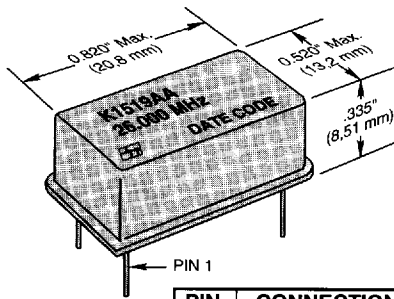


K1519 Series Temperature Compensated Crystal Oscillators

Model K1519AA (Low Current)
Model K1519AB (High Output)

- Inclusive ± 5 ppm Frequency Stability
- Frequency Range from 10.0 to 26.0 MHz
- All-Metal Welded Package
- Low Current Drain
- Sinewave Output Standard
- Modulation Capability Standard On All Models

Application Note #151 describes interface circuitry required to drive logic families and provide modulation, along with other technical information. Available upon request.



PIN	CONNECTION
1	Freq. Adj./Modulation
7	GND/Case GND
8	Output
14	+V _{CC}

Electrical Specifications

- FREQUENCY RANGE:** 10.0 MHz to 26.0 MHz T-75-33-09
- FREQUENCY STABILITY vs ENVIRONMENT**
 ± 5 ppm including temperature, humidity and voltage
- TEMPERATURE RANGE:**
OPERATING: -30°C to +70°C
STORAGE: -55°C to +85°C
- CURRENT DRAIN:**
2 mA max. @ 5.0V dc (K1519AA)
4 mA max. @ 5.0V dc (K1519AB ≤ 16 MHz)
5 mA max. @ 5.0V dc (K1519AB ≤ 20 MHz)
6 mA max. @ 5.0V dc (K1519AB ≤ 26 MHz)
- POWER OUTPUT: (Sinewave Standard)**
K1519AA: 1.0 to 2.5V p-p into 15 pF//50K Ohms
K1519AB: 4.25 to 5.25V p-p into 15 pF//50K Ohms
- SUPPLY:**
+5.0V dc ± 0.1 V dc
 ± 1.3 mV per °C max allowable supply variation
6 mA max. @ 5.0V dc (K1519AB ≤ 26 MHz)

K1135 Series Crystal Controlled Dual Baud Rate Generators

**16 Synchronous/Asynchronous
Baud Rates from 50 to 19,200**

- Single +5V dc Input
- Zero Error Available (Model K1135CA) at 19,200 Baud
- Direct UART/USRT Capability
- Pin Compatible With SMC 5036
- Full Duplex Communication
- All-Metal Welded Package
- Pin 11 Case Ground Minimizes RFI

Application - provides the stable reference frequencies needed by serial interface devices such as UARTs, telephone modems, teletypewriters, cassettes, etc. The K1135 family contains three "versions," A, B, and C. The distinction between the A version and the B version is that the B version has an oscillator frequency (F_0) output, capable of driving two TTL gates or nine LS gates, on pin 1. All three versions have an $F_0 \div 4$ reference output on pin 10. The C version has the crystal frequency changed so that the theoretical and actual frequencies are the same at 19,200 baud for 0% error.

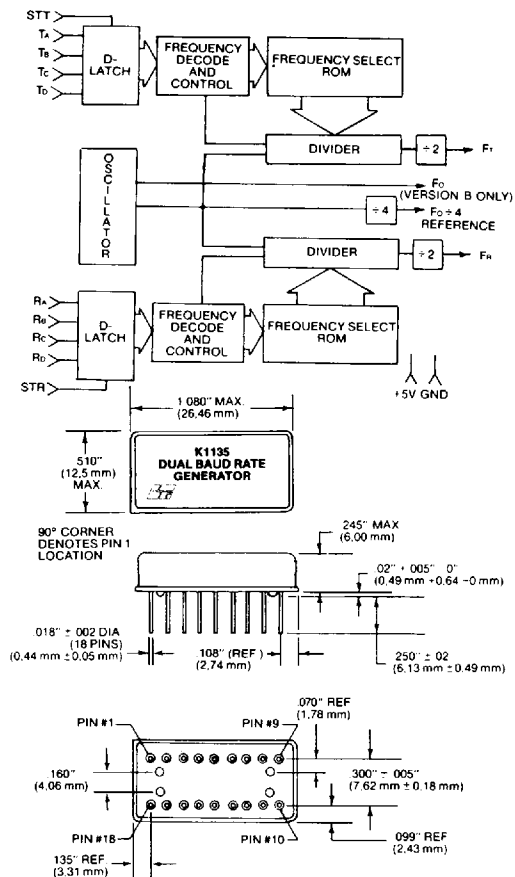
Two Choices of 16 Output Frequencies - The K1135 simultaneously generates two reference frequencies useful in computer

