

**FEATURES**

- 700 MHz To 18 GHz
- Compensation for Temperature Drift
- Voltage Regulators for Improved Stability
- 16 Bit Tuning Resolution

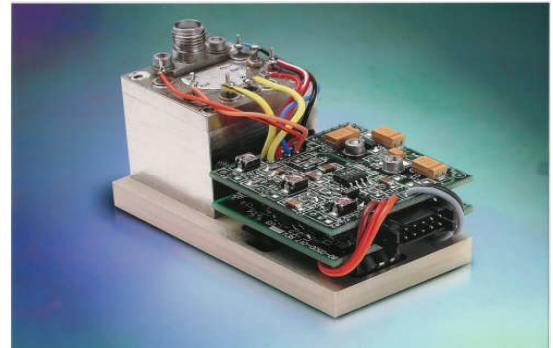
**APPLICATIONS**

Frequency Converters  
Portable Test Equipment

**DESCRIPTION**

Micro Lambda *MLOM and MLXM Series* 1" Cube YIG Oscillators are available with integrated serial driver circuits. These drivers eliminate the need for customers to design or develop their own driver circuits and sophisticated test and alignment procedures. Integrating a driver at Micro Lambda's factory ensures peak performance. Alignment and compensation with the particular YIG oscillator can be maximized down to the component level.

All drivers in this series provide input voltage regulators, reverse voltage/dataline protection and compensation circuits to improve frequency drift. All voltages required by the YIG oscillator, except the heater inputs are supplied by the voltage regulators.


**COMMERCIAL SERIAL DRIVERS**
**.7-18 GHz YTOs, SD & SG SERIES**
**DRIVER INPUT & RESPONSE**
**SPECIFICATION ( 0 to +65 deg. C )**

Tuning Command	Start Word (all 0's) = Lowest Frequency Stop Word (all 1's) = Highest Frequency
Tuning Resolution	16 BIT Positive Logic (Fmax-Fmin)/65,535 Bit Resolution
Tuning Accuracy (excluding hysteresis)	See Table
Tuning Speed	5 mS for 1 GHz step to within $\pm 10$ MHz. (residual FM is 10 kHz Pk-Pk)
<b>Main Driver Inputs</b>	
Supply Voltage & Current	+15 V $\pm$ .5 V @ Oscillator Tuning Current +50 mA, Max. -15 V $\pm$ .5 V @ 50 mA, (Plus Oscillator -5 Vdc Current if any) Max.
Supply Voltage Pushing	$\pm 100$ kHz, Max. @ $\pm .5$ Vdc
Supply Voltage Ripple	10 mV Ripple Pk-Pk over 2 kHz to 3 MHz
Ground	Chassis Ground
YIG Heater Voltage & Current	+24 Vdc $\pm 4$ Vdc @ 300 mA surge for 2 seconds, 25 mA steady state Polarity independent : $\pm 12$ Vdc or $\pm 15$ Vdc acceptable
Digital Interface	The MLWI digital driver interface is a standard 3-wire connection compatible with SPI/QSPI/MICROWIRE interfaces. The chip-select input (CSELECTn) frames the serial data loading at the data input pin (DATA). Immediately following CSELECTn's high-to-low transition, the data is shifted synchronously and latched into the input register on the rising edge of the serial-clock input (CLOCK). After 16 data bits have been loaded into the serial input register, it transfers its contents to the DAC latch on CSELECTn's low-to-high transition (Figure 2). Note that if CSELECTn does not remain low during the entire 16 CLOCK cycles, data will be corrupted. In this case, reload the DAC latch with a new 16-bit word.

## SD-SERIES — CONT.

### 1.0" Cube YIG Oscillators with Serial Drivers

#### Power-On Reset

The MLWI digital driver has a power-on reset circuit to set the DAC's output to OV(F-min) in unipolar mode when VDD is first applied. This ensures that unwanted DAC output voltages will not occur immediately following a system power-up, such as after power loss.

