

FOX
ELECTRONICS[®]

An Integrated Device Technology, Inc. Company

Frequency Control Solutions

Your global resource for advanced
frequency control technology,
quality and innovation.



...for more than
35 years!

- Crystals
- Oscillators
- XpressO
- VCXOs
- TCXOs
- OCXOs

SHORTFORM CATALOG

XpressO®

The revolutionary XpressO® crystal oscillator family from Fox provides a wider range of options, with fewer compensating factors, shorter lead times, and reduced pricing. No cost, performance, or delivery time tradeoffs: you can have virtually the best of all worlds in one package.

Great for your designs. Fox XpressO oscillators with patented technologies (including proprietary ASICs with noise reduction silicon architectures and proven production techniques) deliver accurate performance over an extremely wide range of parameters – all at a lower cost than conventional oscillators!

Great for your business, too! Specifying the optimum oscillator is only half the battle. Getting it delivered in time to meet deadlines for engineering prototypes or full production models – without technical compromise and without paying a premium – seals the deal! This is where XpressO really lives up to its name.

- **The exact frequency you need**, from 0.750 MHz to 1.350 GHz
- **Stabilities** as tight as ± 20 ppm
- **Low jitter and phase noise** characteristics
- **Choice** of HCMOS, LVDS, and LVPECL versions for XO and VCXO product families and for TCXO (on special order)
- **Choice** of 2.5 V or 3.3 V supply voltages
- **Choice** of 7 x 5 mm, 5 x 3.2 mm and 3.2 x 2.5 mm package sizes
- **Next day shipment** of samples for prototyping
- **Mere days** for lead times on production quantities
- **A new pricing structure** that won't penalize you for requesting quick turnaround on unique frequencies



Part Number	Frequency Range	Frequency Stability	Temperature Range	Package	Voltage Operation	Output
FXO-HC3 Series	750 kHz ~ 250 MHz	$\pm 100, \pm 50, \pm 25$ PPM	-20°C ~ +70°C -40°C ~ +85°C (Option)	3.2 x 2.5 mm	2.5 V or 3.3 V	HCMOS
FXO-LC3 Series	750 kHz ~ 1.35 GHz	$\pm 100, \pm 50, \pm 25$ PPM	-20°C ~ +70°C -40°C ~ +85°C (Option)	3.2 x 2.5 mm	2.5 V or 3.3 V	LVDS
FXO-HC5 Series	750 kHz ~ 250 MHz	$\pm 100, \pm 50, \pm 25, \pm 20$ PPM	-20°C ~ +70°C -40°C ~ +85°C (Option)	5 x 3.2 mm	2.5 V or 3.3 V	HCMOS
FXO-PC5 Series	750 kHz ~ 1.35 GHz	$\pm 100, \pm 50, \pm 25, \pm 20$ PPM	-20°C ~ +70°C -40°C ~ +85°C (Option)	5 x 3.2 mm	2.5 V or 3.3 V	LVPECL
FXO-LC5 Series	750 kHz ~ 1.35 GHz	$\pm 100, \pm 50, \pm 25, \pm 20$ PPM	-20°C ~ +70°C -40°C ~ +85°C (Option)	5 x 3.2 mm	2.5 V or 3.3 V	LVDS
FXO-HC7 Series	750 kHz ~ 250 MHz	$\pm 100, \pm 50, \pm 25, \pm 20$ PPM	-20°C ~ +70°C -40°C ~ +85°C (Option)	7 x 5 mm	2.5 V or 3.3 V	HCMOS
FXO-PC7 Series	750 kHz ~ 1.35 GHz	$\pm 100, \pm 50, \pm 25, \pm 20$ PPM	-20°C ~ +70°C -40°C ~ +85°C (Option)	7 x 5 mm	2.5 V or 3.3 V	LVPECL
FXO-LC7 Series	750 kHz ~ 1.35 GHz	$\pm 100, \pm 50, \pm 25, \pm 20$ PPM	-20°C ~ +70°C -40°C ~ +85°C (Option)	7 x 5 mm	2.5 V or 3.3 V	LVDS

