FOX Electronics®

World Leader for Frequency Control Solutions

Frequency Control Solutions

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

FOX Rocks! ...for more than 35 years!

- Crystals
- Oscillators
- TCXOs
- VCXOs

SHORTFORM CATALOG

Over 35 years of helping engineers worldwide meet their toughest frequency control needs.

FOX Electronics does it with the world's broadest line of crystals, oscillators, TCXOs, VCXOs and ultimate technical support capabilities. From overnight off-the-shelf to custom oscillator manufacturing, Fox Rocks your frequency control world...worldwide!

Crystals

Model Number	Frequency Range	Frequency Tolerance	Frequency Stability	Temperature Range	Package	Notes
FC0BS	25 MHz ~ 80 MHz	±10 PPM ~ ±50 PPM	±10 PPM ~ ±50 PPM	0°C ~ +70°C to -40°C ~ +85°C	1.6 x 1.2 mm	4-pad Design
FC1BS	16 MHz ~ 64 MHz	±10 PPM ~ ±50 PPM	±10 PPM ~ ±50 PPM	-10°C ~ +60°C to -40°C ~ +85°C	2 x 1.6 mm	4-pad Design
FC2BS	16 MHz ~ 80 MHz	±10 PPM ~ ±50 PPM	±10 PPM ~ ±50 PPM	0°C ~ +70°C to -40°C ~ +85°C	2.5 x 2 mm	4-pad Design
FC3BQ	12 MHz ~ 40 MHz	±20 PPM ~ ±50 PPM	±20 PPM ~ ±50 PPM	-10°C ~ +70°C to -40°C ~ +85°C	3.2 x 2.5 mm	4-pad Design
FC3BS	10 MHz ~ 200 MHz	±10 PPM ~ ±50 PPM	±5 PPM ~ ±50 PPM	-10°C ~ +60°C to -40°C ~ +85°C	3.2 x 2.5 mm	4-pad Design
FC5AQ	8 MHz ~ 48 MHz	±20 PPM ~ ±30 PPM	±20 PPM ~ ±50 PPM	0°C ~ +70°C to -40°C ~ +85°C	5 x 3.2 mm	2-pad Design
FC5BQ	8 MHz ~ 48 MHz	±20 PPM ~ ±50 PPM	±20 PPM ~ ±50 PPM	0°C ~ +70°C to -40°C ~ +85°C	5 x 3.2 mm	4-pad Design
FC5AS	8 MHz ~ 52 MHz	±10 PPM ~ ±50 PPM	±10 PPM ~ ±50 PPM	-10°C ~ +60°C to -40°C ~ +85°C	5 x 3.2 mm	2-pad Design
FC5BS	8 MHz ~ 200 MHz	±10 PPM ~ ±50 PPM	±5 PPM ~ ±50 PPM	-10°C ~ +60°C to -40°C ~ +85°C	5 x 3.2 mm	4-pad Design
FC6AQ	8 MHz ~ 40 MHz	±20 PPM ~ ±50 PPM	±20 PPM ~ ±50 PPM	0°C ~ +70°C to -40°C ~ +85°C	6 x 3.5 mm	2-pad Design
FC6BS	8 MHz ~ 176 MHz	±5 PPM ~ ±50 PPM	±5 PPM ~ ±50 PPM	-10°C ~ +60°C to -40°C ~ +85°C	6 x 3.5 mm	4-pad Design
FC7BS	6 MHz ~ 200 MHz	±10 PPM ~ ±50 PPM	±5 PPM ~ ±50 PPM	-10°C ~ +60°C to -40°C ~ +85°C	7 x 5 mm	4-pad Design
FC7AS	6 MHz ~ 129 MHz	±20 PPM ~ ±50 PPM	±20 PPM ~ ±50 PPM	-10°C ~ +60°C to -40°C ~ +85°C	7 x 5 mm	2-pad Design
FC8AQ	3.2 MHz ~ 7 MHz	±20 PPM ~ ±50 PPM	±20 PPM ~ ±50 PPM	0°C ~ +70°C to -40°C ~ +85°C	10 x 4.5 mm	4-pad Design
FC4SD	3.2 MHz ~ 80 MHz	±10 PPM ~ ±50 PPM	±5 PPM ~ ±100 PPM	-20°C ~ +70°C to -55°C ~ +125°C	13.9 x 5 mm	Industry Std.

