

K1149 Series ECL Compatible Oscillators

ECL10KH Based Design - provides improved rise and fall times, duty cycle, noise margins and power supply rejection over the earlier 10K family while retaining compatibility. Open emitter output allows the user to select the best load termination to optimize performance.

- Designed to Drive Standard ECL 10K, 10KH Families
- 40.000 MHz to 220.000 MHz
- ± 100 PPM Stability
- -5.2V dc Input at V_{EE}
- +5V dc operation at V_{SS} on K1149BA, K1149CA
- 50 Ohm Drive Capability
- Complementary Output Models Available (K1149BA, BC, BM)
- Various Pinouts Available (See Chart)

Electrical Specifications

FREQUENCY RANGE:
40 MHz to 220 MHz

FREQUENCY STABILITY:
 $\pm 0.01\%$
(Inclusive of calibration tolerance at 25°C, operating temperature range, supply input

voltage change, load change, aging, shock, and vibration.)

TEMPERATURE RANGE: T-50-23
OPERATING: 0°C to +70°C
STORAGE: -55°C to +125°C

V_{EE} SUPPLY VOLTAGE:
-5.2V dc $\pm 5\%$

PIN	K1149 AA	K1149 AB	K1149 AC	K1149 AM	K1149 BA	K1149 BC	K1149 BM	K1149 CA
1	CASE GND	CASE GND	NC	NC	COMP OUT	COMP OUT	COMP OUT	NC
7	V_{EE}	V_{SS}	V_{EE}	V_{SS} & CASE GND	V_{EE} & CASE GND	V_{EE}	V_{SS} & CASE GND	V_{EE} & CASE GND
8	ECL OUT	ECL OUT	ECL OUT	ECL OUT	ECL OUT	ECL OUT	ECL OUT	ECL OUT
14	V_{SS}	V_{EE}	V_{SS} & CASE GND	V_{EE}	V_{SS} (+5V)	V_{SS} & CASE GND	V_{EE}	V_{SS} (+5V)
Freq	40 to 129.99	40 to 129.99	40 to 220	40 to 220	40 to 220	40 to 220	40 to 220	40 to 220
Opts	1,2,3	1,2,3	2,3	2,3	2,3	2,3	2,3	2,3

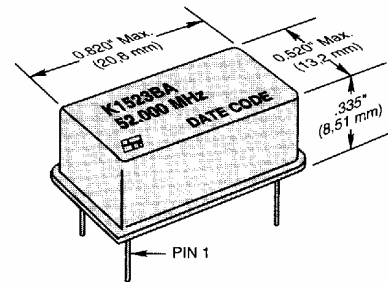
Options Available:

- Opt. 1: Optional +5.0V $\pm 10\%$ operation at V_{SS}
 Opt. 2: ± 50 ppm (K1149XX5) available only in the frequency range of 40 MHz to 160 MHz
 Opt. 3: Optional internal pull down resistor available only in the range of 40 MHz to 160 MHz
 Note: Std. freq. above 160 MHz are 200 MHz and 220 MHz. Consult factory for additional frequencies.

K1523BA Voltage Controlled Crystal Oscillator

- Frequency Range 2.0 MHz to 52.0 MHz
- Frequency Stability ± 25 PPM (≤ 35 MHz)
- TTL/CMOS Compatible
- Sensitivity: +50 to +75 PPM/Volt ≤ 25 MHz
+50 to +95 PPM/Volt ≤ 35 MHz
- Linearity: $\pm 5\%$ Max ≤ 25 MHz
 $\pm 10\%$ Max ≤ 35 MHz
 $\pm 15\%$ Max ≤ 52 MHz
- Usable Deviation (> 35 MHz):
 ± 25 PPM Min, ± 150 PPM Max

Applications—The K1523BA VCXO allows the system designer to phase lock to a reference standard to correct for frequency errors between different timing signals in his system. Predominant use is in local area networks or other forms of computer-shared management system as well as in all phase locked loop applications for communications equipment and analog/digital interface.

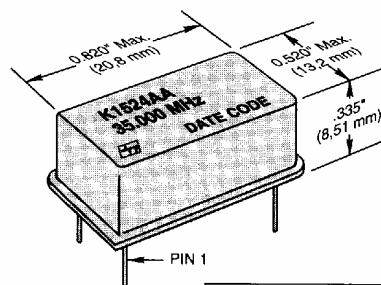


For further technical information, Application Bulletin #156 is available upon request.