XpressO® VCXOs

Part Number	Frequency Range	Frequency Pullability	Temperature Range	Package	Voltage Operation	Output
FVXO-HC5 Series	750 kHz ~ 250 MHz	± 50 PPM APR	-20°C ~ +70°C -40°C ~ +85°C (Option)	5 x 3.2 mm	2.5 V or 3.3 V	HCMOS
FVXO-LC5 Series	750 kHz ~ 1.35 GHz	± 50 PPM APR	-20°C ~ +70°C -40°C ~ +85°C (Option)	5 x 3.2 mm	2.5 V or 3.3 V	LVDS
FVXO-PC5 Series	750 kHz ~ 1.35 GHz	± 50 PPM APR	-20°C ~ +70°C -40°C ~ +85°C (Option)	5 x 3.2 mm	2.5 V or 3.3 V	LVPECL
FVXO-HC7 Series	750 kHz ~ 250 MHz	± 50 PPM APR	-20°C ~ +70°C -40°C ~ +85°C (Option)	7 x 5 mm	2.5 V or 3.3 V	HCMOS
FVXO-LC7 Series	750 kHz ~ 1.35 GHz	± 50 PPM APR	-20°C ~ +70°C -40°C ~ +85°C (Option)	7 x 5 mm	2.5 V or 3.3 V	LVDS
FVXO-PC7 Series	750 kHz ~ 1.35 GHz	± 50 PPM APR	-20°C ~ +70°C -40°C ~ +85°C (Option)	7 x 5 mm	2.5 V or 3.3 V	LVPECL

XpressO® TCXOs

Part Number	Frequency Range	Frequency Stability	Temperature Range	Package	Voltage Operation	Output
FXTC-HE7 Series	750 kHz ~ 250 MHz	$\pm 5, \pm 2.5, \pm 1.5, \pm 1$ PPM	0°C ~ +70°C -40°C ~ +85°C (Option)	7 x 5 mm	2.5 V or 3.3 V	HCMOS
FXTC-LE7 Series	750 kHz ~ 1.35 GHz	$\pm 5, \pm 2.5, \pm 1.5, \pm 1$ PPM	0°C ~ +70°C -40°C ~ +85°C (Option)	7 x 5 mm	2.5 V or 3.3 V	LVDS

Oscillators

Part Number	Frequency Range	Frequency Stability	Temperature Range	Package	Voltage Operation	Output
F100 Series	1 MHz ~ 80 MHz	±100, ±50, ±25 PPM	-10°C ~ +70°C -40°C ~ +85°C (Option)	2 x 1.6 mm ■	1.8 V, 2.5 V, 3.3 V	HCMOS
F200 Series	0.625 MHz ~ 67 MHz	±100, ±50, ±25 PPM	-10°C ~ +70°C -40°C ~ +85°C (Option)	2.5 x 2 mm ■	1 V, 1.8 V, 2.5 V, 3.3 V	HCMOS
F247 / F249	4 MHz ~ 54 MHz	±20, ±15, ±10 PPM	-10°C ~ +70°C -40°C ~ +85°C (Option)	2.5 x 2 mm ■	2.5 V	HCMOS
F237 / F239	4 MHz ~ 54 MHz	±20, ±15, ±10 PPM	-10°C ~ +70°C -40°C ~ +85°C (Option)	2.5 x 2 mm ■	3.3 V	HCMOS
F300 Series	1.8 MHz ~ 170 MHz	±100, ±50, ±25, ±20 PPM	-10°C ~ +70°C -40°C ~ +85°C (Option)	3.2 x 2.5 mm ■	1 V, 1.8 V, 2.5 V, 3.3 V	HCMOS
F347 / F349	4 MHz ~ 54 MHz	±15, ±10 PPM	-10°C ~ +70°C -40°C ~ +85°C (Option)	3.2 x 2.5 mm ■	2.5 V	HCMOS
F337 / F339	4 MHz ~ 54 MHz	±15, ±10 PPM	-10°C ~ +70°C -40°C ~ +85°C (Option)	3.2 x 2.5 mm ■	3.3 V	HCMOS
F500 Series	1.544 MHz ~ 125 MHz	±100, ±50, ±25, ±20 PPM	-10°C to +70°C -40°C to +85°C (Option)	5 x 3.2 mm ■	1.8 V, 2.5 V, 3.3 V	HCMOS
F547 / F549	4 MHz ~ 54 MHz	±15, ±10, ±8 PPM	-10°C to +70°C -40°C to +85°C (Option)	5 x 3.2 mm ■	2.5 V	HCMOS
F537 / F539	4 MHz ~ 54 MHz	±15, ±10, ±8 PPM	-10°C to +70°C -40°C to +85°C (Option)	5 x 3.2 mm ■	2.5 V	HCMOS
F4000 Series	1.8 MHz ~ 160 MHz	±100, ±50, ±25, ±20 PPM	-10°C ~ +70°C -40°C ~ +85°C (Option)	7 x 5 mm ■	1.8 V, 2.5 V, 3.3 V, 5 V	HCMOS
F4107 / F4109 Series	1.8 MHz ~ 54 MHz	±20, ±15, ±10, ±8 PPM	-10°C ~ +70°C -40°C ~ +85°C (Option)	7 x 5 mm ■	3.3 V	HCMOS
F3345 Series	1 MHz ~ 80 MHz	±100, ±50, ±25, ±20 PPM	-10°C ~ +70°C -40°C ~ +85°C (Option)	7 x 5 mm ■	5 V	HCMOS

