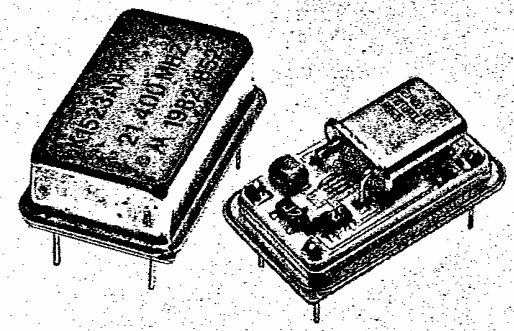
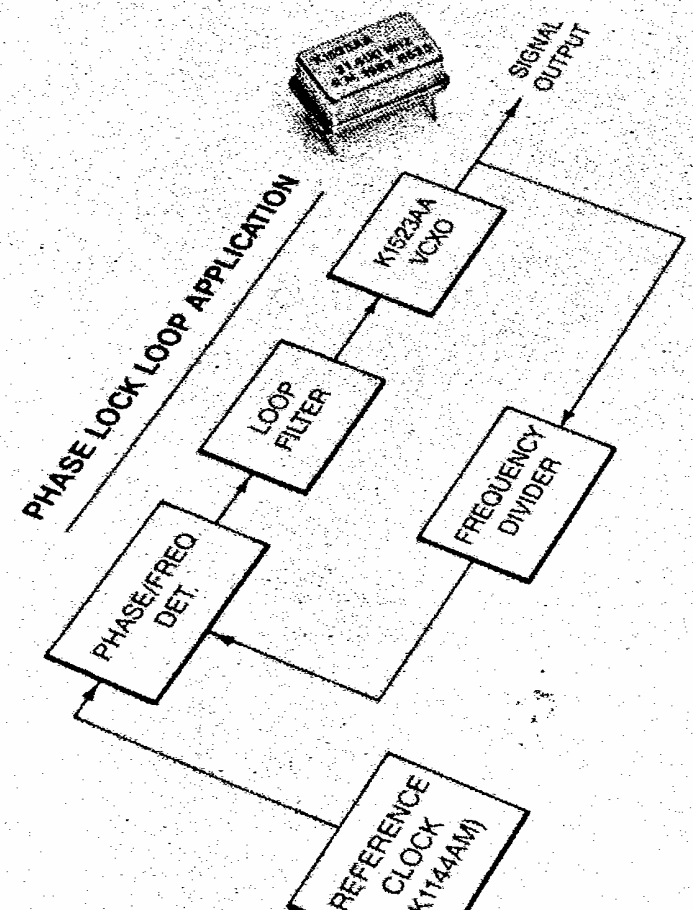
MOTOROLA

K1523AA
Voltage Controlled Crystal Oscillator

- Frequency Range 3 MHz to 22 MHz
- 14-Pin DIP Resistance-Welded Case
- Deviation of ±50 PPM per Volt
- Frequency Stability of ±25 PPM
- Stability/Deviation Options Available





Applications—The K1523AA Voltage Controlled Crystal Oscillator allows the system designer to phase lock to a reference standard to correct for frequency errors between different timing signals in his system. VCXOs are predominantly used in local area networks or in any other form of computer-shared management system as well as in all phase locked loop applications for communications equipment and analog/digital interface.

Deviation—The K1523AA offers standard deviation sensitivity of ±50 ppm per volt, operating from a nominal modulation voltage of 2.5V dc over a modulation range of 0.5V dc to 4.5V dc, while maintaining monotonic linearity specification of less than ±20%. Higher sensitivity is optionally available.

TTL Output—Operating from a supply voltage of +5V dc, the K1523AA Voltage Controlled Crystal Oscillator drives standard TTL logic, fan out of 5.

High Density Packaging—The cost-effective combination of hybrid and discrete component technologies gives the K1523AA optimum performance in a 14-pin DIP package measuring only .820″ x .520″ with .355″ seated height. This allows the designer to achieve a considerable reduction in size and helps solve space limitation problems.

Maximum Reliability—The K1523AA uses a Motorola custom integrated circuit and a hermetically-sealed, resistance-welded quartz crystal, combined with proprietary thick-film hybrid techniques to obtain an oscillator design with reduced parts count while providing uniform high quality and field reliability.

Volume Production—Modern, automated production techniques are used to provide and assure volume production capability. Motorola Components Division is one of the world's largest suppliers of crystal controlled oscillators.

K1523AA VCXO Specifications

FREQUENCY RANGE:
3.0 MHz to 22.0 MHz

FREQUENCY STABILITY:
±.0025%
(Inclusive of calibration tolerance at 25°C, operating temperature range, supply input voltage change, load change, aging, shock, and vibration with modulation voltage held constant).

TEMPERATURE RANGE:

OPERATING:	0°C to 70°C
STORAGE:	−55°C to 85°C

SUPPLY VOLTAGE:
+5V DC ±5%

INPUT CURRENT:

	MAX. @ 25°C	MAX. OVER TEMP.
3.0 MHz to 22.0 MHz	25 mA	35 mA

CURRENT, OUTPUT SHORTED (1 sec max):	18 mA min. 100 mA max.

