

**PROCUREMENT SPECIFICATION FOR HCMOS CRYSTAL CLOCK
OSCILLATOR**

A. DEVICE DETAILS

The Electrical/Mechanical Specification of the clock oscillators are as per attached Annexure-1

B. QUALITY REQUIREMENTS

1. The devices shall be Processed and tested to Class 'S' of MIL-PRF-55310.
2. Manufacturer shall have a qualified product line to MIL-PRF-55310. Proof of having a qualified manufacturing line must be attached to the quote.
3. The device shall be of hybrid technology (i.e. Class 2).
4. Oscillators shall withstand Total dose radiation of 100 Krad (Si) minimum.
5. Element evaluation shall be performed as per Appendix B, Class 2, and Para B.3.3 of MIL- PRF- 55310. Quartz used must be of Swept quartz.
6. All the devices shall be serialized & screened to Class 'S' level of MIL-PRF-55310.
7. All the devices shall undergo Group A and Group B test as per MIL-PRF-55310.
8. Quote separately for each of the following tests. Samples shall be drawn from the deliverable lot that has passed Screening, Group A & B tests.
 - a) **Group C** : As per Annexure-2 on four samples.
 - b) **DPA** :Destructive physical analysis as per MIL-STD-883, method 5009 on one sample.
 - c) **Life test** :1000Hrs Life test as per para 4.8.57 of MIL-PRF-55310F on 2 samples.
9. The manufacturer shall write the detailed/performance specification for the offered part along with delta criteria and submit to ISRO/URSC for review/approval.

C. DATAPACK REQUIREMENTS

The following Data in soft copy (compact disk) shall be provided for review and acceptance by URSC before shipment of the parts:

1. Device processing and assembly traveler sheet.
2. Element evaluation & Screening results by attributes and variables.
3. Group A and Group B test report.
4. Group C test report, if ordered.
5. Life test & DPA report, if ordered.
6. Generic Group C test data, if available.
7. Generic Radiation test data, if available.
8. Manufacturer's Precap Visual Inspection report.
9. Certificate of Conformance issued by the manufacturer.

D. OTHER REQUIREMENTS

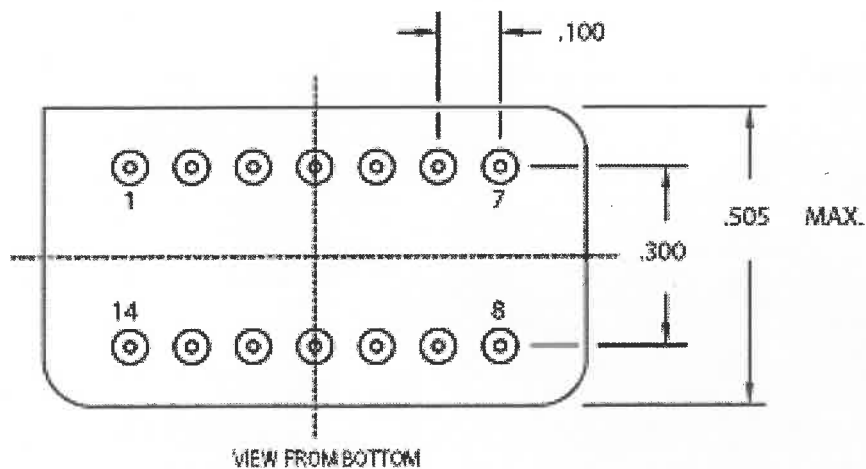
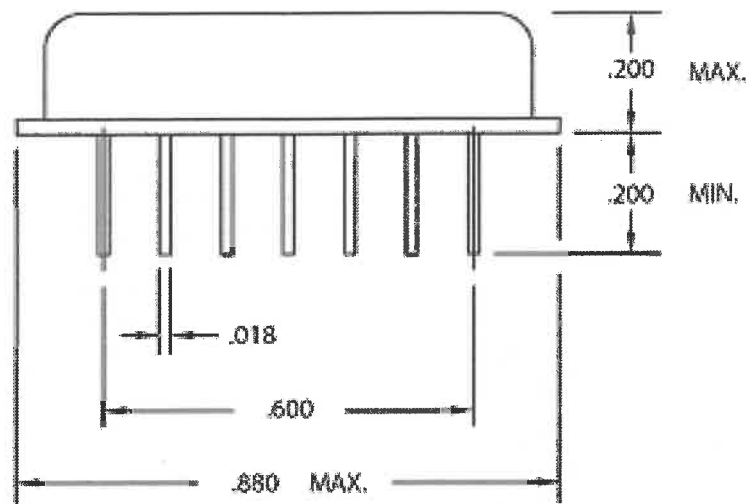
1. Name of the Manufacturer and the data sheets shall be provided as part of the offer.
2. Devices shall be supplied from lots with same data code. The devices shall be drawn from lots manufactured within 2 years of the date of shipment.
3. Devices shall be packed in ESD safe individual package.
4. Report to URSC all NCR/DCN (Document Change Notice) during procurement/Testing.
5. Provide details of space heritage for the offered parts along with the quote.
6. Only Vendors/Suppliers authorized to source above components by the manufacturer will be considered. Necessary Certificate from the manufacturer shall be enclosed along with the offer.