PIN	CONNECTION
1	Control Voltage
4	Gnd/Case Gnd
5	OUTPUT
8	+5.0V DC

K1524AA Voltage Controlled Crystal Oscillator

- Frequency Range 3.0 MHz to 35.0 MHz
- Frequency Stability ± 50 ppm
- TTL/CMOS Compatible
- Linearity: $\pm 15\%$ max
- Deviation: ± 300 ppm minimum



PIN	CONNECTION
1	Control Voltage
7	Gnd/Case Gnd
8	OUTPUT
14	+5.0V DC

Electrical Specifications

FREQUENCY RANGE:
3.0 MHz to 35 MHz

FREQUENCY STABILITY vs TEMPERATURE
 ± 50 ppm
(Inclusive of calibration tolerance at 25°C, operating temperature range, supply input voltage change, load change, aging, shock, and vibration, with control voltage = 2.5V dc)

TEMPERATURE RANGE:
OPERATING: 0°C to +70°C
STORAGE: -55°C to +125°C

SUPPLY VOLTAGE: +5V dc $\pm 5\%$

SUPPLY CURRENT: (CL = 15 pF)
INPUT: < 30 mA
OUTPUT SHORTED (1 sec. max): -30 mA min., -140 mA max.

I_{EE} SUPPLY CURRENT:

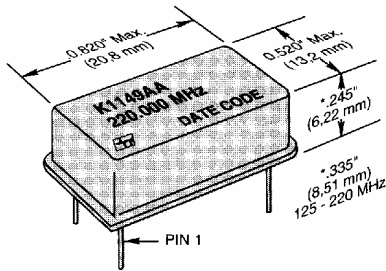
TYPICAL: 28 mA
 MAXIMUM: 60 mA

ECL OUTPUT (0°C to +70°C):

SYMMETRY: 40/60% @ V_{SS} -1.3V dc level
 "0" LEVEL: V_{SS} -1.95V min., V_{SS} -1.60 max.
 "1" LEVEL: V_{SS} -1.02V min., V_{SS} -0.74 max.

RISE AND FALL TIMES:

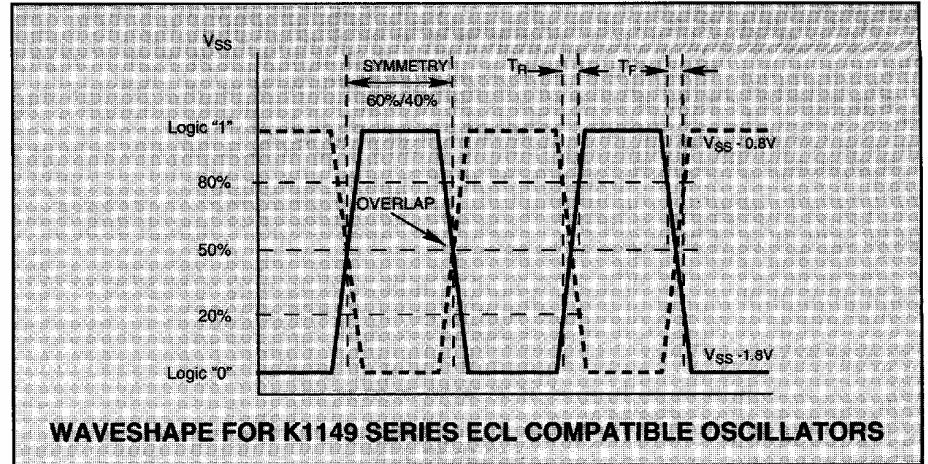
	T _R and T _F
20% - 80%	1.0 ns typical 2.0 ns max.

**OUTPUT LOAD:**

See Test Circuit Diagram

OVERLAP:

1 ns max. at 50% level

**Electrical Specifications****FREQUENCY RANGE:**

2.0 MHz to 52 MHz

FREQUENCY STABILITY:

(Less than 35 MHz)
 ±0.0025% (0°C to +70°C)
 ±0.0050% (-40°C to +85°C)
 (Inclusive of calibration tolerance at 25°C, operating temperature range, supply input voltage change, load change, aging, shock, and vibration, with control voltage = 2.5V dc)

TEMPERATURE RANGE:

OPERATING: 0°C to +70°C (25 ppm)
 -40°C to +85°C (50 ppm)

STORAGE: -55°C to +125°C

PHASE JITTER: <100 ps

SUPPLY VOLTAGE: +5V dc ±5%

SUPPLY CURRENT:

(CL = 15 pF)

INPUT: ≤10 MHz: 13 mA
 ≤20 MHz: 17 mA
 ≤25 MHz: 19 mA
 ≤35 MHz: 26 mA

OUTPUT SHORTED

(1 sec. max): -30 mA min., -140 mA max.