Watch Crystals

Model Number	Frequency Range	Frequency Tolerance	Frequency Stability	Temperature Range	Package	Notes
FK161	32.768 kHz	±20 PPM	-0.04 PPM / ΔC^2	-40˚C ~ +85˚C	1.6 x 1 mm	12.5 pF, 7 pF or 9 pF
FK122	32.768 kHz	±20 PPM	-0.04 PPM / ΔC^2	-40˚C ~ +85˚C	2 x 1.2 mm	12.5 pF or 9 pF
FK135	32.768 kHz	±20 PPM	-0.04 PPM / ΔC^2	-40˚C ~ +85˚C	3.2 x 1.5 mm	12.5 pF, 7 pF or 9 pF
FK13A	32.768 kHz	±20 PPM	-0.04 PPM / ΔC^2	-40˚C ~ +85˚C	3.2 x 1.5 mm	12.5 pF
FK145	32.768 kHz	±20 PPM	-0.04 PPM / ΔC^2	-40˚C ~ +85˚C	4.1 x 1.5 mm	12.5 pF
FK255	32.768 kHz	±20 PPM	-0.04 PPM / ΔC^2	-40˚C ~ +85˚C	4.9 x 1.8 mm	12.5 pF
FKFSX	32.768 kHz	±20 PPM	-0.04 PPM / ΔC^2	-40˚C ~ +85˚C	7 x 1.5 mm	12.5 pF or 7 pF
FKFSR	32.768 kHz	±20 PPM	-0.04 PPM / ΔC^2	-40˚C ~ +85˚C	8.7 x 3.7 mm	12.5 pF or 6 pF
FKFSM	32.768 kHz	±20 PPM	-0.04 PPM / ΔC^2	-40˚C ~ +85˚C	10.41 x 4.06 mm	12.5 pF or 6 pF

