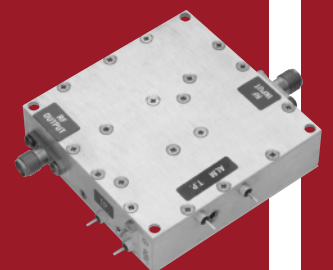
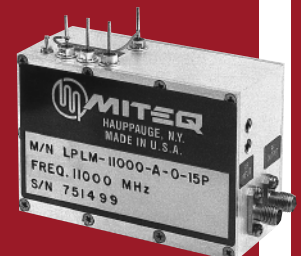
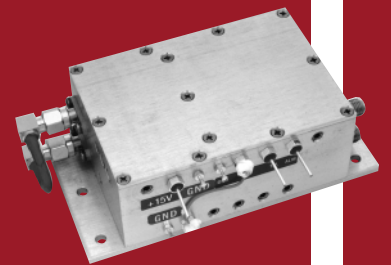
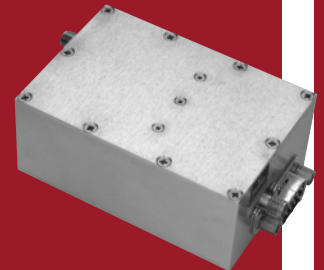
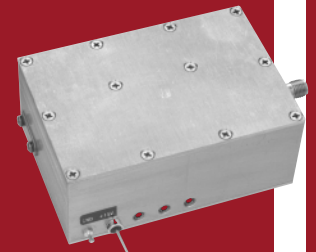
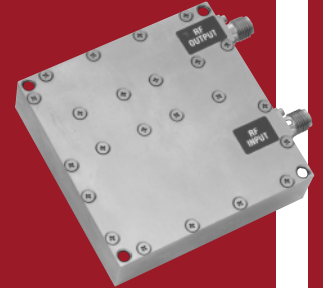


OSCILLATOR SECTION

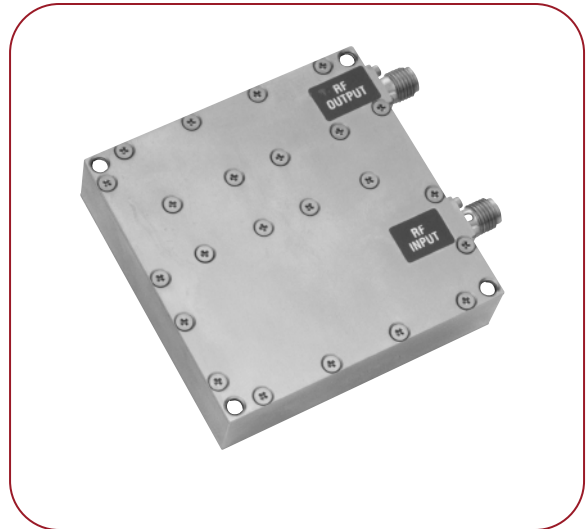


HIGH-VALUE PHASE-LOCKED COAXIAL RESONATOR OSCILLATOR

BCO SERIES:
0.20-4 GHz (Fundamental)
4-16 GHz (Multiplied)

FEATURES

- Low cost
- Phase locked to external standard or internal crystal reference
- High Q ceramic resonator
- Low phase noise
- Small package
- 100% burn-in and temperature testing
- Three-year warranty

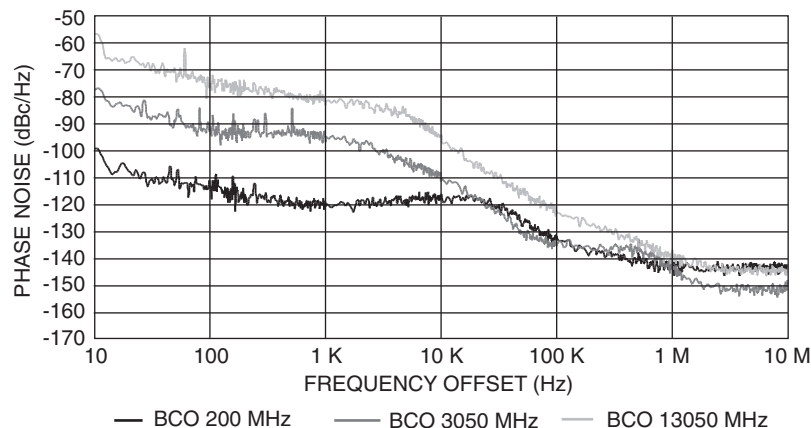


The BCO Series phase-locked source offers excellent phase noise and spurious performance in a 2.25" W x 2.25" L x .55" H housing and is available in fixed frequencies from 200 MHz to 16 GHz in fundamental or multiplied configurations. Units can operate from either external reference, or internal TCXO with stability as low as 1 ppm. Flexible internal DC regulators allow operating DC from 8 to 15 VDC.

ELECTRICAL SPECIFICATIONS

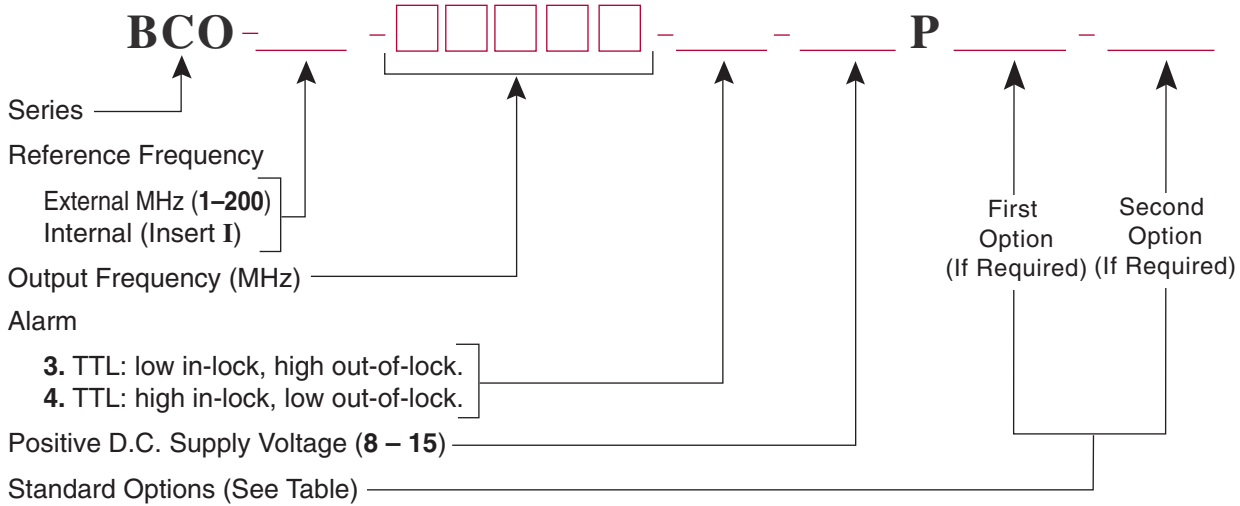
Output frequency range	.20 – 16 GHz
Output power	+13 dBm minimum
Output harmonic	-20 dBc maximum
Output spurious	-70 dBc maximum
Phase noise	See graph
Input reference frequency	1 – 200 MHz
Input impedance	50 ohms
Load VSWR	1.5:1 nominal
DC power requirements	
Fundamental	+8 to +15 volts @ 200 mA
Multiplied	+8 to +15 volts @ 300 mA

TYPICAL PHASE NOISE



HIGH-VALUE PHASE-LOCKED COAXIAL RESONATOR OSCILLATOR

ORDERING INFORMATION



Standard Option table	
High Power	-HP
4-Pin Interface Connector (multiplied unit only)	-C

Note: When specifying options, include applicable detailed information.

EXAMPLE: Part Number BCO-10-13050-3-15P BCO Series phase-locked oscillator with 13.05 GHz output locked to 10 MHz reference with TTL alarm and +15 volts D.C. supply voltage.

MECHANICAL SPECIFICATIONS

Outline drawings
 Multiplied..... 143886, 154937
 Fundamental 166055
 Size..... 2.25" x 2.25" x 0.6"
 Weight..... ≤ 100 grams
 RF connectors SMA female
 DC connectors
 Multiplied or
 Fundamental Feedthru filter
 Available on
 Multiplied only 4-pin JST™

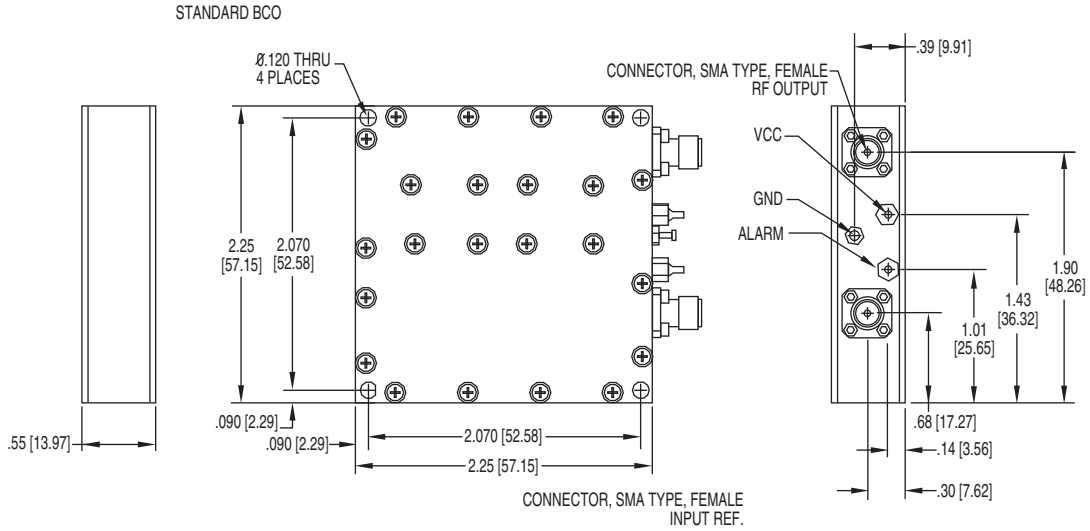
ENVIRONMENTAL SPECIFICATIONS

Temperature
 Operating..... -10 to +60°C
 Storage..... -50 to +100°C
 Humidity..... 95% at 40°C noncondensing
 Shock (survival) 30 g's, 10 ms pulse
 Vibration (survival) ... 20 to 2000 Hz random
 to 4 g's rms

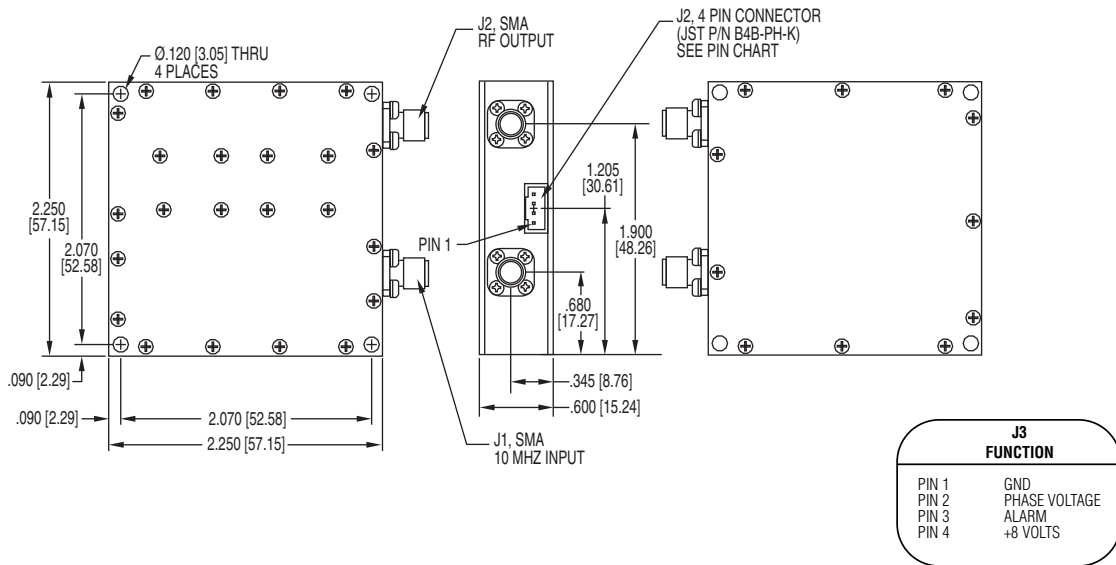
Note: Extended temperature available, please contact MITEQ.

OUTLINE DRAWINGS

143886 BCO SERIES (MULTIPLIED WITH DC FEEDTHRU)



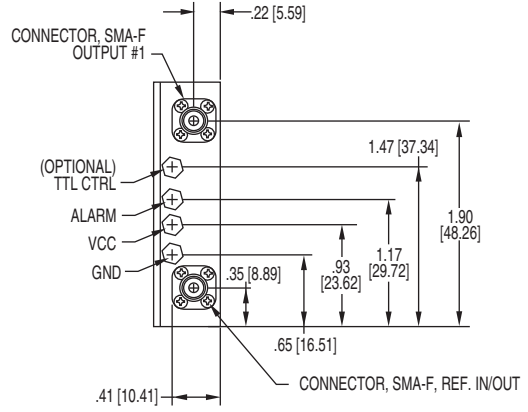
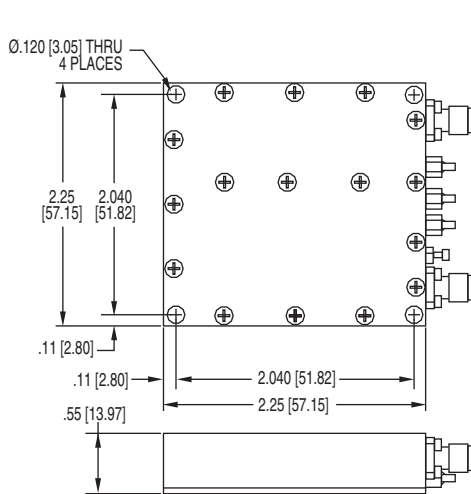
154937 BCO SERIES (MULTIPLIED WITH INTEGRATED 4 PIN CONNECTOR)



NOTE: DIMENSIONS SHOWN IN BRACKETS [] ARE IN MILLIMETERS.

OUTLINE DRAWINGS (CONT.)

