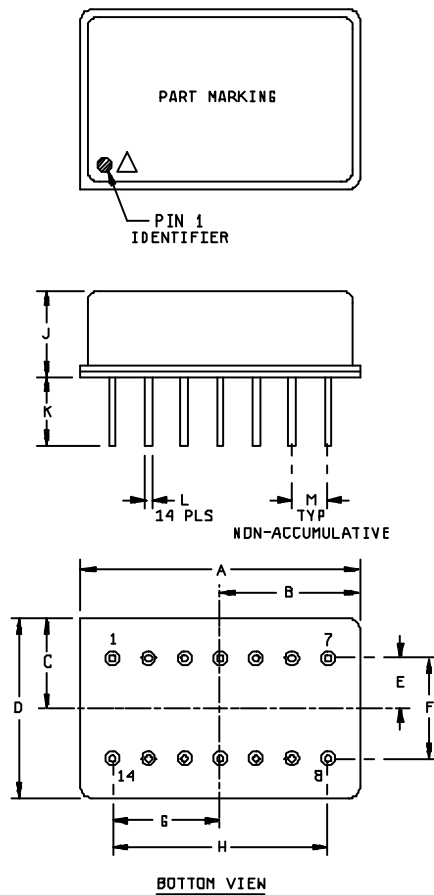


PERFORMANCE SPECIFICATION SHEET

OSCILLATOR, CRYSTAL CONTROLLED, TYPE 1 (CRYSTAL OSCILLATOR (XO)),
25 MHz THROUGH 175 MHz, HERMETIC SEAL, SQUARE WAVE, EMITTER COUPLED LOGIC

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	NC
2	NC
3	NC
4	NC
5	NC
6	NC
7	B-
8	OUTPUT
9	NC
10	NC
11	NC
12	NC
13	NC
14	GND/CASE