and microprocessor applications in which UARTs are used. The two selected frequencies can be quickly changed by either manual control or software control.

Direct UART/USRT Compatibility - The clock frequency is 16 times the baud rate. This higher frequency lets the UART/USRT

do such things as sample the center of each data and recheck for valid data signals. The stability of the UART/USRT frequencies generated are orders of magnitude better than the $\pm 1\%$ tolerance required; thus, the output from Pin 10 (oscillator $\div 4$) may be used for other system clocks.

PIN	CONNECTION
1	NC version A version C F_0 version B
2	V _{CC}
3	F _R
4-7	R _A , R _B , R _C , R _D
8	STR
9	NC
10	$F_0 \div 4$
11	Gnd/Case Gnd
12	STT
13-16	T _D , T _C , T _B , T _A
17	F _T
18	NC





AGING:

1.0 ppm/1 year maximum

PIN 1 FREQUENCY ADJUST: (Electrical)

Settable to 1 Hz with 3.75V to 4.75V dc on Pin 1

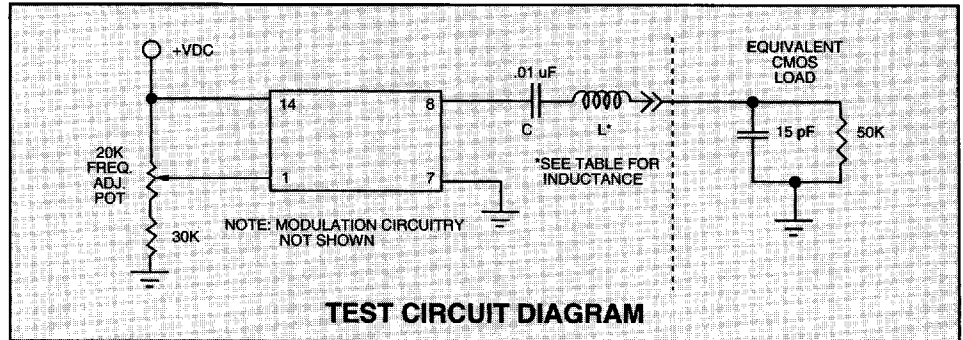
DEVIATION:

12 ppm/Volt minimum

PHASE NOISE:

RMS deviation not to exceed -146 dBc/Hz, 25 kHz from oscillator frequency

OSC FREQ (MHz)	L (mH) Typical	OSC FREQ (MHz)	L (mH) Typical
10 - 11.1999	15.0	16.5 - 17.9999	5.6
11.2 - 12.3999	12.0	18.0 - 19.7999	4.7
12.4 - 13.6999	10.0	19.8 - 21.5999	3.9
13.7 - 15.2999	8.2	21.6 - 23.6999	3.3
15.3 - 16.4999	6.8	23.7 - 26.0	2.7



