INCH-POUND
MIL-PRF-55310/15G
w/AMENDMENT 1
12 March 2020

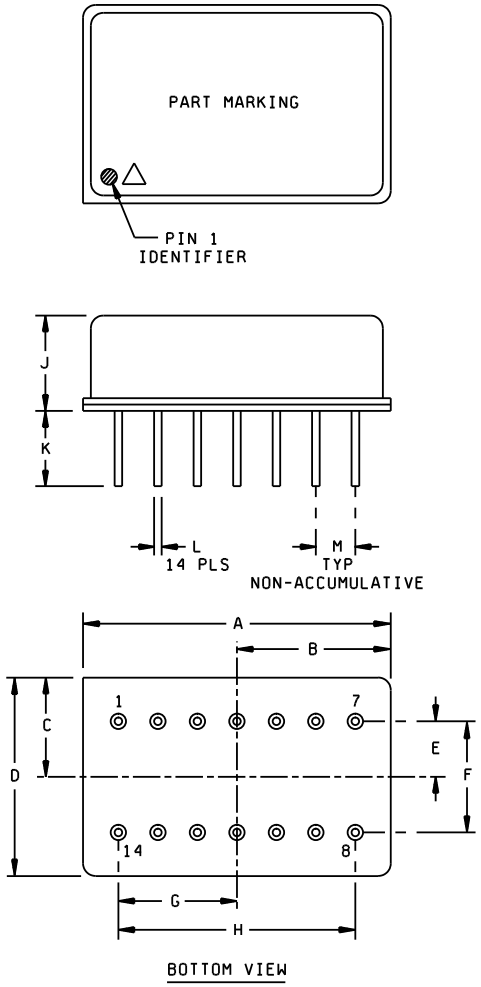
SUPERSEDING
MIL-PRF-55310/15G
11 June 2009

PERFORMANCE SPECIFICATION SHEET

OSCILLATOR, CRYSTAL CONTROLLED, TYPE 1 (CRYSTAL OSCILLATOR (XO)), 0.01 Hz THROUGH 10 MHz, HERMETIC SEAL, SQUARE WAVE, CMOS

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet and MIL-PRF-55310.



Pin number	Function
1	OUTPUT
2	CASE
3	INTERNAL TIE
4	NC
5	NC
6	NC
7	NC
8	B - (GND)
9	NC
10	NC
11	NC
12	INTERNAL TIE
13	NC
14	B+

FIGURE 1. Dimensions and configuration.

Ltr	Inches		mm	
	Min	Max	Min	Max
A	---	.887	---	22.53
B	---	.44	---	11.2
C	---	.27	---	6.8
D	---	.54	---	13.7
E	.145	.155	3.68	3.94
F	.295	.305	7.49	7.75
G	.295	.305	7.49	7.75
H	.595	.605	15.11	15.37
J	---	.20	---	5.1
K	.20	---	5.1	---
L	.016	.020	0.41	0.51
M	.095	.105	2.41	2.67

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerances are ±.005 (0.13 mm) for three place decimals and ±.02 (0.5 mm) for two place decimals.
4. All pins with NC function may be connected internally and are not to be used as external tie points or connections.
5. Color dot or square corner shall be used to indicate pin number 1.
6. ESD indicator, open triangle, shall be marked anywhere on the top of the oscillator.

FIGURE 1. Dimensions and configuration - Continued.

REQUIREMENTS:

Interface and physical dimensions: See figure 1.

Mounting: See figure 1.

Terminals: See figure 1.

Seal: Hermetic in accordance with MIL-PRF-55310, maximum leakage rate 5 x 10^{-8} atm cc/s.

Weight: 0.5 ounce, maximum.

Oscillator: Class 2 or any class 1 or class 3 oscillator meeting all class 2 requirements and verification tests specified herein and in MIL-PRF-55310.

Calibration: Manufacturer calibrated.

Screening: In accordance with MIL-PRF-55310, product level B or S, as applicable.

Temperature:

Operating: See table I.

Storage: -62°C to + 125°C.

Oscillator load: 100 kilohms ±5 percent shunted by a 120 pF ±5 percent capacitor for a CMOS compatible square wave output.

Output waveform: Symmetrical square wave.

Supply voltage: See table I.

Input current: At designated supply voltage (see table I).

Output frequency: Frequency as designated at time of acquisition (see table I).

Output voltage:

Logic 1: See table I.

Logic 0: See table I.

Rise and fall times: See table I.

Duty cycle: See table I.

Initial accuracy at reference temperature: ±15 ppm at +23°C ±1°C up to 30 days after shipment.

Initial frequency-temperature accuracy (one-half temperature cycle): Verification applicable. 1/

TABLE I. Dash numbers and operating characteristics.

