



Charlottesville, VA USA  
www.isotemp.com

## OCXO 143-2

PHONE: (434) 295-3101  
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# CRYSTAL OSCILLATOR SPECIFICATION

This specification defines the operating characteristics of an ovenized crystal oscillator. Long term stability is assured through use of premium components.

REV	DESCRIPTION OF REVISION	BY	APV	DATE
-		DAG	TST	11-19-2003
A	Add pin information to 3. 4. and 5. 2.5.a. was -110, 2.5.b was TBD, Removed 2.5.c. through 2.5.e, In 3.1. $\pm 10 \times 10^{-7}$ was $\pm 8 \times 10^{-7}$ , In 3.4. $\pm 0.6$ VDC was $\pm 0.4$ VDC.	TST	TST	12-07-2000
B	7.7.3. 125-606 was 125-543	DAG	JRD	12-15-2003
C	1.5. was -20 dBc; Added 2.5.c., -140 dBc @ 1 kHz; 5.2. was 4k $\Omega$ load.	LRB	JRD	03-25-2004

ISOTEMP RESEARCH INC. CHARLOTTESVILLE, VA. USA	CODE ID	MODEL NO.	PAGE OF TOTAL		DWG. NO.	REV.
	31785	OCXO 143-2	1	3	114-803	C



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- 1. OUTPUT
  - 1.1. Frequency 10.000 MHz
  - 1.2. Wave form Sine wave
  - 1.3. Level +4 ±2 dBm
  - 1.4. Load 50 Ω
  - 1.5. Harmonics < -25 dBc
  - 1.6. Spurious < -60 dBc
  
- 2. FREQUENCY STABILITY
  - 2.1. Ambient < ±2x10<sup>-8</sup> from 0°C to +70°C (referenced to +25°C)
  - 2.2. Aging
    - a. At time of shipment < ±1x10<sup>-9</sup>/day
    - b. After indefinite storage
      - i. Daily < ±1x10<sup>-9</sup> after 30 days
      - ii. Yearly < ±1x10<sup>-7</sup>
      - iii. 10 Years < ±3.5x10<sup>-7</sup>
  - 2.3. Voltage < ±1x10<sup>-8</sup>/±5% change
  - 2.4. Warm-up < ±1x10<sup>-8</sup> in 3 minutes @+25°C (referenced to 4 hours)
  - 2.5. Phase noise
    - a. @ 10 Hz < -115 dBc
    - b. @ 100 Hz < -135 dBc
    - c. @ 1 kHz < -140 dBc
  
- 3. ELECTRICAL FREQUENCY ADJUSTMENT (PIN = "VCO INPUT")
  - 3.1. Range > ±4x10<sup>-7</sup>  
< ±10x10<sup>-7</sup>
  - 3.2. Control 0 VDC to +4 VDC or  
a 20 kΩ potentiometer connected  
between the "REFERENCE VOLTAGE" pin  
and "0 VOLTS & CASE" pin with wiper  
connected to "VCO INPUT" pin.
  - 3.3. Slope Positive
  - 3.4. Center +2 VDC ±0.6 VDC  
(control voltage at which nominal  
frequency occurs at time of shipment)
  - 3.5. Linearity < ±10%
  - 3.6. Input impedance > 50 kΩ
  
- 4. INPUT POWER (PIN = "+VDC")
  - 4.1. Voltage +5.0 VDC ±5%
  - 4.2. Current < 700 mA @ turn on
  - 4.3. Steady state < 1.5 Watts @ +25°C

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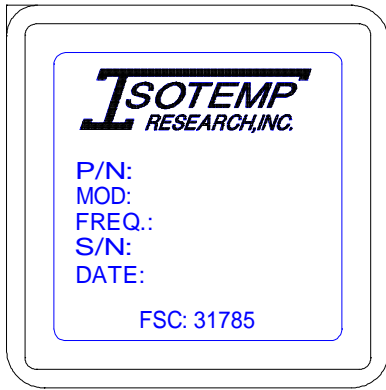
# OCXO 143-2

- 5. REFERENCE VOLTAGE (PIN = "REFERENCE VOLTAGE"), an output
  - 5.1. Voltage + 4 VDC ±5%
  - 5.2. Load > 9 kΩ
  - 5.3. Temperature stability < ±0.010 VDC  
(Over temperature range in 2.1.)
  