166055 BCO SERIES (FUNDAMENTAL)



PHASE-LOCKED COAXIAL RESONATOR OSCILLATOR

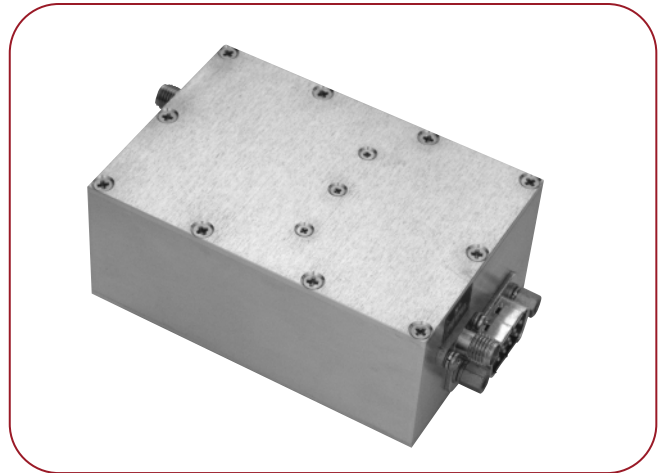
DLP SERIES: 500-3200 MHz

FEATURES

- Low susceptibility to vibration
- 100% environmental screening
- Three-year warranty

OPTIONS

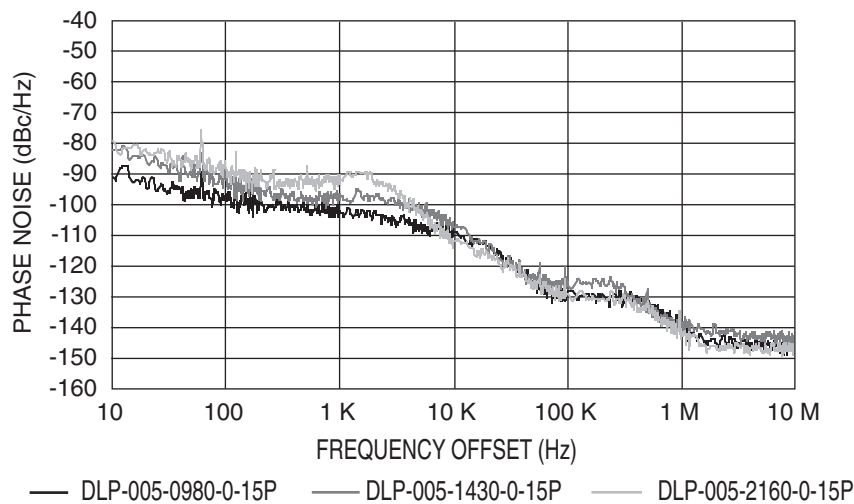
- Higher output power
- Dual RF outputs (50 dB isolation)
- DC and status filtercons



ELECTRICAL SPECIFICATIONS

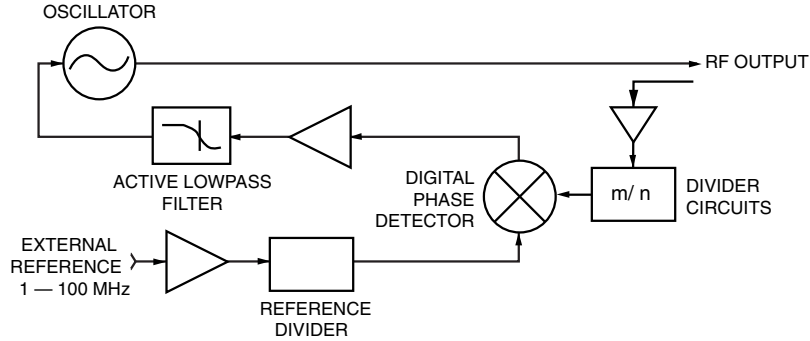
Output frequency range	500 – 3200 MHz
Output power	+13 dBm minimum
Output power variation (0 to 60°C)	±1.5 dB maximum
Output harmonic	-20 dBc maximum
Output spurious	-80 dBc maximum
Phase noise	See graph
Input reference frequency	1 – 100 MHz
Input power level	0 ±3 dBm
Input impedance	50 ohms
Load VSWR	1.5:1 nominal
DC power (Note 1)	+12 to +20 volts @ 250 mA typical
Note 1: Add 100 mA @ +V for dual output.	

TYPICAL PHASE NOISE

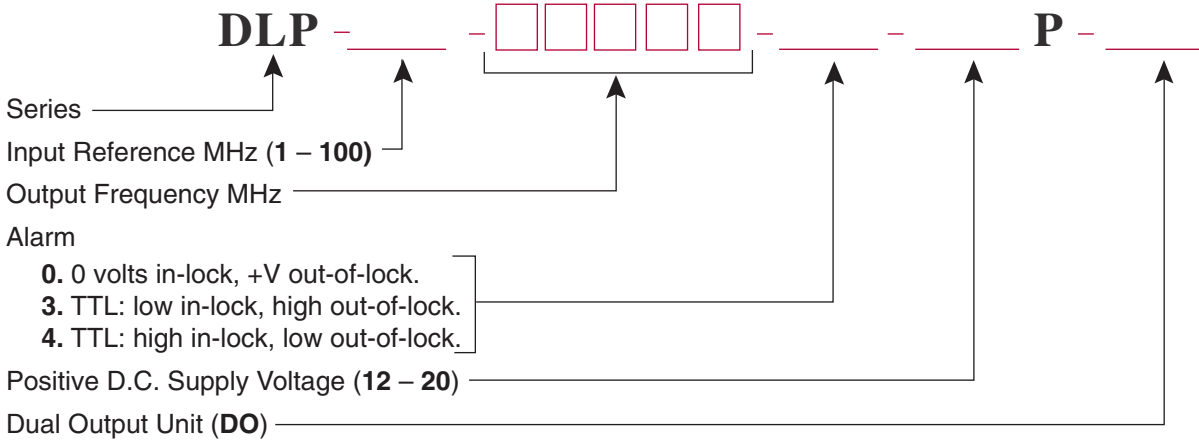


PHASE-LOCKED COAXIAL RESONATOR OSCILLATOR

BLOCK DIAGRAM



ORDERING INFORMATION



EXAMPLE: Part Number DLP-10-02000-3-15P DLP Series phase-locked oscillator with 2 GHz output locked to 10 MHz reference with TTL alarm and +15 volts D.C. supply voltage.

MECHANICAL SPECIFICATIONS

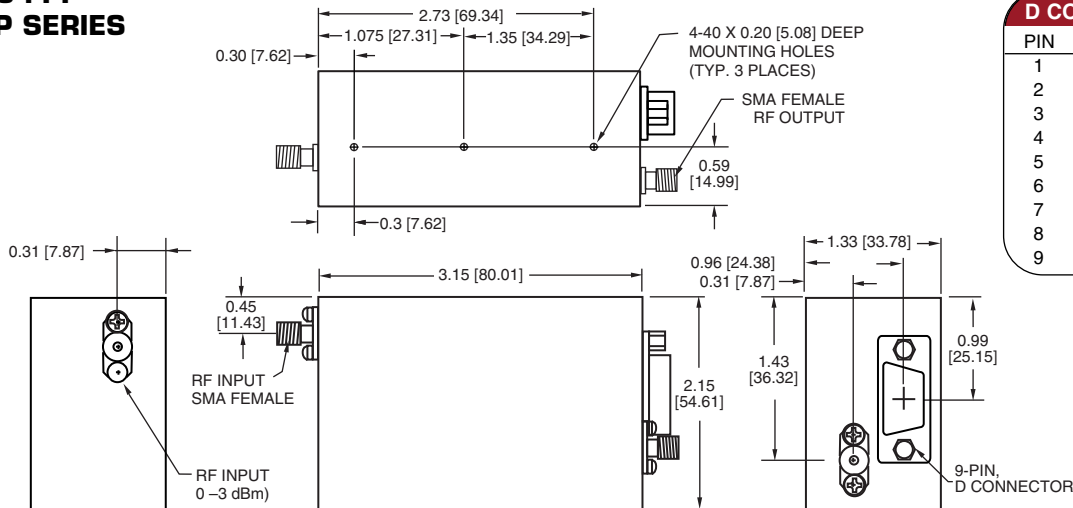
Outline drawing 138411
 Size 2.15" x 3.15" x 1.33"
 Weight 200 grams
 RF connectors SMA female
 DC connectors 9-pin filtered D type

ENVIRONMENTAL SPECIFICATIONS

Temperature
 Operating -25 to +75°C
 Storage -45 to +85°C
 Humidity 95% at 40°C, noncondensing
 Shock (survival) 30 g's, 10 ms pulse
 Vibration (survival) 20 to 2000 Hz random to 4 g's rms

OUTLINE DRAWING

138411 DLP SERIES



D CONNECTOR PINOUTS	
PIN	FUNCTION
1	+15 V
2	VCO Ø VOLTAGE
3	ALARM
4	+5 V
5	GROUND
6	+15 V
7	N/C
8	+5 V
9	GROUND

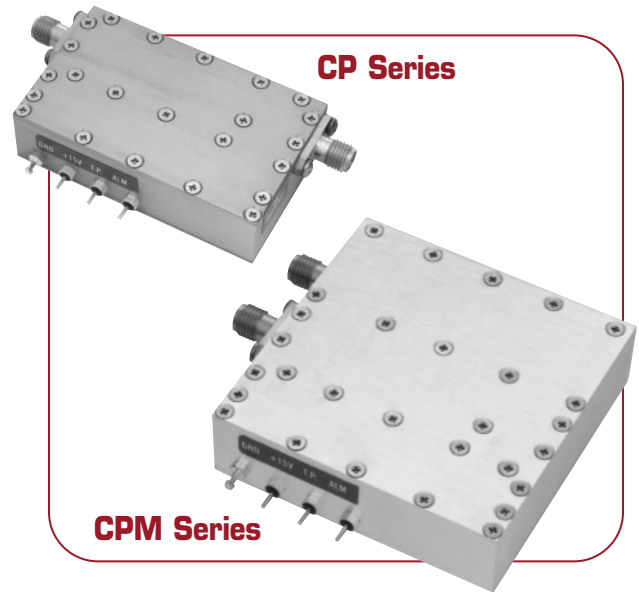
NOTE: DIMENSIONS SHOWN IN BRACKETS [] ARE IN MILLIMETERS.

FUNDAMENTAL/MULTIPLIED PHASE-LOCKED COAXIAL RESONATOR OSCILLATOR

CP SERIES: .9–3.2 GHz
CPM SERIES: 4–15 GHz

FEATURES

- High Q ceramic resonator
- Low phase noise
- Low vibration susceptibility
- Internally regulated
- Small package
- CPM > 15 GHz with external doubler
- CP-I with internal crystal reference
- 100% temperature/phase popping tested
- Three-year warranty



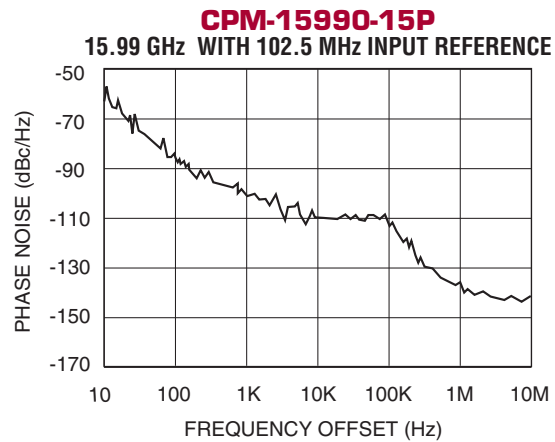
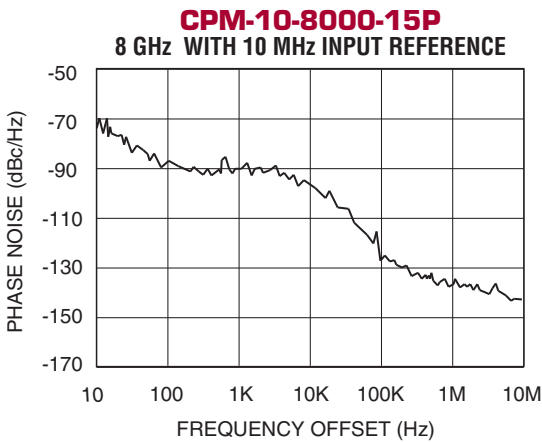
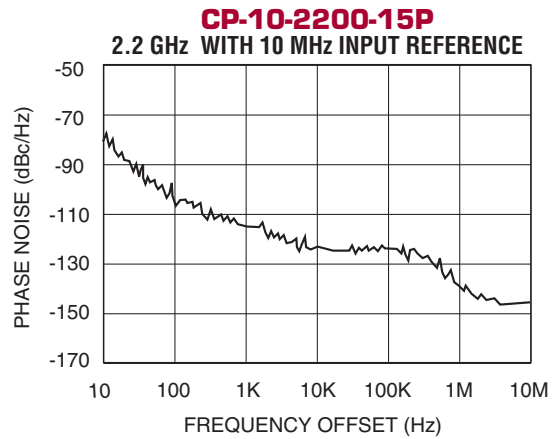
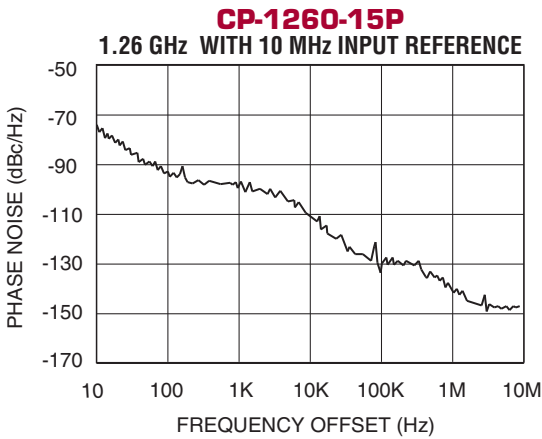
MITEQ's CP/CPM Series oscillator is a high performance, compact, low cost, phase-locked oscillator with output frequencies of .9 to 3.2 GHz (CP Series) and from 4 to 18 GHz (CPM Series). The low profile package allows for easy system integration. Low vibration sensitivity makes the oscillator ideal for both mobile and airborne applications.

ELECTRICAL SPECIFICATIONS

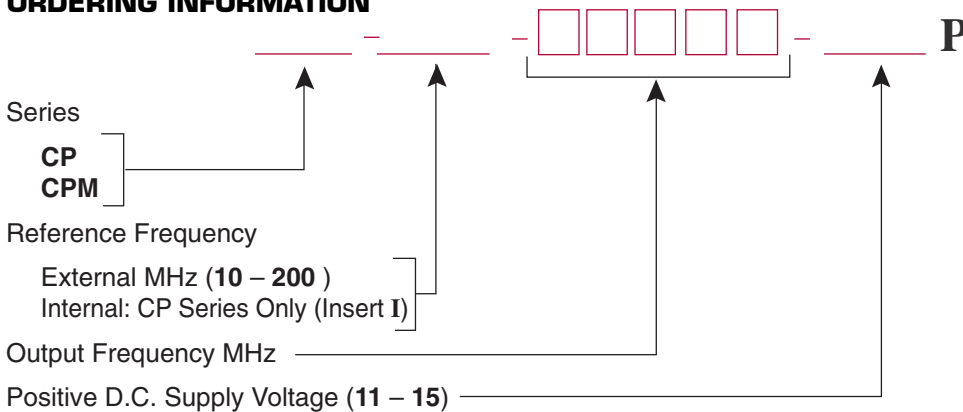
Output frequency range CP Series CPM Series (> 15 GHz with external doubler)	.9 – 3.2 GHz 4 – 15 GHz
Output power	+13 dBm to 15 GHz, +10 dBm above 15 GHz
Output harmonic CP Series CPM Series	-20 dBc maximum -50 dBc maximum
Output spurious	-70 dBc maximum
Phase noise	See graphs
F_{ref} (integer multiple F_0)	10 – 200 MHz at 0 ±3 dBm
Input impedance	50 ohms
Load VSWR	1.5:1 nominal
DC power (+11 V minimum) CP Series CPM Series	+11 to +15 volts 275 mA maximum 500 mA maximum

FUNDAMENTAL/MULTIPLIED PHASE-LOCKED COAXIAL RESONATOR OSCILLATOR

TYPICAL PHASE NOISE



ORDERING INFORMATION



EXAMPLE: Part Number CP-10-01000-11P CP Series phase-locked oscillator at 1 GHz locked to 10 MHz reference and 11 volts D.C. supply voltage.