Dash number	Output frequency range	Supply voltage	Input current (max)	Output voltage		Rise and fall times (max)	Duty cycle	Frequency-temperature tolerance (ppm)		
				Logic: 1 (min)	Logic: 0 (max)			-55°C to +125°C	-55°C to +105°C	-20°C to +70°C
								A	B	C
01	0.01 Hz to 6 MHz	V dc +15	mA 35	13	2	ns 30	percent 45 to 55	±50	±40	±25
02	6 MHz to 10 MHz	+15	40	13	2	30	45 to 55	±50	±40	±25
03	0.01 Hz to 6 MHz	+12	25	10	1	60	45 to 55	±50	±40	±25
04	6 MHz to 10 MHz	+12	30	10	1	60	45 to 55	±50	±40	±25
05	0.01 Hz to 6 MHz	+10	20	9.5	0.5	60	45 to 55	±50	±40	±25
06	6 MHz to 10 MHz	+10	20	9.5	0.5	60	45 to 55	±50	±40	±25
07	0.01 Hz to 6 MHz	+6.75	2.75	6.25	0.5	90	45 to 55	±50	±40	±25

Frequency-temperature tolerance (one-half temperature cycle, referenced to frequency measured at +23°C ±1°C, immediately prior to starting of the test): See table I. Measurements taken at ten equally spaced increments over the specified operating temperature range. 1/

Frequency-voltage tolerance: ±1 ppm maximum for a ±10 percent change in supply voltage. Measurements taken at reference temperature and operating temperature range end points.

Frequency-load tolerance: ±1 ppm for a ±5 percent change in oscillator load.

Frequency-ambient pressure tolerance: ±1 ppm sea level to 70,000 feet.

Frequency aging: Measurements shall be taken at +70°C ±0.2°C at intervals of not more than every 72 hours for 30 days minimum.

±1 ppm per 30 days, maximum.

±1 ppm per 60 days, maximum. 2/

Terminal strength: MIL-STD-202-211, test condition C. Applied force: 2

pounds each terminal.

Bends: Five at 45 degrees each.

Frequency-environmental tolerance: Not applicable.

1/ For the purpose of transitioning this device to MIL-PRF-55310, 'Frequency stability versus temperature' has been renamed 'Frequency-temperature tolerance'. The verification requirements of 'initial frequency-temperature accuracy (one-half temperature cycle)' shall apply except that frequency measurements shall be referenced to the frequency measured at +23°C ±1°C (f_{ref}) instead of to the nominal frequency (f_{nom}).

2/ This is a performance requirement of the oscillator. Support data shall be presented showing that this requirement shall be met.

Vibration, sinusoidal: In accordance with MIL-PRF-55310 and MIL-STD-202-204. Nonoperating:

Test condition D.

Operating: Not required.

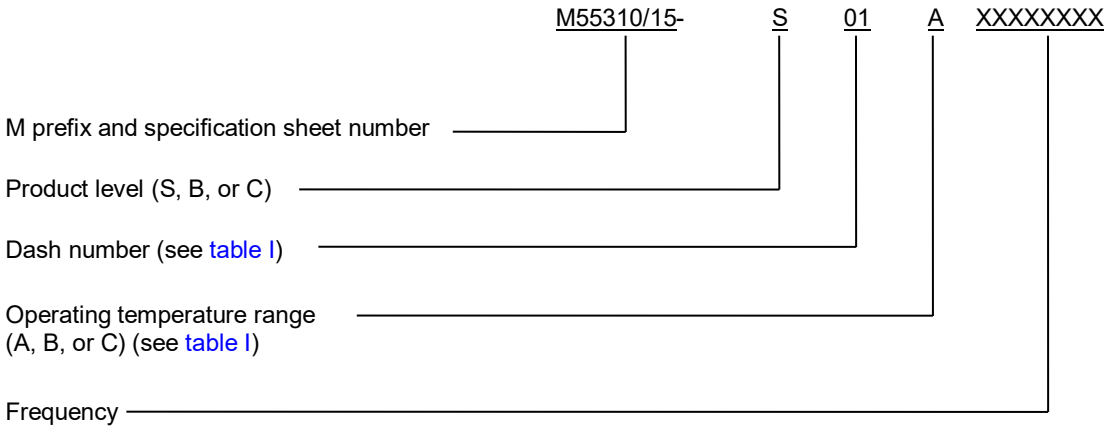
Ambient pressure:

Nonoperating: In accordance with MIL-PRF-55310.

Operating: MIL-STD-202-105, test condition C.

Part or Identifying Number (PIN): Consists of "M" prefix followed by specification sheet number, a dash and coded alphas, and numeric number. See example:

EXAMPLE



Reference documents. In addition to MIL-PRF-55310, this document references the following:
MIL-STD-202-105
MIL-STD-202-204
MIL-STD-202-211

Amendment notations. The margins of this specification sheet are marked with vertical lines to indicate modifications generated by this amendment. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations.

Custodians:
Army - CR
Navy - EC
Air Force - 85
DLA - CC

Review activities:
Army - AR, MI, SM
Navy - AS, CG, MC
Air Force - 19, 84
NASA - NA

Preparing activity:
Army - CR

Agent:
DLA - CC

(Project 5955-2020-020)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at https://assist.dla.mil.