

Dynamic Engineers Inc.

2550 Gray Falls Dr., Suite#128, Houston, TX, 77077 TEL: 281-870-8822EMAIL:Sales@DynamicEngineers.com DOCXO3627S-10MHz-A-V Double Oven Controlled Crystal Oscillator

Features and Benefits

Less than +/- 0.1 ppb per day aging Less than +/- 20 ppb per year aging Less than +/- 0.2 ppb over -40°C to +85°C Industry Standard Package Less than 7.0E-12 root-allan variance for tau = 1 second

Typical Applications

Ideally suited for customer specified hold-over conditions over 24 hours over any +/- 15°C change in temperature.

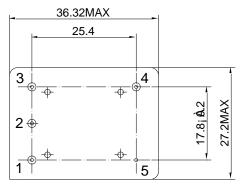
Description

This device is a traditional double oven design architecture utilizing ultra-low aging, proprietary high temperature processes to deliver a highly stable frequency reference source.

Mechanical Drawing & Pin Connections

Drawing No: MD15083-1

Bottom View

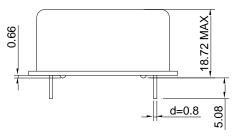


Pin Connections:

Pin	Symbol	Function
1	Vc	Control Voltage(EFC)
2	Vref	Reference Voltage
3	Vs	Supply Voltage
4	RF OUT	RF Output
5	GND	Ground