Note: 1. Provide point-by-point compliance to specification in your quote.
2. Parametric values of the offered parts shall be explicitly mentioned against each of the electrical and mechanical specifications listed in Annexure-1

ANNEXURE-1

ELECTRICAL/MECHANICAL SPECIFICATIONS OF HCMOS OSCILLATOR

SL. No	ELECTRICAL PARAMETERS	SPECIFICATION/ LIMITS
1	Frequency	32MHz
2	Initial Accuracy @ 23°C ±1°C	< ±15 ppm
3	Frequency/Temperature Stability	< ±50 ppm, Over -55 °C to 125 °C
4	Supply Voltage(Vcc)	5V±10%
5	Frequency/Voltage Stability	< ±2 ppm (Vcc ±10%)
6	Input Current	<25mA @ 5.5 V
7	Output Levels Logic '0' Logic '1'	< Vcc x 0.1 V > Vcc x 0.9V
8	Rise and Fall time	< 5ns
9	Duty Cycle (Output symmetry)	40% -60% or Better
10	Output	HCMOS, Square Wave
11	Frequency Aging (After 30 days)	Better than ±0.7 ppm
12	Frequency Aging / year	Better than ±5 ppm
13	Start up Time	< 10 ms.
14	Operating temperature Range	-55°C to +125°C
15	Package and Terminal connections	14 pin DIP, Refer Fig-1 of Annexure-1



TERMINAL CONNECTIONS			
TERMINAL NO.	CONNECTION	TERMINAL NO.	CONNECTION
1	N/C	8	Output
2	N/C	9	N/C
3	N/C	10	N/C
4	N/C	11	N/C
5	N/C	12	N/C
6	N/C	13	N/C
7	Ground	14	Vcc

FIGURE 1. PACKAGE DIMENSIONS AND TERMINAL CONNECTIONS

Dimensions are in mm

ANNEXURE -2

GROUP-C TESTS

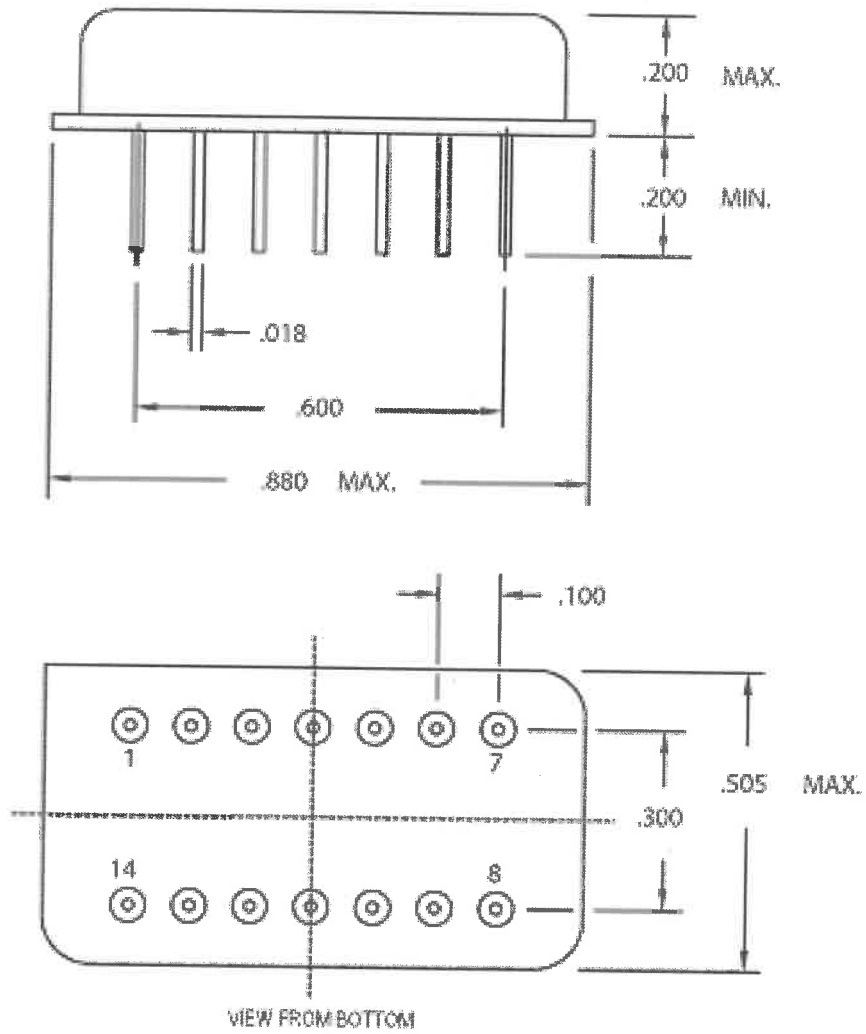
TEST INSPECTION	STANDARD	METHOD	CONDITION	SAMPLE SIZE
Subgroup 1				
Vibration (Sinusoidal)	202	204	D	4 Nos (All sample units)
Shock (non-operating)	202	213	I	
Acceleration (non-operating)	202	212	C, 5000g, Y1 axis	
Subgroup 2				
Thermal Shock (non-operating)	202	107	B	2 Nos (One half of sample units)
Storage Temperature	-	-	@min & max. operating temp 24Hrs dwell time	
*Radiation Hardness (TID)	883	1019	100Krad total dose	
Subgroup 3				
Resistance to Soldering heat	202	210	B	1 No. (one-fourth of sample unit)
Moisture resistance	202	106		
Subgroup 4				
Terminal Strength	202	211	C	1 No. (one-fourth of sample unit)
Resistance to Solvents	202	215		

*Quote separately

**COMPLIANCE MATRIX FOR HCMOS CRYSTAL CLOCK
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INDENT REQUIREMENT	REMARKS
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c) Life test :1000 Hrs. Life test as per para 4.8.57 of MIL-PRF-55310F on 2 samples	
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7	Ground	14	V _{cc}

FIGURE 1. PACKAGE DIMENSIONS AND TERMINAL CONNECTIONS

Dimensions are in mm

GROUP-C TESTS

TEST INSPECTION	STANDARD	METHOD	CONDITION	SAMPLE SIZE	REMARKS
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Acceleration (non-operating)	202	212	C, 5000g, Y1 axis		
Subgroup 2					
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