

Features	Applications
Frequencies from 10 MHz to 52 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		52	MHz	

Frequency Stabilities

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Initial Accuracy		-1.0		+1.0	ppm	@+25°C
Vs. Operating Temperature	$\Delta F/F$	See Ordering Information			ppm	(F _{MAX} -F _{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		F ₀ > 20 MHz
vs. Aging (10 Year)		-3.0		+3.0		F ₀ \leq 20 MHz
vs. Aging (10 Year)		-5.0		+5.0		F ₀ > 20 MHz

RF Output

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Output Logic Level (HCMOS)	V _{OL} V _{OH}	80		20	%V _{CC} %V _{CC}	I _{OL} = +4mA, V _s = +3.0V I _{OH} = -4mA, V _s = +3.0V
Output Logic Level (Clipped Sinewave)		0.8			V _{pk-pk}	
Waveform Symmetry (duty cycle)	T _{DC}	40	50	60	%	@ 50% of waveform (CMOS)
Rise/Fall Time	T _R /T _F			6.5	ns	CMOS
Start-up Time	T _{SU}			10	ms	
Output Load			15 10/10		pF kΩ/pF	CMOS ³ Clipped Sinewave ³
Tristate Function		80% or open			%V _{CC}	Output Enabled
				20	%V _{CC}	Output Disabled: to HIGH Impedance (Z)
Tristate Leakage Current		-100		+100	mA	
Input Leakage Current		-50		+50	mA	

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

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	Vcc	3.135	3.300	3.465	V	M6281
		2.850	3.000	3.150	V	M6282
Operating Current	Icc			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

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.

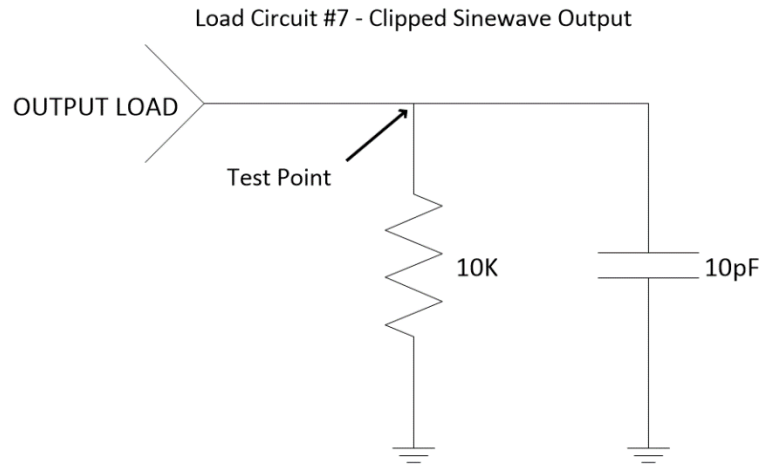
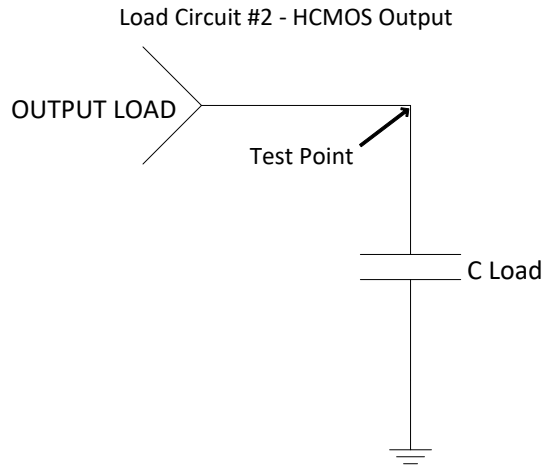
Temperature vs. Stability

	±0.5 ppm	±1.0 ppm	±2.0ppm	±4.6 ppm
-40°C to +85°C	Available	Available	Available	Available
-55°C to +105°C	Contact Factory	Contact Factory	Available	Available
-55°C to +125°C	Contact Factory	Contact Factory	Contact Factory	Available

Environmental Condition

Parameter	Conditions
Shock	Per MIL-STD-202, Method 213, Condition C
Vibration	Per MIL-STD-202, Methods 201 & 204
Solderability	Per EIAJ-STD-002
Hermeticity	Per MIL-STD-202, Method 112, (1x10 ⁻⁸ atm. cc/s of Helium)
Thermal Shock	Per MIL-STD-883, Method 1011, Condition A
Thermal Cycle	Per MIL-STD-883, Method 1010, Condition B