MECHANICAL SPECIFICATIONS

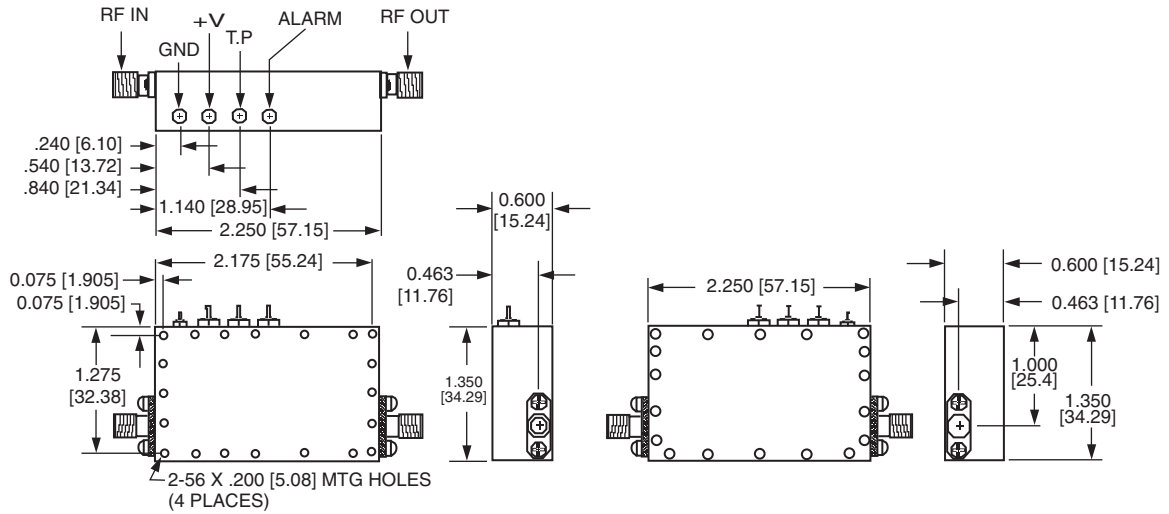
Outline drawings	
CP.....	146962
CPM.....	146941
Size	
CP.....	1.35" x 2.25" x 0.6"
CPM.....	2.25" x 2.25" x 0.6"
Weight.....	≤ 150 grams
RF connectors.....	SMA female
DC connectors.....	Feedthru filter

ENVIRONMENTAL SPECIFICATIONS

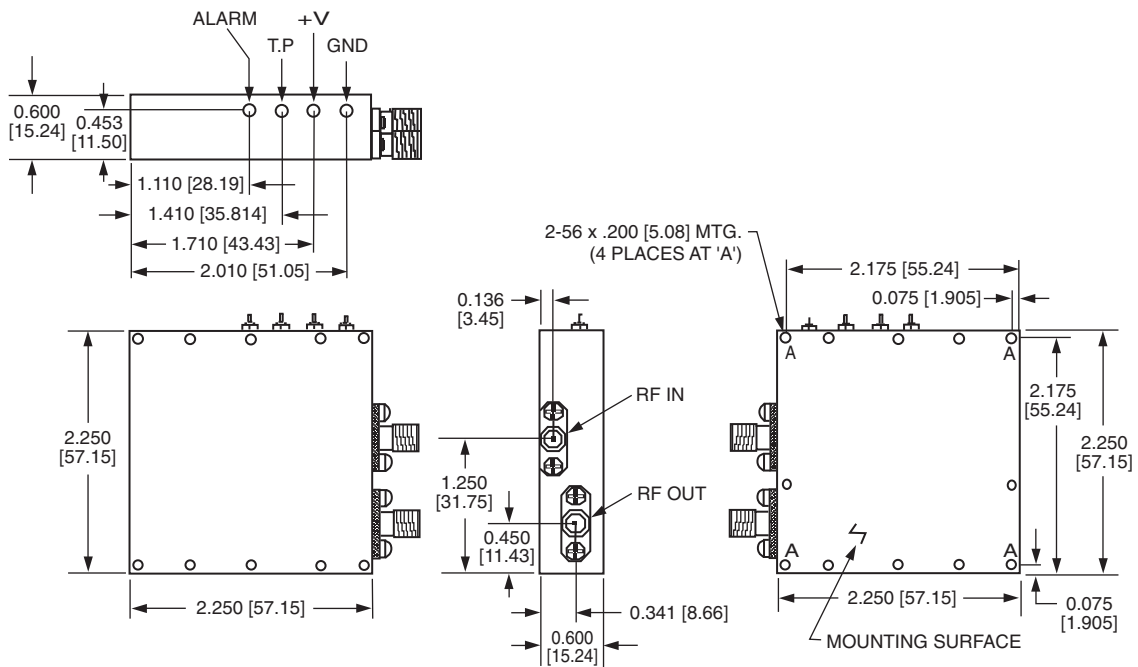
Temperature	
Operating.....	-20 to +70°C
Storage.....	-40 to +85°C
Humidity.....	95% at 40°C noncondensing
Shock (survival).....	30 g's, 10 ms pulse
Vibration (survival).....	20 to 2000 Hz random to 4 g's rms

OUTLINE DRAWINGS

146962 CP SERIES (FUNDAMENTAL)



146941 CPM SERIES (MULTIPLIED)



NOTE: DIMENSIONS SHOWN IN BRACKETS [] ARE IN MILLIMETERS.

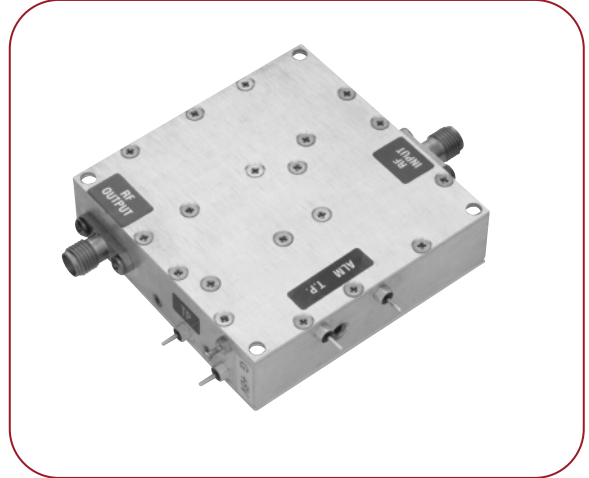
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LOWEST NOISE PHASE-LOCKED DIELECTRIC RESONATOR OSCILLATOR

DLCRO SERIES: 0.8-4 GHz (Fundamental) 4-15 GHz (Multiplied)

FEATURES

- High performance in a small package
- Excellent close in phase noise
- Excellent spurious performance
- Excellent performance/cost ratio
- 100% burn-in and temperature/phase popping tested
- Three-year warranty



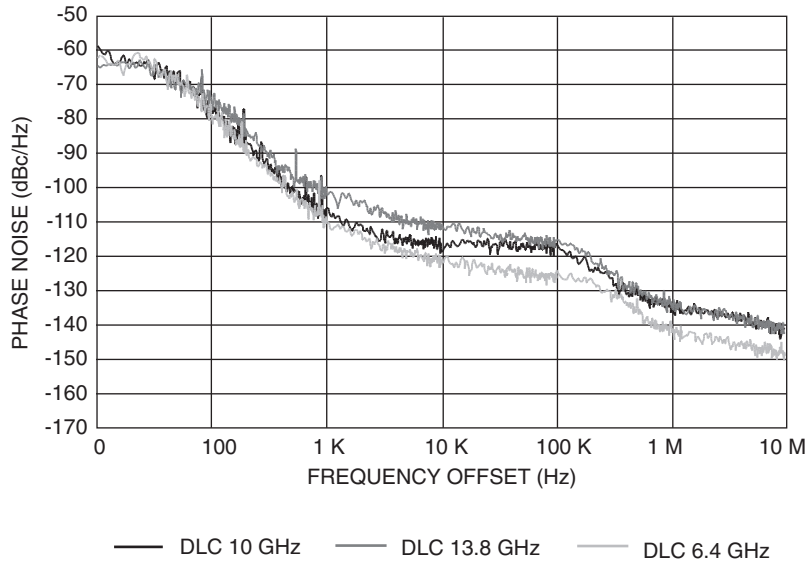
The DLCRO Series phase-locked source offers excellent phase noise and spurious performance in a 2.25" W x 2.25" L x .60" H housing. The dual loop configuration improves phase noise and spurious performance compared to a single loop design, and has the flexibility to allow output frequencies that are not direct multiples of the input. Available in fixed frequencies from 800 MHz to 15 GHz in fundamental or multiplied configurations. The DLC can operate with external reference of 1 to 200 MHz, and with 11 to 15 VDC supply input.

ELECTRICAL SPECIFICATIONS

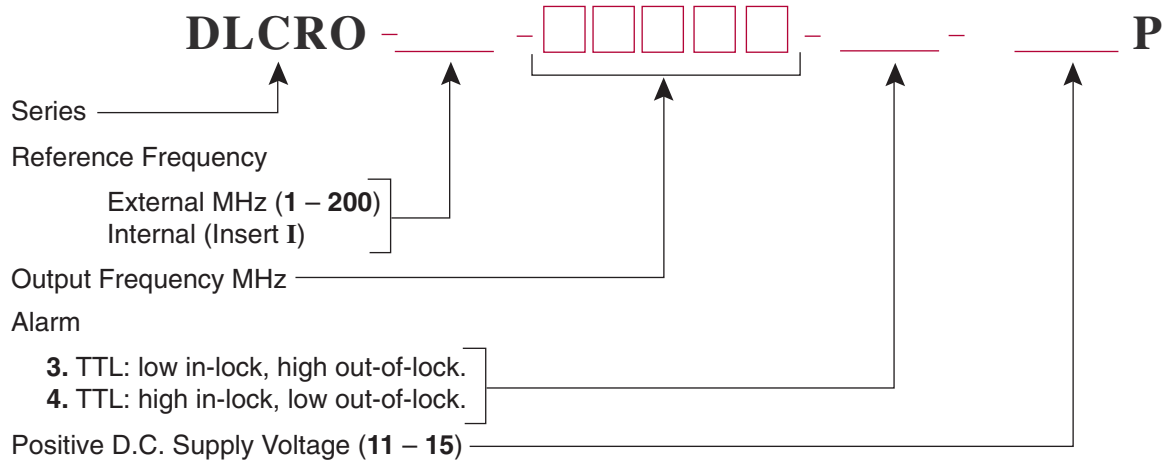
Output frequency range	0.8 – 15 GHz (>15 GHz, contact MITEQ)
Output power	+13 dBm minimum
Output harmonic	-50 dBc maximum (-20 dBc to 4 GHz)
Output spurious	-70 dBc maximum
Phase noise	See graph
Input frequency range	1 – 200 MHz
Input impedance	50 ohms
Load VSWR	1.5:1
DC power	
Fundamental	+11 to +15 volts at 250 mA
Multiplied	+11 to +15 volts at 300 mA

LOWEST NOISE PHASE-LOCKED DIELECTRIC RESONATOR OSCILLATOR

TYPICAL PHASE NOISE



ORDERING INFORMATION



EXAMPLE: Part Number DLCRO-10-10000-3-12P Double Loop phase-locked oscillator with 10 GHz output locked to 10 MHz reference with TTL alarm and +12 volts D.C. supply voltage.

MECHANICAL SPECIFICATIONS

- Outline drawing 153748
- Size 2.25" x 2.25" x 0.60"
- Weight ≤ 100 grams
- RF connectors SMA female
- DC connectors Feedthru filter

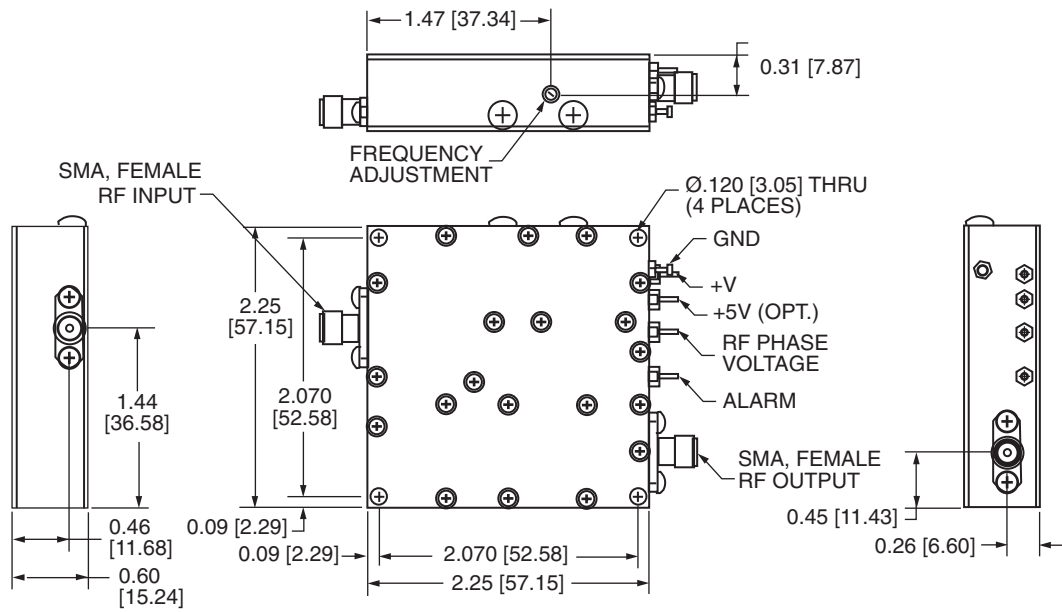
ENVIRONMENTAL SPECIFICATIONS

- Temperature
 - Operating -10 to +60°C
 - Storage -50 to +100°C
- Humidity 95% at 40°C noncondensing
- Shock (survival) 30 g's, 10 ms pulse
- Vibration (survival) 20 to 2000 Hz random to 4 g's rms

Note: Extended temperature available, please contact MITEQ.

OUTLINE DRAWING

153748 DLCRO SERIES



NOTE: DIMENSIONS SHOWN IN BRACKETS [] ARE IN MILLIMETERS.

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ULTRA-LOW NOISE PHASE-LOCKED DIELECTRIC RESONATOR OSCILLATOR

PLDRO SERIES: 1.75–40 GHz

FEATURES

- Lowest phase noise
- Very fine frequency resolution
- Reference from 5 to 100 MHz
- Internal reference available
- Small package
- Low power consumption
- 100% temperature/phase popping tested
- 100% burn-in
- Three-year warranty



ELECTRICAL SPECIFICATIONS

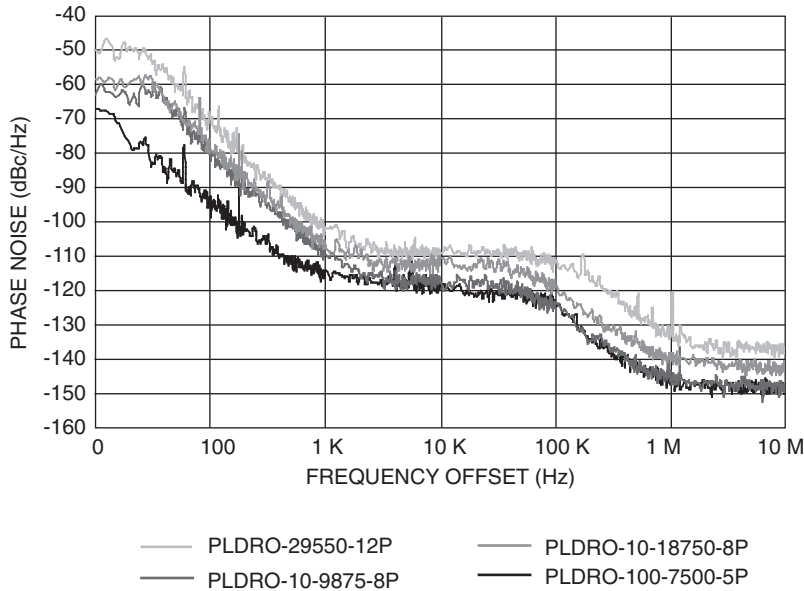
Output frequency range	
Subharmonic unit	1.75 – 6.7 GHz
Fundamental unit	6.7 – 13.4 GHz
Multiplied X2 unit	13.4 – 26.8 GHz
Multiplied X4 unit	26.8 – 40 GHz
Output power	+13 dBm minimum
Multiplied X4 unit	+10 dBm minimum
Output harmonic	-50 dBc maximum
Fundamental unit	-20 dBc maximum
Output spurious	
Subharmonic unit	-85 dBc maximum
Fundamental unit	-80 dBc maximum
Multiplied X2 unit	-75 dBc maximum
Multiplied X4 unit	-70 dBc maximum
Phase noise	See graph
Reference frequency	5 – 100 MHz (Note 1)
Reference input power	0 ±3 dBm
DC power	
Subharmonic unit	+5 VDC or +8 VDC
Fundamental unit	+5 VDC, or +8 VDC, or +12 VDC, or +15 VDC
Multiplied units	+8 VDC, or +12 VDC, or +15 VDC
Voltage tolerance	-0 or +0.4
Current	
Subharmonic unit	530 mA maximum
Fundamental unit	350 mA maximum
Multiplied unit	550 mA maximum
Load VSWR	2:1
Lock alarm	TTL “high” in-lock (Note 2)
Connectors	
RF/IN/OUT	SMA or K female
Voltage/Alarm/Phase	Solder pin feedthru

Notes:

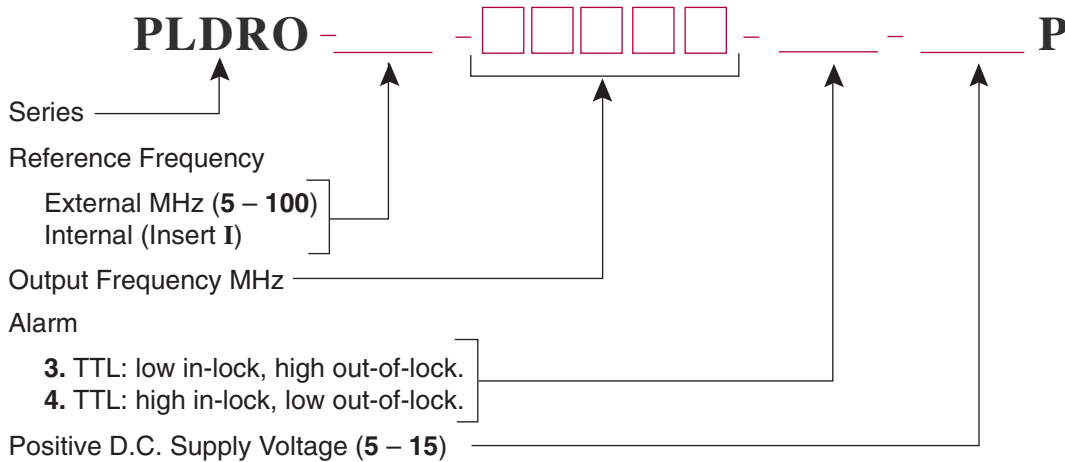
1. Reference frequency above 100 MHz is available, please contact MITEQ.
2. Reverse logic available.