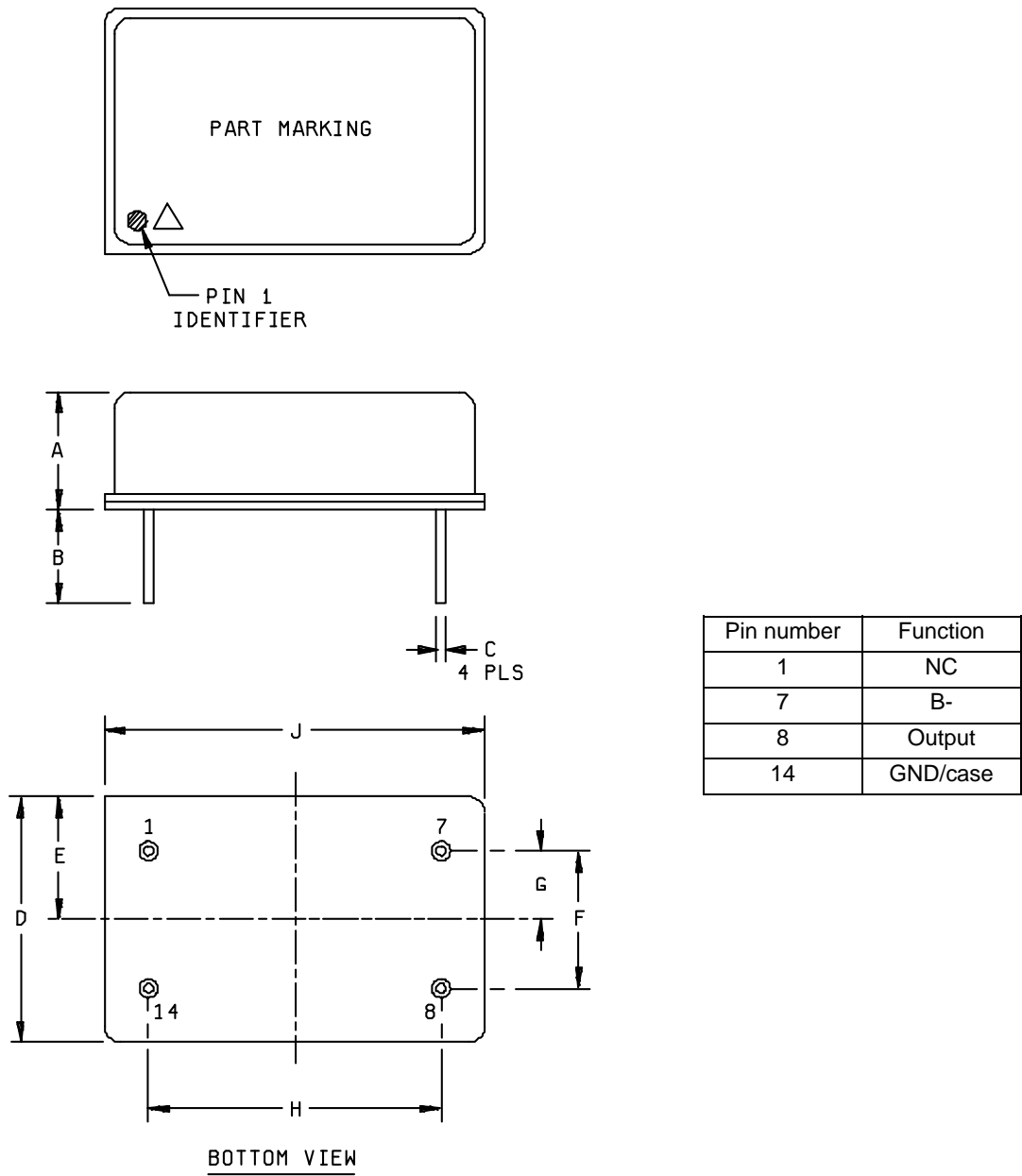
Configuration A

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	5.11	5.37
J	---	.20	---	5.1
K	.20	---	5.1	---
L	.016	.020	0.41	0.51
M	.095	.105	2.41	2.67

Configuration A

FIGURE 1. Dimensions and configuration - Continued.



Configuration B

FIGURE 1. Dimensions and configurations - Continued.

Ltr	Inches		mm	
	Min	Max	Min	Max
A	---	.20	---	5.1
B	.20	---	5.1	---
C	.016	.020	0.41	0.51
D	---	.515	---	13.08
E	---	.27	---	6.8
F	.295	.305	7.49	7.75
G	.145	.155	3.68	3.94
H	.595	.605	15.11	15.37
J	---	.815	---	20.70

Configuration B

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerances are ± 0.005 (0.13 mm) for three place decimals and ± 0.02 (0.5 mm) for two place decimals.
4. All pins with the 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 configurations - Continued.

REQUIREMENTS:

Interface and physical dimensions: See figure 1.

Package configuration: See figure 1.

Terminals: See figure 1.

Weight: 0.5 ounces (14.175 grams), 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.

Load test circuit: See figure 2.

Seal: Hermetic in accordance with [MIL-PRF-55310](#), maximum leakage rate 5×10^{-8} atm cc/s.

Supply voltage (B-): -5.2 V dc ± 5 percent.

Overvoltage survivability: In accordance with [MIL-PRF-55310](#).

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

Start-up time: 15 milliseconds maximum, measurement shall be taken at reference temperature and operating temperature range endpoints.

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

Output logic voltage levels: See figure 3.

Logic 1: -1.15 V dc minimum.

Logic 0: -1.54 V dc maximum.

Output waveform: Symmetrical square wave, emitter coupled logic compatible (see figure 3).

Duty cycle: See table I and figure 3.

Rise and fall times (see table I): Measurements shall be taken at the 20 percent and 80 percent peak-to-peak output voltage levels, with peak-to-peak output defined as Logic 1 - Logic 0 (see figure 3).

Initial accuracy at reference temperature: See table I.

Initial frequency-temperature accuracy (1/2 temperature cycle): See table I. Measurements shall be taken at ten equally spaced increments over the specified operating temperature range.

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TABLE I. Dash numbers and operating characteristics.

