

FEATURES

Stress compensated crystal cut
 High stability – 5×10^{-12} Allan deviation
 Low aging – ± 0.1 ppm/year

Ultra-low phase noise

Standard	-140 dBc/Hz @ 10 Hz
	-169 dBc/Hz floor
Low	-145 dBc/Hz @ 10 Hz
	-170 dBc/Hz floor
Ultra	-115 dBc/Hz @ 1 Hz
	-146 dBc/Hz @ 10 Hz
	-172 dBc/Hz floor

Sine output
 Oven monitor, enable, low g-sensitivity options
 Thru-hole Europack – 36 x 27 mm

APPLICATIONS

Lab instrumentation
 Satellite communications
 Radar
 COTS

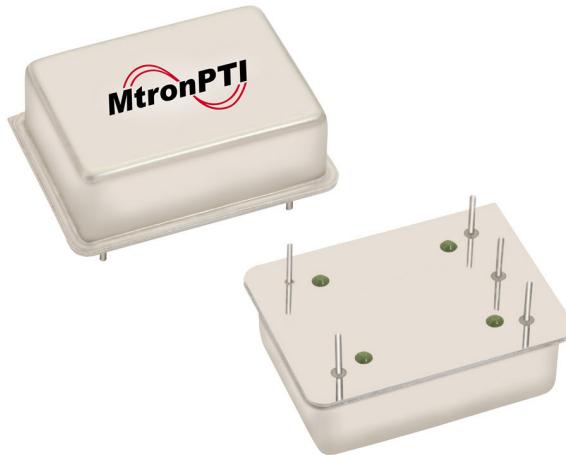
SOLID FOUNDATION

*Precision measurement and reliable communications
 need a solid reference*

Network analyzer measurements are only as good as the noise they themselves generate. Satellite communication terminals and radar need low noise to hold the channel and provide a clear image. MtronPTI's [XO5123 Series Low Phase Noise OCXOs](#) bring the ultra-low phase noise and high stability these systems need.

In the near past, low noise reference oscillators were bulky multi-cubic-inch boxes, perhaps designed by system builders themselves. No more. MtronPTI's [XO5123 Series](#) delivers down to -115 dBc/Hz @ 1 Hz and -172 dBc/Hz noise floor in a small, 36 x 27 mm, 'Europack' package. Consuming only 2.5 Watts steady state and with ± 0.1 ppm/year aging, the [XO5123 Series](#) also meets SWaP (low size, weight and power) requirements as well as ensuring long, accurate equipment life.

Nearly fifty years of crystal science and high performance oscillator design and manufacturing helps MtronPTI's [XO5123 Series](#) make measurements a bit more accurate, data links more reliable and situational awareness more complete.



Electrical Characteristics

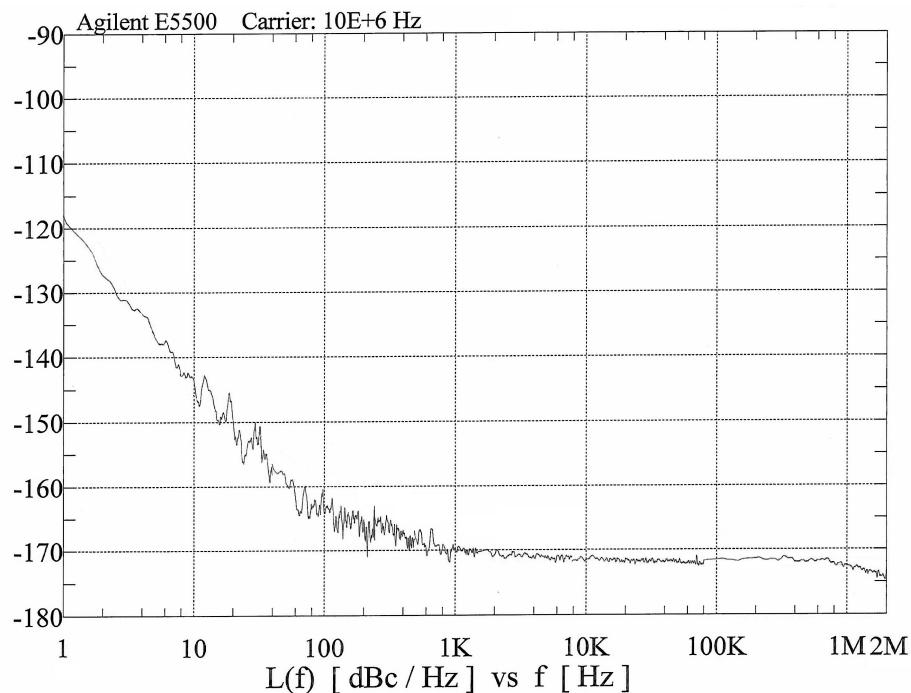
Parameter	Symbol	Min.	Typ.	Max.	Units	Comment
OUTPUT FREQUENCY						
Nominal			10.000000		MHz	
Initial Frequency Accuracy	F ₀	-0.1		+0.1	ppm	At time of shipment
vs. Temperature Range		-10		+10	ppb	-20 °C to +70 °C, other ranges available
vs. Supply Voltage		-2.0		+2.0	ppb	±5 % change in voltage
vs. Load		-2.5		+2.5	ppb	±5 % change in load
Aging/Day		-0.5		+0.5	ppb	
Aging/Year		-0.1		+0.1	ppm	
Short Term Stability				5	x10 ⁻¹²	After 30 days power on
(Allan deviation)						Per second
RF OUTPUT						
Output Type			Sinewave			
Output Load			50		Ω	
Level			+10		dBm	Into 50Ω
Frequency Adjustment						
Method			External Voltage Tuned			
Tuning Slope			Positive			
Tuning Voltage	V _{TUNE}	0	2.5	+5	V _{DC}	Other slope ranges available
Modulation bandwidth		1			kHz	
TUNING			Digital control			
Method			250			
Steps			8 bit			
Data				25	V _{DC}	
Tuning speed					μs	Parallel word
PHASE NOISE						Standard Phase Noise Version
SSB Phase Noise (static)			-105			
achieved after warm-up			-140			@ 1 Hz Offset
			-155			@ 10 Hz Offset
			-162			@ 100 Hz Offset
			-169			@ 1 kHz Offset
			-169			@ 10 kHz Offset
						@ 100 kHz Offset
						Low Phase Noise Version
			-112			@ 1 Hz Offset
			-145			@ 10 Hz Offset
			-155			@ 100 Hz Offset
			-162			@ 1 kHz Offset
			-170			@ 10 kHz Offset
			-170			@ 100 kHz Offset
						Ultra-low Phase Noise Version
			-115			@ 1 Hz Offset
			-146			@ 10 Hz Offset
			-158			@ 100 Hz Offset
			-165			@ 1 kHz Offset
			-170			@ 10 kHz Offset
			-172			@ 100 kHz Offset
OTHER PARAMETERS						
Warm-up Time	ΔF/F			5	Minutes	
Harmonics				-30	dBc	To be within ±100 ppb @ 25 °C, referenced to the frequency
Spurious				-80	dBc	after 24-hour power on
Supply Voltage and Power						
Supply Voltage	V _S	4.75	5.0	5.25	V _{DC}	12 volt and other options available
Power Consumption				2.5	Watts	Steady state @ 25 °C in still air
				4.5	Watts	In still air @ turn on