Electrical Specifications

FREQUENCY

- K1135AA FO ÷ 4 = 1.2672 MHz
- K1135BA FO ÷ 4 = 1.2872 MHz, FO = 5.0688 MHz
- K1135CA FO ÷ 4 = 1.2288 MHz

OUTPUT OPTIONS

Xmit/Rcvr Address	Baud Rate	Theor Freq (kHz)	VERSION A, B				VERSION C			
			Actual Freq (kHz)	% Error	Duty Cycle	Divisor	Actual Freq (kHz)	% Error	Duty Cycle	Divisor
0 0 0 0	50	0.8	0.8	—	50/50	6336	0.8	—	50/50	6144
0 0 0 1	75	1.2	1.2	—	50/50	4224	1.2	—	50/50	4096
0 0 1 0	110	1.76	1.76	—	50/50	2880	1.7589	-0.01	—	2793
0 0 1 1	134.5	2.152	2.1523	0.016	50/50	2355	2.152	—	50/50	2284
0 1 0 0	150	2.4	2.4	—	50/50	2112	2.4	—	50/50	2048
0 1 0 1	300	4.8	4.8	—	50/50	1056	4.8	—	50/50	1024
0 1 1 0	600	9.6	9.6	—	50/50	528	9.6	—	50/50	512
0 1 1 1	1200	19.2	19.2	—	50/50	264	19.2	—	50/50	256
1 0 0 0	1800	28.8	28.8	—	50/50	176	28.7438	-0.19	—	171
1 0 0 1	2000	32.0	32.081	0.253	50/50	158	31.9168	-0.26	50/50	154
1 0 1 0	2400	38.4	38.4	—	50/50	132	38.4	—	50/50	128
1 0 1 1	3600	57.6	57.6	—	50/50	88	57.8258	0.39	—	85
1 1 0 0	4800	76.8	76.8	—	50/50	66	76.8	—	50/50	64
1 1 0 1	7200	115.2	115.2	—	50/50	44	114.306	-0.77	—	43
1 1 1 0	9600	153.6	153.6	—	48/52	33	153.6	—	50/50	32
1 1 1 1	19.200	307.2	316.8	3.125	50/50	16	307.2	—	50/50	16

*When duty cycle is not exactly 50%, it is 50% ± 10%

FREQUENCY STABILITY:

±0.01% (Inclusive of calibration tolerance at 25°C, operating temperature range, input voltage change, load change, aging, shock and vibration.)

TEMPERATURE RANGE:

- OPERATING: 0°C to +70°C
- STORAGE: -40°C to +85°C

INPUT VOLTAGE:

V_{CC} + 5V dc, ±5%

A.C. CHARACTERISTICS

- Receiver Strobe Pulse Width: 150 ns min. (Note 1)
- Transmitter Strobe Pulse Width: 150 ns min. (Note 1)
- Input Setup Time, Address: 50 ns min. (Note 1)
- Input Hold Time, Address: 50 ns min.
- Strobe to New Freq. Delay: 3.5 µs max.

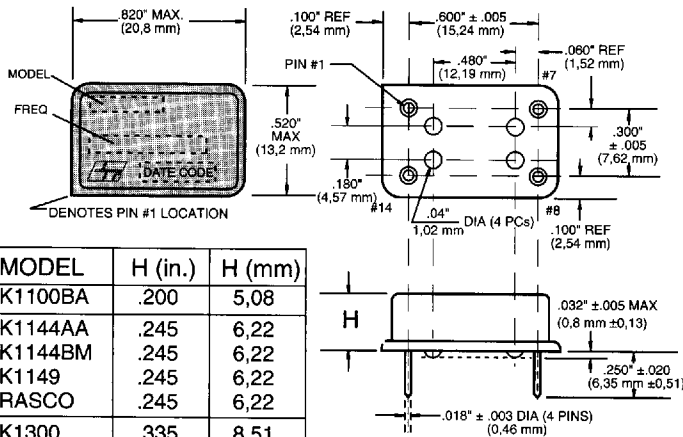
Note 1: Input setup time can be decreased to >0 ns by increasing the minimum strobe width by 50 ns to a total of 200 ns.

D.C. CHARACTERISTICS

- Input Voltage Level, Low (V_{IL}): 0.8V maximum
- Input Voltage Level, High (V_{IH}): 2.0V minimum
- Output Voltage (F_R, F_T) Level, Low (V_{OL}): 0.5V max., (I_{OL} = 3.2 mA)
- Output Voltage (F_R, F_T) Level, High (V_{OH}): V_{CC} - 1.5 min., 4.3V typ. (I_{OH} = 100 µA)
- Oscillator Output (F_O) Level, Low (V_{OL}): 0.5V max. (I_{OL} = 3.2 mA) (K1135B only)
- Output Voltage (F_O) Level, High (V_{OH}): V_{CC} - 1.5 min., 4.3V typ. (I_{OH} = 100 µA) (K1135B only)
- Ref. Output (F_O + 4) Level, Low (V_{OL}): 0.4V max., (I_{OL} = 1.6 mA)
- Ref. Output (F_O + 4) Level, High (V_{OH}): V_{CC} - 1.5 min., 4.0V typ. (I_{OH} = 100 µA)
- Input Current Level, Low (I_{IL}): 0.3 mA max. (V_{IN} = GND)
- Input Capacitance, All Inputs (C_{IN}): 5 pf typ., 10 pf max. (V_{IN} = GND)
- Power Supply Current (I_{CC}): 50 mA typ., 65 mA max.

