

VCO Series

- DIL 14, DIL 8 PACKAGES AVAILABLE
- BI-POLAR VCOXO CAN BE SUPPORTED IN DIL 14 PACKAGE

MODEL	Through Hole					
	VCOXO-1800	VCOXO-1825	VCOXO-1900	VCOXO-1925	VCOXO-1073	VCOXO-1700
VCOXO Series	20.7x13.0x7.1	13.08x13.08x5.5	50.80x50.80x19.0			20.7x13.0x4.5
Dimensions (mm)	HCMOS/TTL Compatible					
Output	SINE					
Frequency Range	Up to 20 MHz					
Supply Voltage	5V, 3.3V, 5.0V, 12.0V, 3.3V, 5.0V					
OTR	0 to +50°C to -40 to +85°C					
Pulling Range	±100 ppm Max.					
Transfer Function	Positive					
Set Ability For Center Frequency @ 25°C nominal	2V Min & 3V Max, 1.25V Min. & 2.05V Max, 2V Min & 3V Max, 1.25V Min. & 2.05V Max.					
Frequency Adjustment	Internal Trimmer					
	External Control Voltage					

- DIFFERENTIAL OUTPUTS LIKE PECL & LVDS AVAILABLE IN DIL 14 & SMD PACKAGES

MODEL	Through Hole			SMD		
	VCOXO-1900	VCOXO-1901	VCOXO-1925	VCOXO-1900	VCOXO-1901	VCOXO-1900
VCOXO Series	20.7x13.0x4.5			7.06x0.4x1.8		
Dimensions (mm)	PECL			Complementary PECL		
Output	40 to 210 MHz			42.50 to 212.50 MHz		
Frequency Range	5.0V			3.3V		
Supply Voltage	±15 to ±100 ppm			±50 ppm		
Frequency Stability	0 to +50°C to -40 to +85°C			0 to 70°C, -40 to 85°C		
OTR	±100 ppm Min.			±25, ±50, ±100 ppm		
Pulling Range				-10 to +70°C, -40 to +85°C		
				±100 ppm Min.		

TCXO Series

- Standard European / DIL 14 / DIL 8 & SMD VERSIONS AVAILABLE
- STRATUM 3 TCXOS AVAILABLE IN THROUGH HOLE AND SMD VERSION
- TCXO 1063 IS CONSTRUCTED WITH 3-TIER MOUNT CRYSTAL TO WITHSTAND VIBRATION (RANDOM) AND SHOCK TESTS

MODEL	Through Hole			SMD		
	TCXO-1015 (DL-14)	TCXO-1025 (DL-14)	TCXO-1015 (DL-8)	TCXO-7000	TCXO-5002	TCXO-3225
TCXO Series	20.7x13.0x4.5			7.06x0.4x1.8		
Dimensions (mm)	HCMOS, TTL, CLIPPED SINE			CLIPPED SINE		
Output	8 to 40 MHz (HCMOS, SINE)			1 to 150 MHz (HCMOS, TTL)		
Frequency Range	1 to 180 MHz (SINE)			8 to 100 MHz (SINE)		
Supply Voltage (Vcc)	3.3V, 5.0V			3.3V, 5.0V		
Frequency Stability	±1.5 to ±10.0 ppm			±1.5 to ±10.0 ppm		
OTR	0 to +50°C to -40 to +85°C			0 to +50°C to -30 to +85°C		
Supply Voltage Stability	±0.1 ppm Max. Per 5% Change			±0.2 ppm per 5% change		
Aging	±2.0 ppm / year Max.			±1.0 ppm / year Max.		
Frequency Adjustment	±3 ppm Max. by Internal Trimmer			±3 ppm Max. by Internal Trimmer		
				±5 ppm by external 2 pin variable resistor		

Note: TCXO with 11.4 x 5.8 x 3.0 mm (Max.) dimensions is also available.