Auto Grade AEC-Q200 Oscillators

Part Number	Frequency Range	Frequency Stability	Temperature Range	Package	Voltage Operation	Output
FA510	2 MHz ~ 48 MHz	±100, ±50, ±25 PPM	-40°C ~ +85°C -40°C ~ +125°C (Option)	5 x 3.2 mm ■	1.8 V	HCMOS
FA540	2 MHz ~ 75 MHz	±100, ±50, ±25 PPM	-40°C ~ +85°C -40°C ~ +125°C (Option)	5 x 3.2 mm ■	2.5 V	HCMOS
FA530	2 MHz ~ 135 MHz	±100, ±50, ±25 PPM	-40°C ~ +85°C -40°C ~ +125°C (Option)	5 x 3.2 mm ■	3.3 V	HCMOS
FA4500	2 MHz ~ 48 MHz	±100, ±50, ±25 PPM	-40°C ~ +85°C -40°C ~ +125°C (Option)	7 x 5 mm ■	1.8 V	HCMOS
FA4400	2 MHz ~ 75 MHz	±100, ±50, ±25 PPM	-40°C ~ +85°C -40°C ~ +125°C (Option)	7 x 5 mm ■	2.5 V	HCMOS
FA4100	2 MHz ~ 135 MHz	±100, ±50, ±25 PPM	-40°C ~ +85°C -40°C ~ +125°C (Option)	7 x 5 mm ■	3.3 V	HCMOS



