



## SPECIFICATION FOR HCMOS COMPATIBLE SMT OSCILLATOR MtronPTI P/N M2002S278

### Electrical Specifications:

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Frequency of Operation	F <sub>O</sub>		14.000000		MHz	
Frequency Tolerance		-25		+25		@ +23°C ± 3°C
<b>Frequency Stability</b>						
Frequency Stability	ΔF/F	-100		+100	ppm	Includes initial calibration tolerance, deviation over operating temperature, shock, vibration, supply, load and aging.
<b>RF Output</b>						
Output Type		HCMOS Compatible				
Output Load				15	pF	
Symmetry (duty cycle)	T <sub>DC</sub>	40		60	%	Ref to ½ V <sub>DD</sub>
Logic "1" Level	V <sub>OH</sub>	90% V <sub>DD</sub>			V	HCMOS load
Logic "0" Level	V <sub>OL</sub>			10% V <sub>DD</sub>	V	HCMOS load
Rise/Fall Time	T <sub>R</sub> /T <sub>F</sub>			10	ns	From 10% to 90% V <sub>DD</sub>
Tri-State Enable Logic	V <sub>IH</sub>	2.0			V	Pad 1
Tri-State Disable Logic	V <sub>IL</sub>			0.3	V	Pad 1
Enable Disable Time	T <sub>SU</sub>			150	ns	Pad 1
<b>Supply Voltage &amp; Power Consumption</b>						
Supply Voltage	V <sub>DD</sub>	2.97	3.3	3.63	V	
Supply Current (1)	IDD1			20	mA	Output enabled
Supply Current (2)	IDD2			4	mA	Output disabled

### Environmental & Mechanical Requirements:

Operating Temperature	T <sub>A</sub>	-55		+125	°C	
Storage Temperature	T <sub>S</sub>	-55		+125	°C	
Mechanical Shock	Per MIL-STD-202, Method 213, Condition C (100 g's, 6 ms duration, ½ sinewave)					
Vibration	Per MIL-STD-202, Method 201 & 204 (10 g's from 10-2000 Hz)					
Hermeticity	Per MIL-STD-202, Method 112 (1 x 10 <sup>-8</sup> atm cc/s of Helium)					
Solderability	Per EIAJ-STD-002					
Max. Soldering Conditions	See solder profile, Figure 1					
Package Type	4- pad 5 X 7 X 1.9 mm leadless ceramic. (M2 type)					
Part Marking	All parts that have completed the tests and screening requirements shall be marked with a yellow color dot on the top cover of the device.					

### Testing/Screening Requirements:

Special Product Testing	All lots supplied to Hamilton Sunstrand shall have all Electrical Specifications as shown above in this drawing verified at -55°C to +125°C. When tested, lot shall demonstrate a percent defective of no greater than 0.5% (99.5% yield). A demonstrated reject rate of greater than 0.5% will be sufficient cause for the lot to be rejected.
Date Code	All parts from one lot shall be from one date code. Product shall be no older than one year from the receiving date of the purchase order from Hamilton Sunstrand.