Unit : mm

Side View



Rev.1

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DOCXO3627S-10MHz-A-V

Double Oven Controlled Crystal Oscillator

Specifications

	OCXO	Sym	Condition		Value		Unit	Note
Specification			Condition	Min.	Тур.	Max.		Note
Frequency		Fo			10.000000		MHz	
RF Output								-
Output Waveform					HCMOS			
Load					15		pF	
Output Level High "1"				+4.4			V	
Output Level Low "0"						+0.3	V	
Harmonics	5					-30	dBc	
Duty Cycle)		@+2.5V	45	50	55	%	
Spurious						-60	dBc	
Power Su	pply							
Voltage		Vcc		4.75	5.0	5.25	V	
Power Consumption(Steady State)			@+25°C			2.5	W	
Current Consumption(Warm-up)		lWarm-up				1.75	A	
Reference	e Voltage							
Reference Voltage Output (Pin 2)				+2.66	+2.8	+2.94	V	
Load				9			Kohm	
Stability of	Stability of Ref. Voltage over temp.			-0.0005		+0.0005	V	
Frequency								
			VCO @Min. voltage	-0.8		-0.35	ppm	Ref. to frequency
Electronic	Frequency Control(EFC)							at nominal center
Liootionio			VCO @Max. voltage	+0.35		+0.8	ppm	voltage
EFC Voltage		Vc		0	+1.4	+2.8	V	voltage
Linearity				-10		+10	%	
	EFC Input Impedance			50			Kohm	
EFC Slope		∆f/Vc			Positive			
					1 0511170			
Frequency Stability								
								VCO input at
Initial Tole	rance @+25°C		After turn on power			+/-0.1	maa	VCO input at center voltage
Initial Tole	rance @+25°C		After turn on power 30+/-5 minutes			+/-0.1	ppm	vCO input at center voltage +/-0.001V
								center voltage
	rance @+25°C ting Temperature Range		30+/-5 minutes From -40°C to +85°C			+/-0.1	ppm ppb	center voltage
Vs. Operat		ours over A	30+/-5 minutes From -40°C to +85°C Steady state	perature as	a function of tem	+/-0.2	ppb	center voltage +/-0.001V
Vs. Operat	ting Temperature Range		30+/-5 minutes From -40°C to +85°C Steady state NY +/- 15°C change in ten			+/-0.2	ppb	center voltage +/-0.001V
Vs. Operat Less than days contir	ting Temperature Range +/- 0.3 ppb total drift over 24 h		30+/-5 minutes From -40°C to +85°C Steady state NY +/- 15°C change in ten			+/-0.2	ppb	center voltage +/-0.001V
Vs. Operat Less than days contir Vs. Supply	ting Temperature Range +/- 0.3 ppb total drift over 24 h nuous operation in the end app		30+/-5 minutes From -40°C to +85°C Steady state NY +/- 15°C change in ten	stomer holds		+/-0.2 aperature and onstant. +/-0.2	ppb d aging with a	center voltage +/-0.001V
Vs. Operat Less than days contir	ting Temperature Range +/- 0.3 ppb total drift over 24 h nuous operation in the end app		30+/-5 minutes From -40°C to +85°C Steady state NY +/- 15°C change in ten ipment. This assumes cu			+/-0.2 perature and postant.	ppb d aging with a	center voltage +/-0.001V
Vs. Operat Less than days contir Vs. Supply Warm-up	ting Temperature Range +/- 0.3 ppb total drift over 24 h nuous operation in the end app v Voltage Change		30+/-5 minutes From -40°C to +85°C Steady state NY +/- 15°C change in ten ipment. This assumes cu In 5 minutes @+25+/-1°C	stomer holds		+/-0.2 aperature and onstant. +/-0.2	ppb d aging with a	center voltage +/-0.001V
Vs. Operat Less than days contir Vs. Supply	ting Temperature Range +/- 0.3 ppb total drift over 24 h nuous operation in the end app v Voltage Change		30+/-5 minutes From -40°C to +85°C Steady state NY +/- 15°C change in ten ipment. This assumes cu In 5 minutes	stomer holds	power supply co	+/-0.2 aperature and onstant. +/-0.2 +20	ppb d aging with a ppb ppb	center voltage +/-0.001V
