

Features	Applications
Frequencies from 10 MHz to 125 MHz Supports both TCXO and VCTCXO formats Tight stability ± 0.1 ppm over -40°C to $+85^{\circ}\text{C}$ 3.0 V and 3.3 V versions Low phase noise performance Low G-sensitivity (0.6 ppb/G) version available	Telecom / Datacom Industrial Controls Communications & Navigation

Electrical Specifications

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Frequency Range	F_0	10		125	MHz	

Frequency Stabilities

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Initial Accuracy		-1.0		+1.0	ppm	@ $+25^{\circ}\text{C}$
vs. Operating Temperature	$\Delta F/F$	See Ordering Information			ppm	$(F_{\text{MAX}} - F_{\text{MIN}})/2$ ¹
vs. Reflow		-1		+1	ppm	2 reflows max
vs. Supply Voltage			± 0.02	± 0.1	ppm	5% voltage variation
vs. Load			± 0.02	± 0.1	ppm	5% load variation
vs. Aging (First Year)		-1.0		+1.0	ppm	$F_0 \leq 20$ MHz ²
vs. Aging (First Year)		-2.0		+2.0	ppm	$F_0 > 20$ MHz
vs. Aging (10 Year)		-3.0		+3.0	ppm	$F_0 \leq 20$ MHz
vs. Aging (10 Year)		-5.0		+5.0	ppm	$F_0 > 20$ MHz

RF Output

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Output Logic Level (CMOS)	V_{OL} V_{OH}	80		20	$\%V_{\text{CC}}$ $\%V_{\text{CC}}$	
Output Logic Level (Clipped Sinewave)		0.8			Vpk-pk	$F_0 \leq 50$ MHz
Waveform Symmetry (duty cycle)	T_{DC}	40	50	60	%	@ 50% of waveform (CMOS)
Rise/Fall Time	$T_{\text{R}}/T_{\text{F}}$			6.5 2	ns	CMOS ≤ 50 MHz LVCMOS > 50 MHz
Output Load			15 10/10		pF k Ω /pF	CMOS ³ Clipped Sinewave Output ³
Tristate Function		80% or Open			$\%V_{\text{CC}}$	Output Enabled

				20	%V _{CC}	Output Disabled: to HIGH Impedance (Z)
Tristate Leakage Current		-100		+100	μA	
Input Leakage Current		-50		+50	μA	
Startup Time	T _{SU}			10	ms	

Frequency Adjustment

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Control Voltage Range	V _C	0.3		2.7	V	@3.0 V supply
		0.3		3.0	V	@3.3 V supply
Tuning Range		±5.0			ppm	VCTCXO only ⁴
Linearity				5	%	
Modulation Bandwidth		2			kHz	
Input Resistance		100			kΩ	

Phase Noise

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
SSB Phase Noise (measured @ 26 MHz)			-98		dBc/Hz	@ 10Hz Offset
			-127		dBc/Hz	@ 100Hz Offset
			-148		dBc/Hz	@ 1kHz Offset
			-156		dBc/Hz	@ 10kHz Offset

Operating Voltage and Current

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Operating Voltage	V _{CC}	3.135	3.300	3.465	V	M6231
		2.850	3.000	3.150	V	M6232
Operating Current	I _{CC}			4.4	mA	HCMOS @ 16 MHz
				5.5	mA	HCMOS @ 26 MHz
				7.8	mA	HCMOS @ 50 MHz
				3.5	mA	Clipped Sine @ 16 MHz
				3.9	mA	Clipped Sine @ 26 MHz
				5.0	mA	Clipped Sine @ 50 MHz
			40	mA	F _o > 50MHz	

Temperature

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
-----------	--------	------	------	------	-------	------------

Operating Temperature	T _A	See Ordering Information			°C
Storage Temperature	T _S	-55		+125	°C