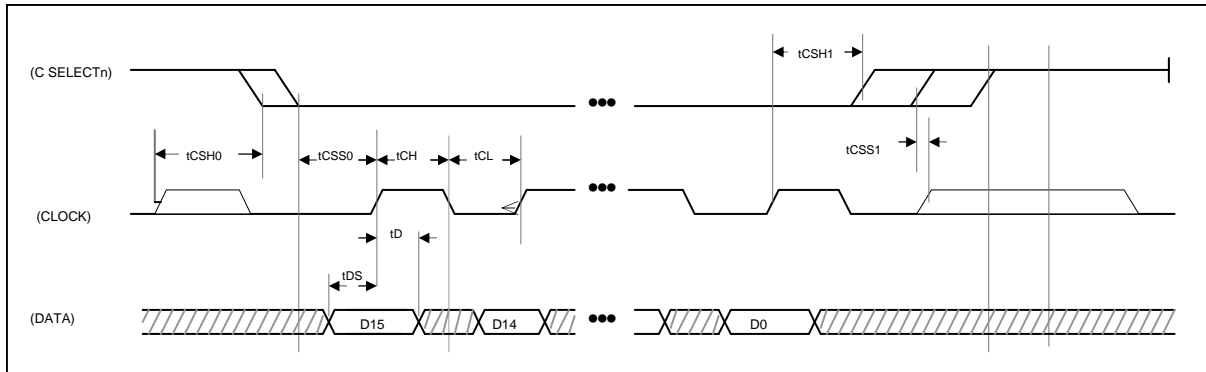


Figure 1. Timing Diagram

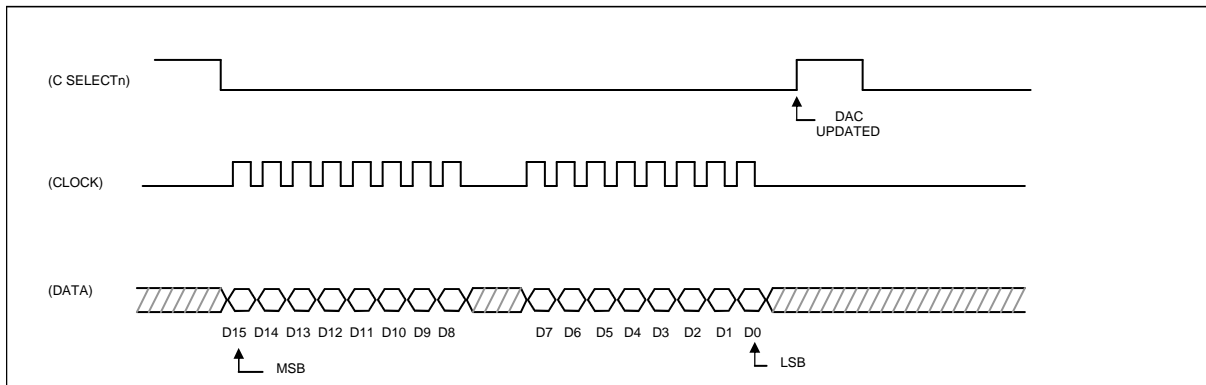


Figure 2. 3-Wire Interface Timing Diagram

#### TIMING CHARACTERISTICS

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
CLOCK Frequency	f <sub>CLK</sub>				10	MHz
CLOCK Pulse Width High	t <sub>CH</sub>		45			ns
CLOCK Pulse Width Low	t <sub>CL</sub>		45			ns
CSn Low to CLOCK High Setup	t <sub>CSS0</sub>		45			ns
CSn High to CLOCK High Setup	t <sub>CSS1</sub>		45			ns
CLOCK High to CSn Low Hold	t <sub>CSH0</sub>		30			ns
CLOCK High to CSn High Hold	t <sub>CSH1</sub>		45			ns
DATA to CLOCK High Setup	t <sub>DS</sub>		40			ns
DATA to CLOCK High Hold	t <sub>DH</sub>		0			ns
VDD High to CSn Low (power-up delay)				20		μs

## SD-SERIES — CONT.

### FM Coil Driver (SG Option)

Voltage	± 10 V
Current	± 100 mA
Input Impedance	1 k-Ohms
Sensitivity (Note 1)	± 2.5 MHz/V
Frequency Deviation	± 25 MHz

