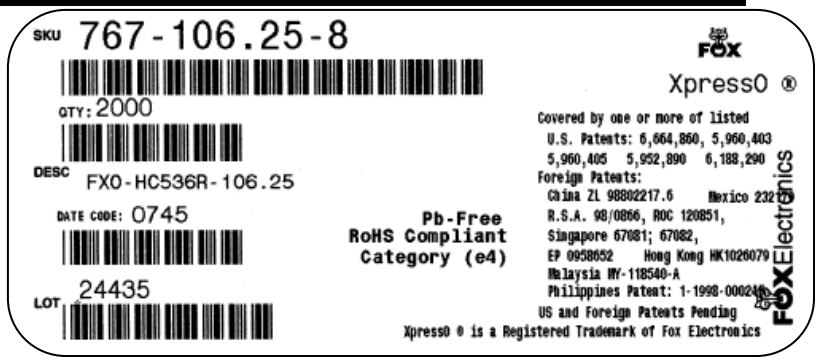


2k Reel Dimensions in mm



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

- Fox Part Number: **767-106.25-8**
- Quantity: **2000** pieces
- Description: **FXO-HC536R-106.25**
- Date Code **0745**
  (YYWW 2007 45th wk)
- LOT # **24435**
  If traceability should become necessary



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