Mtron™
Innovative RF Solutions

XO7013-001R, 9x14mm
100MHz, CMOS, SMD VCXO

Electrical Specifications

Parameter	Symbol	Min.	Typ.	Max,	Units	Conditions
Nominal Frequency			100.000000		MHz	

Frequency Stabilities

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Absolute Pull Range (APR)		±20			ppm	APR = (Pull range) - (degradations due to temperature + aging + power supply + load+ initial tolerance + shock + vibration)
Aging		-3		+3	ppm	1st Year
		-1		+1	ppm	Per year (after 1st year)

RF Output

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Output Type			CMOS			
Output Load				15	pF	
Symmetry (Duty Cycle)		45	50	55	%	50% V_{DD}
Rise/Fall time			3		ns	@ 20% to 80% V_{DD}
Logic Level "LOW"				10% V_{DD}	V	
Logic Level "HIGH"		90% V_{DD}			V	

Frequency Adjustment

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Adjustment Method			External Voltage			
Adjustment Voltage	V_{TUNE}	0	1.65	3.3	V_{DC}	
Tuning Sensitivity			25		ppm/V	
Linearity				5	%	
Modulation Bandwidth		10			kHz	
Input Impedance			50		kΩ	
Adjustment Slope			Positive			

Additional Parameters

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
SSB Phase Noise (under static conditions)			-140		dBc/Hz	1 kHz Offset
			-155		dBc/Hz	10 kHz Offset
			-164		dBc/Hz	100 kHz Offset
			-166		dBc/Hz	1 MHz Offset
Integrated Jitter			40		fs	12 kHz to 20 MHz
Sub-harmonics		None				

Operating Voltage and Current

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Supply Voltage	V_{DD}	+3.0	+3.3	+3.6	V_{DC}	
Supply Current				35	mA	