TCXOs

Model Number	Frequency Range	Frequency Stability	Temperature Range	Package	Voltage Operation	Output	Pin 1 Function
FT1GN	13 MHz ~ 52 MHz	±0.5 PPM	-30°C ~ +85°C	2 x 1.6 mm	1.8 ~ 3.3 V	Clipped Sine	No Connect
FT1GV	13 MHz ~ 52 MHz	±0.5 PPM	-30°C ~ +85°C	2 x 1.6 mm	1.8 ~ 3.3 V	Clipped Sine	Voltage Control
FT1CN	13 MHz ~ 52 MHz	±2 PPM	-30°C ~ +85°C	2 x 1.6 mm	1.8 ~ 3.3 V	Clipped Sine	No Connect
FT1CV	13 MHz ~ 52 MHz	±2 PPM	-30°C ~ +85°C	2 x 1.6 mm	1.8 ~ 3.3 V	Clipped Sine	Voltage Control
FT2GN	16.367 MHz ~ 38.4 MHz	±0.5 PPM	-30°C ~ +85°C	2.5 x 2 mm	1.8 ~ 3.3 V	Clipped Sine	No Connect
FT2GV	16.367 MHz ~ 38.4 MHz	±0.5 PPM	-30°C ~ +85°C	2.5 x 2 mm	1.8 ~ 3.3 V	Clipped Sine	Voltage Control
FT2CN	10 MHz ~ 40 MHz	±2 PPM, ±2.5 PPM	0°C ~ +70°C to -40°C ~ +85°C	2.5 x 2 mm	2.5 ~ 3.3 V	Clipped Sine	No Connect
FT2CV	10 MHz ~ 40 MHz	±2 PPM, ±2.5 PPM	0°C ~ +70°C to -40°C ~ +85°C	2.5 x 2 mm	2.5 ~ 3.3 V	Clipped Sine	Voltage Control
FT2HD	4 MHz ~ 54 MHz	±2.5 PPM	0°C ~ +70°C to -40°C ~ +85°C	2.5 x 2 mm	2.5 ~ 3.3 V	HCMOS	Enable/Disable
FT3GN	16.367 MHz ~ 38.88 MHz	±0.5 PPM	-30°C ~ +85°C	3.2 x 2.5 mm	1.8 ~ 3.3 V	Clipped Sine	No Connect
FT3GV	16.367 MHz ~ 38.88 MHz	±0.5 PPM	-30°C ~ +85°C	3.2 x 2.5 mm	1.8 ~ 3.3 V	Clipped Sine	Voltage Control
FT3CN	8 MHz ~ 52 MHz	±1 PPM ~ ±2.5 PPM	0°C ~ +70°C to -40°C ~ +85°C	3.2 x 2.5 mm	1.8 ~ 3.3 V	Clipped Sine	No Connect
FT3CV	8 MHz ~ 52 MHz	±1 PPM ~ ±2.5 PPM	0°C ~ +70°C to -40°C ~ +85°C	3.2 x 2.5 mm	1.8 ~ 3.3 V	Clipped Sine	Voltage Control
FT3HN	8.192 MHz ~ 40 MHz	±1 PPM ~ ±2.5 PPM	0°C ~ +70°C to -40°C ~ +85°C	3.2 x 2.5 mm	3.3 V	HCMOS	No Connect
FT3HV	8.192 MHz ~ 40 MHz	±1 PPM ~ ±2.5 PPM	0°C ~ +70°C to -40°C ~ +85°C	3.2 x 2.5 mm	3.3 V	HCMOS	Voltage Control
FT3HD	4 MHz ~ 54 MHz	±2.5 PPM	0°C ~ +70°C to -40°C ~ +85°C	3.2 x 2.5 mm	2.5 ~ 3.3 V	HCMOS	Enable/Disable
FT5SN	10 MHz ~ 40 MHz	±0.1 PPM ~ ±0.28 PPM	-20°C ~ +70°C to -40°C ~ +85°C	5 x 3.2 mm	3.3 V	HCMOS	No Connect
FT5SV	10 MHz ~ 40 MHz	±0.1 PPM ~ ±0.28 PPM	-20°C ~ +70°C to -40°C ~ +85°C	5 x 3.2 mm	3.3 V	HCMOS	Voltage Control
FT5CN	8 MHz ~ 40 MHz	±0.5 PPM ~ ±2.5 PPM	0°C ~ +70°C to -40°C ~ +85°C	5 x 3.2 mm	2.5 ~ 3.3 V	Clipped Sine	No Connect
FT5CV	8 MHz ~ 40 MHz	±0.5 PPM ~ ±2.5 PPM	0°C ~ +70°C to -40°C ~ +85°C	5 x 3.2 mm	2.5 ~ 3.3 V	Clipped Sine	Voltage Control
FT5HN	8 MHz ~ 40 MHz	±1 PPM ~ ±2.5 PPM	0°C ~ +70°C to -40°C ~ +85°C	5 x 3.2 mm	2.5 ~ 3.3 V	HCMOS	No Connect
FT5HV	8 MHz ~ 40 MHz	±1 PPM ~ ±2.5 PPM	0°C ~ +70°C to -40°C ~ +85°C	5 x 3.2 mm	3.3 V	HCMOS	Voltage Control
FT5HD	4 MHz ~ 54 MHz	±2.5 PPM	0°C ~ +70°C to -40°C ~ +85°C	5 x 3.2 mm	2.5 ~ 3.3 V	HCMOS	Enable/Disable
FT7SN	10 MHz ~ 40 MHz	±0.28 PPM, ±0.37 PPM	-20°C ~ +70°C to -40°C ~ +85°C	7 x 5 mm	3.3 V	HCMOS	No Connect
FT7SV	10 MHz ~ 40 MHz	±0.28 PPM, ±0.37 PPM	-20°C ~ +70°C to -40°C ~ +85°C	7 x 5 mm	3.3 V	HCMOS	Voltage Control
FT7CV	10 MHz ~ 26 MHz	±1 PPM ~ ±2.5 PPM	-30°C ~ +75°C to -40°C ~ +85°C	7 x 5 mm	3.0 V	Clipped Sine	Voltage Control
FT7HD	4 MHz ~ 54 MHz	±2.5 PPM	-30°C ~ +75°C to -40°C ~ +85°C	7 x 5 mm	2.5 ~ 3.3 V	HCMOS	Enable/Disable
FT9xx	9.6 MHz ~ 56 MHz	±1 PPM ~ ±2.5 PPM	0°C ~ +70°C to -40°C ~ +85°C	11.4 x 9.6	3.0 V, 3.3 V, 5.0 V	Clipped Sine or HCMOS	No Connect or Voltage Control

