RASCO® PLUS Crystal Clock Oscillators

- 1.25 to 50 MHz Frequency Range
- TTL/CMOS Compatibility Standard from 1.25 MHz to 20 MHz
- 3,000g Shock Rating
- Low Current Drain
- Drives Motorola 68020, 68030, Intel 80386 and Other High Speed Microprocessors
- Provides Precise Rise and Fall Times to Drive High Speed MOS Microprocessors
- Optional ±0.005% Stability
- "S" Models Feature 45/55% Symmetry
- "E" Models Feature Enable/Disable Capability Over The Entire Frequency Range
- "M" Models Operate From -40°C to +85°C

For further technical information concerning the Enable/Disable function, Application Bulletin #153 is available upon request.

Electrical Specifications

FREQUENCY RANGE: 1.25 to 50 MHz
FREQUENCY STABILITY:
±100 ppm (—50 ppm optional) 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
(RASCO PLUS M -40°C to +85°C)
STORAGE: -55°C to +125°C
INPUT VOLTAGE: +5V dc ±10%
VOLTAGE STABILITY: <±3 ppm Typical
INPUT CURRENT: (see graph at right)

Freq. (MHz)	≤10	≤20	≤30	≤40	≤52
I_{CC} (mA) max Over Temp	13	17	31	34	40

CURRENT, OUTPUT
SHORTED: -30 mA Min, -140 mA Max

OUTPUT	RISE & FALL	T_R(ns)	T_F(ns)
1.25-20 MHz (15 pF)	CMOS: 20% to 80%V_{CC} TTL: 0.5V to 2.5V:	5 4	5 4
20-52 MHz (15 pF)	CMOS: 20% to 80%V_{CC} TTL: 0.5V to 2.5V:	4 3.5	3 2.5
20-52 MHz (50 pF)	CMOS; 20% to 80%V_{CC} TTL: 0.5V to 2.5V:	7 6	5 4

OUTPUT (0°C TO +70°C)
SYMMETRY:
40/60% (min/max, std) @.5V_{CC} (CMOS) or 1.4V (TTL)
"S" Versions 45/55% (min/max) @ .5V_{CC} (CMOS) or 1.4V (TTL)
"S" Version Not Available In CMOS Above 20 MHz
"0" LEVEL (V_{OL}): +0.5V max. @ I_{OL} = 16 mA
"1" LEVEL (V_{OH}): V_{CC} -0.4V min. @ I_{OH} = -1 mA
CL = 15pF
HIGH OR LOW LEVEL
OUTPUT CURRENT: ±20 mA Absolute max value
OUTPUT VOLTAGE: -0.5V to V_{CC} + 0.5V
START UP TIME
(TYPICAL) ≤5 ms
OUTPUT LOAD:
10 TTL Gates CMOS Compatible
LOAD STABILITY:
<±2 ppm Typical CL = 15 pF
ENABLE/DISABLE:
Pd LH 1 µsec max., Pd HL 1 µsec max.

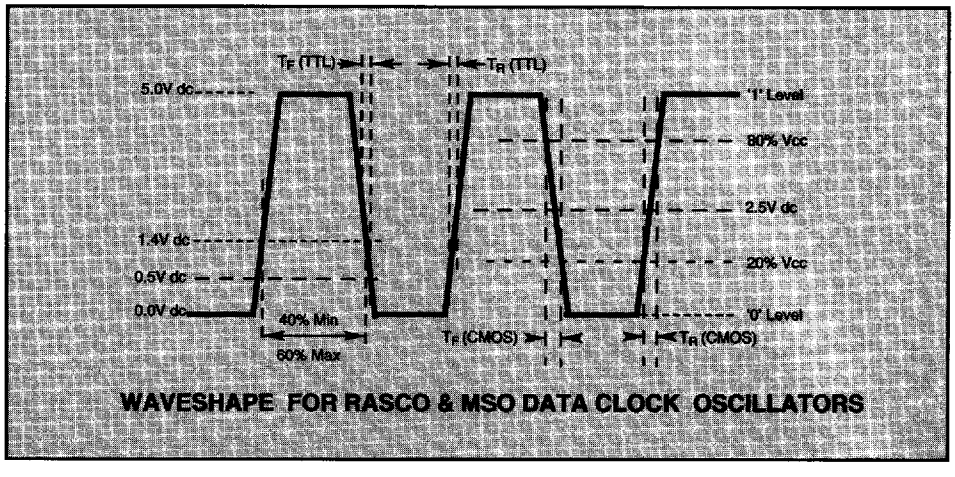
ENABLE/DISABLE APPLICATION

The enable input is CMOS/TTL compatible.