OUTPUT:**SYMMETRY**

(<16 MHz): 45/55% @ CMOS/TTL levels
 (16 - 52 MHz): 40/60% @ CMOS/TTL levels

T _R & T _F (max), CL=15 pF:	T _R	T _F
CMOS (20 to 80% Vdd)	5 ns	5 ns
TTL (0.5V to 2.5V dc)	4 ns	4 ns

LOAD: 10 TTL gates, CMOS compatible

START UP TIME: <10 ms max.

FREQUENCY CONTROL:

CONTROL VOLTAGE: 0.5V - 2.5V - 4.5V dc
DEVIATION

≤25 MHz: ±100 ppm min. ±150 ppm max.
 ≤35 MHz: ±100 ppm min. ±190 ppm max.

USABLE***DEVIATION**

>35 MHz: ±25 ppm min. ±150 ppm max.

*Note: Where the usable deviation is the total deviation ± the tolerances including the effects of temperature, power supply variations, load variations, and aging.

SENSITIVITY: +50 to +75 ppm/V ≤25 MHz
 +50 to +95 ppm/V ≤35 MHz

LINEARITY: <±5% at ≤25 MHz
 ≤±10% at ≤35 MHz

INPUT IMPEDANCE: ≥ 50K Ohms at ≤10 kHz
MODULATION BW: ≤20 kHz (-3dB, Vc = 2.5V)

OUTPUT:

SYMMETRY: 40/60% @ CMOS/TTL levels

T_R & T_F (max):

CMOS (20 to 80% Vdd)	5 ns
TTL (0.5V to 2.5V dc)	4 ns

START UP TIME: <10 ms max.

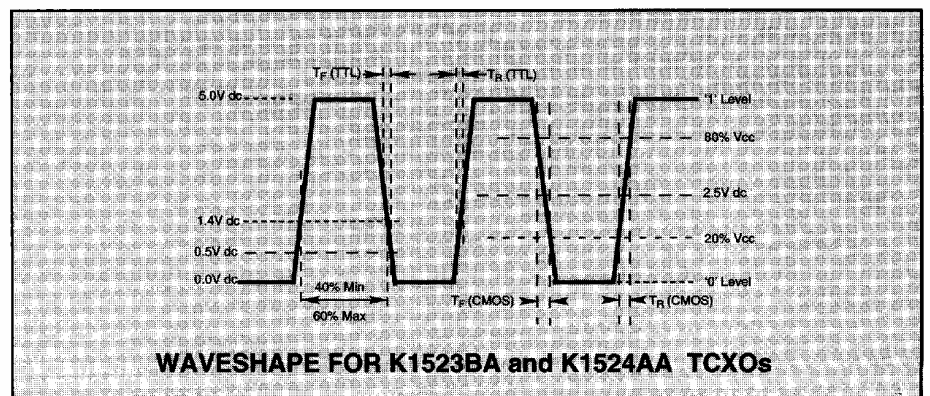
FREQUENCY CONTROL:**CONTROL**

VOLTAGE: 0.5V to 4.5V, nom. 2.5V dc

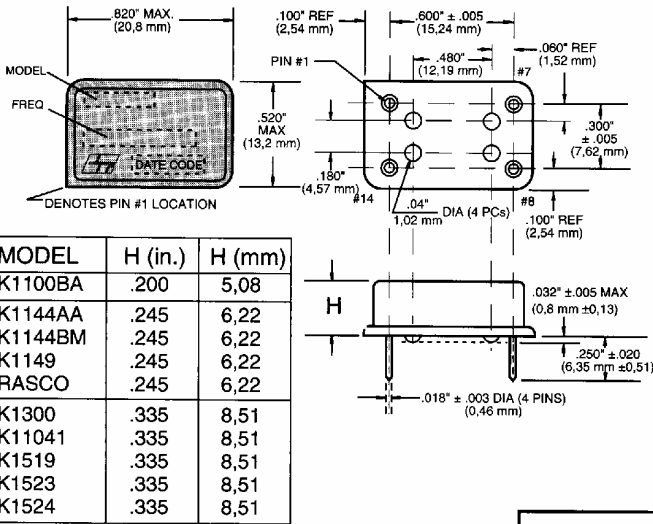
DEVIATION: ±300 ppm min.