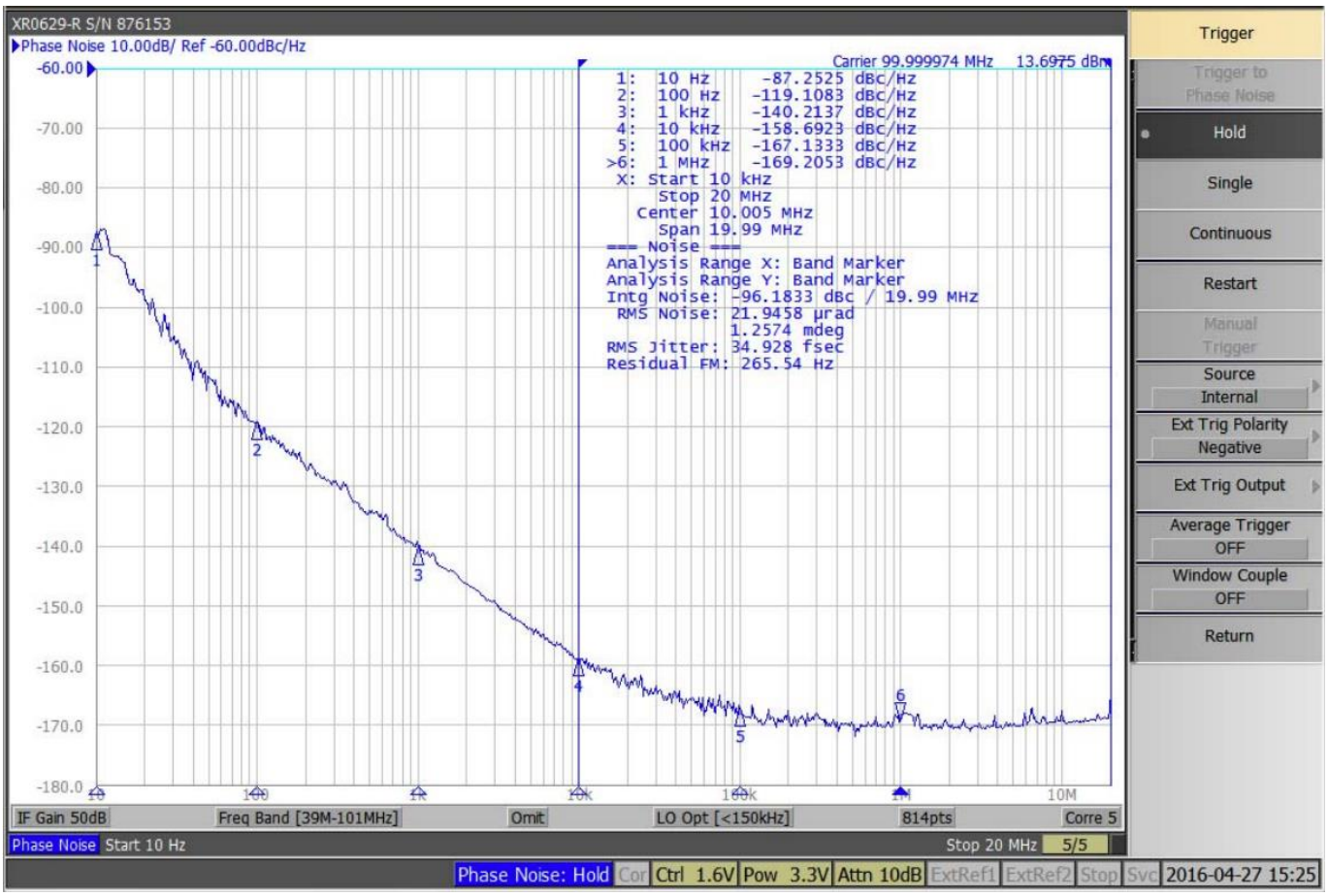
Temperature

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Operating Temperature	OTR	-40		+85	°C	
Storage Temperature	STR	-55		+95	°C	

Environmental Condition

Seal	Non-Hermetic and Washable unit. Recommend a vacuum bake at 125 ° C for 1 hour after wash. Components inside the VCXO will withstand a Parylene coating 0.25-0.75 mil thickness.
RoHS	Full RoHS Compliance
Shock	MIL-STD-883, Method 2002, Condition B
Solderability	MIL-STD-883, Method 2003
Vibration	MIL-STD-883, Method 2007, Condition A
Solvent Resistance	MIL-STD-202, Method 215
Resistance to Soldering Heat	MIL-STD-202, Method 210, Condition I or J
Thermal Shock	MIL-STD-883, Method 1011, Condition A
Moisture Resistance	MIL-STD-883, Method 1004

Representative Phase Noise Performance



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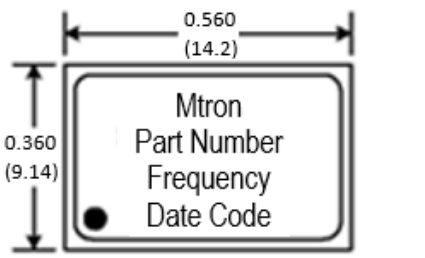
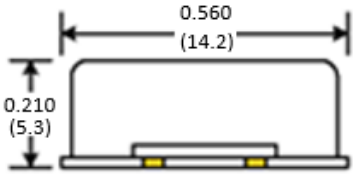
Mechanical and pin out information

Pad	Function
1	Voltage Control
2	Ground
3	Output
4	+V_{DD}

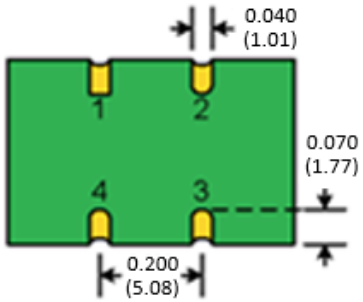
Part Marking	
Line 1	Mtron
Line 2	XO7013-001R
Line 3	100.000MHz
Line 4	Date Code

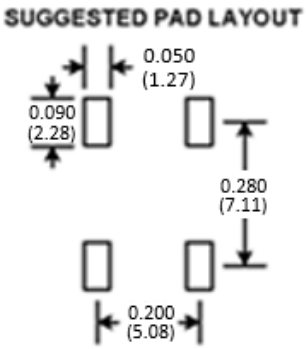
Graphs/Package Dimensions/etc.