Dash number		Output frequency range	Input current max at 5.25 V $\pm 5\%$ <u>2/</u>	Pulse characteristics			Initial accuracy at +23°C $\pm 1^\circ\text{C}$ <u>3/</u>	Frequency aging per year (max) <u>4/</u>	Frequency-temperature tolerance (ppm)		
Configuration				Rise and fall times max <u>1/</u>	Duty cycle min-max <u>1/</u>	Load (test) to -2.0 V dc <u>2/</u>			-55°C to +125°C	-55°C to +105°C	-20°C to +70°C
A	B								A	B	C
02	03	25 MHz to 100 MHz	<u>mA</u> 50	<u>ns</u> 3.5	<u>percent</u> 40 to 60	<u>ohms</u> 50	<u>ppm</u> ± 15	<u>ppm</u> ± 5	<u>ppm</u> ± 65	<u>ppm</u> ± 55	<u>ppm</u> ± 40
06	07	25 MHz to 100 MHz	75	3.5	40 to 60	100	± 15	± 5	± 65	± 55	± 40
10	11	25 MHz to 100 MHz	50	3.5	40 to 60	50	± 25	± 10	± 100	± 75	± 50
14	15	25 MHz to 100 MHz	75	3.5	40 to 60	100	± 25	± 10	± 100	± 75	± 50
32	33	100 MHz to 125 MHz	60	3.5	40 to 60	50	± 15	± 5	± 65	± 55	± 40
36	37	100 MHz to 125 MHz	75	3.5	40 to 60	100	± 15	± 5	± 65	± 55	± 40
40	41	100 MHz to 125 MHz	60	3.5	40 to 60	50	± 25	± 10	± 100	± 75	± 50
44	45	100 MHz to 125 MHz	60	3.5	40 to 60	100	± 25	± 10	± 100	± 75	± 50
62	63	125 MHz to 175 MHz	70	3.0	40 to 60	50	± 15	± 5	± 65	± 55	± 40
66	67	125 MHz to 175 MHz	125	3.0	40 to 60	100	± 15	± 5	± 65	± 55	± 40
70	71	125 MHz to 175 MHz	70	3.0	40 to 60	50	± 25	± 10	± 100	± 75	± 50
74	75	125 MHz to 175 MHz	125	3.0	40 to 60	100	± 25	± 10	± 100	± 75	± 50

1/ See figure 3.

2/ See figure 2.

3/ Up to 30 days following shipment.

4/ After 30 days following shipment.

TABLE II. Frequency aging limits.

	5 ppm per year <u>1/</u>	10 ppm per year <u>1/</u>
Maximum change over 30 days	± 0.7 ppm	± 1.5 ppm
Projected maximum change for 1 year after 30 days	± 5.0 ppm	± 10.0 ppm

1/ See table I.

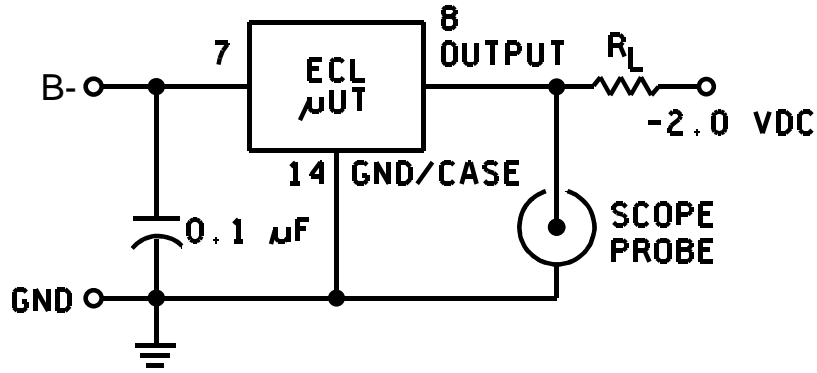
Frequency-voltage tolerance ± 1 ppm maximum for a ± 5 percent change in supply voltage. Measurements shall be taken at reference temperature and operating temperature range endpoints.

Frequency-environmental tolerance: ± 3 ppm.

Frequency aging: Frequency aging shall be in accordance with [MIL-PRF-55310](#) and shall meet the limits of table II.

Vibration, sinusoidal: [Method 204 of MIL-STD-202](#).

Nonoperating: Test condition D.



NOTE: $R_L = 50\Omega$ or 100Ω (see table I).

FIGURE 2. Load test circuit.

