

ELECTRICAL CHARACTERISTICS

Nominal Frequency	300 KHz to 75 MHz
Input Voltage	+3.3Vdc \pm 5% 35 mA max
Output (with supply voltage at +3.3 VDC and the output loaded as specified below)	Low Voltage CMOS Compatible Squarewave
Rise and Fall Time	5 ns maximum from 10% to 90% level
Duty Cycle	40/60% @ 50% amplitude level
Logic "0" Logic "1"	.1Vcc maximum .9Vcc minimum
Load	Up to 5 CMOS loads
Temperature Stability including \pm 10% Load Change and \pm 5% Input Voltage change	See Temperature Stability Options Table I
Aging	\pm 1 PPM 1st year & \pm 5 PPM for 10 years
Electrical Frequency Adjustment (when specified – see Table II)	\pm 5 PPM minimum with an external 20K Ω rheostat connected from Pin 4 to Ground or select-at-test resistor in the range of 0 to 20K Ω connected from Pin 4 to Ground
Allen Variance (Short Term Stability)	$<1 \times 10^{-9}$ /second
RF Output Enable (Pin 14 when specified) If an Enable is not specified, Pin 14 will be a N/C or No Connection	If an Enable is desired, it must be specified on the Purchase Order as one of the following options: "RF Output Enable required, CMOS Logic '1' or floating to Enable, Logic '0' to Disable." "RF Output Enable required, CMOS Logic '0' or floating to Enable, Logic '1' to Disable."

ABOLUTE MAXIMUM RATINGS

Supply Voltage	-0.5 to +6.00 VDC
DC Input Current	50 mA maximum
Storage Temperature range	-62°C to +125°C
Operable Temperature range (TCXO will operate and have output signal, but not meet all the requirements of this specification)	-55°C to +125°C
Lead Temperature (Soldering, 10 seconds)	300°C

ENVIRONMENTAL CHARACTERISTICS

Sine Vibration	Mil-STD-202, Method 204, TC "D"
Random Vibration	Mil-STD-202, Method 214 TC "I-K" (15 minutes per axis)
Shock	Mil-STD-202, Method 213, TC "F"
Acceleration	Mil-STD-883, Method 2001, TC "A"
Altitude	50,000 feet minimum to deep space
Radiation	Radiation testing is not performed at the oscillator level, but these TCXOs have been acceptable for use in environments of up to 100K rads total dose, by analysis of the components used. They are assembled with all bipolar semiconductors with the exception of the ACMOS chip used to provide the CMOS output. A CMOS chip that is from a radiation tested, certified wafer lot can be provided if specified on the Purchase Order. A copy of the parts list and materials can be provided for customer review.

TABLE I
FREQUENCY vs TEMPERATURE STABILITY and
EXTERNAL FREQUENCY ADJUSTMENT OPTIONS

OPTION	EXT FREQ ADJUST	TEMP STABILITY
A	±5 PPM	±2 PPM 0°C to +50°C
B	±5 PPM	±2 PPM 0°C to +50°C & ±5 PPM -40°C to +85°C
C	±5 PPM	±3 PPM -20°C to +65°C
D	±5 PPM	±3 PPM -20°C to +65°C & ±5 PPM -40°C to +85°C
E	±5 PPM	±4 PPM -40°C to +85°C
F	±5 PPM	±4 PPM -40°C to +85°C & ±10 PPM -55°C to +105°C
G	±5 PPM	±5 PPM -40°C to +85°C
H	NO	±5 PPM -40°C to +85°C
I	±5 PPM	±5 PPM -40°C to +85°C & ±10 PPM -55°C to +105°C
J	NO	±5 PPM -40°C to +85°C & ±10 PPM -55°C to +105°C
K	±5 PPM	±8 PPM -40°C to +85°C & ±10 PPM -55°C to +105°C
L	NO	±8 PPM -40°C to +85°C & ±10 PPM -55°C to +105°C
M	NO	±10 PPM -40°C to +85°C
N	NO	±10 PPM -55°C to +105°C
O	NO	±12 PPM -55°C to +105°C

**TABLE II
CONSTRUCTION, SCREENING & TESTING OPTIONS**

NOTE: For Engineering or Prototype TCXOs requiring basic electrical testing only and no Screening, or Groups 'A' and 'B' Testing, use the code letter 'E'.

