

# Extraordinary Low Phase Noise OCXO Reference Module

Data Sheet 1942A

Rev. K

## O-ESQXXYY-E-A-X 100/10 MHz Reference OCXO Module in Machined Aluminum Case

### Product Data Sheet

### Features

- Extraordinary Low Phase Noise Featuring -171 dBc/Hz at 1 KHz offset TYP
- Internally Locked to Precision 10 MHz OCXO with Excellent Temperature Stability and Aging
- External Reference is Optional

### Applications

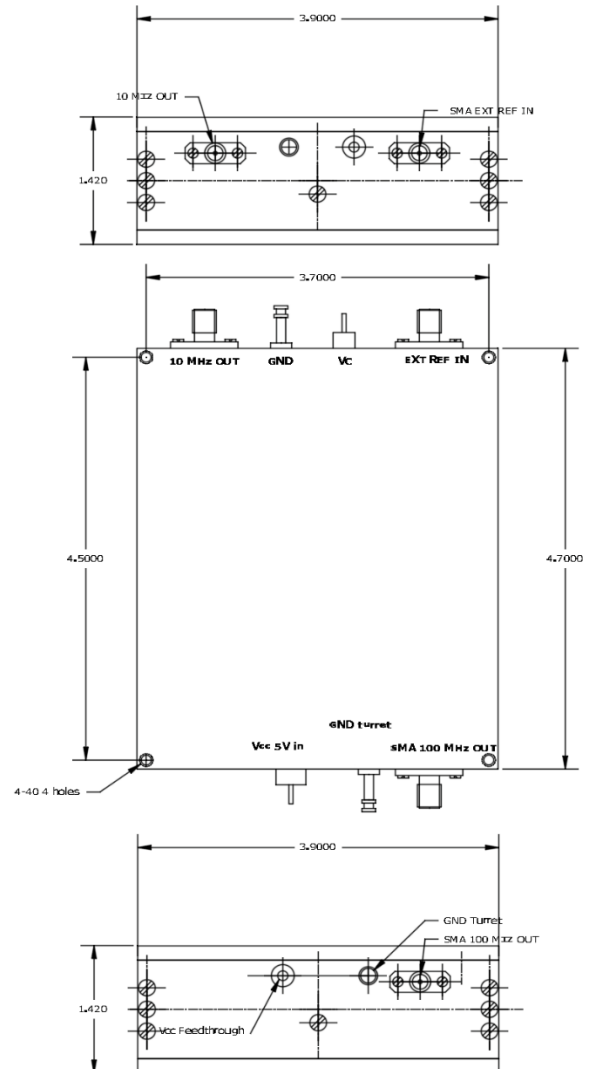
- Radar
- Test and measurement
- Instrumentation
- COTS/Dual use

### Inputs

External 10 MHz IN - SMA Female  
Vcc – Feedthrough  
Vc – Feedthrough

### Outputs

100 MHz OUT - SMA Female  
10 MHz OUT - SMA Female



Mechanical Dimensions, TYP

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## Specifications:

Parameter	Symb	Condition	Min	Typ	Max	Unit	Note
<b>Absolute Maximum Ratings</b>							
Input Break Down Voltage	V <sub>cc</sub>		-0.5		6.5	V	
Storage temper.	T <sub>s</sub>		-55		85	°C	
Control Voltage	V <sub>c</sub>		-1		10	V	