OCCO Series

MODEL	Through Hole					
	TCXO-1020	TCXO-1040	TCXO-1070	TCXO-1090	TCXO-1053	TCXO-2020
TCXO Series	50.80x50.80x12.7					
Dimensions (mm)	HCMOS, TTL, SINE					
Output	1 to 150 MHz (HCMOS, TTL)					
Frequency Range	5 to 150 MHz (SINE)					
Supply Voltage (Vcc)	5.0V, 12.0V, 15.0V					
Frequency Stability	±0.5 to ±2.0 ppm					
OTR	0 to +50°C to -40 to +85°C					
Frequency Adjustment	External Control Voltage / Internal Trimmer					
	External 5-pin potentiometer, External 2-pin variable resistor					



MODEL	Through Hole					
	AT-CUT			SC-CUT		
OCCO Series	2626	2127	2060	2055	2051	2057
Description	Small Package Low Power @ 0.5W @ standard state	Small Package @ 0.5W over -20 to +70°C	Smaller Package DIL 14 @ 0.5W @ standard state	High Stability Low Warm up / Low Power / Warm up	Ultra Stable OCCO	Excellent Phase noise
Dimensions (mm) max.	26 x 26 x 13	21 x 21 x 13	20 x 13 x 10	36 x 27 x 25	36 x 27 x 17.0	36 x 27 x 16
Output	HCMOS/SINE			HCMOS/SINE		
Frequency Range	HCMOS/SINE 2 to 80 MHz	HCMOS, TTL, SINE 10 to 60 MHz	HCMOS, SINE 2 to 120 MHz	1 to 30 MHz	10 to 40 MHz	10 to 40 MHz
Supply Voltage (±5%)	SINE 2 to 80 MHz 3.3V, 5.0V, 12.0V	20 to 60 MHz 5.0V	16 to 120 MHz 3.3V, 5.0V	5 to 30 MHz 5.0V, 12.0V	5 to 40 MHz 5.0V / 12.0V	5 to 40 MHz 5.0V
OTR	-20 to +70°C	0 to 50°C to -40 to 85°C	-40 to +85°C	0 to 50°C to -40 to 85°C	-40 to +85°C	-40 to +70°C
Stability over OTR	±5x10 ⁻⁶	±2x10 ⁻⁷	±5x10 ⁻⁶ , ±10x10 ⁻⁶ , ±20x10 ⁻⁶ (15years)	±5x10 ⁻⁶ , ±10x10 ⁻⁶ , ±20x10 ⁻⁶	±10x10 ⁻⁶	±1x10 ⁻⁶
Power consumption @ 25°C	During Warm-Up 2.0W	2.5 W	2.5 W	1.0W	4.5 W	4.0 W
Warm up time @ 25°C	5 min. max. to ±0.1ppm	3 min. max. to ±0.1ppm	Within spec. after 30sec @ 0°C	10 min. max. to ±0.01ppm	90 sec max.	8 min max.
Aging	±0.1ppm/year after 30 days	±0.3ppm per year	±0.7 ppm for 1st year, ±4ppm max. for 10years.	±1 x 10 ⁻⁶ per day ±5 x 10 ⁻⁶ per year	±1 x 10 ⁻⁶ per day ±5 x 10 ⁻⁶ per year	±0.3ppm per year

- Above details indicates our capabilities
- For more specifications kindly visit our website or contact factory
- Phase Noise for 2058 Package - 165 dBc/Hz @ 10KHz

- ISO 9001 : 2008 Certified Organisation
- All products are RoHS / REACH Compliant.
- Specifications are subject to change without notice.