Option Code	S	R	C	B
Operation				
Design, Construction & Component Screen (see Mfging Section)	Mil-PRF-55310 Class 'S'	Mil-PRF-55310 Class 'B'	Mil-PRF-55310 Class 'B'	Mil-PRF-55310 Class 'B'
Workmanship	M883, Method 2017 for Class 'S'	M883, Method 2017 for Class 'B'	M883, Method 2017 for Class 'B'	M883, Method 2017 for Class 'B'
Screening	Mil-PRF-55310 Class 'S'	Mil-PRF-55310 Class 'S'	Mil-PRF-55310 Class 'B' modified	Mil-PRF-55310 Class 'B'
Non-Destruct Wire Bond Pull	100%	100%	N/A	N/A
Internal Visual	M883, Method 2017 for Class 'S'	M883, Method 2017 for Class 'B'	M883, Method 2017 for Class 'B'	M883, Method 2017 for Class 'B'
Stabilization Bake	48 hrs minimum @ +150°C	48 hrs minimum @ +150°C	48 hrs minimum @ +150°C	48 hrs minimum @ +150°C
Thermal Shock	M883, Method 1011, TC 'A'	M883, Method 1011, TC 'A'	N/A	N/A
Temperature Cycling	M883, Method 1010, TC 'B'	M883, Method 1010, TC 'B'	M883, Method 1010, TC 'B'	M883, Method 1010, TC 'B'
Constant Acceleration	M883, Method 2001, TC 'A' (5000 gs, Y1 Axis only)	M883, Method 2001, TC 'A' (5000 gs, Y1 Axis only)	M883, Method 2001, TC 'A' (5000 gs, Y1 Axis only)	M883, Method 2001, TC 'A' (5000 gs, Y1 Axis only)
Seal Test (fine & gross)	100%	100%	100%	100%
PIND	M883, Method 2020, TC 'B'	M883, Method 2020, TC 'B'	M883, Method 2020, TC 'B'	N/A
Electrical Test Frequency, Output levels, Input Current	@ +25°C only	@ +25°C only	@ +25°C only	@ +25°C only
Burn-In (Powered with load)	+125°C for 240 hours	+125°C for 240 hours	+125°C for 160 hours	+125°C for 160 hours
Electrical Test Frequency, Output levels, Input Current	@ +25°C & Temp Extremes specified in Table II	@ +25°C & Temp Extremes specified in Table II	@ +25°C & Temp Extremes specified in Table II	@ +25°C & Temp Extremes specified in Table II
PDA	2% applies to Input Current @ +25°C	2% applies to Input Current @ +25°C	10% applies to Input Current @ +25°C	10% applies to Input Current @ +25°C
Radiographic	M883, Method 2012	M883, Method 2012	N/A	N/A
Group 'A'	100%	100%	Sample per Mil-PRF-55310	Sample per Mil-PRF-55310
Group 'B' (30 day Aging @ +70°C)	100%	100%	Sample per Mil-PRF-55310	Sample per Mil-PRF-55310

MANUFACTURING INFORMATION

QUARTZ CRYSTAL

For the flight models, swept quartz shall be used in the manufacture of the crystals. For the Engineering models, non-swept quartz shall be used.

TRAVELLERS

Travellers or Process Cards are used in the manufacturing and testing of all of the 1623 Series TCXOs and are available for customer review. Copies of these Travellers can be provided with the TCXOs at time of shipment if so specified on the purchase order.

TRACEABILITY and HOMOGENEOUS MATERIAL Option Codes 'S' & 'R' only

Manufacturing lot and date code information shall be recorded, by TCXO serial number, of every component and all materials used in the manufacture of that TCXO. Also all semiconductors used in the manufacture of any given Production Lot of TCXOs, shall be from the wafer and have the same manufacturing lot date code. A Production Lot, as defined by Corning, is all oscillators that have been kitted and assembled as a single group. After the initial kitting and assembly, this Production Lot may be divided into multiple sublots to facilitate alignment and test capacity and may be sealed at multiple times within a 13 week window.