TTL OUTPUT (0°C to 70°C):

SYMMETRY:	60/40% @ 1.4V dc level
RISE AND FALL TIMES:	TR and TF
3.0 MHz to 22.0 MHz	8 ns max.
"0" LEVEL:	+0.4V max.
"1" LEVEL:	+2.4V min.
"0" SINK CURRENT:	20 mA min.
"1" SOURCE CURRENT:	−500 μA minimum

OUTPUT LOAD:

3.0 MHz to 22.0 MHz	1 to 5 TTL gates
DEVIATION SENSITIVITY:	±50 ppm/V typical (higher sensitivities available)
NOMINAL CONTROL VOLTAGE:	2.5V dc
CONTROL VOLTAGE RANGE:	0.5V dc to 4.5V dc
MONOTONIC LINEARITY:	less than ±20%

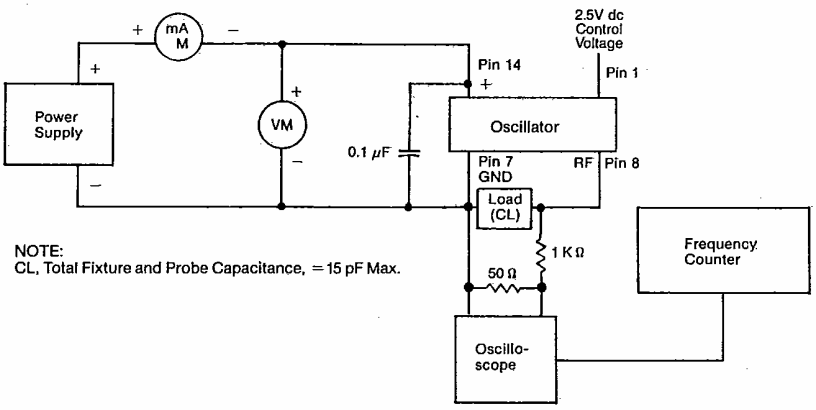
ENVIRONMENTAL:

TEMPERATURE CYCLE:	MIL. STD.-883B Method 1010.2 Level B
SHOCK:	1000 G's 0.35 millisec. ½ sine wave; 3 shocks each plane
VIBRATION:	10-55 Hz, .060" D.A., 55 Hz-2000 Hz 35 G's, Duration time—12 hours
HUMIDITY:	85% Relative humidity, @ +85°C, 500 hrs.

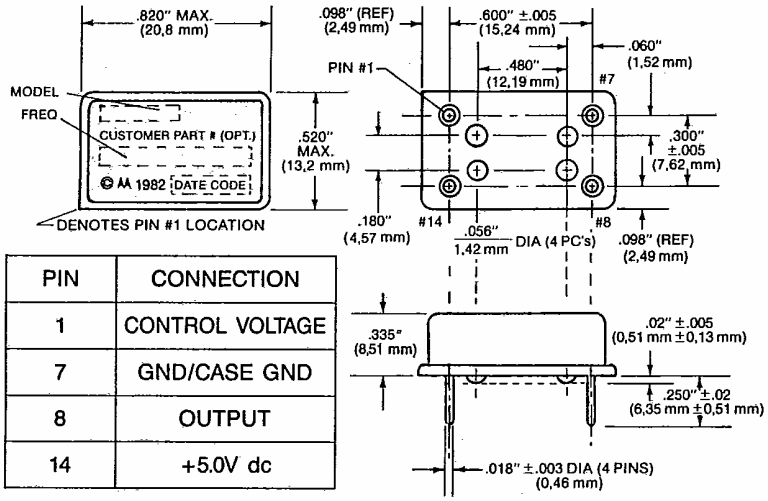
MECHANICAL:

GROSS LEAK TEST:	Leak test in de-ionized H_2O.
HERMETICALLY SEALED PACKAGE:	Mass spectrometer leak rate less than 2×10^{-8} atmos. CC/sec. of helium
SEAL STRENGTH:	20 lbs. max. force perpendicular to top and bottom
BEND TEST:	Pins will withstand maximum bend of 90° reference to base for 2 bends.
MARKING INK:	Epoxy, heat cured
SOLVENT RESISTANCE:	Isopropyl alcohol, Tricholoroethane Freon TMC No marking or seal destruction. Dipped in solvent 1 minute @ +25°C ±5°C

Note: (1) Unit can be cleaned by only one type solvent listed.
Note: (2) Ultrasonic degreaser not to be used.



TEST CIRCUIT DIAGRAM



PIN	CONNECTION
1	CONTROL VOLTAGE
7	GND/CASE GND
8	OUTPUT
14	+5.0V dc

Solderability Specifications

MATERIALS:

SOLDER:	60% tin and 40% lead
FLUX:	Mildly activated rosin base type such as Alpha 611.

PROCEDURE:

PREPARATION:	No wiping, cleaning, scraping, or abrading shall be performed on the leads.
SOLDER BATH:	The solder bath shall be maintained at 265 ±5°C.
SOLDERABILITY:	Dip the terminals into room temperature flux, to a maximum of .020" from the unit base, for 5 to 10 seconds. Withdraw from the flux and dip the terminals to the same depth in the molten solder from 5 to 7 seconds. Flux residue may be removed with Freon rinse, or with soft swab moistened with isopropyl alcohol or Freon.

REQUIREMENTS:

EVALUATION:	All leads must exhibit a minimum of 90% continuous solder coating over their entire length beyond .020° from the unit base. Pinholes or voids may not be concentrated in any one area and are not to exceed 10% of the total area under examination.

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