Frequency Control Products RF & Microwave Products



- Filters (Cavity, Crystal, LC, High Frequency, Diplexers)
- Digital Tuned Filters
- Voltage Tuned Filters
- Switches
- Power Amplifiers
- Low Noise Amplifiers

- Local Oscillators
- Frequency Synthesizers
- Quartz Crystal
- CXO
- VCO
- TCXO
- OCCO

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Filters



Cavity Filters:

Centre Frequency Fc (MHz)	1dB Band Width (% of Fc)	VSWR	Power Handling(W)	Impedance	Package
70 MHz to 6000 MHz	1.1 to 4.3	1.4:1	2.5	50Ω	SMD, Pin and Connector

Crystal Filters:

Centre Frequency Fc (MHz)	3dB Band Width (% of Fc)	Return Loss (dB)	Pass Band Ripple (dB)	Impedance	Package
1.4 MHz to 140 MHz	0.02 to 0.44	<10	<0.5	50Ω	SMD, Pin and Connector

LC Low Pass Filters:

Cut Off Frequency Fc (MHz)	Insertion Loss (dB)	VSWR	Power Handling (W)	Impedance	Package
1 MHz to 1300 MHz	0.5 to 2.2	1.1:1 to 1.6:1	1	50Ω	SMD, Pin and Connector

LC High Pass Filters:

Cut Off Frequency Fc (MHz)	Insertion Loss (dB)	VSWR	Power Handling (W)	Impedance	Package
20 MHz to 900 MHz	0.5 to 1.2	1.5:1	1	50Ω	SMD, Pin and Connector

LC Band Pass Filters:

Centre Frequency Fc (MHz)	1dB Band Width (% of Fc)	VSWR	Power Handling (W)	Impedance	Package
2 MHz to 1200 MHz	2.85 to 200	1.4:1 and 1.5:1	1	50Ω	SMD, Pin and Connector

- High Power (Including LC) and High Frequency(up to 18GHz) Low pass, High pass, Band pass & Band stop filters can be supported as per customer requirements.

Digitally Tuned Filters

- Wide Tuning Range
- Good Linearity
- 5-8 bit control
- For frequencies from 30 MHz to 8 GHz

Voltage Tuned Filters

- 30 MHz – 6 GHz
- Wide Tuning Range
- Good Linearity
- Low Insertion Loss

Power Amplifiers

- 30 MHz to 6 GHz
- CW and complex waveform
- Single or Multicarrier
- Power up to 300W
- Low Harmonic and IM distortion
- High Efficiency

Frequency Synthesizers

- 10MHz to 6GHz
- Low Phase Noise
- Low Spurious
- Internal & external reference
- Serial Interface RS232/display

Local Oscillators

- Up to 6 GHz
- High Stability
- Customized
- Compact size
- EMI/EMC as per MIL

Low Noise Amplifier

- Up to 6 GHz
- Low Noise Figure (0.5dB up to 3 GHz, 0.8 dB up to 6 GHz with optimum matching for NF)
- High Gain
- High Linearity

Switches

- High/Low Power switches
- High Isolation
- Low Insertion Loss

- ★ **We also Support**
 - Frequency Multipliers (up to 6GHz)
 - Multicouplers (up to 6GHz)
 - Cavity Duplexers (up to 4GHz)

Quartz Crystals

- SEVERAL STANDARD PACKAGES (RESISTANCE AND COLD WELD) HC-49U, 49S, UM-1, HC-43U & SMD VERSIONS AVAILABLE
- TO-5 MILL GRADE CRYSTALS AS PER ESAS301 CAN BE SUPPORTED



MODEL	Through Hole					
	UM-1	UM-1 SLM	UM-1 3LEAD	UM-1 COLD WELD	UM-5	HC-36U
Dimensions (mm)	7.6 x 3.1 x 8.0	7.6 x 2.5 x 8.0	7.6 x 3.1 x 8.0	7.6 x 3.25 x 8.0	7.57 x 2.25 x 5.72	19.43 x 9.14 x 19.69
Frequency Range	7.5 to 170 MHz			14 to 120 MHz	1 to 150 MHz	
OTR	(0 to +50°C) to (-55 to +125°C)			(0 to +50°C) to (-55 to +125°C)		