ULTRA-LOW NOISE PHASE-LOCKED DIELECTRIC RESONATOR OSCILLATOR

TYPICAL PHASE NOISE



ORDERING INFORMATION



EXAMPLE: Part Number PLDRO-10-11500-3-8P Phase-Locked Dielectric Resonator Oscillator with 11.5 GHz output locked to 10 MHz reference with TTL alarm and +8 volts D.C. supply voltage.

MECHANICAL SPECIFICATIONS

- Outline drawings
 - Fundamental..... 148748
 - Multiplied 156650
- Size
 - Fundamental..... 2.25" x 2.25" x 0.95"
 - Multiplied 2.70" x 3.00" x 1.05"
- Weight ≤ 200 grams
- RF connectors..... SMA female, SMA/K-female
- DC connectors Feedthru filter

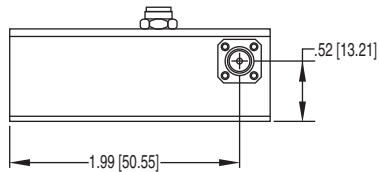
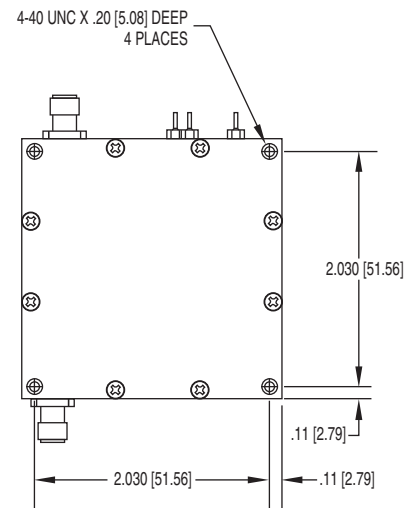
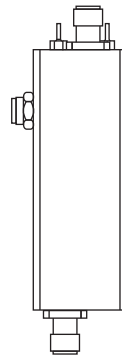
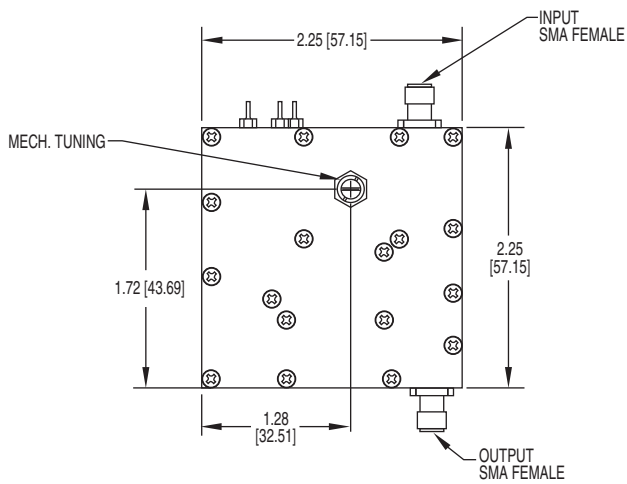
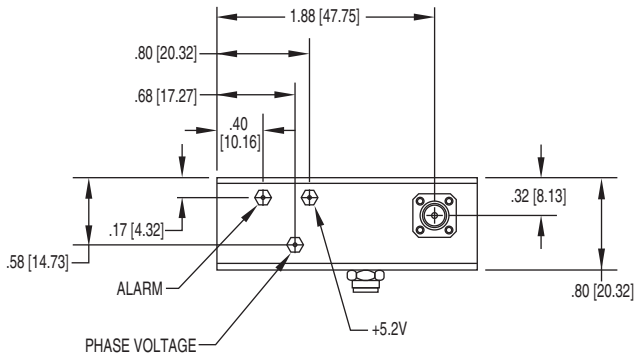
ENVIRONMENTAL SPECIFICATIONS

- Temperature
 - Operating -20 to +70°C
 - Storage -50 to +100°C
- Humidity 95% at 40°C noncondensing
- Shock (survival) 30 g's, 10 ms pulse
- Vibration (survival) 20 to 2000 Hz random to 4 g's rms

Note: Extended temperature ranges available, please contact MITEQ.

OUTLINE DRAWINGS

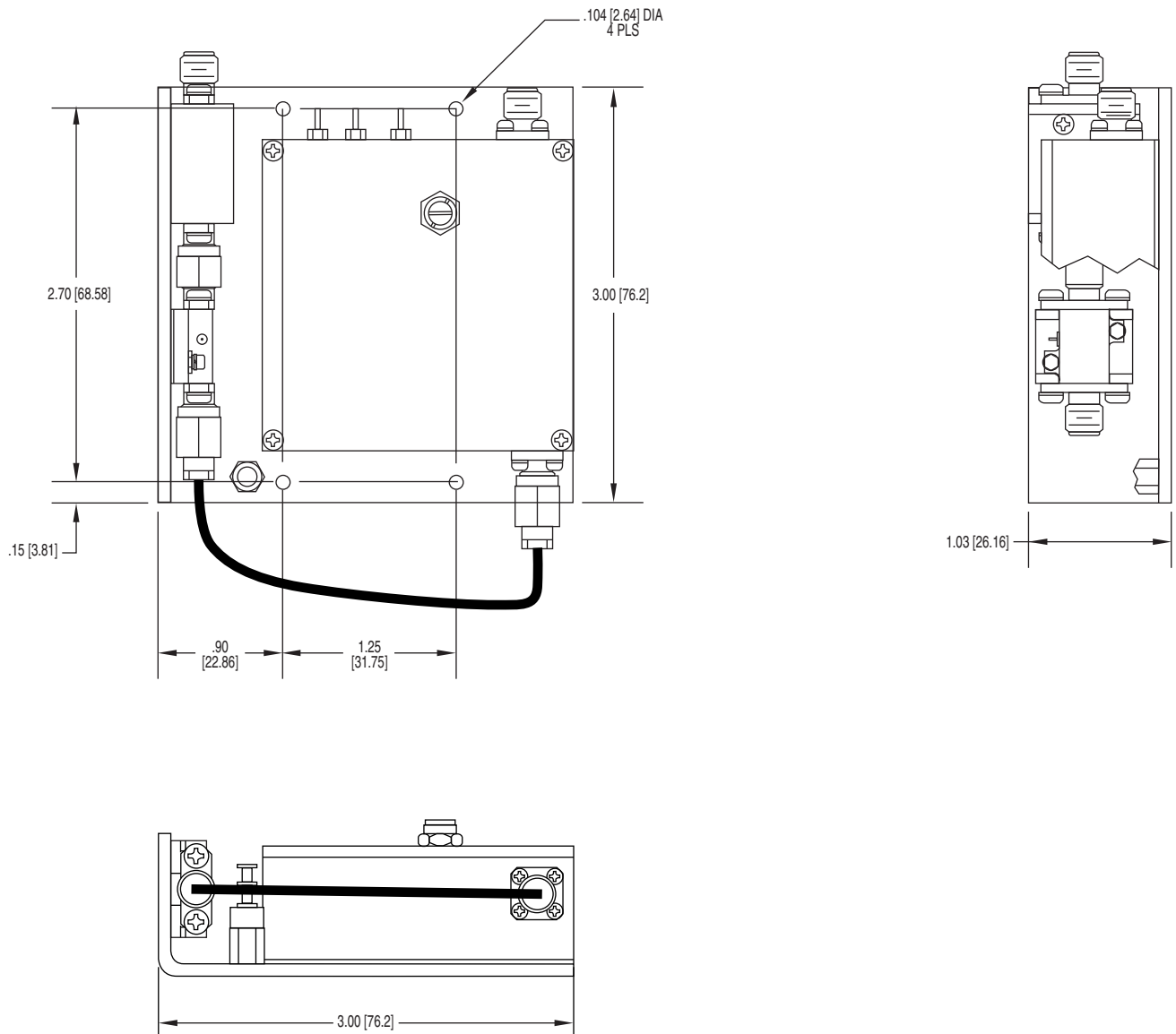
148748 PLDRO SERIES (FUNDAMENTAL)



NOTE: DIMENSIONS SHOWN IN BRACKETS [] ARE IN MILLIMETERS.

OUTLINE DRAWINGS (CONT.)

156650 PLDRO SERIES (SUBHARMONIC AND MULTIPLIED)



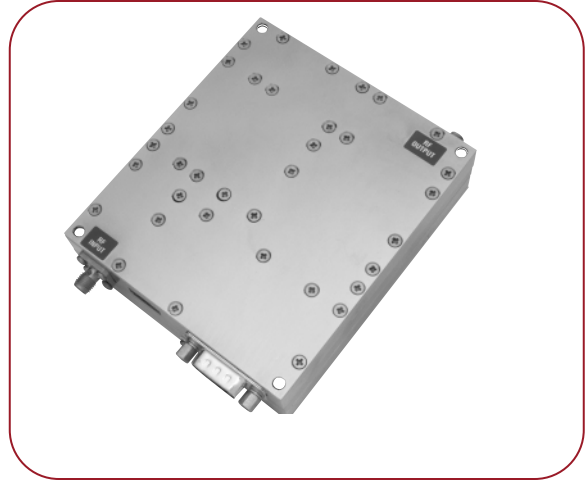
NOTE: DIMENSIONS SHOWN IN BRACKETS [] ARE IN MILLIMETERS.

VARIABLE FREQUENCY MULTI-SOURCE OSCILLATOR

VFS SERIES

FEATURES

- High performance fixed sources
- Supports up to three output frequencies
- Bandwidth to 20%



The VFS unit is a state-of-the-art high performance multi-source oscillator, which is capable of providing up to three discrete frequencies one at a time, and it is enclosed in a package size of 4.0" L x 3.5" W x 1.1" H. The frequency of operation is 1 to 16 GHz with a bandwidth of approximately 20% and an output power of +13 dBm minimum.

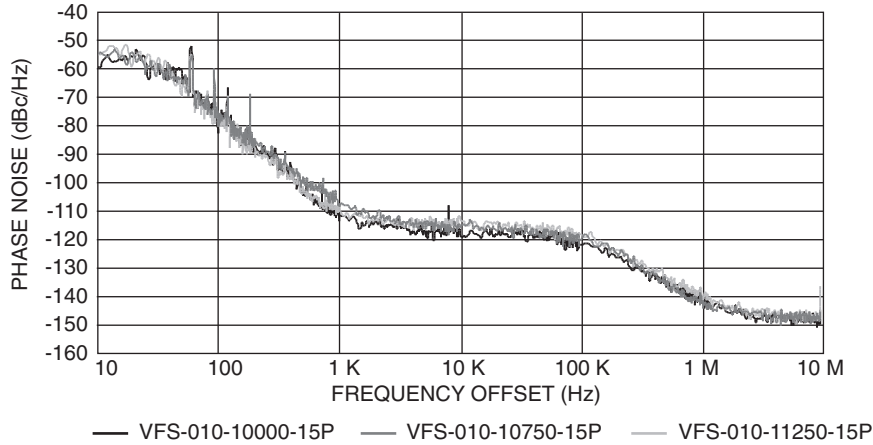
ELECTRICAL SPECIFICATIONS

Output frequency range	1 – 16 GHz (Note 1)
Output power	+13 dBm minimum
Output spurious	< -70 dBc
Output harmonic	≤ -20 dBc
Reference frequency	5 – 100 MHz (customer specified)
Reference input power	0 ±3 dBm
Load VSWR	2:1
Connectors	
RF/IN/OUT	SMA female
DC power/alarm	9-pin D (FCC17E09PC-2E0)
Frequency control	5-pin Molex (S5B-PH-SM)
Frequency selection control	Two bit TTL (customer specified)
Phase alarm	TTL or open collector
Phase noise	See graph
DC power	+5.2 VDC @ 380 mA, and +15 or +12 VDC @ 160 mA

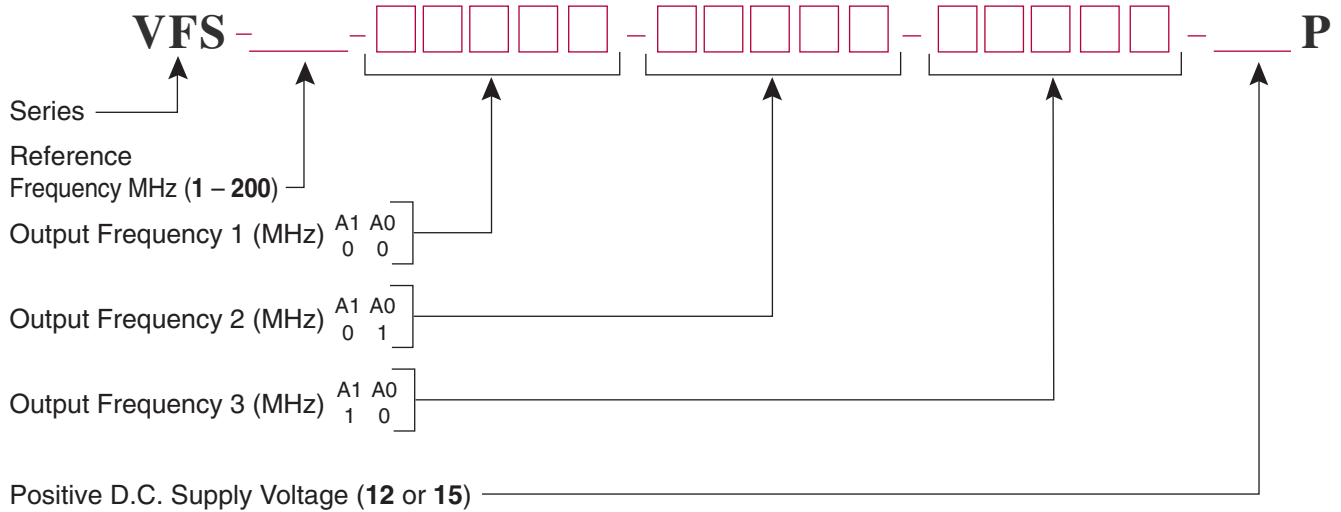
Note 1: This unit is capable of outputting up to three different frequencies one at a time.

VARIABLE FREQUENCY MULTI-SOURCE OSCILLATOR

TYPICAL PHASE NOISE



ORDERING INFORMATION



EXAMPLE: Part Number VFS-10-09750-10500-11250-15P Variable Frequency phase-locked oscillator with output frequencies of 9.75 GHz, 10.5 GHz and 11.25 GHz locked to 10 MHz reference operating from +5 and +15 volts D.C. supply voltage.