Environmental & Physical

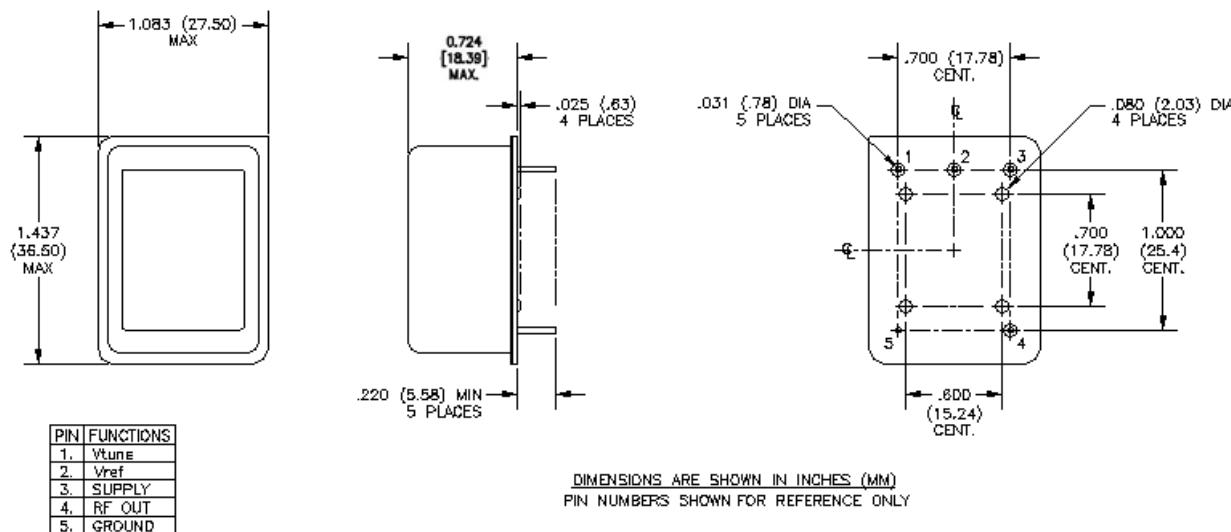
Parameter	Symbol	Min.	Typ.	Max.	Units	Comment
Operating Temperature	OTR	-20		+70	°C	
Storage Temperature	STR	-55		+85	°C	
Vibration (survival)		Per MIL-STD 202G, Method 204, Condition A				
Shock (survival)		Per MIL-STD 202G, Method 213, Condition C				
Solderability		Per EIAJ-STD-002				
RoHS		Full RoHS Compliance				



Typical Phase Noise Plot (Ultra-low phase noise version)



Mechanical, marking and pin out



Revision History

Date	Rev.	Orig.	Details of Revision
20141217	1	DPD	Preliminary

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