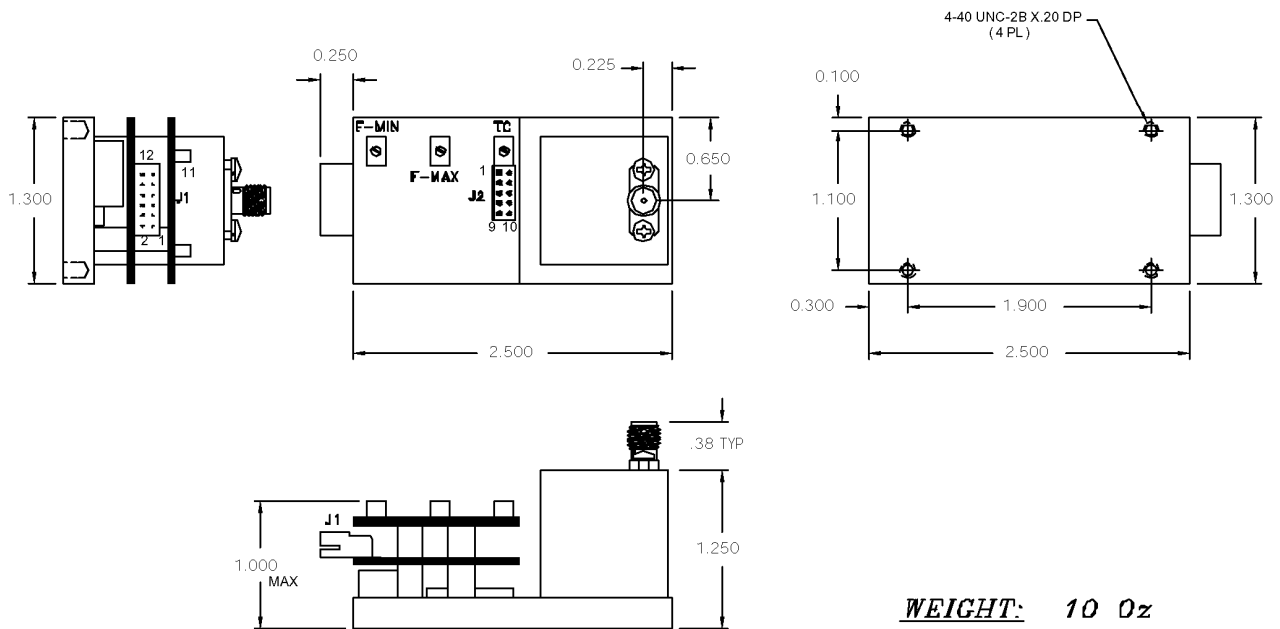
Note: 1. FM Coil Sensitivity Adjustment Available. Sensitivity Stated is Average Over Frequency Range.

### PERFORMANCE SPECIFICATIONS

#### 1.0" Cube YIG Oscillator with Serial Drivers (0°C to +65°C)

Model Number	Frequency GHz	Accuracy ( MHz) *	Current +15 V (mA)	Current -15 V (mA)	Outline Drawing	Outline Drawing (SG Option)
<b>Octave Bands</b>						
MLOM-0102SD	1-2	± 3	200	50	11-112	11-160
MLOM-0204SD	2-4	± 6	300	50	11-112	11-160
MLOM-0408SD	4-8	± 8	500	50	11-112	11-160
MLOM-0812SD	8-12.4	± 12	700	50	11-112	11-160
MLOM-1218SD	12-18	± 14	1100	50	11-112	11-160
<b>Multi-Octave Bands</b>						
MLOM-0702SD	.7-2	± 3	200	50	11-112	11-160
MLOM-0704SD	.7-4	± 5	300	50	11-112	11-160
MLOM-0208SD	2-8	± 12	500	50	11-112	11-160
MLOM-0306SD	3-6	± 8	400	50	11-112	11-160
MLOM-0210SD	2-10	± 15	600	100	11-112	11-160
MLOM-0310SD	3.5-10.5	± 15	600	100	11-112	11-160
MLOM-0412SD	4-12.4	± 16	700	100	11-112	11-160
MLXM-0618SD	6-18	± 18	1225	100	11-112	11-160
MLOM-0716SD	7-16	± 18	900	50	11-112	11-160
MLOM-0818SD	8-18	± 18	1100	50	11-112	11-160
MLXM-0818SD	8-18	± 18	1225	100	11-112	11-160

\* Accuracy includes frequency drift and linearity errors over the temperature range.



**WEIGHT: 10 Oz**

**BOTTOM BOARD (DAC BOARD)  
J1 ( 2MM DUAL ROW TERMINAL STRIP )**

DIGIKEY PART # : H2065-ND

MATING WITH # : H2141-ND

<i>PIN</i>	<i>FUNCTIONS</i>
1	CLOCK
2	DATA
3	CSELECTn
4	GROUND
5	-V SUPPLY
6	+V SUPPLY
7	HEATER 1
8	HEATER 2
9	FM + (*)
10	FM - (*)
11	N/C
12	N/C

**NOTES:**

- 1- (\*) : NOT USED FOR FILTER
- 2- RECOMMENDED WIRE SIZE = 20-22 GAUGE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES  
TOLERANCE ARE:

FRACTIONS DECIMALS ANGLES  
 .XX .000 .005  
 .XXX .005 .005

CONTRACT NO.