MECHANICAL SPECIFICATIONS

- Outline drawing 156516
- Size 3.50" x 4.00" x 1.13"
- Weight ≤ 350 grams
- RF connectors SMA female
- DC connectors Filtered 9-pin D
- Frequency control 5-pin Molex

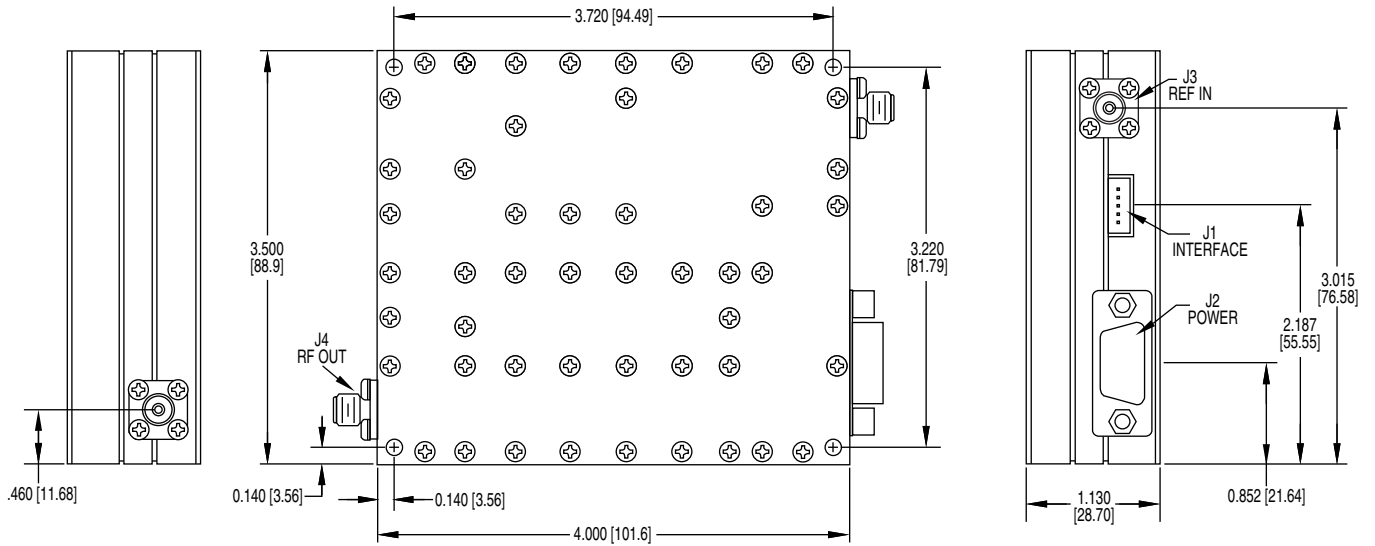
ENVIRONMENTAL SPECIFICATIONS

- Temperature
 - Operating -10 to +60°C
 - Storage -50 to +100°C
- Humidity 95% at 40°C noncondensing
- Shock (survival) 30 g's, 10 ms pulse
- Vibration (survival) 20 to 2000 Hz random to 4 g's rms

Note: Extended temperature available, please contact MITEQ.

OUTLINE DRAWING

156516 VFS SERIES



	J1 INTERFACE	J2 POWER
PIN 1	GND	+15V
PIN 2	WAKE-UP	PHASE VOLTAGE
PIN 3	N/C	TTL ALARM
PIN 4	ADRO	+5.2V
PIN 5	ADR1	GND
PIN 6	-	N/C
PIN 7	-	N/C
PIN 8	-	+5.2V
PIN 9	-	GND

NOTE: DIMENSIONS SHOWN IN BRACKETS [] ARE IN MILLIMETERS.

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PHASE-LOCKED COAXIAL RESONATOR OSCILLATOR

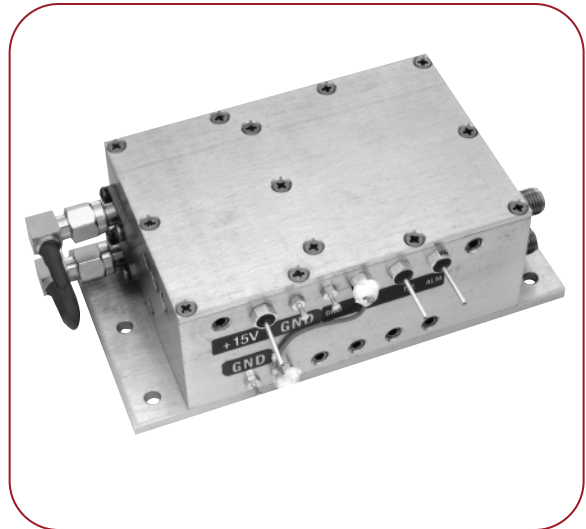
LP SERIES: 500–3200 MHz

FEATURES

- High Q ceramic resonator
- Low phase noise
- Low susceptibility to vibration
- Three-year warranty
- 100% temperature/phase popping tested

OPTIONS

- Higher output power
- 1 – 20 MHz input reference (dual-loop design)
- Internal crystal reference
- Integrated relay alarm



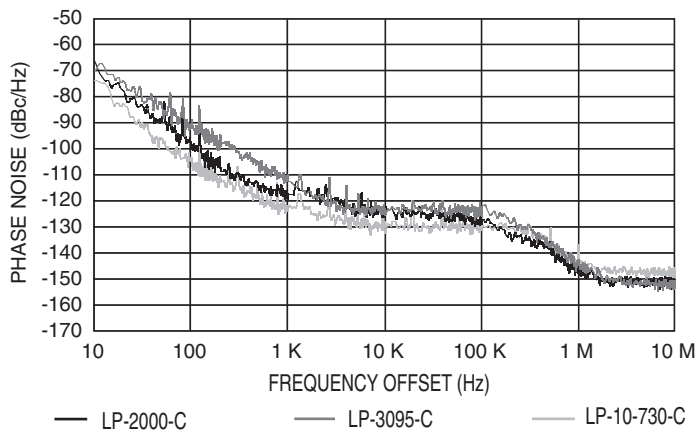
ELECTRICAL SPECIFICATIONS

Output frequency range	500 – 3200 MHz
Output power	+13 dBm minimum
Output power variation	±1.5 dB maximum
Output harmonic	-20 dBc maximum
Output spurious	-70 dBc maximum
Phase noise	See graph
Input reference frequency	
Internal	Factory selectable
External	1 – 550 MHz (optional)
Input power level	0 ±3 dBm
Input impedance	50 ohms
Load VSWR	1.5:1 nominal
DC power (Notes 1 and 2)	+15 or +20 volts @ 250 mA

Notes:

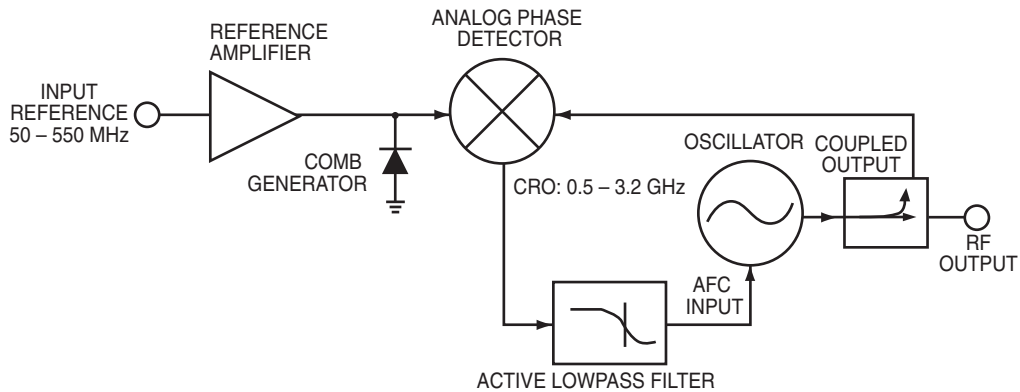
1. Add 50 mA @ +V for internal crystal reference.
2. Add 120 mA @ +V and 220 mA @ +5 volts for external 1 – 20 MHz reference.

TYPICAL PHASE NOISE

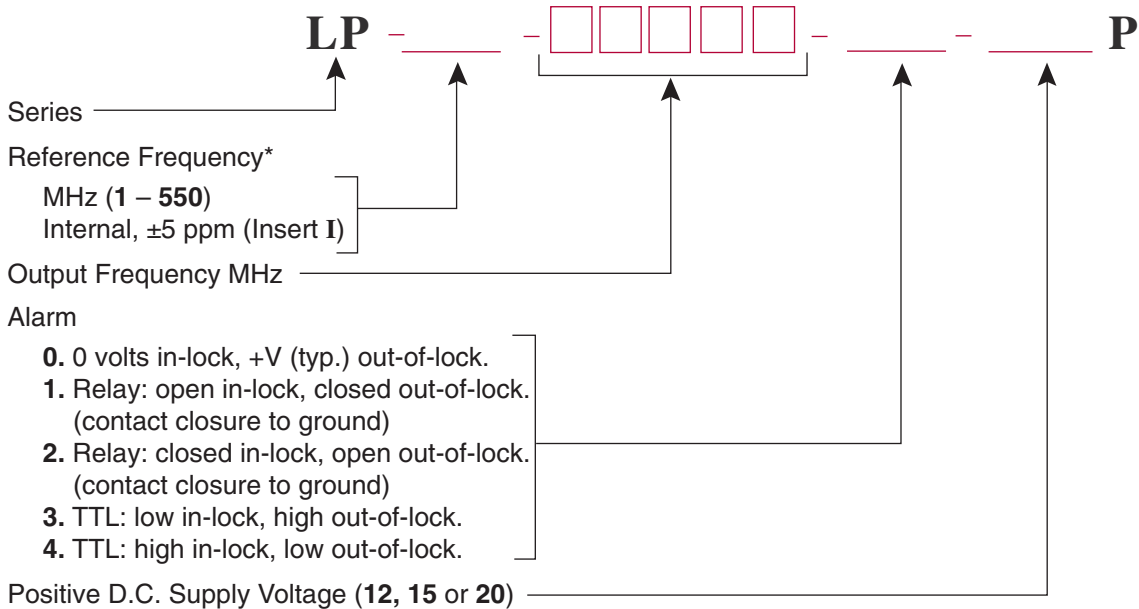


PHASE-LOCKED COAXIAL RESONATOR OSCILLATOR

BLOCK DIAGRAM



ORDERING INFORMATION



* Reference <50 MHz will be dual-loop design.

EXAMPLE: Part Number LP-10-01500-3-15P LP Series phase-locked oscillator with 1.5 GHz output locked to 10 MHz with TTL alarm and +15 volts D.C. supply voltage.

MECHANICAL SPECIFICATIONS

Outline drawing..... 165654
 Size..... 2.15" x 3.15" x 1.32"
 Weight..... 250 grams nominal
 RF connectors SMA female
 DC connectors..... Feedthru filter

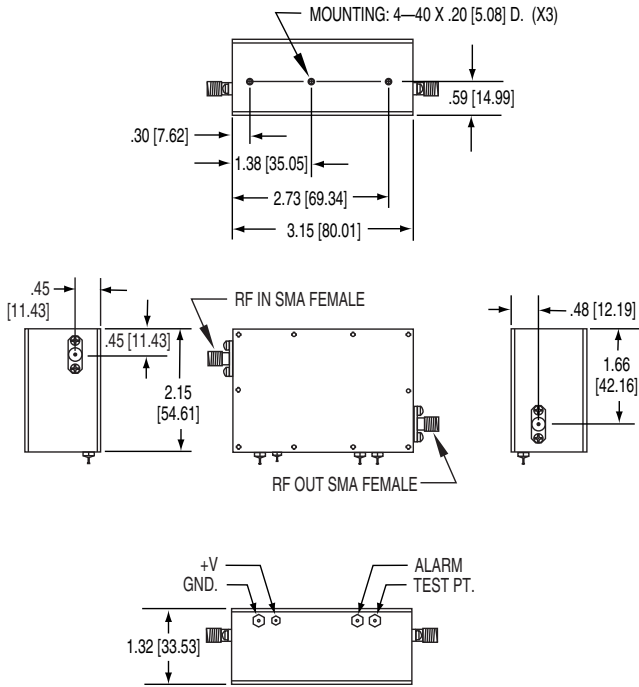
ENVIRONMENTAL SPECIFICATIONS

Temperature
 Operating -10 to +60°C
 Storage -45 to +85°C
 Humidity..... 95% at 40°C noncondensing
 Shock (survival) 30 g's, 10 ms pulse
 Vibration (survival) 20 to 2000 Hz random to 4 g's rms

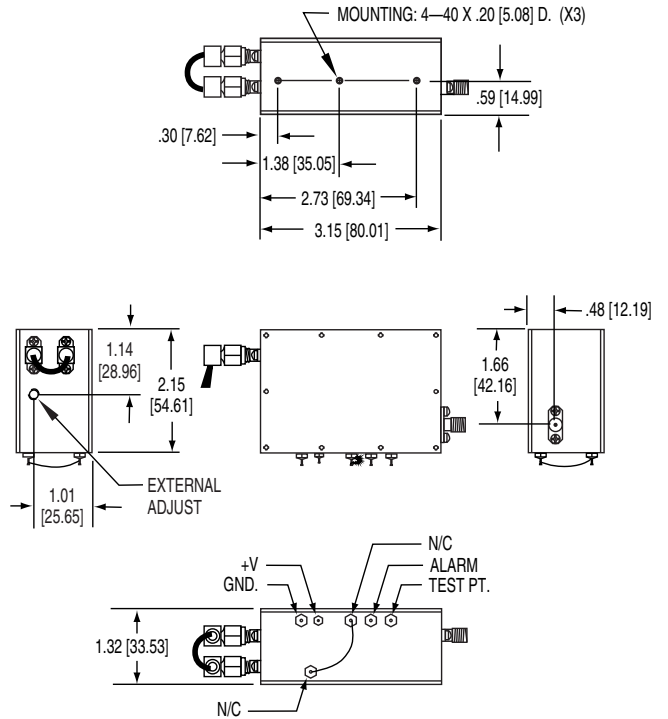
OUTLINE DRAWING

165654 LP SERIES

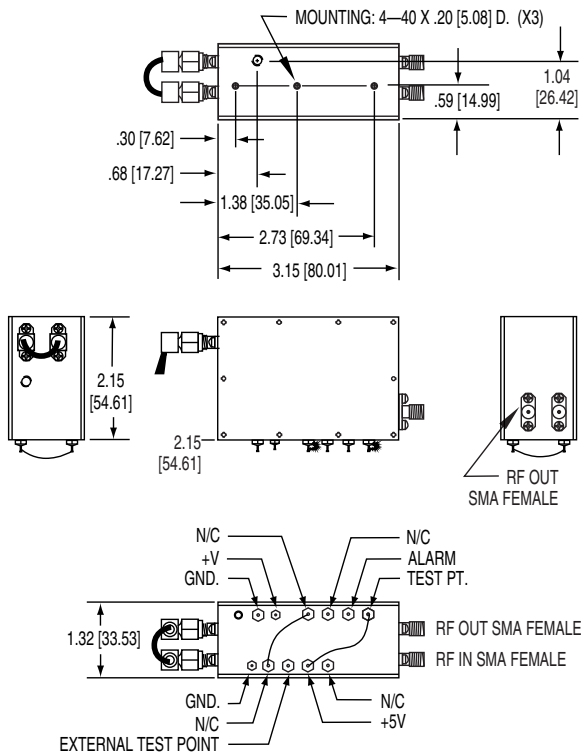
OPTION A. (EXTERNAL REFERENCE)



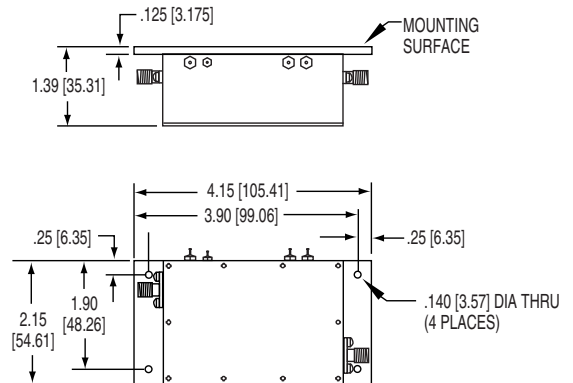
OPTION B,C (INTERNAL REFERENCE)



OPTION -5, -10 (DUAL LOOP)



OPTIONAL MOUNTING PLATE CONFIGURATION



NOTE: DIMENSIONS SHOWN IN BRACKETS [] ARE IN MILLIMETERS.

