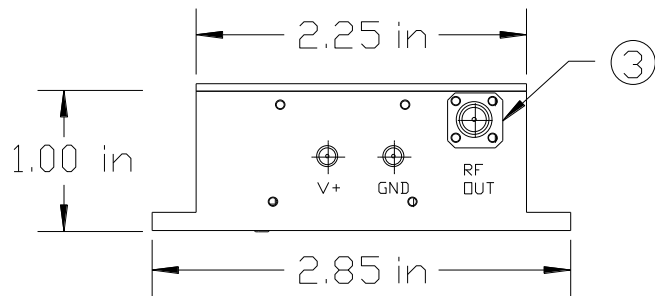
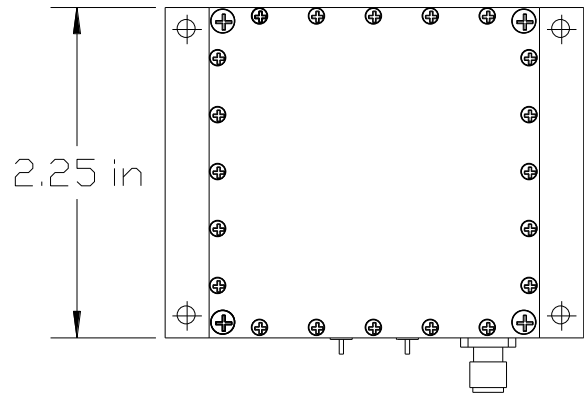
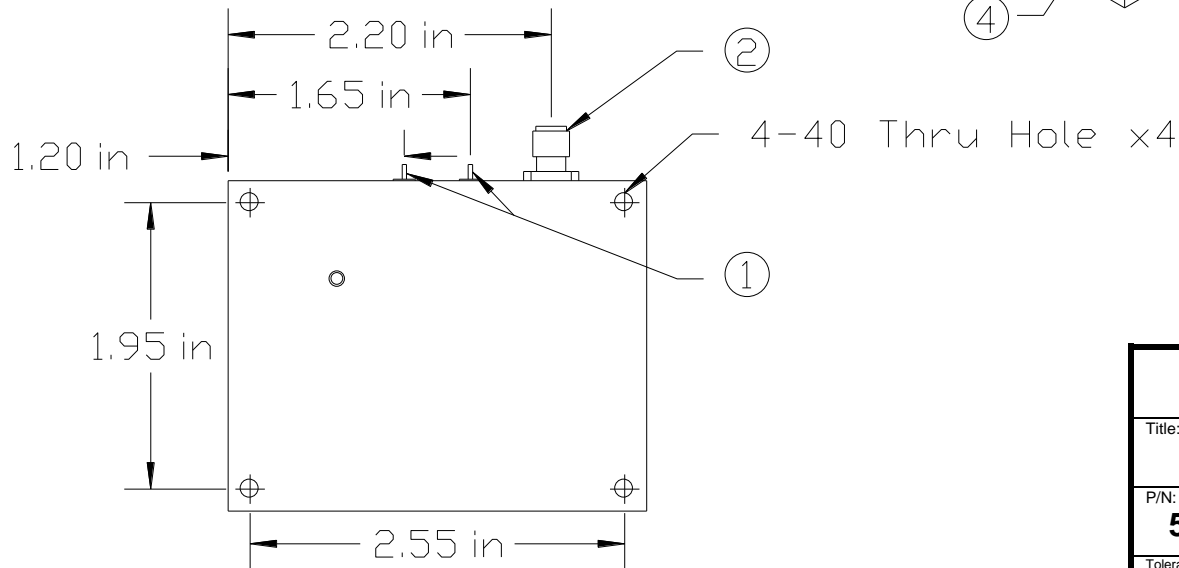
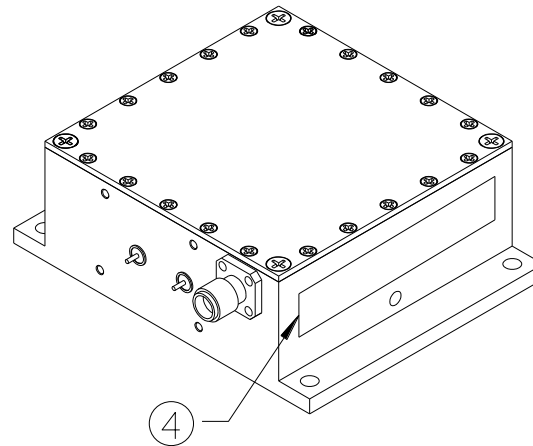



REV	DATE	REVISION RECORD	DWN	AUTH
-	11-06-08	Initial Release	Liz	GP
A	04-24-14	Qual P/N, 501-	Liz	
B	06-12-20	Pin labels, Accuracy, Remove Groups	Liz	
C	04-17-23	Initial Accuracy; Add COTS Model	MAS	



1. ITEM 1 PART NUMBER MP-628-317, METAL PROCESSING CO, INC. (FSCM OAN48)
2. ITEM 2 PART NUMBER 212-507SF, SOUTHWEST MICROWAVE (FSCM 66049)
3. MARKING: CONNECTOR FUNCTION AS DEPICTED
4. MARKING: LOCATION



 Wenzel Associates, Inc. Austin, Texas				
Title:				
10.0 MHz-SC Space Crystal Oscillator				
P/N:	Rev:	Date:	Drawn:	Ref:
501-19933	C	04-17-23		21298
Tolerances: (except as noted) Dimensions are in inches	0.XX Dec: ±0.030"	0.XXX Dec: ±0.010"	FSCM: 62821	Page 1 of 3