- 6. ENVIRONMENTAL
  - 6.1. Humidity MIL-STD-202F, Method 103A, Test Condition A (95% R.H. @ +40°C, non-condensing, 240 hours)
  - 6.2. Storage temperature -50°C to +105°C
  - 6.3. Vibration (non-operating) MIL-STD-202F Method 201A. (0.06" Total p-p, 10 to 55 Hz)
  - 6.4. Shock (non-operating) MIL-STD-202F, Method 213B, Test Condition J.  
(30 g, 11 ms half-sine)
  - 6.5. Seal MIL-STD-202F, Method 112C, Test Condition D.
  
- 7. MECHANICAL
  - 7.1. Applicable series OCXO 143 series
  - 7.2. Model number OCXO 143-2
  - 7.3. Outline drawing 125-606

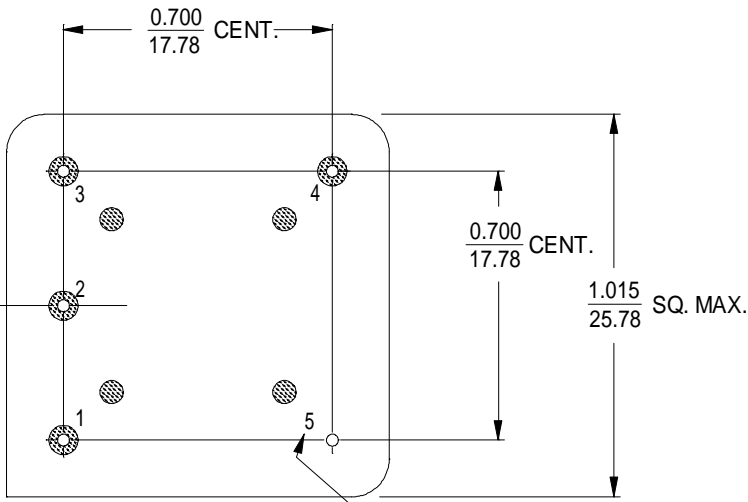
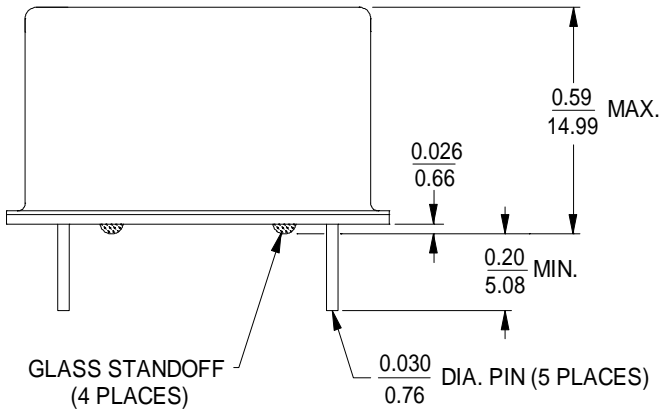
NOTE: This specification differs from the OCXO 143-2 listed in the ISOTEMP catalogue in the following areas. 1. The Phase noise is 5 dBc better at 10 Hz. 2. The Maximum Electrical Frequency Adjustment Range is  $2 \times 10^{-7}$  larger. 3. The package height is 0.09 inches taller.

This unit is available with HCMOS output as OCXO 143-3.

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(VIEW FROM TOP)



(VIEW FROM BOTTOM)

NUMBERS FOR REFERENCE ONLY  
(NOT STAMPED ON UNIT)

$\frac{\text{INCH}}{\text{mm}}$  (REFERENCE ONLY)

Form NO. 120-081E

PIN CONNECTIONS	
PIN	FUNCTION
1 (See Note 1)	VCO INPUT or NOT CONNECTED
2 (See Note 1)	REFERENCE VOLTAGE or NOT CONNECTED
3	+VDC
4	R.F. OUTPUT
5	0 VOLTS & CASE

Note 1. If the specification does not specify parameters for either PIN1 or PIN2 then that respective PIN is NOT internally CONNECTED.



OSCILLATORS

Charlottesville, Virginia USA

NAME: OUTLINE DRAWING  
(OCXO 143 SERIES)

CODE I.D. NO.  
**31785**

SCALE: 2:1  
DWN. BY: DAG

DATE: 09-23-2002  
APPR'D. BY: TST

TOLERANCES  
UNLESS OTHERWISE SPECIFIED:  
ANGLES: ±1 DEGREE  
FRACTIONS: ±1/32 INCH  
DECIMALS: .XX ± .015, .XXX ± .010 INCH

MATERIAL: STEEL  
FINISH: NICKEL  
MARK: LABEL

LET REVISION

BY APP DATE

DWG: 125-606  
REV: -  
SHT: 1 OF 1