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MULTIPLIED PHASE-LOCKED COAXIAL RESONATOR OSCILLATOR

LPLM SERIES: 3.4-15 GHz

FEATURES

- Superior phase noise
- Ideal for digital radio links
- 100% burn-in
- Three-year warranty

OPTIONS

- Internal crystal reference (mechanically adjustable)
- 1 – 20 MHz input reference (dual-loop design)

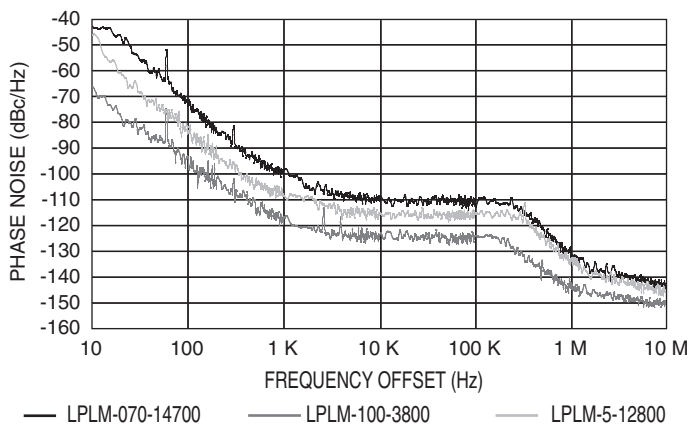


ELECTRICAL SPECIFICATIONS

Output frequency range	3.4 – 15 GHz
Output power	+13 dBm minimum
Output power variation	±1.5 dB maximum
Output impedance	50 ohms nominal
Output tuning range	2% of bandwidth nominal (Note 1)
Output harmonic	-50 dBc minimum (Out to Third harmonic)
Output spurious	-70 dBc minimum (standard) -65 dBc minimum (dual loop)
Phase noise	See graph
Input reference frequency	
Internal	Factory selectable
External	1 – 550 MHz (optional)
Input power level	0 ±3 dBm
Load VSWR	1.5:1 nominal
DC power	+15 or +20 volts @ 400 mA typical (standard) @ 600 mA (optional)

Note 1: Up to 5% available on custom models.

TYPICAL PHASE NOISE



GUARANTEED PHASE NOISE

Offset from Carrier	Phase Noise at 4 GHz Carrier (dBc/Hz)	Phase Noise at 8 GHz Carrier (dBc/Hz)	Phase Noise at 15 GHz Carrier (dBc/Hz)
100 Hz	-85	-80	-75
1 kHz	-105	-100	-95
10 kHz	-113	-107	-100
100 kHz	-113	-107	-100
1 MHz	-133	-127	-120
10 MHz	-145	-145	-140

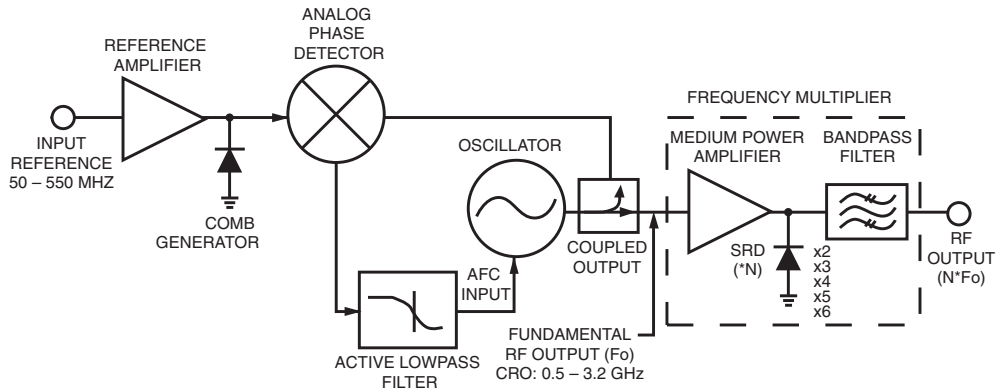
Notes: Internal models: 100 MHz (typical).

External models: Phase noise must be at least -121

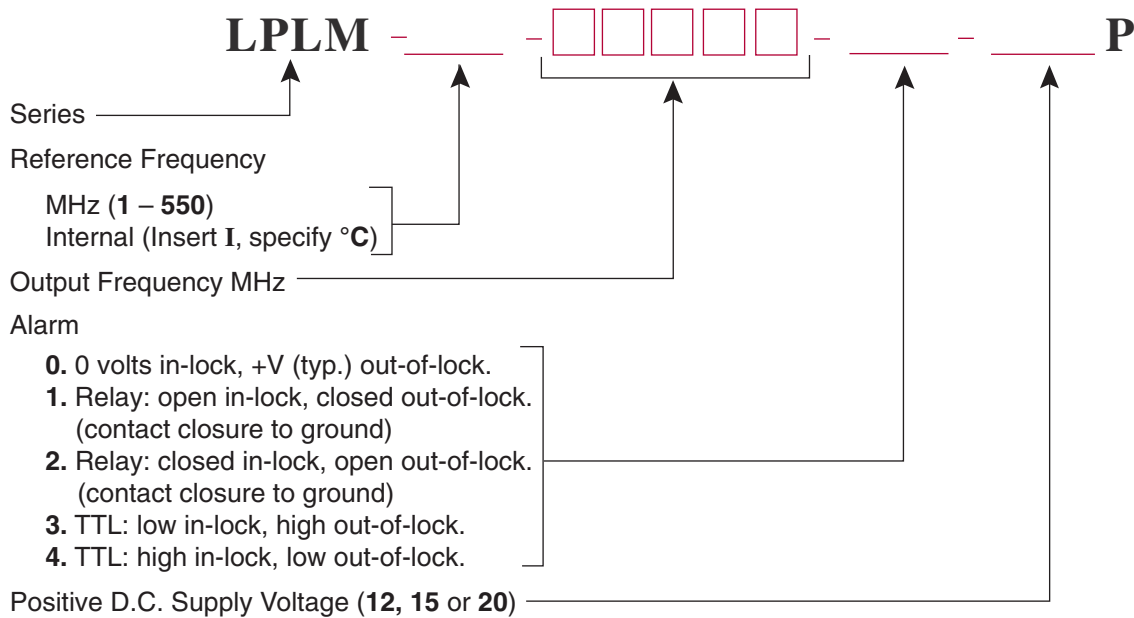
@ 100 Hz, -141 @ 1 kHz, -153 @ 10 kHz for guaranteed performance.

MULTIPLIED PHASE-LOCKED COAXIAL RESONATOR OSCILLATOR

BLOCK DIAGRAM



ORDERING INFORMATION



EXAMPLE: Part Number LPLM-10-10000-3-15P LPLM Series phase-locked oscillator with 10 GHz output locked to 10 MHz reference with TTL alarm and +15 volts D.C. supply voltage.

MECHANICAL SPECIFICATIONS

Outline drawings..... 165652, 165653
 Size
 LPLM (4-8)..... 2.20" x 3.65" x 1.42"
 LPLM (8-15)..... 2.15" x 3.15" x 1.32"
 Weight 350 grams nominal
 RF connectors SMA female
 DC connectors Feedthru filter

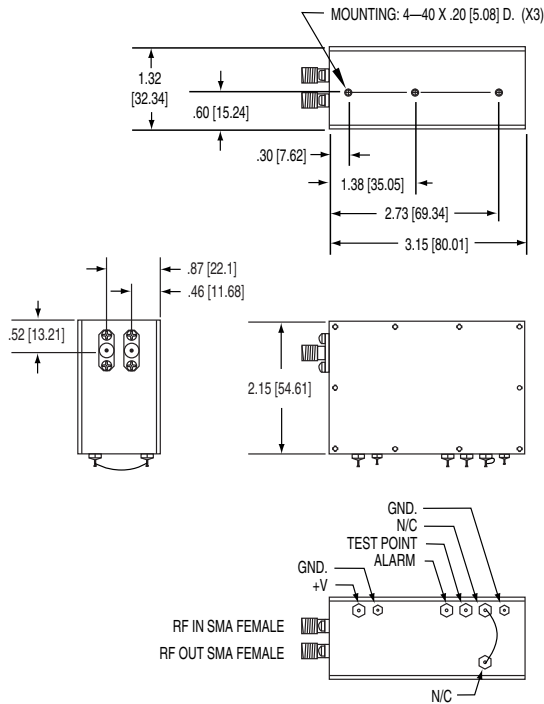
ENVIRONMENTAL SPECIFICATIONS

Temperature
 Operating..... -10 to +60°C
 Storage -45 to +85°C (standard)
 Humidity..... 95% at 40°C, noncondensing
 Shock (survival) 30 g's, 10 ms pulse
 Vibration (survival) 20 to 2000 Hz random to 4 g's rms

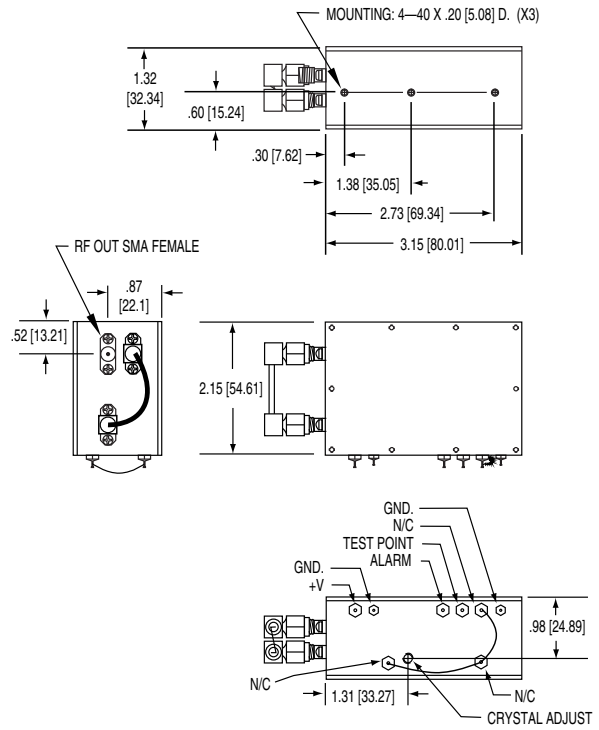
OUTLINE DRAWINGS

165652 LPLM SERIES (1 TO 20 MHz INPUT, 8 TO 15 GHz OUTPUT)

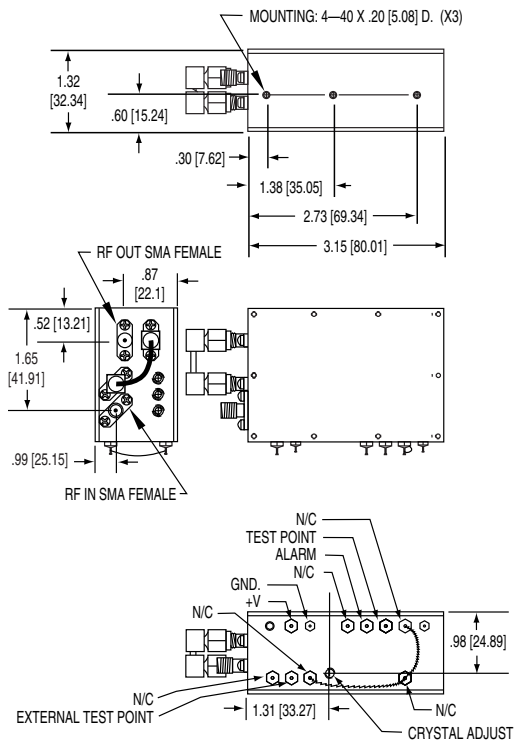
OPTION A. (EXTERNAL REFERENCE)



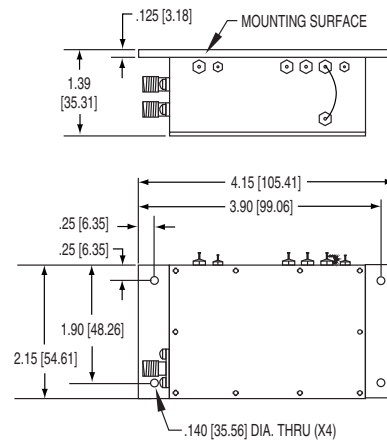
OPTIONS B,C (INTERNAL REFERENCE)



OPTION -5, -10 (DUAL LOOP)



OPTIONAL MOUNTING PLATE CONFIGURATION

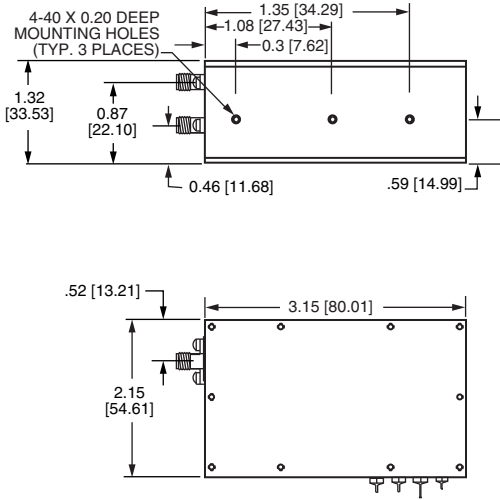


NOTE: DIMENSIONS SHOWN IN BRACKETS [] ARE IN MILLIMETERS.

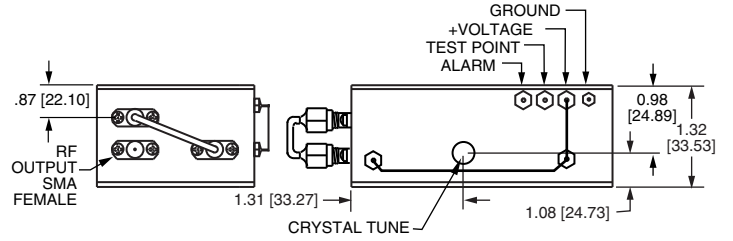
OUTLINE DRAWINGS (CONT.)

165652

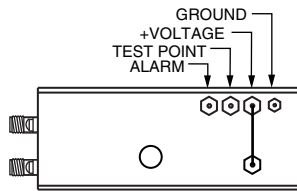
LPLM SERIES (50 TO 550 MHz INPUT, 8 TO 15 GHz OUTPUT)



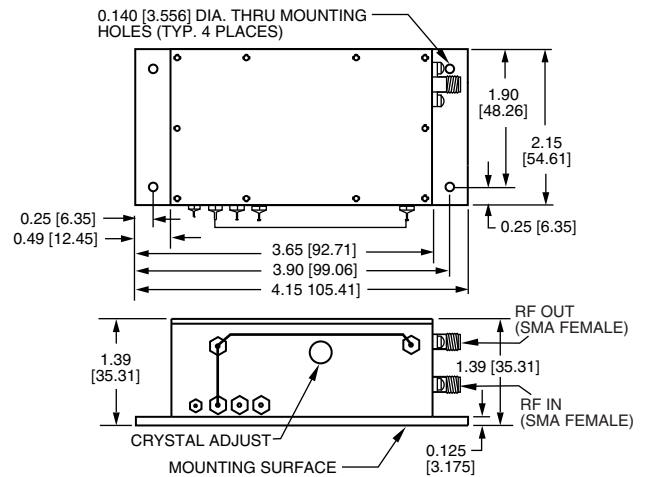
OPTIONS B,C AND D (INTERNAL REFERENCE)



OPTION A (EXTERNAL REFERENCE)



OPTIONAL MOUNTING PLATE CONFIGURATION

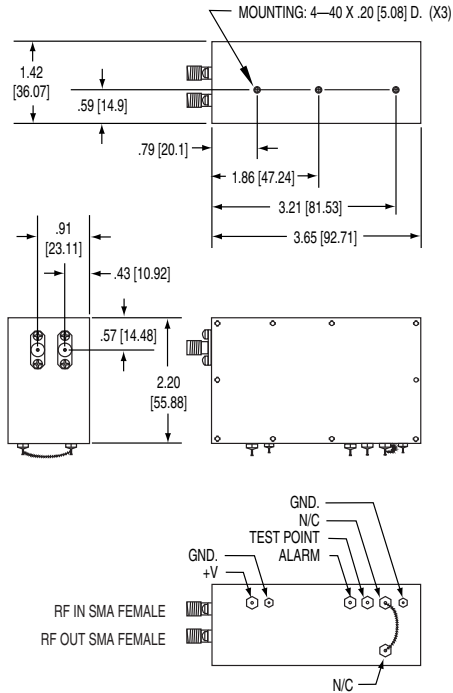


NOTE: DIMENSIONS SHOWN IN BRACKETS [] ARE IN MILLIMETERS.