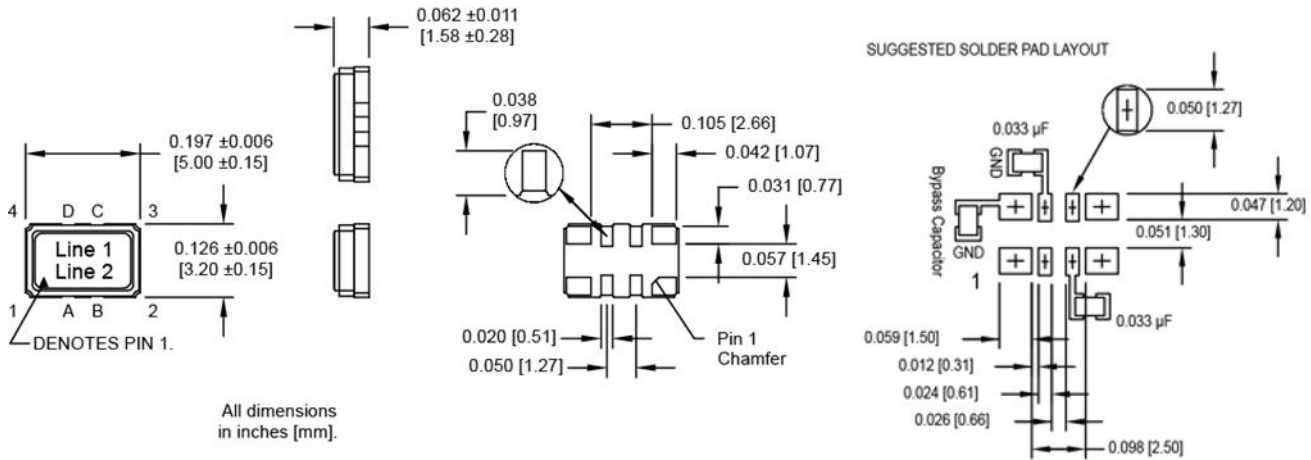
Load Circuit Diagrams



Mechanical and pin out information

Pad	Function
1	Voltage Control or N/C
A	N/C – Do Not Connect
B	N/C or Phase Noise Filter
2	Ground
3	Output
C	Tristate or N/C - Do Not Connect
D	N/C or Phase Noise Filter
4	Supply Vcc+

Package Dimensions



Lead Free Solder Profile

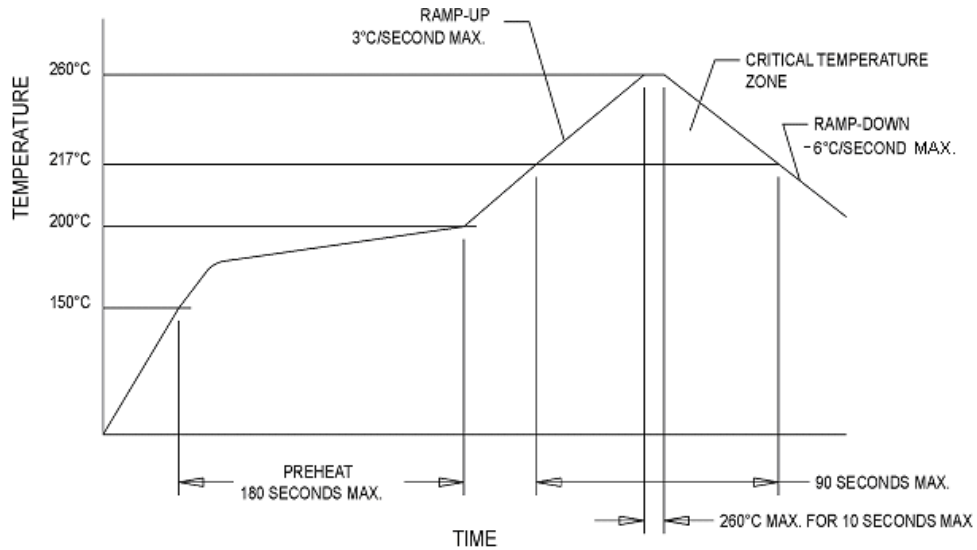
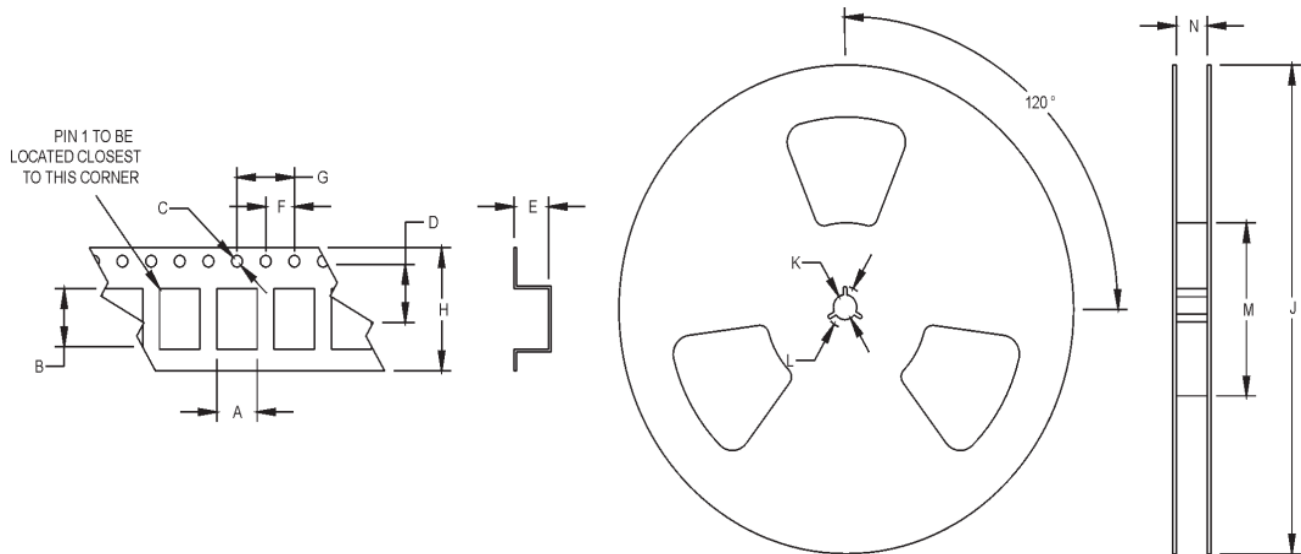


Figure 1

Tape and Reel Specifications

All units in mm



A	B	C	D	E	F	G	H	J	K	L	M
3.7	5.5		5.5	1.4	4	8	12	255			80

Ordering Information

M628x 2 J F C N 00.0000MHz

Product Series	
M6281	3.3 V
M6282	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	
N	Leadless Ceramic Package

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
03-24-26	A	IBD	Initial Version