GENERAL REQUIREMENTS

Material, Design and Construction MIL-PRF-55310
 Parts and Materials List Supplied
 Parts, Materials EEE-INST-002, JANTX Semiconductors, ER passives and 883B ICs, when available.
 Crystal 10 MHz, premium Q, Z-swept, synthetic quartz
 Outgassing TML<1% and CVCM <0.1% per SP-R-002A
 Traceability Semiconductor and passive lot and date code tracking
 De-rating per EEE-INST-002, (JPL-D-8545, alternative)
 Soldering J-STD-001 class 3
 Case Nickel-plated aluminum housing
 Finish Electroless nickel per AMS 2404

ELECTRICAL PERFORMANCE

RF Output Frequency 10 MHz, sine wave
 Frequency Accuracy (initial) $\pm 8 \times 10^{-8}$ at +25°C
 Frequency Stability $\pm 5 \times 10^{-8}$ for -10°C to +50°C (ref +25°C)
 Aging Rate (after 90 days operating)
 1 day $\pm 5 \times 10^{-10}$
 1 month $\pm 5 \times 10^{-9}$
 RF Output Power +13 dBm ± 1.5 dB into 50Ω
 RF Output 2nd Harmonic -30 dBc
 RF Output Sub-harmonics ≤ -40 dBc
 RF Output Spurious ≤ -100 dBc, 100 KHz to 1 GHz
 Phase Noise (Static) 10 MHz
 1 Hz -100 dBc/Hz
 10 Hz -130 dBc/Hz
 100 Hz -150 dBc/Hz
 1 KHz -155 dBc/Hz
 10 KHz -155 dBc/Hz
 Supply voltage +15 VDC $\pm 5\%$
 Warm-up power ≤ 5 watts
 Warm-up time ≤ 20 minutes at ambient pressure $\leq 5 \times 10^{-5}$ torr
 Input power ≤ 2.5 watts steady state at ambient pressure $\leq 5 \times 10^{-5}$ torr

ENVIRONMENTAL CONDITIONS

Operating temperature -10°C to +50°C
 +15°C to +50°C at atmospheric pressure
 Storage temperature -40°C to +105°C
 Ambient pressure Atmospheric (760 torr), Vacuum ($\leq 5 \times 10^{-5}$ torr)

MECHANICAL SPECIFICATIONS

Size 2.25" x 2.85" x 1.0" (57.1 x 72.4 x 25.4 mm)
 Weight ≤ 300 grams
 Physical Pressure relief holes

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MODEL DEFINITIONS

EM (Engineering Model) Design and Construction similar in appearance and identical in form, fit, and function to FM. Developed using best commercial practice, including some commercial parts and materials. EM shall be subjected only to electrical tests, with some environmental testing performed.

FM (Flight Model) Fabricated to meet all design, construction, and test requirements reference MIL-PRF-55310, Class 1, Product level S. FM shall be subjected to the entire compliment of electrical and environmental acceptance tests listed.
 Flight Model Space Level, Parts EEE-INST-002, Level 1,2,3
 MIL-PRF-3098 Level 2 Crystals, Tested to Table 2, Qual Table 3 by similarity
 MIL-PRF-19500 / MIL-STD-750 Semiconductors, JANTXV with PIN D, JANTX with PIN D and DPA (5 ea)

QM (Qualification) FM unit, when specified, using EEE-INST-002, Level 1,2,3 parts where available. Testing for (1) sample unit.

COTS Form, Fit, and Function COTS equivalent, Electrical performance only, room ambient pressure and temperature.

501-19933-COTS Commercial Model

501-19933-01 EM Engineering Model

501-19933-02 QM Qualification Model

501-19933-03 FM Flight Model

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Austin, Texas				
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QUALIFICATION TESTS (Non-flight model, only)

Random Vibration	11.95 Grms, MIL-STD-202, method 214 I-D, 50 to 2000 Hz, 5 min per axis
Shock	MIL-STD-202, Method 213, Condition A, 50G, 11msec
Thermal Shock	MIL-STD-202, Method 107, Condition A-1, 25 cycles, -55°C to +85°C
Ambient Pressure	MIL-STD-202, Method 105, at 5×10^{-5} torr
Electrical Tests*	
Radiographics	MIL-STD-202, method 209
Inspection	Pre-cap inspection at Wenzel's facility Post-cap inspection / Final Source at Wenzel's facility

ACCEPTANCE TESTS (Flight Model)

Electrical Tests*	
Thermal Shock	MIL-STD-202, Method 107, Condition A, 5 Cycles, -55°C to +85°C
Electrical Tests*	
Burn-In (operational)	240 hours minimum at +50°C
Aging Rate	Projected after 30 days operating
Electrical Tests*	
Radiographics	MIL-STD-202, method 209
Inspection	Pre-cap inspection at Wenzel's facility Post-cap inspection / Final Source at Wenzel's facility

***ELECTRICAL TESTS**

Tested at ambient pressure $\leq 5 \times 10^{-5}$ torr and at -10, +25, and +50°C unless otherwise noted

Warm-Up Power (-10°C only)
 Warm-Up Time (-10°C only)
 Input Power
 Cold Start (-10°C)
 Hot Start (+50°C)
 RF Output Power
 RF Output Harmonics
 RF Output Spurious
 Frequency Accuracy (+25°C only)
 Frequency Stability
 Phase Noise - Static (+25°C only, 760 torr)

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Wenzel Associates, Inc.

Austin, Texas

Title:

10.0 MHz-SC Space Crystal Oscillator

P/N:

501-19933

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C

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21298

Tolerances:
(except as noted)
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0.XX Dec:

 ± 0.030 "

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FSCM:

62821Page **3** of **3**