Over the specified operating voltage and temperature range:

V_{IH} ("1" level input voltage) = 2.4V dc minimum
V_{IL} ("0" level input voltage) = 0.8V dc maximum
I_{IL} ("0" level input current) = 300 µA max @V_{IL}

When enable input is low ("0"), the output is disabled to logic "1" level, and can be wire "OR"ed for testing.



WAVESHAPE FOR RASCO & MSO DATA CLOCK OSCILLATORS

MSO_E Series Surface Mountable Clock Oscillators

- 1.5 to 40 MHz Frequency Range
- 0.560" by 0.360" (14,22 x 9,14 mm) Footprint
- 3,000g Shock Rating
- Available in "C" Lead Configuration
- Anti-Static Tube Packaging or 24 mm Tape & Reel
- Enable/Disable Standard
- 45/55% Symmetry Optional

Electrical Specifications

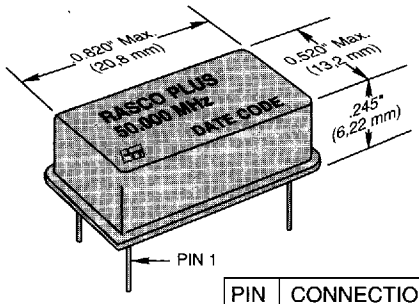
FREQUENCY RANGE: 1.5 to 40 MHz
FREQUENCY STABILITY:
±100 ppm (inclusive of calibration tolerance at 25°C, operating temperature range, input voltage change, load change, aging, shock, and vibration)
TEMPERATURE RANGE:
OPERATING: 0°C to +70°C
STORAGE: -55°C to +125°C
INPUT VOLTAGE: +5V dc ±10%
VOLTAGE STABILITY: <±3 ppm Typical
INPUT CURRENT: (see graph at right)

Frequency	I_{CC} Max at C_L = 15 pF
≤ 10 MHz	13
10.01 to 20 MHz	17
20.01 to 30 MHz	21
30.01 to 40 MHz	26

CURRENT, OUTPUT
SHORTED: -30mA Min, -140 mA Max

OUTPUT (0°C TO +70°C)
SYMMETRY:
40/60% (min/max, std) @.5V_{CC} (CMOS) or 1.4V (TTL)
"S" Versions 45/55% (min/max) @ .5V_{CC} (CMOS) or 1.4V (TTL)
"S" Version Not Available In CMOS Above 20 MHz
RISE & FALL TIMES (CL = 15 pF) T_R T_F
CMOS (20%V_{CC} to 80%V_{CC}): 5 ns 5 ns max.
TTL (0.5V to 2.5V): 4 ns 4 ns max.
(See graphs at right)
"0" LEVEL (V_{OL}): +0.5V max. I_{OL} = 16 mA
"1" LEVEL (V_{OH}): V_{CC} -0.4V min. I_{OH} = -1 mA
HIGH OR LOW LEVEL
OUTPUT CURRENT: ±20 mA Absolute max value
OUTPUT VOLTAGE: -0.5V to V_{CC} + 0.5V
START UP TIME: (TYPICAL) ≤5 ms
OUTPUT LOAD: 10 TTL Gates, CMOS Compatible
LOAD STABILITY: <±2 ppm typical, C_L=15 pF
ENABLE/DISABLE: Pd_{LH} 1 µs max.; Pd_{HL} 1 µs max.

For further technical information concerning the Enable/Disable function, Application Bulletin #153 is available upon request.



PIN	CONNECTION
1	N.C.*
7	Gnd/Case Gnd
8	OUTPUT
14	+V dc

*Used for enable/disable function in "E" version only

MODEL IDENTIFICATION

RASCO PLUS 5 C or S E

1. Stability
2. CMOS or Symmetry
3. Enable/Disable

1. Stability - RASCO PLUS 5 is ±0.005%, RASCO PLUS and RASCO PLUS M are ±0.01%

2. CMOS or Symmetry - CMOS compatible models above 20 MHz are indicated by the letter "C" (below 20 MHz, all models are both CMOS and TTL compatible). "S" indicates tight symmetry (45/55%, not available in CMOS above 20 MHz), models with no "S" suffix have the standard 40/60% (worst case) symmetry.