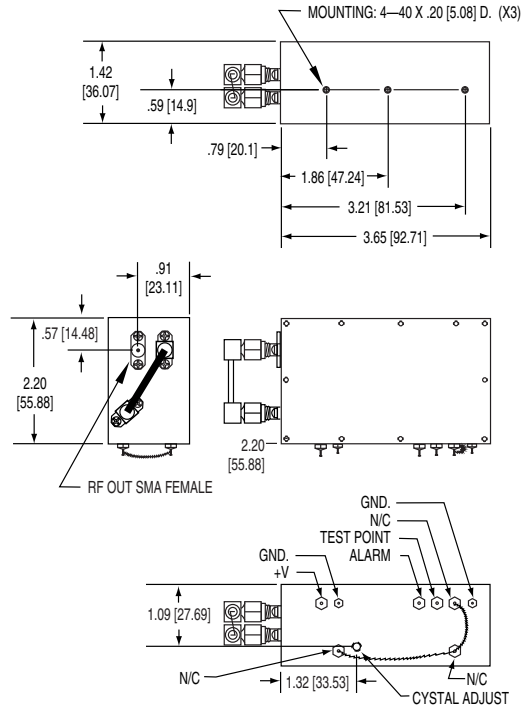
OUTLINE DRAWINGS (CONT.)

165653 LPLM SERIES (1 TO 20 MHz INPUT, 4 TO 8 GHz OUTPUT)

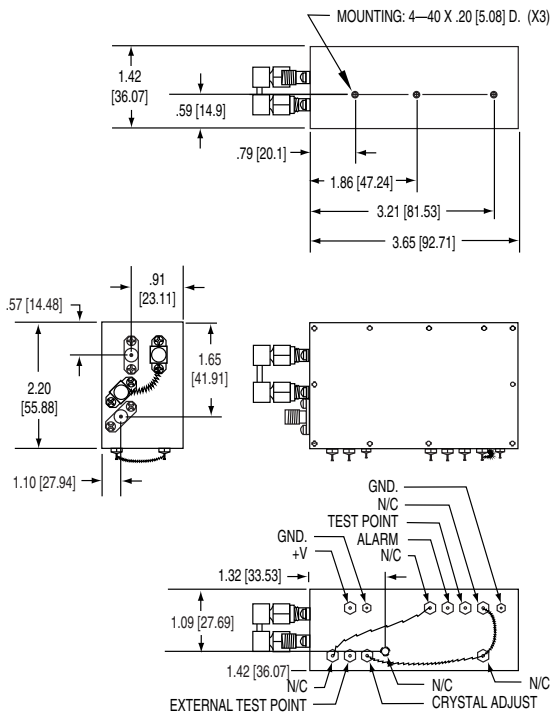
OPTION A. (EXTERNAL REFERENCE)



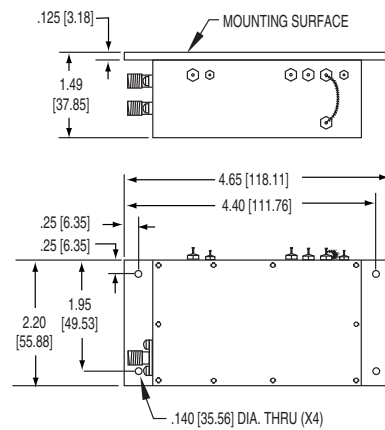
OPTIONS B,C (INTERNAL REFERENCE)



OPTION -5, -10 (DUAL LOOP)



OPTIONAL MOUNTING PLATE CONFIGURATION



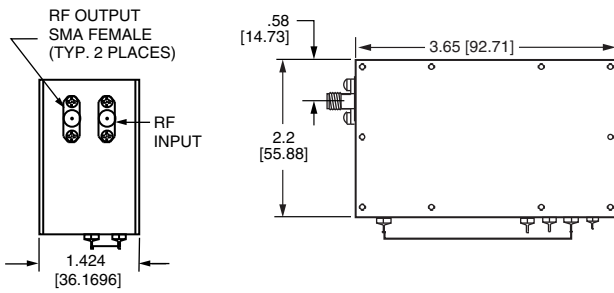
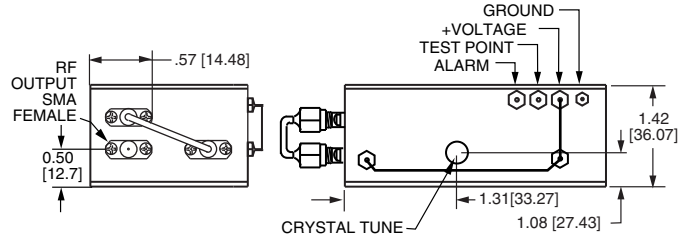
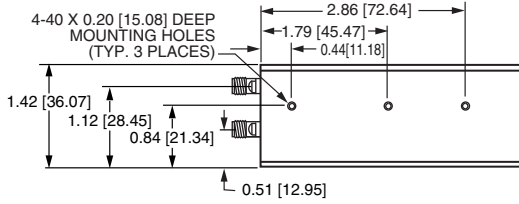
NOTE: DIMENSIONS SHOWN IN BRACKETS [] ARE IN MILLIMETERS.

OUTLINE DRAWINGS (CONT.)

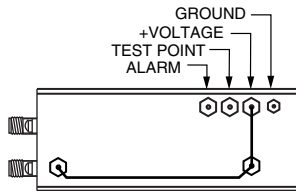
165653

LPLM SERIES (50 TO 550 MHz INPUT, 4 TO 8 GHz OUTPUT)

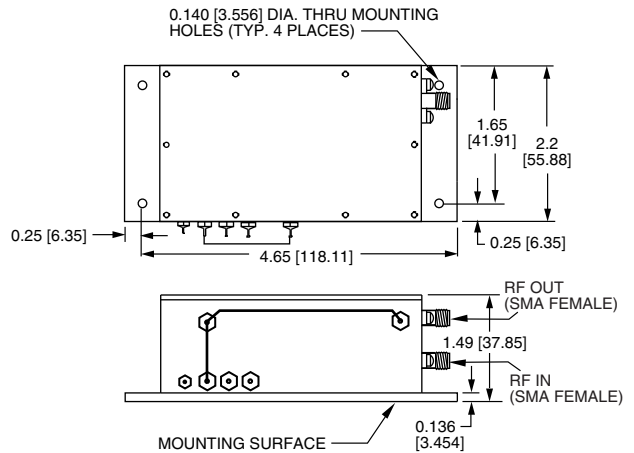
OPTIONS B,C AND D (INTERNAL REFERENCE)



OPTION A. (EXTERNAL REFERENCE)



OPTIONAL MOUNTING PLATE CONFIGURATION



NOTE: DIMENSIONS SHOWN IN BRACKETS [] ARE IN MILLIMETERS.

PHASE-LOCKED CRYSTAL OSCILLATOR

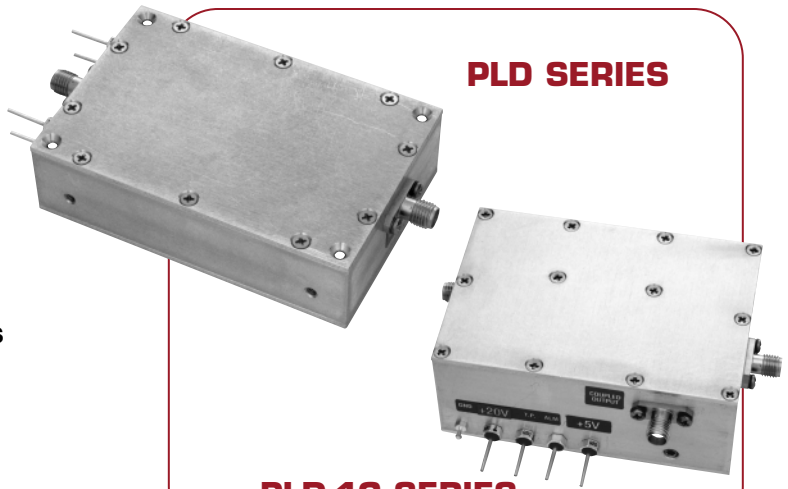
PLD SERIES:
30-130 MHz (PLD)
130-1000 MHz (PLD-1C)

FEATURES

- Low phase noise design
- Fractional frequency division available
- Low subharmonics for multiplied models (-70 dBc)
- +13 dBm standard output power

OPTIONS

- Higher output power
- TTL output
- Coupled RF output



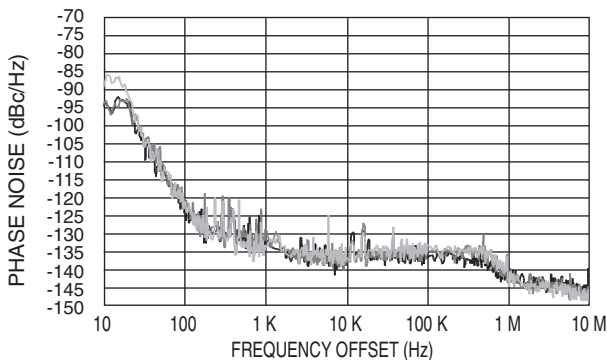
ELECTRICAL SPECIFICATIONS

Output frequency range Fundamental (PLD) Multiplied (PLD-1C)	30 – 130 MHz 130 – 1000 MHz
Output power	+13 dBm minimum
Output power variation	±1 dB maximum
Output harmonic	-20 dBc maximum
Output spurious	-70 dBc maximum
Phase noise	See graphs
Input reference frequency	1 – 20 MHz
Input power level	0 ±3 dBm
Input impedance	50 ohms
Load VSWR	1.5:1 nominal
DC power (Note 1)	+15 or +20 volts @ 250 mA and +5 volts @ 200 mA

Note 1: Add 120 mA @ +V for PLD-1C.

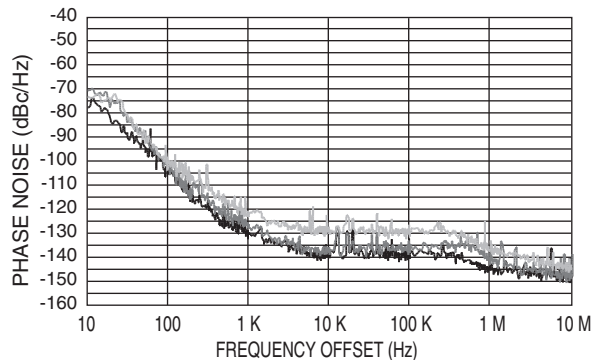
TYPICAL PHASE NOISE

PLD SERIES



— PLD-010-050-15P — PLD-010-060-15P — PLD-010-070-15P

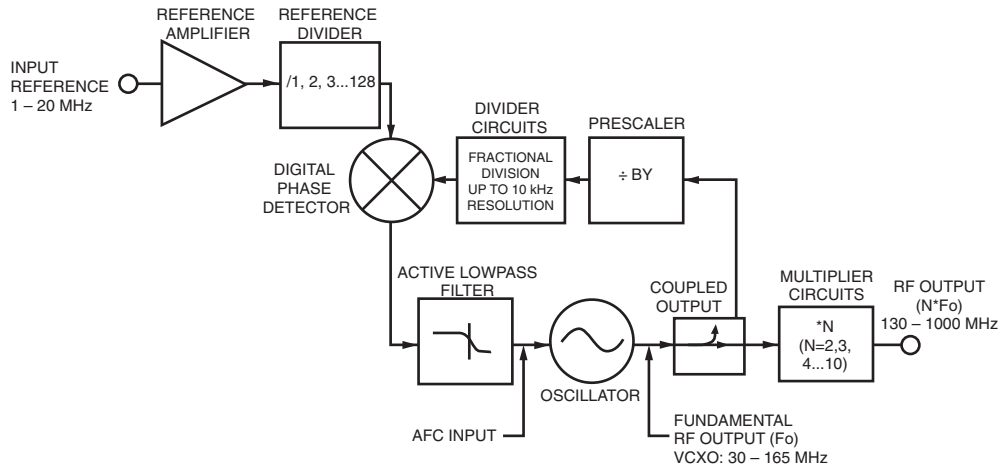
PLD-1C SERIES



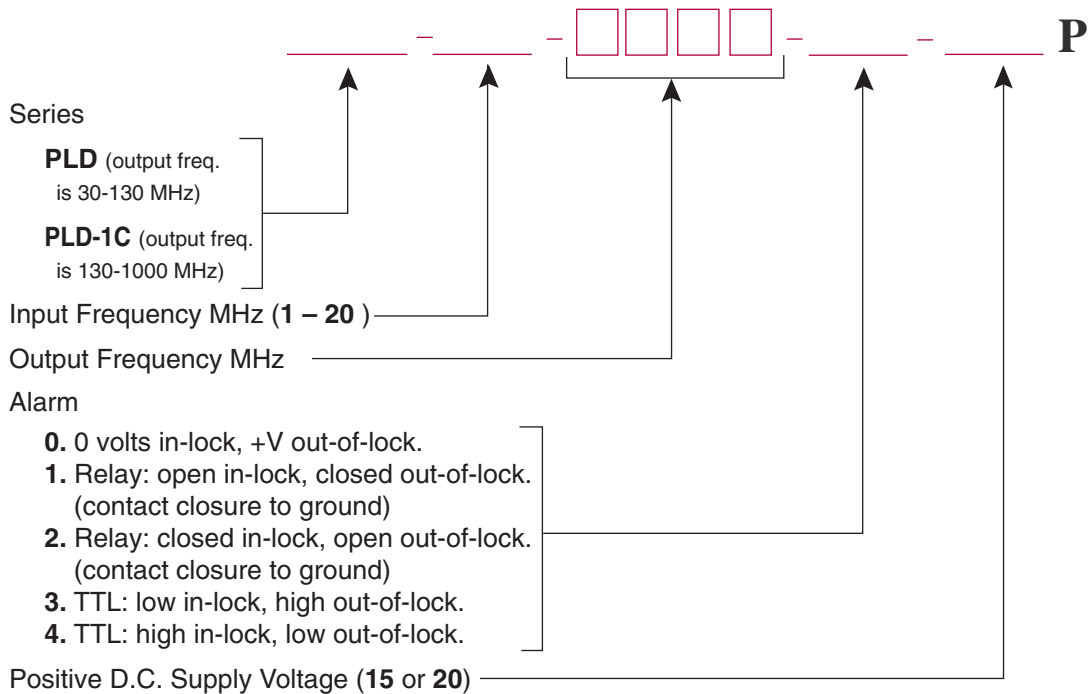
— PLD-1C-010-382-0-15P — PLD-1C-010-0582-0-15P — PLD-1C-010-0640-0-15P

PHASE-LOCKED CRYSTAL OSCILLATOR

BLOCK DIAGRAM



ORDERING INFORMATION



EXAMPLE: Part Number PLD-10-0100-3-15P PLD Series 100 MHz phase-locked crystal oscillator with 10 MHz reference, TTL alarm and +15 volts D.C. supply voltage.