VCXOs

Model Number	Frequency Range	Frequency Stability	Pullability	Temperature Range	Package	Voltage Operation
FY3HCJ	1 MHz ~ 50 MHz	±50 PPM	±100 PPM	-10°C ~ +70°C or -40°C ~ +85°C	3.2 x 2.5 mm	3.3 V
FY5HBJ	2 MHz ~ 54 MHz	±50 PPM	±100 PPM	-10°C ~ +70°C or -40°C ~ +85°C	5 x 3.2 mm	3.3 V
FY7HCJ	1 MHz ~ 80 MHz	±50 PPM	±100 PPM	-10°C ~ +70°C or -40°C ~ +85°C	7 x 5 mm	3.3 V
FY7HCK	1 MHz ~ 80 MHz	±100 PPM	±100 PPM	-10°C ~ +70°C or -40°C ~ +85°C	7 x 5 mm	3.3 V
FY7HCE	1 MHz ~ 80 MHz	±25 PPM	±50 PPM	-10°C ~ +70°C or -40°C ~ +85°C	7 x 5 mm	3.3 V
FY7HCF	1 MHz ~ 80 MHz	±50 PPM	±50 PPM	-10°C ~ +70°C or -40°C ~ +85°C	7 x 5 mm	3.3 V
FY7HCH	1 MHz ~ 80 MHz	±25 PPM	±100 PPM	-10°C ~ +70°C or -40°C ~ +85°C	7 x 5 mm	3.3 V

Auto-grade Crystals and Oscillators

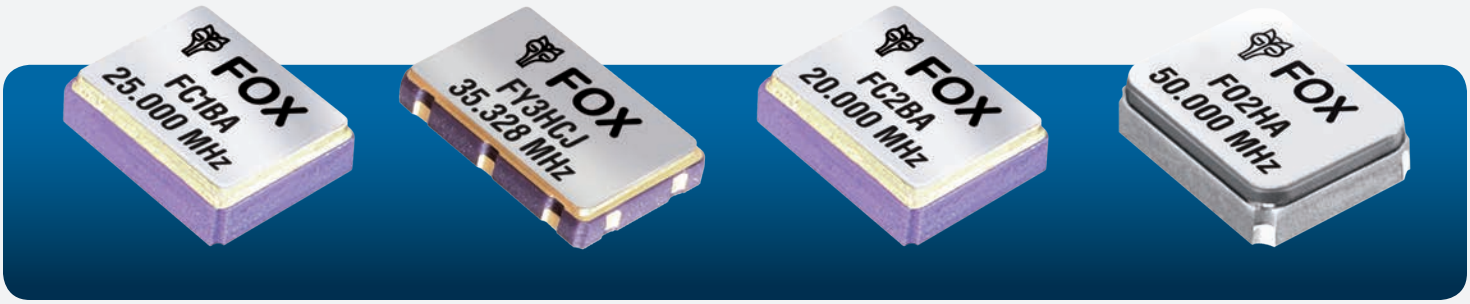
FOX Electronics has several sizes and temperature ranges available in our automotive grade MHz crystals, kHz crystals and oscillators. All of our automotive grade products are AEC-Q200 qualified and produced at TS16949 certified facilities.