LINEARITY: <±15%

INPUT IMPEDANCE: ≥ 50K Ohms at ≤10 kHz

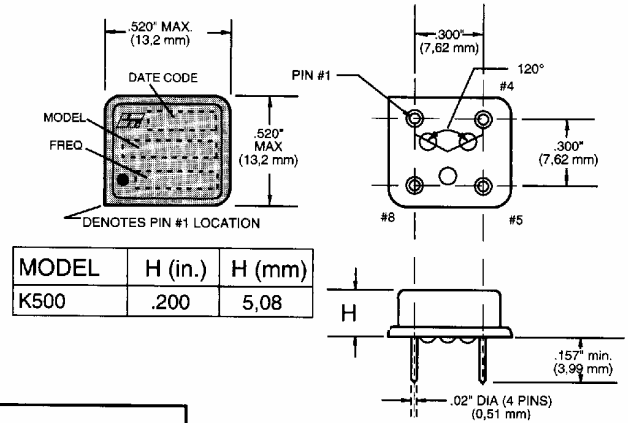


**DIMENSIONAL DETAIL,
FULL DIP MODELS**



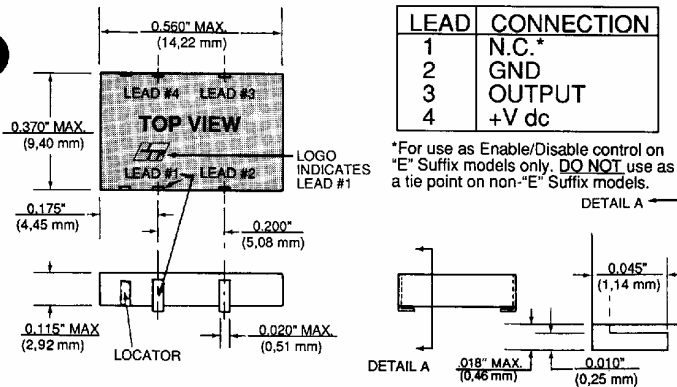
**DIMENSIONAL DETAIL,
HALF DIP MODELS**

T-90-20



TECHNICAL HOT LINE
1-800-888-1499
Direct Line to Engineering

**DIMENSIONAL DETAIL,
SURFACE MOUNT OSCILLATOR**



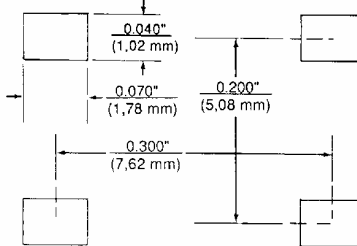
Solderability Specifications, Surface Mount Oscillators

MATERIALS:
SOLDER: 60% tin and 40% lead.
FLUX: RMA

PROCEDURE:
PREPARATION: No wiping, cleaning, scraping, or abrading shall be performed on the leads.
SOLDER BATH: The solder bath shall be maintained at 243°C.
SOLDERABILITY: Dip the terminals into room temperature flux, to the depth necessary to cover the surface to be soldered, for 3 to 5 seconds. Withdraw from the flux and dip the terminals to the same depth in the molten solder from 3 to 5 seconds. Flux residue may be removed with isopropyl alcohol rinse or chlorinated solvents.

REQUIREMENTS:
EVALUATION: Each solder immersed surface shall be at least 95% covered with smooth, continuous, adherent coating of new solder. The remaining 5% shall be solder-coated but may show small pinholes or voids provided these are not concentrated in one area.

**SUGGESTED TEST PADS,
SURFACE MOUNT OSCILLATOR**



Product covered by
U.S. Patent No. 4,710,730

SHIPPING SPECIFICATIONS

Shipping Tube:
MATERIAL: Black w/clear rigid PVC, (Conductive)
LENGTH: 14.75 ± 0.050 inches
END INSERTS: Soft rubber removable
QTY/TUBE: 25

Shipping Tape:
SIZE: 24 mm
MATERIAL: Black PVC, conductive, .012" thick

Shipping Reel:
SIZE: 13" diameter
MATERIAL: Plastic
CENTER HOLE:

	13" Reel
Tape Length	16.5 yds
Max No. of Pockets	1280
Leader Length	16" min
Trailer Length	14" min
Q.C. Sample Qty.	10 pcs
Product/Reel	1200
Cover Tape Thickness	.002"
Cover Peel Strength	75g

**NOTE: Minimum Order for
Tape & Reel is 1000 Pieces**