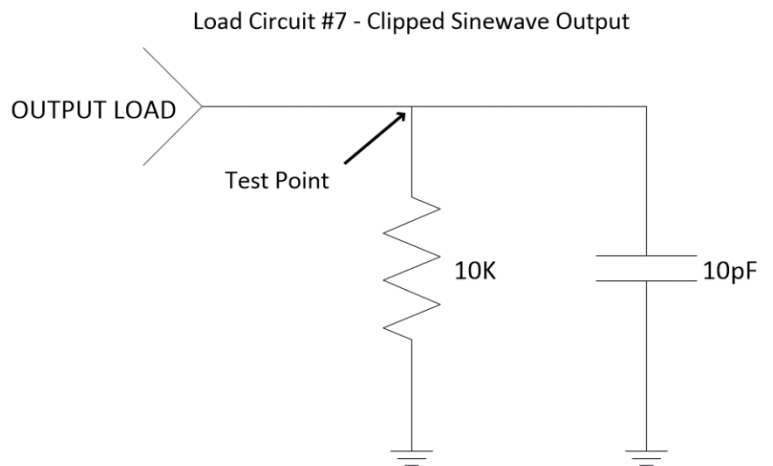
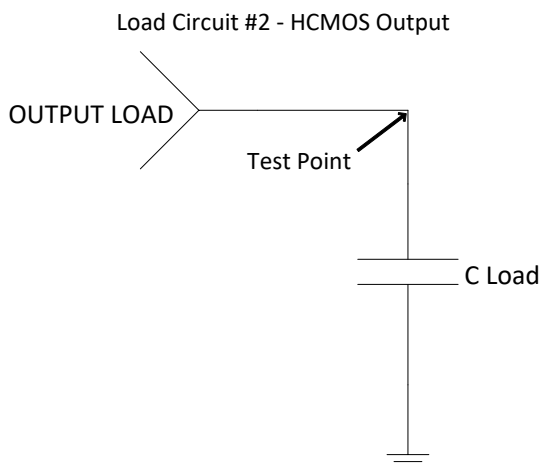
Notes

Note 1	Contact factory for less than ±1 ppm frequency stability.
Note 2	Contact factory for less than ±1 ppm frequency aging.
Note 3	Refer to the load circuit diagram in this data sheet.
Note 4	Contact factory for other tuning range options.

Environmental Conditions

Parameter	Conditions
Shock	Per MIL-STD-202, Method 213, Condition C (100 g's, 6msec duration, ½ sinewave)
Vibration	Per MIL-STD-202, Method 201 & 204 Condition D (20 g's from 10-2000Hz)
Solderability	Per EIAJ-STD-002
Max. Soldering Conditions	See solder profile, Figure 1
Package Type	4-Pad FR-4 4-pad 9x14mm
Pad Termination	ENIG over Cu