Auto-grade AEC-Q200 Crystals

Model Number	Frequency Range	Frequency Tolerance	Frequency Stability	Temperature Range	Package	Notes
FK13A	32.768 kHz	±20 PPM	-0.04 PPM / ΔC^2	-40°C ~ +125°C	3.2 x 1.5 mm	2-pad Design
FC1BA	20 MHz ~ 50 MHz	±10 PPM ~ ±50 PPM	±20 PPM ~ ±100 PPM	-40°C ~ +85°C to -40°C ~ +125°C	2 x 1.6 mm	4-pad Design
FC2BA	16 MHz ~ 50 MHz	±10 PPM ~ ±50 PPM	±20 PPM ~ ±100 PPM	-40°C ~ +85°C to -40°C ~ +125°C	2.5 x 2 mm	4-pad Design
FC3BA	12 MHz ~ 52 MHz	±10 PPM ~ ±50 PPM	±15 PPM ~ ±100 PPM	-40°C ~ +85°C to -40°C ~ +125°C	3.2 x 2.5 mm	4-pad Design
FC5BA	8 MHz ~ 52 MHz	±20 PPM ~ ±50 PPM	±20 PPM ~ ±100 PPM	-40°C ~ +85°C to -40°C ~ +125°C	5 x 3.2 mm	4-pad Design
FC7BA	6 MHz ~ 48 MHz	±20 PPM ~ ±50 PPM	±20 PPM ~ ±100 PPM	-40°C ~ +85°C to -40°C ~ +125°C	7 x 5 mm	4-pad Design

Auto-grade AEC-Q200 Oscillators

Model Number	Frequency Range	Frequency Stability	Temperature Range	Package	Voltage Operation	Output
FO1HA	4 MHz ~ 50 MHz	±25, ±50, ±100 PPM	-40°C ~ +85°C, -40°C ~ +105°C, or -40°C ~ +125°C	2 x 1.6 mm	1.8 V, 2.5 V, 3.3 V	HCMOS
FO2HA	2 MHz ~ 160 MHz	±25, ±50, ±100 PPM	-40°C ~ +85°C, -40°C ~ +105°C, or -40°C ~ +125°C	2.5 x 2 mm	1.8 V, 2.5 V, 3.3 V	HCMOS
FO3HA	2 MHz ~ 160 MHz	±25, ±50, ±100 PPM	-40°C ~ +85°C, -40°C ~ +105°C, or -40°C ~ +125°C	3.2 x 2.5 mm	1.8 V, 2.5 V, 3.3 V	HCMOS
FO5HA	2 MHz ~ 135 MHz	±25, ±50, ±100 PPM	-40°C ~ +85°C, -40°C ~ +105°C, or -40°C ~ +125°C	5 x 3.2 mm	1.8 V, 2.5 V, 3.3 V	HCMOS
FO7HA	2 MHz ~ 135 MHz	±25, ±50, ±100 PPM	-40°C ~ +85°C, -40°C ~ +105°C, or -40°C ~ +125°C	7 x 5 mm	1.8 V, 2.5 V, 3.3 V	HCMOS