## SPECIFICATION FOR HCMOS COMPATIBLE SMT OSCILLATOR MtronPTI P/N M2002S278

### Dimensions, Marking, and Pin Out Information:

Pad	Function
1	Tri-state
2	Ground
3	Output
4	+V <sub>DD</sub>

Part Marking	
Line 1	M2002S278
Line 2	14M000
Line 3	M yywwvv

Legend	
yy	Year
ww	Work week
vv	Factory code

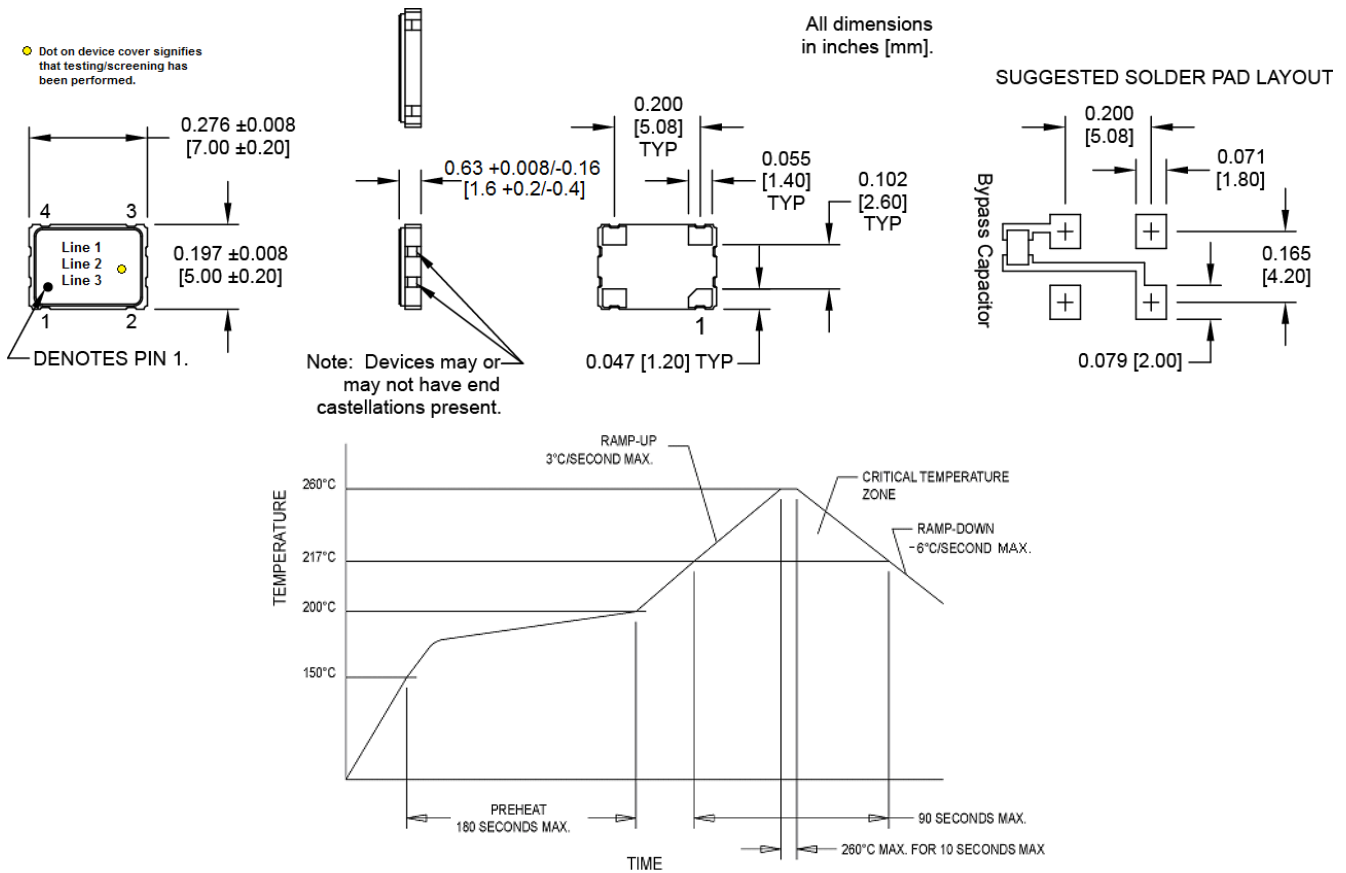


Figure 1

### DATA SHEET REVISION TABLE:

Date	Rev.	Author	Details of Revision
7/23/04	0	RLC	Original release.
1/6/06	A	RLC	Added colored dot to part marking to indicate screening performed per Hamilton specs.
2/18/08	B	RLC	Identified Hamilton Specification Revision "J" on reference information
8/27/09	C	WNJ	Updated data sheet format. Added Tri-state enable/disable logic levels.
2/7/14	D	MM	Added ITAR statement
5/20/14	E	MM	Removed ITAR statement.
02/04/15	F	MM	Updated per Rev. N of customer drawing.