MECHANICAL SPECIFICATIONS

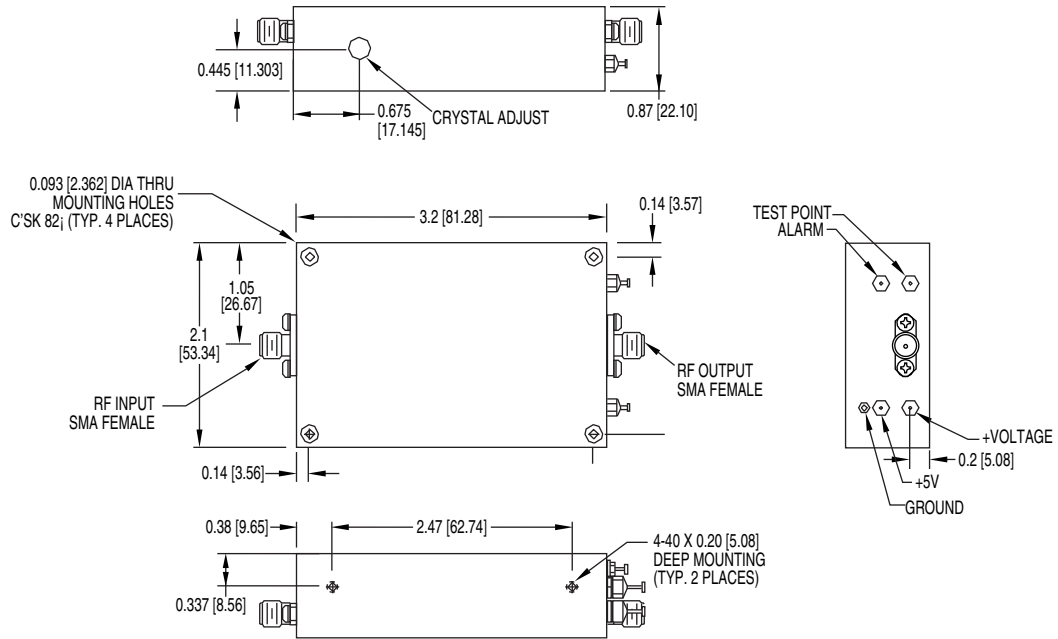
Outline drawings	
PLD	138410
PLD-1C	138413
Size	
PLD	2.6" x 3.20" x 0.87"
PLD-1C	2.15" x 3.15" x 1.33"
Weight	
Fundamental	250 grams nominal
Multiplied	300 grams nominal
RF connectors	SMA female
DC connectors	Feedthru filter

ENVIRONMENTAL SPECIFICATIONS

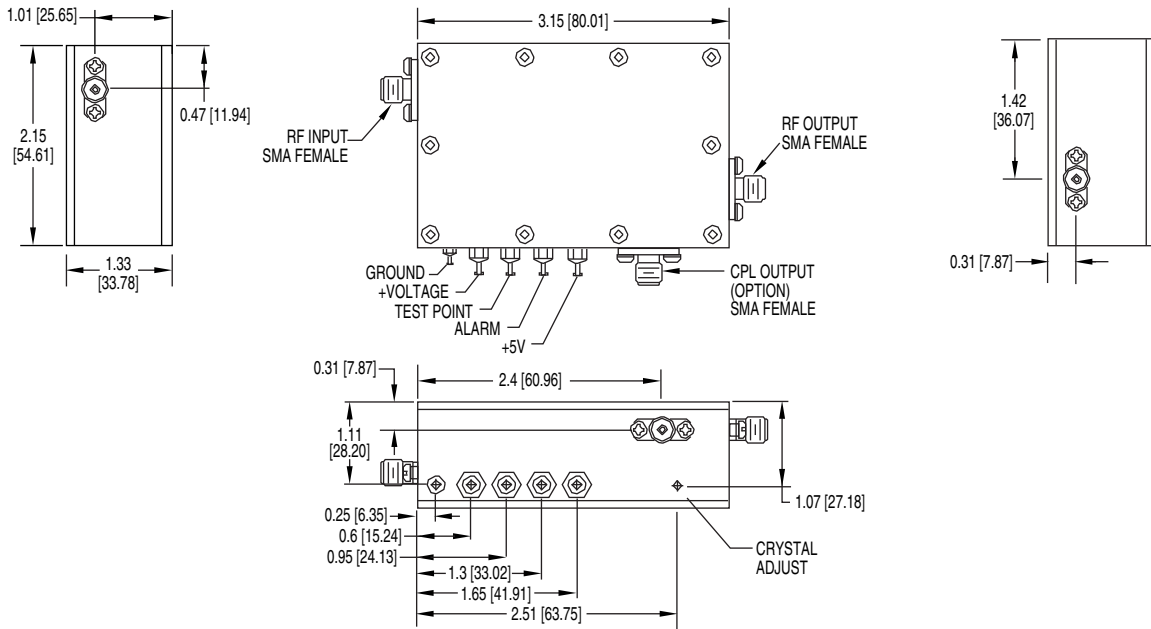
Temperature	
Operating	0 to 60°C
Storage	-45 to +85°C
Humidity	95% at 40°C, noncondensing
Shock (survival)	30 g's, 10 ms pulse
Vibration (survival)	20 to 2000 Hz random to 4 g's rms

OUTLINE DRAWINGS

138410 PLD SERIES (FUNDAMENTAL)



138413 PLD-1C SERIES (MULTIPLIED)



NOTE: DIMENSIONS SHOWN IN BRACKETS [] ARE IN MILLIMETERS.

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ULTRA LOW-NOISE CRYSTAL OSCILLATOR

XTO-05 SERIES: 5-130 MHz

FEATURES

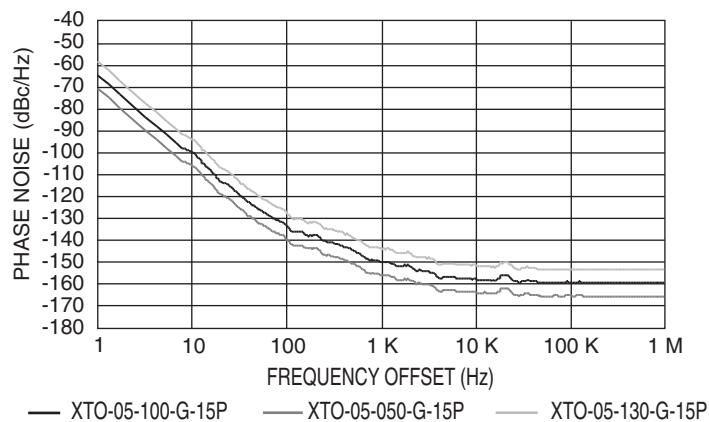
- Ultra low phase noise
- Low current consumption
- Low cost
- Oven controlled



ELECTRICAL SPECIFICATIONS

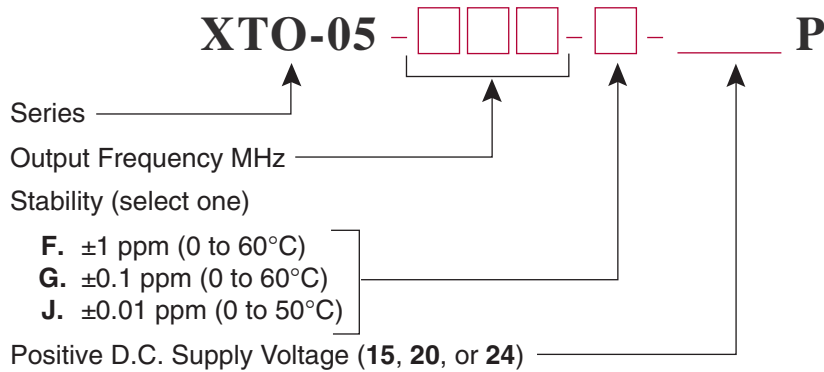
Output frequency range	5 – 130 MHz
Output power	+11 dBm minimum (standard) +15 dBm maximum (optional)
Output power variation (0 to 60°C)	±1 dB maximum
Output impedance	50 ohms
Output harmonic	-30 dBc minimum
Frequency stability	F. ±1 ppm, (0 to 60°C) G. ±0.1 ppm (0 to 60°C) J. ±0.01 ppm (0 to 50°C)
Phase noise	See graph
Aging rate	2 x 10 ⁻⁹ per 24 hours
Load VSWR	1.5:1 nominal
DC power requirements	+15, +20 or +24 volts @ 300 mA (warm-up) @ 175 mA (continuous)

TYPICAL PHASE NOISE



ULTRA LOW-NOISE CRYSTAL OSCILLATOR

ORDERING INFORMATION



EXAMPLE: Part Number XTO-020-F-15P XTO Series crystal oscillator with 20 MHz output, ±1 ppm stability and +15 volts D.C. supply voltage.

MECHANICAL SPECIFICATIONS

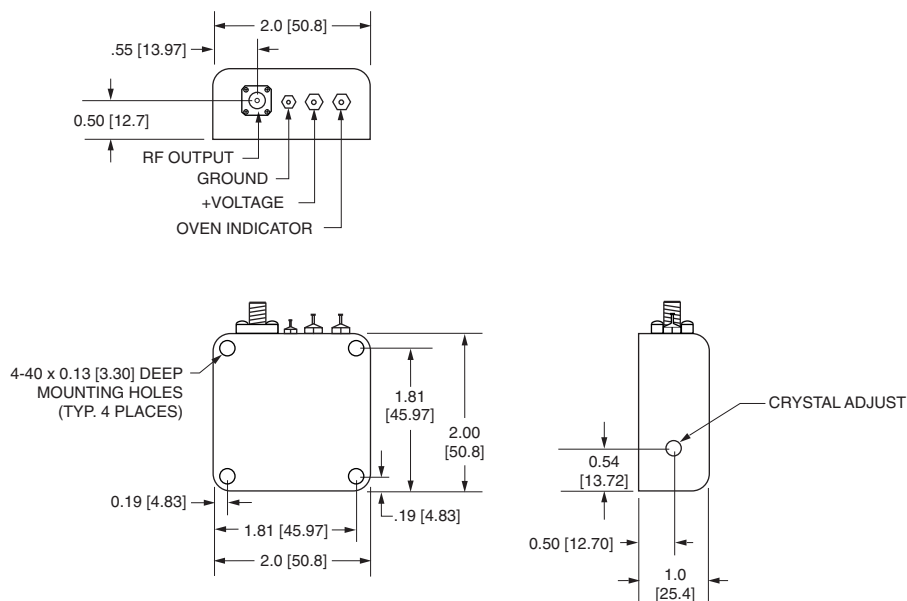
Outline drawings..... 138427
 Size..... 2.0" x 2.0" x 1.0"
 Weight..... 100 grams nominal
 RF connectors SMA female
 DC connectors..... Feedthru filter

ENVIRONMENTAL SPECIFICATIONS

Temperature
 Operating 0 to 60°C
 Storage..... -45 to +85°C
 Humidity..... 95% at 45°C, noncondensing
 Shock (survival)..... 30 g's, 10 ms pulse
 Vibration (survival)..... 20 to 2000 Hz random to 4 g's rms

OUTLINE DRAWING

138427 XTO-05 SERIES



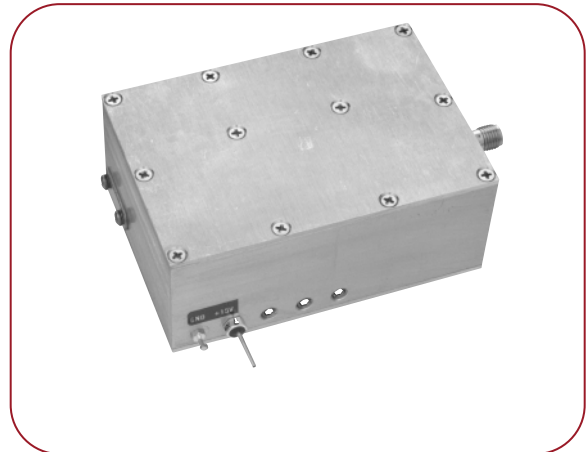
NOTE: DIMENSIONS SHOWN IN BRACKETS [] ARE IN MILLIMETERS.

MULTIPLIED CRYSTAL OSCILLATOR TO 1 GHz

XTM SERIES: 130-1000 MHz

FEATURES

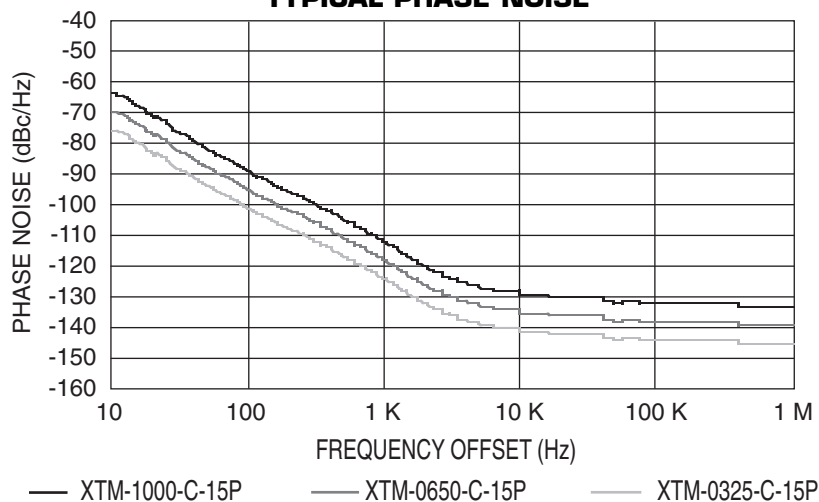
- Low phase noise
- Mechanical tunability



ELECTRICAL SPECIFICATIONS

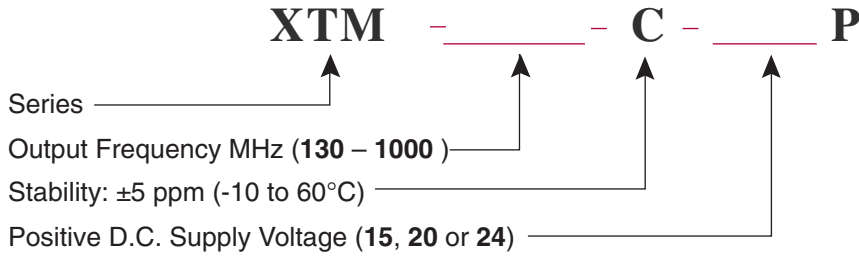
Output frequency range	130 – 1000 MHz
Output power	+10 dBm minimum
Output power variation (0 to 60°C)	±1 dB maximum
Output impedance	50 ohms
Output harmonic	-30 dBc minimum
Output spurious	-60 dBc minimum
Phase noise	See graph
Load VSWR	1.5:1 nominal
Frequency stability	±5 ppm (-10 to 60°C)
DC power	+15, +20 or +24 volts @ 240 mA nominal

TYPICAL PHASE NOISE



MULTIPLIED CRYSTAL OSCILLATOR TO 1 GHz

ORDERING INFORMATION



EXAMPLE: Part Number XTM-150-C-15P XTM Series multiplied crystal oscillator with 150 MHz output, ±5 ppm stability and +15 volts D.C. supply voltage.

MECHANICAL SPECIFICATIONS

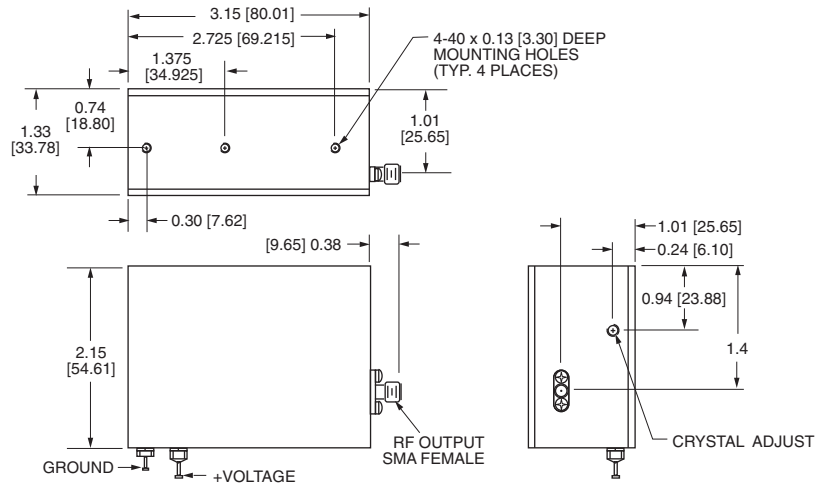
Outline drawing..... 123528
 Size..... 2.15" x 3.15" x 1.33"
 Weight..... 300 grams nominal
 RF connectors SMA female
 DC connectors..... Feedthru filter

ENVIRONMENTAL SPECIFICATIONS

Temperature
 Operating -10 to +60°C
 Storage..... -45 to +85°C
 Humidity..... 95% at 40°C, noncondensing
 Shock (survival) 30 g's, 10 ms pulse
 Vibration (survival) 20 to 2000 Hz random to 4 g's rms

OUTLINE DRAWING

123528 XTM SERIES



NOTE: DIMENSIONS SHOWN IN BRACKETS [] ARE IN MILLIMETERS.