Oscillators

Model Number	Frequency Range	Frequency Stability	Temperature Range	Package	Voltage Operation	Output
FO8HS	1 MHz ~ 80 MHz	±25 PPM ~ ±100 PPM	-20°C ~ +70°C or -40°C ~ +85°C	1.6 x 1.2 mm	1.8 V ~ 3.3 V	HCMOS
FO1HS	1 MHz ~ 80 MHz	±25 PPM ~ ±100 PPM	-10°C ~ +60°C, -20°C ~ +70°C, or -40°C ~ +85°C	2 x 1.6 mm	1.8 V ~ 3.3 V	HCMOS
FO2HS	0.075 MHz ~ 54 MHz	±10 PPM ~ ±100 PPM	-10°C ~ +70°C, -20°C ~ +70°C, or -40°C ~ +85°C	2.5 x 2 mm	1 V ~ 3.3 V	HCMOS
FO2HK	32.768 kHz	±20 PPM ~ ±50 PPM	-10°C ~ +60°C, -20°C ~ +70°C, or -40°C ~ +85° C	2.5 x 2 mm	1.8 V ~ 3.3 V	HCMOS
FO3HS	0.625 MHz ~ 75 MHz	±10 PPM ~ ±100 PPM	-10°C ~ +70°C, -20°C ~ +70°C, or -40°C ~ +85°C	3.2 x 2.5 mm	1 V ~ 3.3 V	HCMOS
FO3HK	32.768 kHz	±20 PPM ~ ±50 PPM	-10°C ~ +60°C, -20°C ~ +70°C, or -40°C ~ +85°C	3.2 x 2.5 mm	1.8 V ~ 3.3 V	HCMOS
FO5HS	1.544 MHz ~ 160 MHz	±8 PPM ~ ±100 PPM	-10°C ~ +70°C, -20°C ~ +70°C, or -40°C ~ +85°C	5 x 3.2 mm	1.8 V ~ 3.3 V	HCMOS
FO7HS	0.012 MHz ~ 170 MHz	±8 PPM ~ ±100 PPM	-10°C ~ +70°C, -20°C ~ +70°C, or -40°C ~ +85°C	7 x 5 mm	1.8 V ~ 3.3 V	HCMOS
FO7HH	1 MHz ~ 80 MHz	±20 PPM ~ ±100 PPM	-10°C ~ +70°C, -20°C ~ +70°C, or -40°C ~ +85°C	7 x 5 mm	5 V	HCMOS
FO2SL	25 MHz ~ 156.25 MHz	±20 PPM ~ ±100 PPM	-20°C ~ +70°C or -40°C ~ +85°C	2.5 x 2 mm	2.5 V, 3.3 V	HCSL
FO3SL	25 MHz ~ 156.25 MHz	±20 PPM ~ ±100 PPM	-20°C ~ +70°C or -40°C ~ +85°C	3.2 x 2.5 mm	2.5 V, 3.3 V	HCSL
FO5SL	15 MHz ~ 160 MHz	±25 PPM ~ ±100 PPM	0°C ~ +70°C or -40°C ~ +85°C	5 x 3.2 mm	2.5 V, 3.3 V	HCSL
FO7SL	15 MHz ~ 160 MHz	±25 PPM ~ ±100 PPM	-10°C ~ +70°C or -40°C ~ +85°C	7 x 5 mm	2.5 V, 3.3 V	HCSL
FO2LS	25 MHz ~ 156.25 MHz	±25 PPM ~ ±100 PPM	-20°C ~ +70°C or -40°C ~ +85°C	2.5 x 2 mm	2.5 V, 3.3 V	LVDS
FO3LS	25 MHz ~ 156.25 MHz	±25 PPM ~ ±100 PPM	-20°C ~ +70°C or -40°C ~ +85°C	3.2 x 2.5 mm	2.5 V, 3.3 V	LVDS
FO5LS	19 MHz ~ 156.25 MHz	±25 PPM ~ ±100 PPM	-20°C ~ +70°C or -40°C ~ +85°C	5 x 3.2 mm	2.5 V, 3.3 V	LVDS
FO7LS	75 MHz ~ 270 MHz	±20 PPM ~ ±100 PPM	-10°C ~ +70°C or -40°C ~ +85°C	7 x 5 mm	2.5 V, 3.3 V	LVDS
FO2PS	25 MHz ~ 156.25 MHz	±20 PPM ~ ±100 PPM	-20°C ~ +70°C or -40°C ~ +85°C	2.5 x 2 mm	2.5 V, 3.3 V	LVPECL
FO3PS	25 MHz ~ 156.25 MHz	±25 PPM ~ ±100 PPM	-20°C ~ +70°C or -40°C ~ +85°C	3.2 x 2.5 mm	2.5 V, 3.3 V	LVPECL
FO5PS	50 MHz ~ 156.25 MHz	±25 PPM ~ ±100 PPM	-20°C ~ +70°C or -40°C ~ +85°C	5 x 3.2 mm	2.5 V, 3.3 V	LVPECL
FO7PS	40 MHz ~ 280 MHz	±20 PPM ~ ±100 PPM	-20°C ~ +70°C or -40°C ~ +85°C	7 x 5 mm	2.5 V, 3.3 V	LVPECL
FO7PU	70 MHz ~ 170 MHz	±20 PPM ~ ±100 PPM	-20°C ~ +70°C or -40°C ~ +85°C	7 x 5 mm	3.3 V	LVPECL

Fox Custom Products Center

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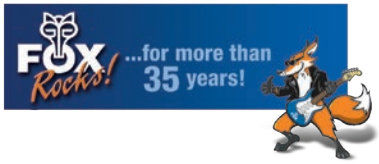

RoHS Compliant Pb

FOX-G-3984 11/16