Vs. Operat Less than days contir Vs. Supply Warm-up	ting Temperature Range +/- 0.3 ppb total drift over 24 h nuous operation in the end app v Voltage Change		30+/-5 minutes From -40°C to +85°C Steady state NY +/- 15°C change in ten ipment. This assumes cu In 5 minutes @+25+/-1°C	stomer holds	power supply co Tau = 1 sec	+/-0.2 perature and ponstant. +/-0.2 +20 0.007 0.01	ppb d aging with a ppb ppb ppb/s ppb/10s	center voltage +/-0.001V
Vs. Operat Less than days contir Vs. Supply Warm-up	ting Temperature Range +/- 0.3 ppb total drift over 24 h nuous operation in the end app v Voltage Change		30+/-5 minutes From -40°C to +85°C Steady state NY +/- 15°C change in ten ipment. This assumes cu In 5 minutes @+25+/-1°C Allan Deviation	stomer holds	power supply co Tau = 1 sec	+/-0.2 aperature and onstant. +/-0.2 +20 0.007	ppb d aging with a ppb ppb ppb/s	center voltage +/-0.001V
Vs. Operat Less than days contir Vs. Supply Warm-up	ting Temperature Range +/- 0.3 ppb total drift over 24 h nuous operation in the end app / Voltage Change n Stability Per Day (After 30 Days Operation)		30+/-5 minutes From -40°C to +85°C Steady state NY +/- 15°C change in ten ipment. This assumes cu In 5 minutes @+25+/-1°C Allan Deviation Less than this rate at	stomer holds	power supply co Tau = 1 sec	+/-0.2 perature and ponstant. +/-0.2 +20 0.007 0.01	ppb d aging with a ppb ppb ppb/s ppb/10s	center voltage +/-0.001V
Vs. Operat Less than days contir Vs. Supply Warm-up Short Term	ting Temperature Range +/- 0.3 ppb total drift over 24 h nuous operation in the end app v Voltage Change n Stability Per Day (After 30 Days Operation) Per Year		30+/-5 minutes From -40°C to +85°C Steady state NY +/- 15°C change in ten ipment. This assumes cu In 5 minutes @+25+/-1°C Allan Deviation Less than this rate at time of shipment	stomer holds	power supply co Tau = 1 sec	+/-0.2 perature and ponstant. +/-0.2 +20 0.007 0.01	ppb d aging with a ppb ppb ppb/s ppb/10s	center voltage +/-0.001V
Vs. Operat Less than days contir Vs. Supply Warm-up Short Term	ting Temperature Range +/- 0.3 ppb total drift over 24 h nuous operation in the end app / Voltage Change n Stability Per Day (After 30 Days Operation)		30+/-5 minutes From -40°C to +85°C Steady state NY +/- 15°C change in ten ipment. This assumes cu In 5 minutes @+25+/-1°C Allan Deviation Less than this rate at time of shipment Curve-fit less than this	stomer holds	power supply co Tau = 1 sec	+/-0.2 aperature and onstant. +/-0.2 +20 0.007 0.01 +/-0.1	ppb d aging with a ppb ppb/s ppb/10s ppb	center voltage +/-0.001V
Vs. Operat Less than days contir Vs. Supply Warm-up Short Term	ting Temperature Range +/- 0.3 ppb total drift over 24 h nuous operation in the end app / Voltage Change n Stability Per Day (After 30 Days Operation) Per Year (After 30 Days Operation)		30+/-5 minutes From -40°C to +85°C Steady state NY +/- 15°C change in ten ipment. This assumes cu In 5 minutes @+25+/-1°C Allan Deviation Less than this rate at time of shipment Curve-fit less than this rate at time of	stomer holds	power supply co Tau = 1 sec	+/-0.2 aperature and onstant. +/-0.2 +20 0.007 0.01 +/-0.1	ppb d aging with a ppb ppb/s ppb/10s ppb	center voltage +/-0.001V
Vs. Operat Less than days contir Vs. Supply Warm-up Short Term Aging	ting Temperature Range +/- 0.3 ppb total drift over 24 h nuous operation in the end app / Voltage Change n Stability Per Day (After 30 Days Operation) Per Year (After 30 Days Operation)		30+/-5 minutes From -40°C to +85°C Steady state NY +/- 15°C change in ten ipment. This assumes cu In 5 minutes @+25+/-1°C Allan Deviation Less than this rate at time of shipment Curve-fit less than this rate at time of	stomer holds	power supply co Tau = 1 sec	+/-0.2 aperature and onstant. +/-0.2 +20 0.007 0.01 +/-0.1	ppb d aging with a ppb ppb/s ppb/10s ppb	center voltage +/-0.001V