### Electrical (1)

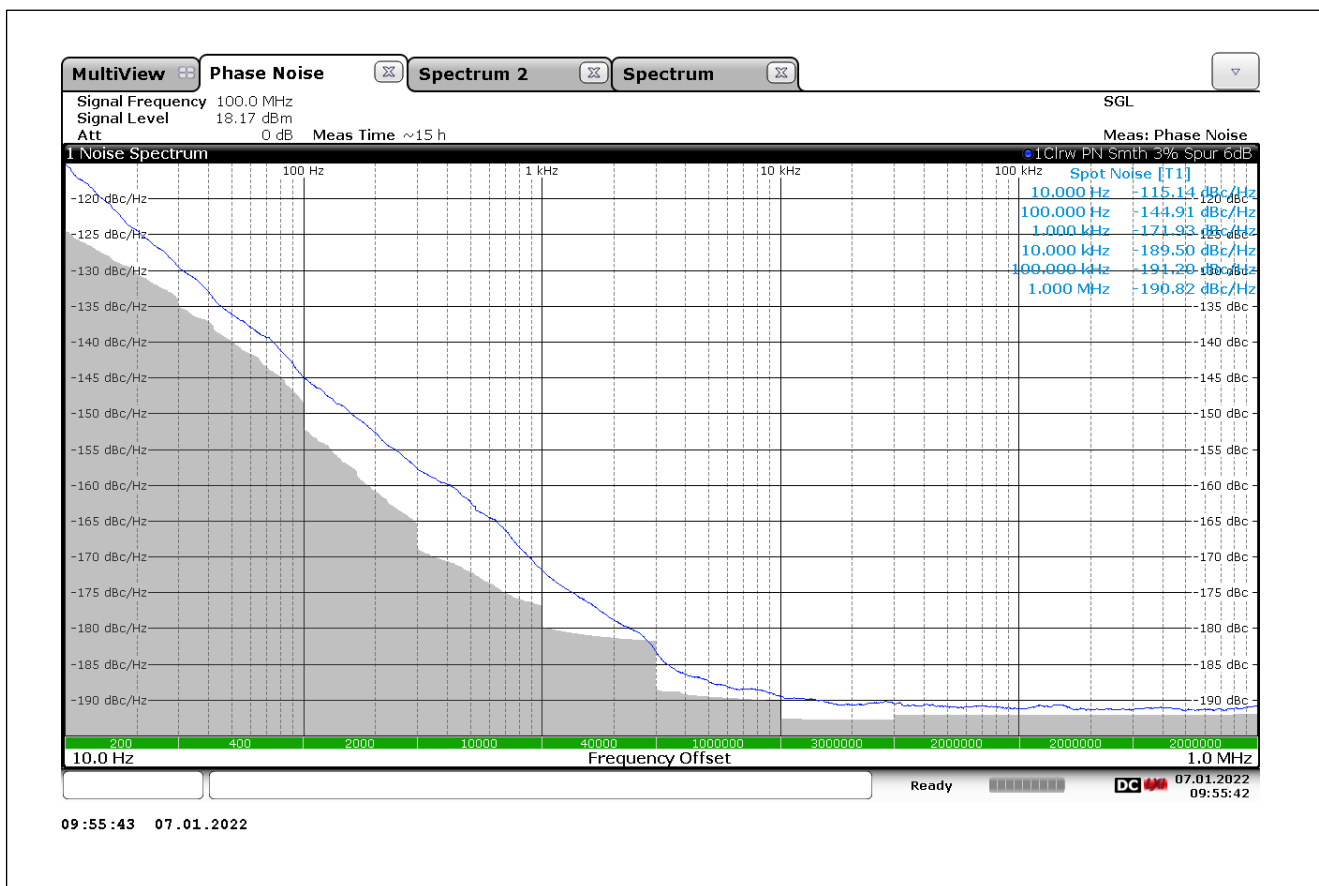
Frequency	F100 F10			100 10		MHz	
Frequency stability	$\Delta F/F$	vs. Temp.		$\pm 5$		ppb	See table below
		vs. Supply			1	ppb/5% change	
		Vs. load			1	ppb/5% change	
Aging		per day per first year 10 years		5E-10 5E-8	0.3	ppm	After 30 days of continuous operation
Allan Deviation		.01s to 1s		5E-13			
SSB Phase Noise 100 MHz OUT	$\xi(\Delta f)$	10 Hz		-115		dBc/Hz	
		100 Hz		-145			
		1 KHz		-171			
		10 KHz		-185			
		$\geq 100$ KHz		-190			
SSB Phase Noise 10 MHz OUT	$\xi(\Delta f)$	1 Hz		-120		dBc/Hz	Internal Reference Only
		10 Hz		-148			
		100 Hz		-160			
		1 KHz		-168			
		10 KHz		-170			
$\geq 100$ KHz		-172					
Retrace		After 30 minutes		$\pm 10$		ppb	
G-sensitivity		worst direction			$\pm 0.5$ $\pm 1.0$	ppb/G	100 MHz OUT 10 MHz OUT
Input Voltage	V <sub>cc</sub>		4.9	5.0	5.5	V	
Power consumption	P	steady state, 25°C start-up		6.0 18	7.5 20	W	Still air
Spectral Purity		Output power		18 10		dBm dBm dBc	100 MHz 10 MHz 100 MHz Non-supply related
		Subharmonics			-80		
		Spurious			-80		
		Harmonics		-35	-30		
Load		50 Ohm (Internally AC-coupled)					Both outputs
Warm-up time	$\tau$	to 0.1ppm accuracy		5	8	minutes	During warm-up the output signal can be scrambled, jittery, and not usable altogether
Output Waveform		Sine-wave					
Control voltage	V <sub>c</sub>		0		4.5	V	Slope option "P"
Setability			2.0	2.25	2.5	V	Slope option "P"
Pull range		from nominal F	$\pm 0.4$			ppm	
V <sub>c</sub> Rate of Change					0.1	V/s	
Modulation Bandwidth	MBW				0.1	Hz	Due to internal PLL loop bandwidth about 1 Hz
Absolute Pull Range	APR	Over all conditions	$\pm 0.1$			ppm	
External Reference		Sine Wave	+10			dBm	
Reference Select			Automatically switches to External Reference once present				

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## Environmental and Mechanical

<b>Operating temp. range</b>	0 to 70°C Standard, Other options TBD
<b>Mechanical Shock</b>	Per MIL-STD-202, 30G, 11ms survival
<b>Thermal Shock</b>	Per MIL-STD_883, Method 1011, Condition A survival
<b>Vibration</b>	Per MIL-STD-202, 5G to 2000 Hz survival
<b>Soldering Conditions</b>	260°C for 10s Max leads only



## Creating a Part Number

**Q - ESQ**  
 100.000/10.000 MHz  
 OCXO  
 ELPN Module

### Temperature Stability

Code	Specification
18	$\pm 1 \times 10^{-8}$
59	$\pm 5 \times 10^{-9}$
YZ	$\pm Y \times 10^{-Z}$

**XX YY - E -**

### Temperature Range

Code	In 5°C steps
First letter	Lowest temperature from G = -10°C
Second letter	Highest temperature to W = 70°C
Examples	
HR	-5°C to 45°C
GU	-10°C to 60°C

### Temperature Code Table

Letter	Temp °C	Letter	Temp °C	Letter	Temp °C	Letter	Temp °C	Letter	Temp °C	Letter	Temp °C
A	-40	F	-15	K	10	P	35	U	60	Z	85
B	-35	G	-10	L	15	Q	40	V	65		
C	-30	H	-5	M	20	R	45	W	70		
D	-25	I	0	N	25	S	50	X	75		
E	-20	J	5	O	30	T	55	Y	80		

**A - X -**

### Environmental

Code	Specification
L	Contains a level of lead that is in excess of RoHS directive and is not designed for reflow
R	RoHS compliant, not designed for reflow

### Ref Select Option

Code	Specification
A	Automatic