TCXOs and OCXOs

TCXOs













Part Number	Frequency Range	Frequency Stability	Temperature Range	Package	Voltage Operation	Output
FOX922 Series	10 MHz ~ 40 MHz	±2 PPM	-20°C ~ +75°C	2.5 x 2 mm	2.5 ~ 3.3 V	Clipped Sine
FOX922-GP Series	16 MHz ~ 38.4 MHz	±0.5 PPM	-30°C ~ +85°C	2.5 x 2 mm	1.8 ~ 3.3 V	Clipped Sine
FOX251 Series	4 MHz ~ 54 MHz	±2.5 PPM	-30°C ~ +85°C	2.5 x 2 mm	2.5 ~ 3.3 V	HCMOS
FOX923 Series	8 MHz ~ 52 MHz	±2.5 PPM	-30°C ~ +85°C	3.2 x 2.5 mm	1.8 ~ 3.3 V	Clipped Sine
FOX923-GP Series	10 MHz ~ 27.456 MHz	±0.5 PPM	-30°C ~ +85°C	3.2 x 2.5 mm	1.8 ~ 3.3 V	Clipped Sine
FOX923CH Series	8.192 MHz ~ 32.768 MHz	±2.5 PPM	-30°C ~ +85°C	3.2 x 2.5 mm	3.3 V	HCMOS
FOX914 Series	8 MHz ~ 40 MHz	±2.5 PPM	-30°C ~ +85°C	5 x 3.2 mm	1.8 ~ 3.3 V	Clipped Sine
FOX924 Series	8 MHz ~ 34 MHz	±2.5 PPM	-30°C ~ +85°C	5 x 3.2 mm	3.3 V	HCMOS
FOX331 Series	10 MHz ~ 26 MHz	±0.28 PPM	-20°C ~ +70°C -40°C ~ +85°C (Option)	7 x 5 mm	3.3 V	HCMOS
FXTC-HE72 Series	750 kHz ~ 180 MHz	±5, ±2.5, ±1.5, ±1 PPM	0°C ~ +70°C -40°C ~ +85°C (Option)	7 x 5 mm	2.5 V	HCMOS
FXTC-HE73 Series	750 kHz ~ 250 MHz	±5, ±2.5, ±1.5, ±1 PP	0°C ~ +70°C -40°C ~ +85°C (Option)	7 x 5 mm	3.3 V	HCMOS
FXTC-LE72 Series	750 kHz ~ 1 GHz	±5, ±2.5, ±1.5, ±1 PPM	0°C ~ +70°C -40°C ~ +85°C (Option)	7 x 5 mm	2.5 V	LVDS
FXTC-LE73 Series	750 kHz ~ 1.35 GHz	±5, ±2.5, ±1.5, ±1 PPM	0°C ~ +70°C -40°C ~ +85°C (Option)	7 x 5 mm	3.3 V	LVDS
FOX801LF Series	10 MHz ~ 50 MHz	±2.5 PPM	0°C ~ +70°C	11.4 x 9.6 mm	3 V, 3.3 V, 5 V	Clipped Sine
FOX801BHCLF Series	10 MHz ~ 56 MHz	±2.5 PPM	0°C ~ +70°C	11.4 x 9.6 mm	3 V, 3.3 V, 5 V	HCMOS

OCXOs





Part Number	Frequency Range	Frequency Stability	Temperature Range	Package	Voltage Operation	Output
FHS301 / 501 Series	5 MHz ~ 80 MHz	±250 PPB	-30°C ~ +75°C	8 Pin Half Dip/ Low Profile	3.3 V, 5 V	Clipped Sine or HCMOS
FTS310 Series	2.43 MHz ~ 60 MHz	±250 PPB	-40°C ~ +65°C -40°C ~ +85°C (Option)	14 Pin DIP	3.3 V	HCMOS/TTL
FTS301 / 501 Series	10 MHz ~ 40 MHz	±250 PPB	0°C ~ +70°C -20°C ~ +70°C (Option)	14 Pin DIP	3.3 V, 5 V	HCMOS/TTL
FTC Series	1 MHz ~ 100 MHz	±10, ±20, ±50 PPB	0°C ~ +70°C -40°C ~ +75°C (Option)	1 in x 1 in	5 V	Clipped Sine or HCMOS
FTE Series	5 MHz ~ 50 MHz	±7, ±10, ±15 PPB	0°C ~ +70°C -40°C ~ +75°C (Option)	36 x 27.2 mm Euro Package	5 V	Clipped Sine or HCMOS
FTM301AH	5 MHz ~ 40 MHz	±10, ±20, ±50 PPB	0°C ~ +70°C -40°C ~ +85°C (Option)	25.4 x 22.1 mm SMD	3.3 V	HCMOS