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

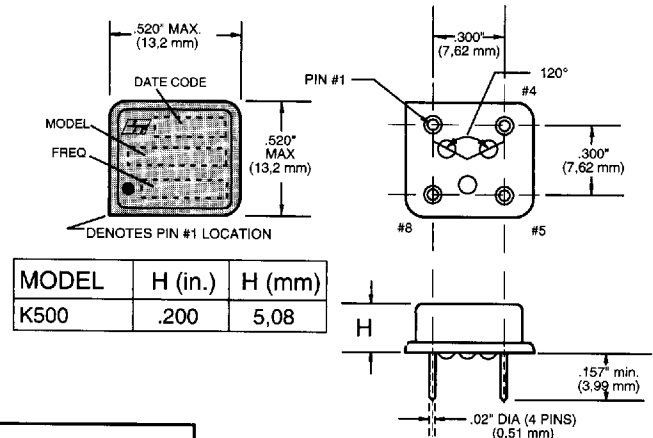
**DIMENSIONAL DETAIL,
FULL DIP MODELS**



MODEL	H (in.)	H (mm)
K1100BA	.200	5,08
K1144AA	.245	6,22
K1144BM	.245	6,22
K1149	.245	6,22
RASCO	.245	6,22
K1300	.335	8,51
K11041	.335	8,51
K1519	.335	8,51
K1523	.335	8,51
K1524	.335	8,51

**DIMENSIONAL DETAIL,
HALF DIP MODELS**

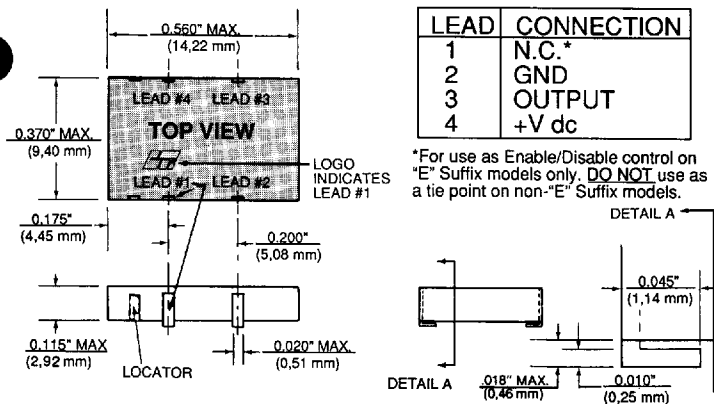
T-90-20



MODEL	H (in.)	H (mm)
K500	.200	5,08

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

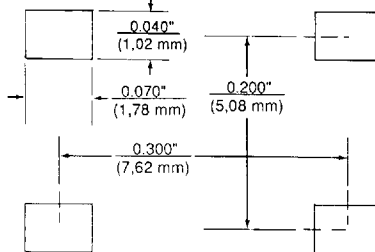
**DIMENSIONAL DETAIL,
SURFACE MOUNT OSCILLATOR**



LEAD	CONNECTION
1	N.C.*
2	GND
3	OUTPUT
4	+V dc

*For use as Enable/Disable control on "E" Suffix models only. **DO NOT** use as a tie point on non-"E" Suffix models.

**SUGGESTED TEST PADS,
SURFACE MOUNT OSCILLATOR**



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

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.

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

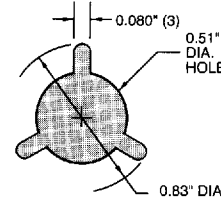
MATERIAL: Black PVC, conductive, .012" thick

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**