Vs. Operat Less than days contir Vs. Supply Warm-up Short Term Aging	ting Temperature Range +/- 0.3 ppb total drift over 24 h nuous operation in the end app / Voltage Change n Stability Per Day (After 30 Days Operation) Per Year (After 30 Days Operation)		30+/-5 minutes From -40°C to +85°C Steady state NY +/- 15°C change in ten ipment. This assumes cu In 5 minutes @+25+/-1°C Allan Deviation Less than this rate at time of shipment Curve-fit less than this rate at time of shipment	stomer holds	power supply co Tau = 1 sec	+/-0.2 perature and postant. +/-0.2 +20 0.007 0.01 +/-0.1 +/-20	ppb d aging with a ppb ppb/s ppb/10s ppb	center voltage +/-0.001V
Vs. Operat Less than days contir Vs. Supply Warm-up Short Term Aging Phase Not	ting Temperature Range +/- 0.3 ppb total drift over 24 h nuous operation in the end app v Voltage Change n Stability Per Day (After 30 Days Operation) Per Year (After 30 Days Operation) ise		30+/-5 minutes From -40°C to +85°C Steady state NY +/- 15°C change in ten ipment. This assumes cu In 5 minutes @+25+/-1°C Allan Deviation Less than this rate at time of shipment Curve-fit less than this rate at time of shipment @1Hz @10Hz	stomer holds	power supply co Tau = 1 sec	+/-0.2 perature and ponstant. +/-0.2 +20 0.007 0.01 +/-0.1 +/-20 -90 -120	ppb d aging with a ppb ppb/s ppb/10s ppb ppb ppb dBc/Hz dBc/Hz	center voltage +/-0.001V
Vs. Operat Less than days contir Vs. Supply Warm-up Short Term Aging	ting Temperature Range +/- 0.3 ppb total drift over 24 h nuous operation in the end app v Voltage Change n Stability Per Day (After 30 Days Operation) Per Year (After 30 Days Operation) ise		30+/-5 minutes From -40°C to +85°C Steady state NY +/- 15°C change in ten ipment. This assumes cu In 5 minutes @+25+/-1°C Allan Deviation Less than this rate at time of shipment Curve-fit less than this rate at time of shipment @1Hz	stomer holds	power supply co Tau = 1 sec	+/-0.2 perature and ponstant. +/-0.2 +20 0.007 0.01 +/-0.1 +/-20 -90	ppb d aging with a ppb ppb/s ppb/10s ppb ppb ppb dBc/Hz	center voltage +/-0.001V
Vs. Operat Less than days contir Vs. Supply Warm-up Short Term Aging Phase Not	ting Temperature Range +/- 0.3 ppb total drift over 24 h nuous operation in the end app v Voltage Change n Stability Per Day (After 30 Days Operation) Per Year (After 30 Days Operation) ise		30+/-5 minutes From -40°C to +85°C Steady state NY +/- 15°C change in ten ipment. This assumes cu In 5 minutes @+25+/-1°C Allan Deviation Less than this rate at time of shipment Curve-fit less than this rate at time of shipment @1Hz @10Hz @10Hz @10Hz @1KHz	stomer holds	power supply co Tau = 1 sec	+/-0.2 perature and onstant. +/-0.2 +20 0.007 0.01 +/-0.1 +/-0.1 +/-20 -90 -120 -140 -150	ppb d aging with a ppb ppb/s ppb/10s ppb ppb ppb dBc/Hz dBc/Hz dBc/Hz	center voltage +/-0.001V
Vs. Operat Less than days contir Vs. Supply Warm-up Short Term Aging Phase Not	ting Temperature Range +/- 0.3 ppb total drift over 24 h nuous operation in the end app v Voltage Change n Stability Per Day (After 30 Days Operation) Per Year (After 30 Days Operation) ise		30+/-5 minutes From -40°C to +85°C Steady state NY +/- 15°C change in ten ipment. This assumes cu In 5 minutes @+25+/-1°C Allan Deviation Less than this rate at time of shipment Curve-fit less than this rate at time of shipment @1Hz @10Hz @10Hz @10Hz @10Hz @10Hz	stomer holds	power supply co Tau = 1 sec	+/-0.2 perature and ponstant. +/-0.2 +20 0.007 0.01 +/-0.1 +/-0.1 +/-20 -90 -120 -140 -150 -155	ppb d aging with a ppb ppb/s ppb/10s ppb ppb ppb dBc/Hz dBc/Hz dBc/Hz dBc/Hz	center voltage +/-0.001V