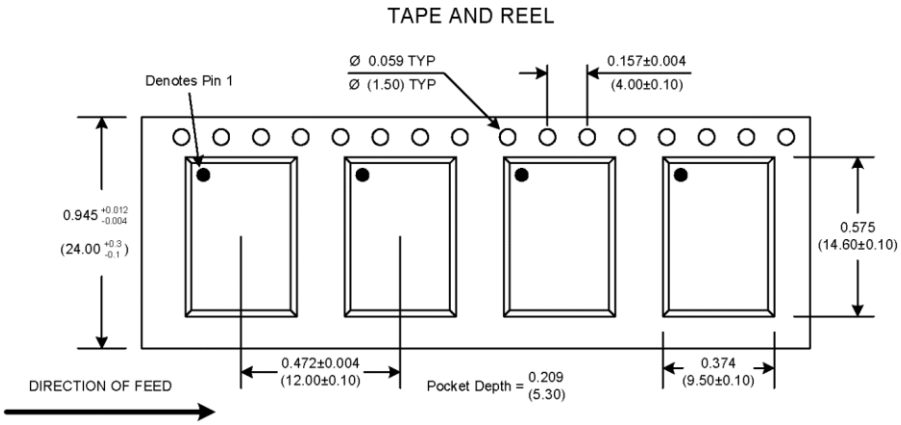


Tolerance	
3 decimals	± 15 mil
2 decimals	± 10 mil

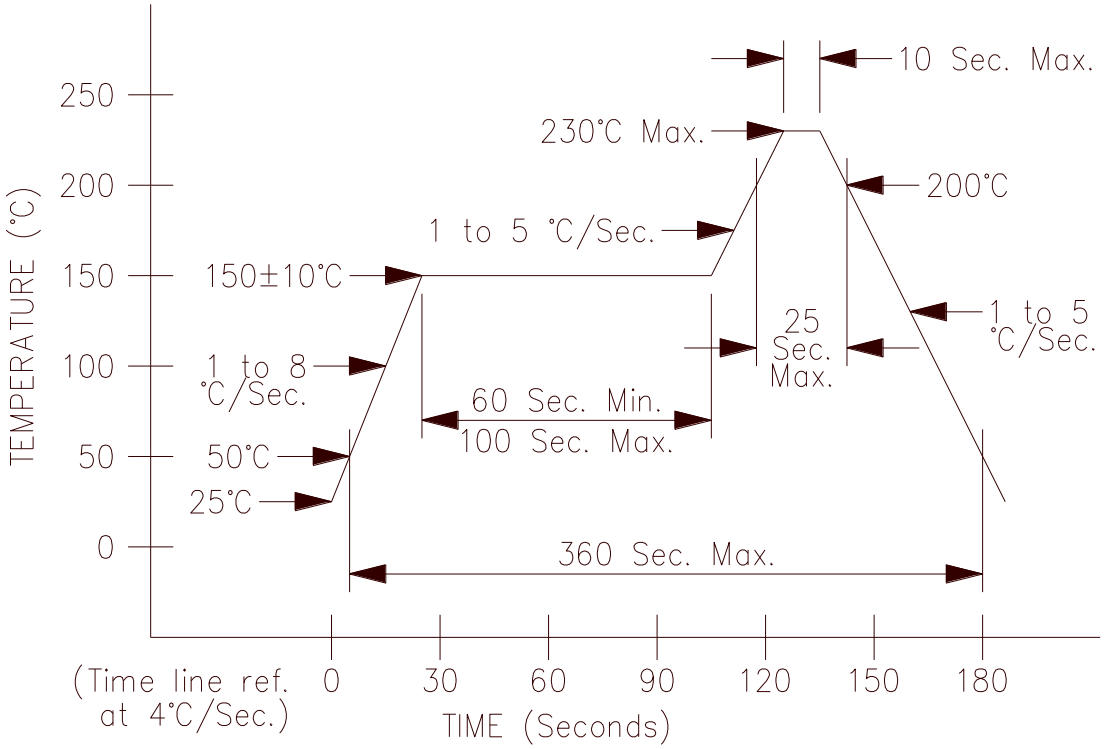




Tape and Reel



Recommended Reflow Profile



Revision History

4/24/2025 - Revision B: Datasheet format update

5/04/2016 – Revision A: Initial Version