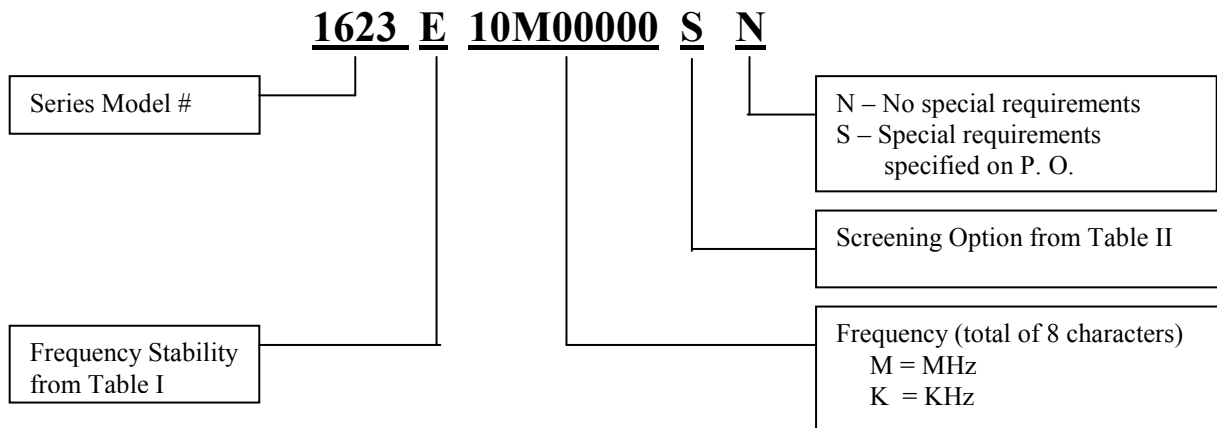
TEST DATA

All Test Data is recorded by TCXO serial number. Copies of this data can be provided with the TCXOs at time of shipment if so specified on the purchase order.

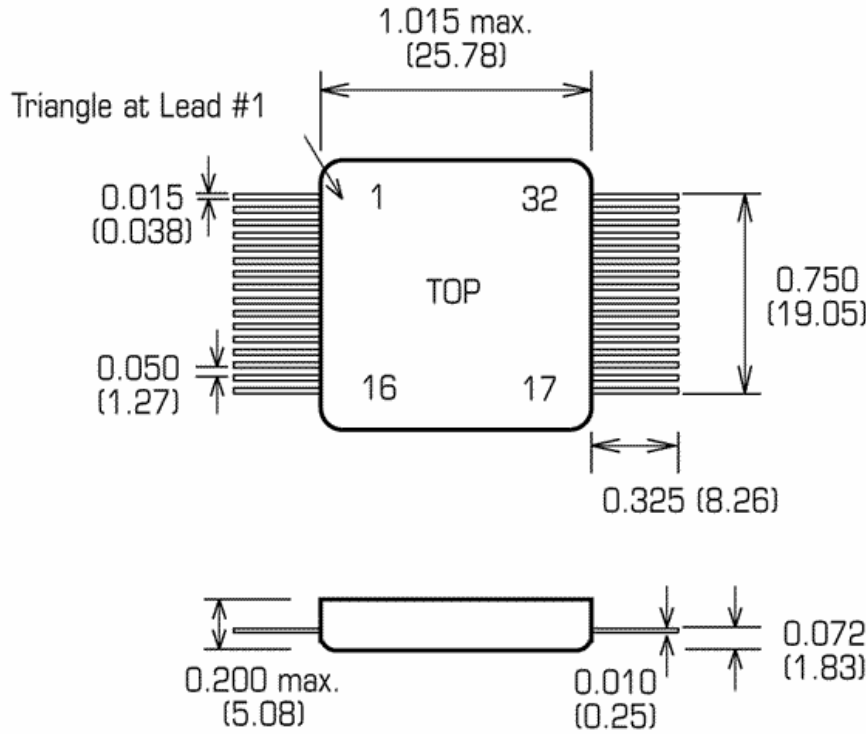
REWORK

All rework follows the requirements of Mil-PRF-55310 Class 'S' for Option Code 'S' and Class 'B' for Option Codes 'R', 'B' and 'C'. The only exception is the Select-At-Test components may be replaced up to four times.

PART NUMBER BREAKDOWN



Mechanical Outline and Pin Connections



Dimensions: Inches (mm)

PIN CONNECTIONS

1 – 3	NO CONNECTION
4	EXT FREQ ADJUST or N/C
5	GND
6 – 10	NO CONNECTION
11	+3.3 VDC
12	RF OUTPUT
13	+3.3 VDC
14 – 32	NO CONNECTION

EXTERNAL FREQUENCY ADJUSTMENT

When specified in Table I the External Frequency Adjustment shall be accomplished by connecting a resistor or trimmer potentiometer from Pin 4 to GND. The resistance range is 0Ω or GND to 20KΩ max. Nominal freq typically occurs in the range of 7.5K to 12.5KΩ.