Crystals

Part Number	Frequency Range	Frequency Tolerance	Frequency Stability	Temperature Range	Package	Notes
FX216 Series	24 MHz ~ 60 MHz	±50 PPM ~ ±10 PPM	±50 PPM ~ ±10 PPM	-10°C ~ +60°C to -40°C ~ +85°C	2 x 1.6 x 0.4 mm 	4-pad Design RoHS Compliant
FX252BS	12 MHz ~ 80 MHz	±50 PPM ~ ±10 PPM	±50 PPM ~ ±10 PPM	0°C ~ +70°C to -40°C ~ +85°C	2.5 x 2 x 0.6 mm 	4-pad Design RoHS Compliant
FQ3225B	12 MHz ~ 50 MHz	±30 PPM ~ ±20 PPM	±30 PPM ~ ±20 PPM	-10°C ~ +70°C to -40°C ~ +85°C	3.2 x 2.5 x 1 mm 	4-pad Design RoHS Compliant
FX325BS	16 MHz ~ 50 MHz	±50 PPM ~ ±10 PPM	±50 PPM ~ ±10 PPM	-10°C ~ +60°C to -40°C ~ +85°C	3.2 x 2.5 x 0.8 mm 	4-pad Design RoHS Compliant
FQ5032 Series	12 MHz ~ 48 MHz	±30 PPM ~ ±20 PPM	±30 PPM ~ ±20 PPM	0°C ~ +70°C to -40°C ~ +85°C	5 x 3.2 x 1.2 mm 	2- or 4-pad Design RoHS Compliant
FX532 Series	10 MHz ~ 67 MHz	±50 PPM ~ ±10 PPM	±50 PPM ~ ±10 PPM	-10°C ~ +60°C to -40°C ~ +85°C	5 x 3.2 x 1 mm 	2- or 4-pad Design RoHS Compliant
FQ6035 Series	6 MHz ~ 40 MHz	±30 PPM ~ ±20 PPM	±30 PPM ~ ±20 PPM	0°C ~ +70°C to -40°C ~ +85°C	6 x 3.5 x 1.3 mm 	2- or 4-pad Design RoHS Compliant
FMB	9 MHz ~ 176 MHz	±50 PPM ~ ±5 PPM	±50 PPM ~ ±3 PPM	-10°C ~ +60°C to -40°C ~ +85°C	6 x 3.5 x 1.1 mm 	4-pad Design RoHS Compliant
FD	6 MHz ~ 218 MHz	±50 PPM ~ ±5 PPM	±50 PPM ~ ±3 PPM	-10°C ~ +60°C to -40°C ~ +85°C	7 x 5 x 1.1 mm 	4-pad Design RoHS Compliant
FE	6 MHz ~ 160 MHz	±50 PPM ~ ±20 PPM	±50 PPM ~ ±20 PPM	-10°C ~ +60°C to -40°C ~ +85°C	7 x 5 x 1.7 mm 	2-pad Design RoHS Compliant
FQ1045A	3.2768 MHz ~ 7 MHz	±30 PPM ~ ±20 PPM	±30 PPM ~ ±20 PPM	0°C ~ +70°C to -40°C ~ +85°C	10 x 4.5 x 1.7 mm 	4-pad Design RoHS Compliant
HC49SDF	3.2 MHz ~ 80 MHz	±50 PPM ~ ±10 PPM	±50 PPM ~ ±5 PPM	-20°C ~ +70°C to -55°C ~ +125°C	13.9 x 5 x 4.5 mm 	Industry Standard RoHS Compliant

Automotive AEC-Q200 Crystals

Part Number	Frequency Range	Frequency Tolerance	Frequency Stability	Temperature Range	Package	Notes
FXA2520	16 MHz ~ 50 MHz	±50 PPM	±50 PPM ~ ±100 PPM	-40°C ~ +85°C to -40°C ~ +125°C	2.5 x 2 x 0.6mm 	4-pad Design RoHS Compliant
FXA3225	12 MHz ~ 52 MHz	±50 PPM	±50 PPM ~ ±100 PPM	-40°C ~ +85°C to -40°C ~ +125°C	3.2 x 2.5 x 0.75 mm 	4-pad Design RoHS Compliant
FXA5032	8 MHz ~ 52 MHz	±50 PPM	±50 PPM ~ ±100 PPM	-40°C ~ +85°C to -40°C ~ +125°C	5 x 3.2 x 1 mm 	4-pad Design RoHS Compliant
FXA7050	6 MHz ~ 48 MHz	±50 PPM	±50 PPM ~ ±100 PPM	-40°C ~ +85°C to -40°C ~ +125°C	7 x 5 x 1.1 mm 	4-pad Design RoHS Compliant