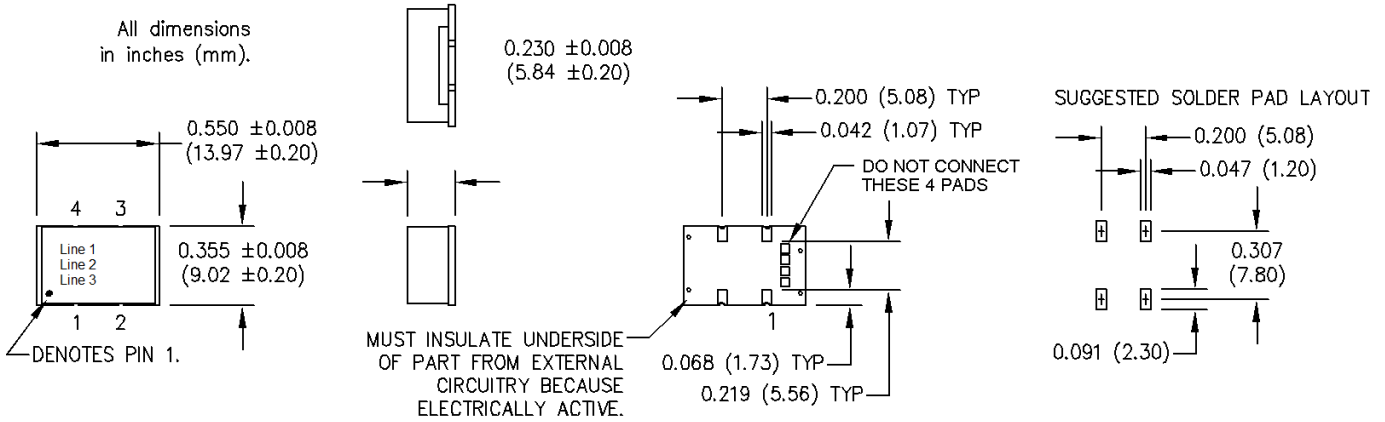
Load Circuit Diagrams



Mechanical and pin out information

Pad	Function
1	Voltage Control or N/C
2	Ground
3	Output
4	Supply Vcc+

Package Dimensions



Lead Free Solder Profile

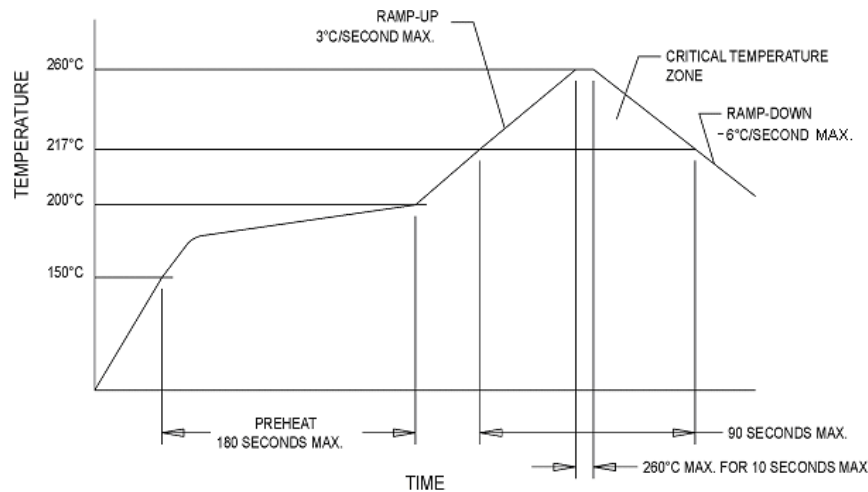
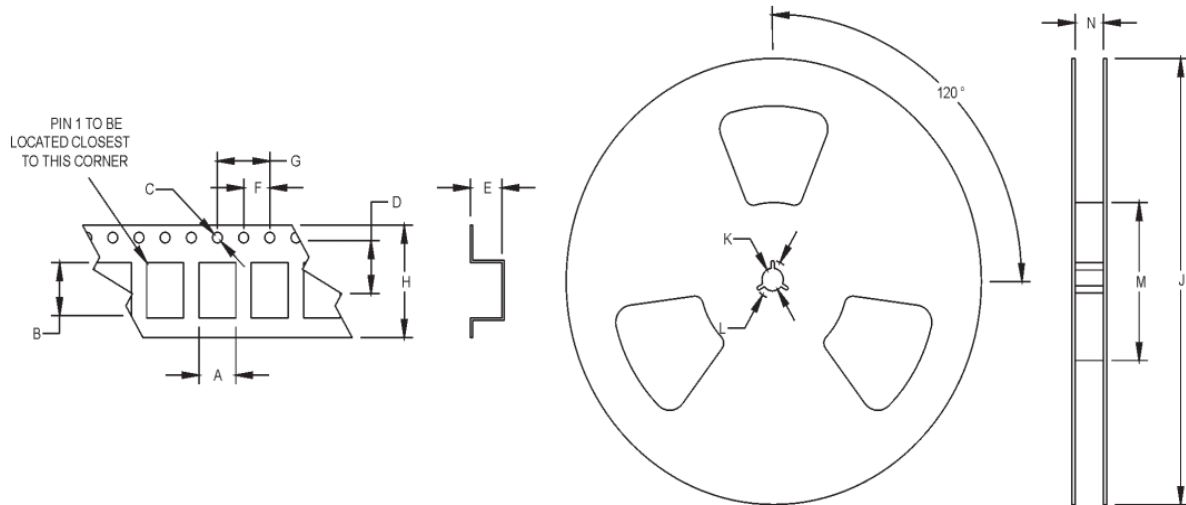


Figure 1

Tape and Reel Specifications

All units in mm



A	B	C	D	E	F	G	H	J	K	L	M
9.54	14.62	1.5	11.5	5.4	4	12	24	330	6.5		100

Ordering Information

M623x 2 J F C K 00.0000MHz

Product Series	
M6231	3.3 V
M6232	3.0 V

Temperature Range	
1	0°C to +70°C
6	-20°C to +70°C
2	-40°C to +85°C
3	-55°C to +105°C
4	-55°C to +125°C

Stability	
L	± 4.6 ppm
H	± 2.5 ppm
K	± 2.0 ppm
J	± 1.0 ppm
G	± 0.5 ppm
P	± 0.3 ppm
M	± 0.20 ppm
Q	± 0.14 ppm
N	± 0.10 ppm

Frequency (Customer specified)

Package/Lead Configuration	
K	FR-4 leadless Ceramic

Output Waveform	
C	HCMOS
S	Clipped Sine Wave

Output Type	
T	Voltage Control With Tristate
F	No Voltage Control With Tristate

Revision History

Date	Rev	Author	Details of Revision
03-31-26	B	IBD	Initial Version