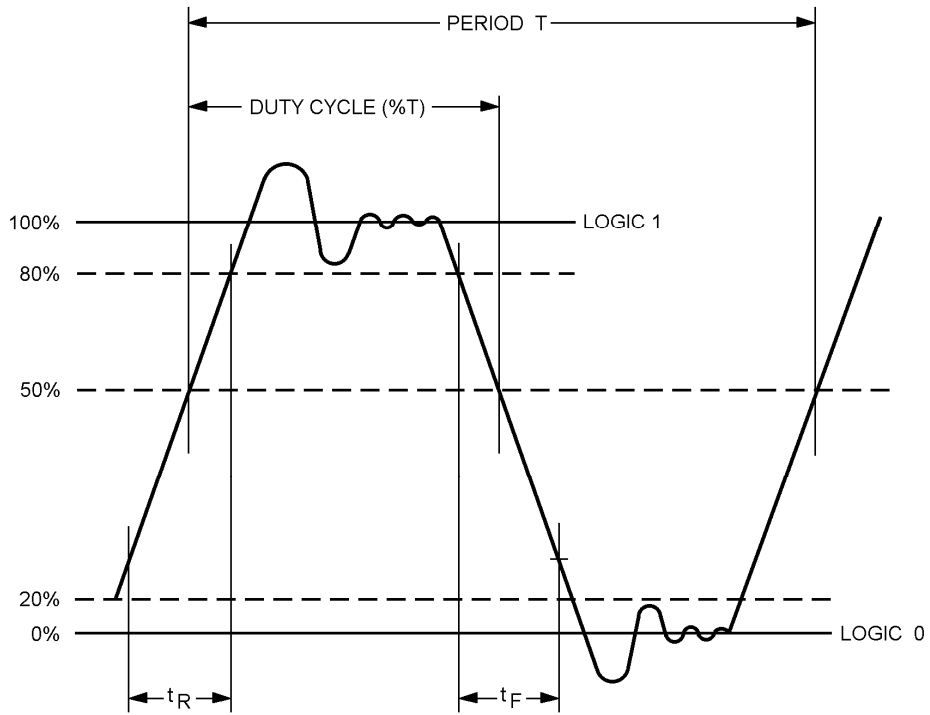


FIGURE 3. Waveform.

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Operating: Not required.

Shock (nonoperating): [Method 213 of MIL-STD-202](#), test condition I.

Thermal shock (nonoperating): [Method 107 of MIL-STD-202](#), test condition B.

Ambient pressure:

Nonoperating: In accordance with [MIL-PRF-55310](#).

Operating: [Method 105 of MIL-STD-202](#), test condition C.

Resistance to soldering heat: [Method 210 of MIL-STD-202](#), test condition E.

Moisture resistance: [Method 106 of MIL-STD-202](#).

Terminal strength: [Method 211 of MIL-STD-202](#), condition C.

Applied force: 2 pounds each terminal for 10 seconds.

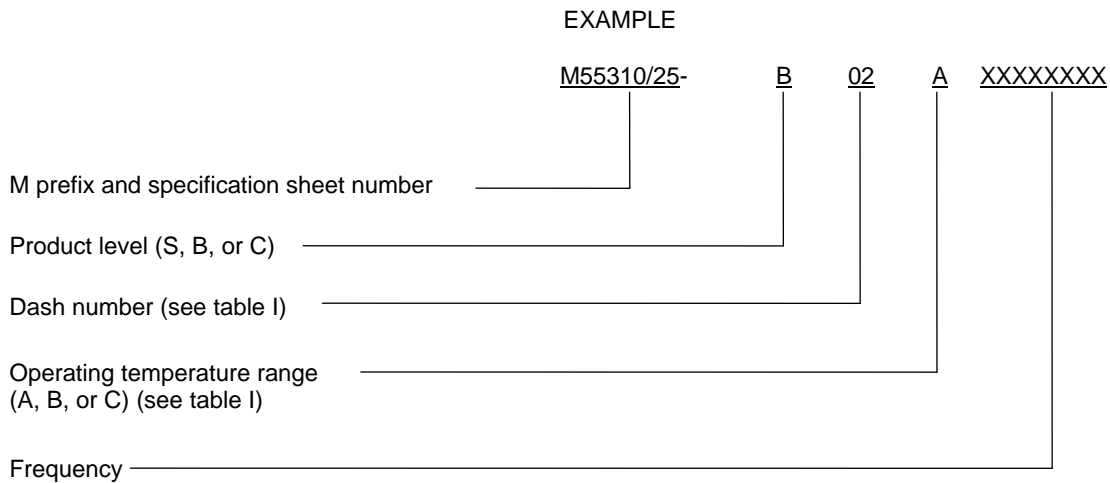
Bends: 5 at 45 degrees each.

Solderability: [Method 208 of MIL-STD-202](#).

Resistance to solvents: [Method 215 of MIL-STD-202](#).

Screening: In accordance with [MIL-PRF-55310](#), class B or S, as applicable.

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



Reference documents. In addition to [MIL-PRF-55310](#), this document references the following:

[MIL-STD-202](#)

MIL-PRF-55310/25D

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Custodians:

Army - CR
Navy - EC
Air Force - 99
DLA - CC

Preparing activity:

Army - CR

Agent:

DLA - CC

Review activities:

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

(Project 5955-2009-020)

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 <http://assist.daps.dla.mil>.