Watch Crystals

Part Number	Frequency Range	Frequency Tolerance	Frequency Stability	Temperature Range	Package	Notes
FX122	32.768 kHz	±20 PPM	-0.04 PPM / ΔC²	-40°C ~ +85°C	2 x 1.2 x 0.6 mm 	12.5 pF or 9 pF RoHS Compliant
FX135	32.768 kHz	±20 PPM	-0.04 PPM / ΔC²	-40°C ~ +85°C	3.2 x 1.5 x 0.9 mm 	12.5 pF or 9 pF RoHS Compliant
FX145	32.768 kHz	±20 PPM	-0.04 PPM / ΔC²	-40°C ~ +85°C	4.1 x 1.5 x 0.9 mm 	12.5 pF RoHS Compliant
FX255	32.768 kHz	±20 PPM	-0.04 PPM / ΔC²	-40°C ~ +85°C	4.9 x 1.8 x 1 mm 	12.5 pF RoHS Compliant
FSXLF	32.768 kHz	±20 PPM	-0.04 PPM / ΔC²	-40°C ~ +85°C	7 x 1.5 x 1.4 mm 	12.5 pF or 7 pF RoHS Compliant
FSRLF	32.768 kHz	±20 PPM	-0.04 PPM / ΔC²	-40°C ~ +85°C	8.7 x 3.7 x 2.5 mm 	12.5 pF or 6 pF RoHS Compliant
FSMLF	32.768 kHz	±20 PPM	-0.04 PPM / ΔC²	-40°C ~ +85°C	10.41 x 4.06 x 3.56 mm 	12.5 pF or 6 pF RoHS Compliant
NCLF Series	32.768 kHz	±20 PPM	-0.04 PPM / ΔC²	-20°C ~ +60°C	3 x 8, 2 x 6, 1 x 5 mm 	12.5 pF or 6 pF RoHS Compliant

Fox Custom Products Center –

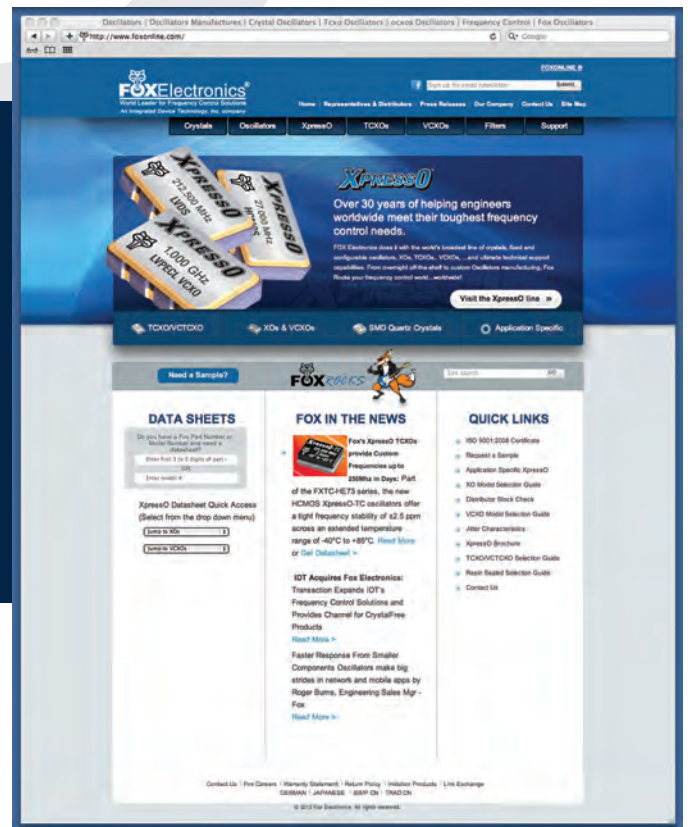
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