MODEL	Through Hole			SMD							
	HC-49T	HC-43U	HC-49U (Short Lead)	49S	Fork	46S SMD (SMD+pad)	Tuning Fork (SMD+pad)	HC-760	AE-6035	AE-6032	AE-3225
Dimensions (mm)	11.05 x 4.65 x 11.40	11.43 x 5.08 x 13.30	11.05 x 4.65 x 13.05	11.18 x 4.7 x 13.30	3.0 x 8.0 x 4.5/12.2	13.3 x 4.65 x 4.5/12.2	8 x 3.8 x 2.5	7.0 x 5.0	6.0 x 3.5	5.0 x 3.2	3.2 x 2.5
Frequency Range	1.8432 to 150 MHz			3.579545 to 75 MHz	32.768 MHz to 75 MHz	3.579545 to 75 MHz	32.768 KHz	8 to 80 MHz	8 to 80 MHz	8 to 40 MHz	12 to 40 MHz
OTR	(0 to +50°C) to (-55 to +125°C)			(0 to +50°C) to (-40 to +85°C)							

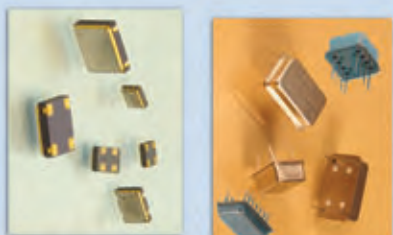


MODEL	Full Size-DIL14 / Full Size-All 14 Pins						Mini Half Size-DIL8 / Mini Size-All 8 Pins					
	CMO 180/200	CMO 200/400	CMO 225/425	CMO 250	CMO 850	CMO 600/1300	CMO 1308 x 13.08 x 5.5	CMO 800/1400	CMO 825/1425	CMO -7650	CMO -5032	CMO -3225
Series	20.7 x 13.0 x 4.5						13.08 x 13.08 x 5.5					
Dimensions (mm)	20.7 x 13.0 x 4.5						7.0 x 5.0 x 1.8					
Output	TTL	HCMS05	HCMS05	HCMS05	HCMS05	TTL	HCMS05	HCMS05	HCMS05	HCMS05/TL	HCMS05	
Frequency Range	32 KHz to 160 MHz	320KHz to 210MHz	320KHz to 120MHz	320 KHz to 120 MHz	320 KHz to 120 MHz	32 KHz to 160 MHz	320KHz to 210MHz	320KHz to 120MHz	320KHz to 120MHz	1 to 200 MHz	1.8 to 125 MHz	
Supply Voltage	5V	3.3V	3.3V	2.5V	5V	5V	3.3V	3.3V	3.3V	1.8V - 5V		
Frequency Stability	±10 ppm to ±100 ppm						±20ppm to ±100 ppm					
OTR	0 to +50°C to -55 to +125°C						0 to +50°C to -40 to +85°C					

Crystal Oscillators

CXO Series

- ALL 14PINS, 8PINS, DIL14, DIL 8 & SMD VERSIONS AVAILABLE
- FREQUENCY: 32.768 KHz CAN BE SUPPORTED IN THROUGH HOLE AND SMD VERSIONS



XO Series

- DIFFERENTIAL OUTPUTS ECL / PECL / LVDS AVAILABLE IN DIL 14 & SMD VERSIONS



MODEL	Through Hole				SMD			
	XO-900	XO-925	XO-700	XO-526	XO-590	XO-502	XO-590	XO-590
Dimensions (mm)	20.7 x 13.0 x 4.5				7.0 x 5.0 x 1.70			
Output	PECL	ECL	LVDS	SINE	LVDS	PECL	LVDS	PECL
Frequency Range	40 MHz to 210 MHz		50 MHz to 160 MHz		8 MHz to 150 MHz		10.9-670 MHz	
Supply Voltage	5.0V	3.3V	-5.2V	3.3V	5.0V/ 12.0V	3.3V	3.3V	3.3V
Frequency Stability	±2 to ±100 ppm		±15 to ±100 ppm		±10 to ±50 ppm		±20ppm, ±25ppm, ±50ppm	
OTR	0 to +50°C to -40 to +85°C				0 to +50°C to -40 to +85°C			
Frequency Adjustment	-				External Control Voltage / Internal trimmer			

NOTE: SMD VERSIONS CAN BE SUPPORTED WITH 1.8V & 2.5V ALSO