APPROVALS DATE

DRAWN N NGUYEN 4/11/02

CHECKED

ISSUED



MICRO LAMBDA WIRELESS, INC.

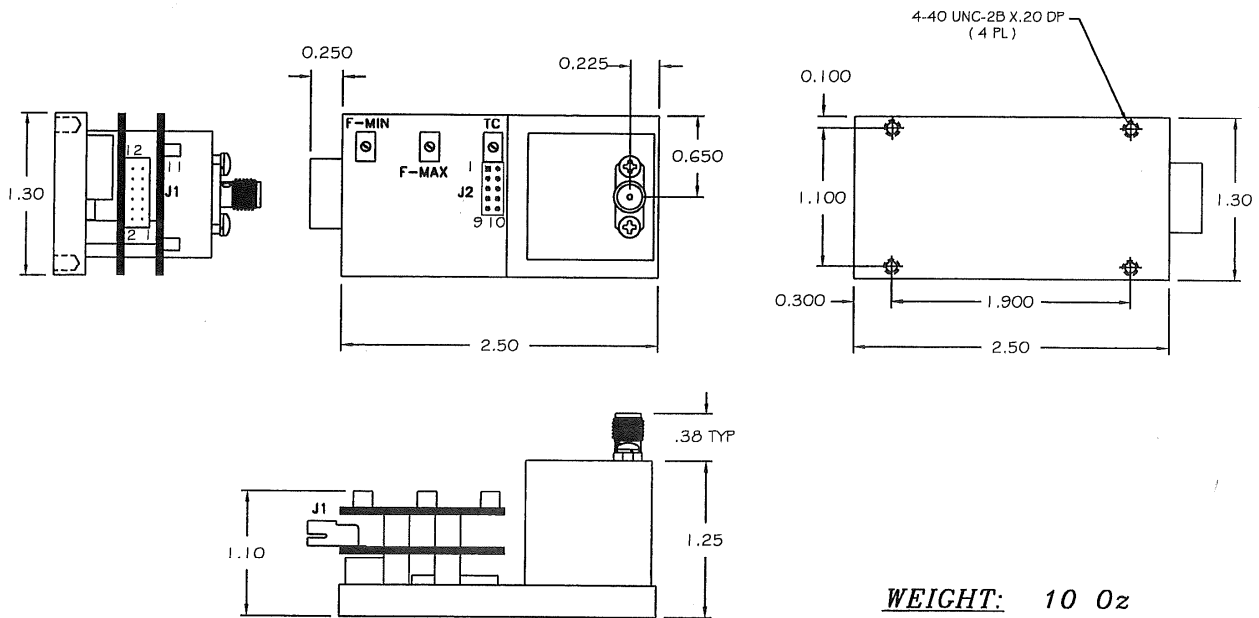
**1" OSC. W/ 1.3" 16 BIT SERIAL DIGITAL DRIVER**

SIZE CAGE No ORN63

DWG. NO. 11 - 112

REV. A

DO NOT SCALE DRAWING



**WEIGHT: 10 Oz**


**BOTTOM BOARD (DAC BOARD)  
J1 ( 2MM DUAL ROW TERMINAL STRIP )**

DIGIKEY PART # : H2065-ND  
MATING WITH # : H2141-ND

PIN	FUNCTIONS
1	CLOCK
2	DATA
3	CSELECT <sub>n</sub>
4	GROUND
5	-V SUPPLY
6	+V SUPPLY
7	HEATER 1
8	HEATER 2
9	FM ± 10V
10	FM GROUND
11	N/C
12	N/C

**NOTES:**

1- RECOMMENDED WIRE SIZE = 20-22 GAUGE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE ARE: FRACTIONS    DECIMALS    ANGLES *                .xx    .020 *                .xxx    .010	CONTRACT NO.		 <b>MICRO LAMBDA WIRELESS, INC.</b>								
	APPROVALS	DATE									
MATERIAL	DRAWN N. NGUYEN	11/4/09	<b>1" OSC. W/ 1.3" 16 BIT SERIAL &amp; FM DRIVER</b>								
FINISH	CHECKED DS	11/4/09									
DO NOT SCALE DRAWING	ISSUED		<table border="1"> <tr> <td>SIZE</td> <td>CAGE No</td> <td>DWG. NO.</td> <td>REV.</td> </tr> <tr> <td></td> <td>ORNG3</td> <td>11-160</td> <td></td> </tr> </table>	SIZE	CAGE No	DWG. NO.	REV.		ORNG3	11-160	
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