Vs. Operat Less than - days contir Vs. Supply Warm-up Short Term Aging Phase Nois	ting Temperature Range +/- 0.3 ppb total drift over 24 h nuous operation in the end app / Voltage Change n Stability Per Day (After 30 Days Operation) Per Year (After 30 Days Operation) ise		30+/-5 minutes From -40°C to +85°C Steady state NY +/- 15°C change in ten ipment. This assumes cu In 5 minutes @+25+/-1°C Allan Deviation Less than this rate at time of shipment Curve-fit less than this rate at time of shipment @1Hz @10Hz @10Hz @10Hz @1KHz	stomer holds	power supply co Tau = 1 sec	+/-0.2 perature and onstant. +/-0.2 +20 0.007 0.01 +/-0.1 +/-0.1 +/-20 -90 -120 -140 -150	ppb d aging with a ppb ppb/s ppb/10s ppb ppb ppb dBc/Hz dBc/Hz dBc/Hz	center voltage +/-0.001V
Vs. Operat Less than days contir Vs. Supply Warm-up Short Term Aging Phase Nois Phase Nois Environm	ting Temperature Range +/- 0.3 ppb total drift over 24 h nuous operation in the end app / Voltage Change n Stability Per Day (After 30 Days Operation) Per Year (After 30 Days Operation) ise se		30+/-5 minutes From -40°C to +85°C Steady state NY +/- 15°C change in ten- ipment. This assumes cu In 5 minutes @+25+/-1°C Allan Deviation Less than this rate at time of shipment Curve-fit less than this rate at time of shipment @1Hz @1Hz @1Hz @10Hz @10Hz @10Hz @10KHz @100KHz	stomer holds	power supply co Tau = 1 sec	+/-0.2 perature and ponstant. +/-0.2 +20 0.007 0.01 +/-0.1 +/-0.1 +/-20 -90 -120 -140 -150 -155	ppb d aging with a ppb ppb/s ppb/10s ppb ppb ppb dBc/Hz dBc/Hz dBc/Hz dBc/Hz	center voltage +/-0.001V
Vs. Operat Less than days contir Vs. Supply Warm-up Short Term Aging Phase Nois Phase Nois Environme Operating	ting Temperature Range +/- 0.3 ppb total drift over 24 h nuous operation in the end app / Voltage Change n Stability Per Day (After 30 Days Operation) Per Year (After 30 Days Operation) ise se ental Temperature Range	-40°C to +	30+/-5 minutes From -40°C to +85°C Steady state NY +/- 15°C change in ten ipment. This assumes cu In 5 minutes @+25+/-1°C Allan Deviation Less than this rate at time of shipment Curve-fit less than this rate at time of shipment @1Hz @10Hz @10Hz @10Hz @100Hz @100KHz @100KHz %5°C	-20	Tau = 1 sec Tau = 1 sec Tau = 10 sec	+/-0.2 perature and ponstant. +/-0.2 +20 0.007 0.01 +/-0.1 +/-0.1 +/-20 -90 -120 -140 -150 -155	ppb d aging with a ppb ppb/s ppb/10s ppb ppb ppb dBc/Hz dBc/Hz dBc/Hz dBc/Hz	center voltage +/-0.001V
Vs. Operat Less than days contir Vs. Supply Warm-up Short Term Aging Phase Nois Phase Nois Environm Operating Vibration (1	ting Temperature Range +/- 0.3 ppb total drift over 24 h nuous operation in the end app / Voltage Change n Stability Per Day (After 30 Days Operation) Per Year (After 30 Days Operation) ise se	-40°C to + MIL-STD-	30+/-5 minutes From -40°C to +85°C Steady state NY +/- 15°C change in ten ipment. This assumes cu In 5 minutes @+25+/-1°C Allan Deviation Less than this rate at time of shipment Curve-fit less than this rate at time of shipment @1Hz @10Hz @10Hz @10Hz @100Hz @100KHz @100KHz %5°C	-20 -20 Total p-p, 10	Tau = 1 sec Tau = 1 sec Tau = 10 sec	+/-0.2 pperature and onstant. +/-0.2 +20 0.007 0.01 +/-0.1 +/-20 -90 -120 -140 -155 -160	ppb d aging with a ppb ppb/s ppb/10s ppb ppb ppb dBc/Hz dBc/Hz dBc/Hz dBc/Hz	center voltage +/-0.001V

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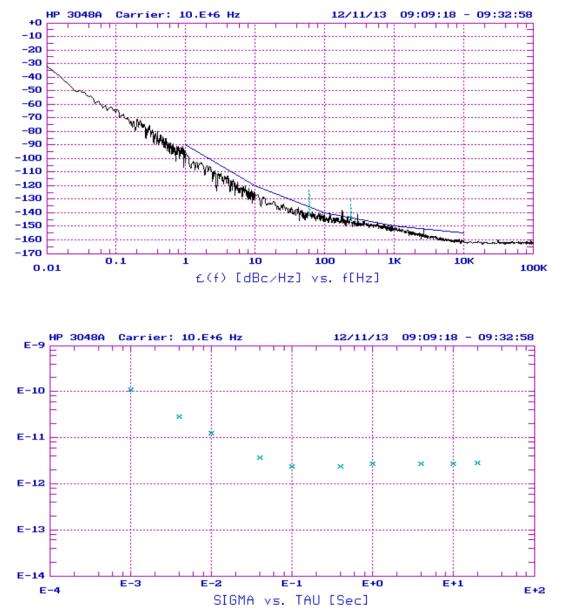


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Double Oven Controlled Crystal Oscillator

Phase Noise and Short-Term Stability Test Data



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