3. Enable/Disable - indicated by an "E" suffix.

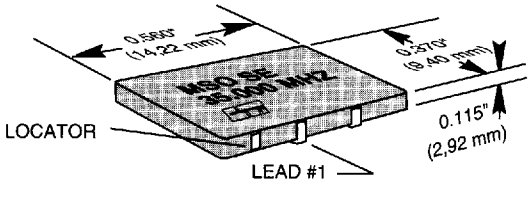
MODEL IDENTIFICATION

MSO — S E

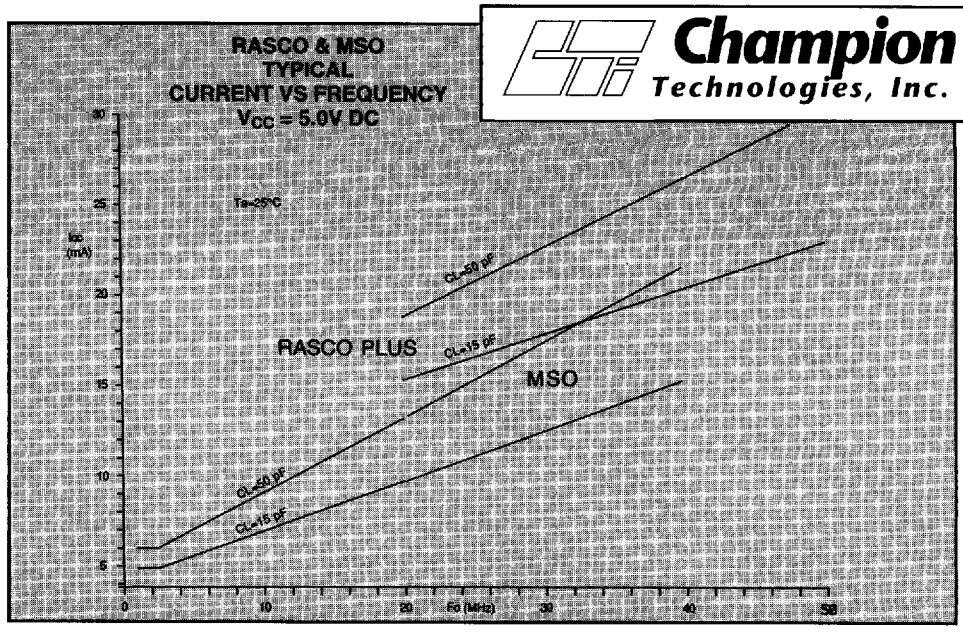
1. Symmetry

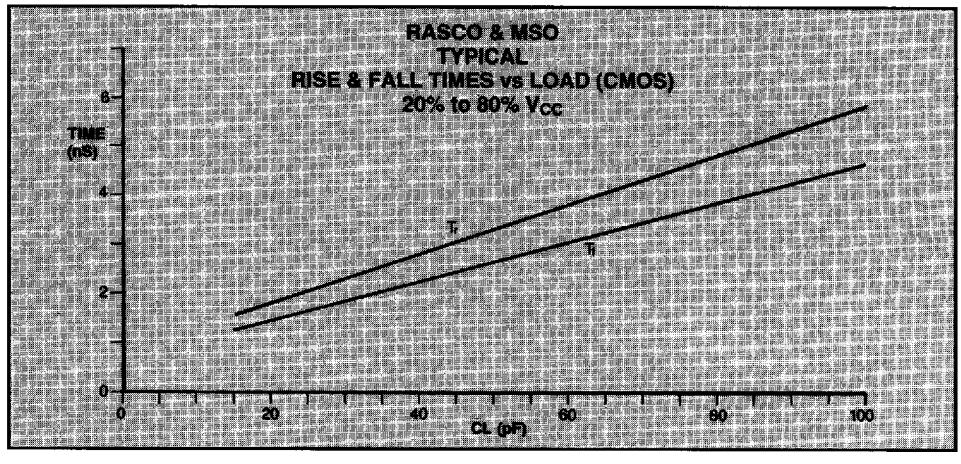
1. Symmetry - tight symmetry (45/55%) models are indicated by an "S" suffix. Models with no "S" suffix have the standard 40/60% (worst case) symmetry specification. (Tight symmetry is not available in CMOS above 20 MHz.)

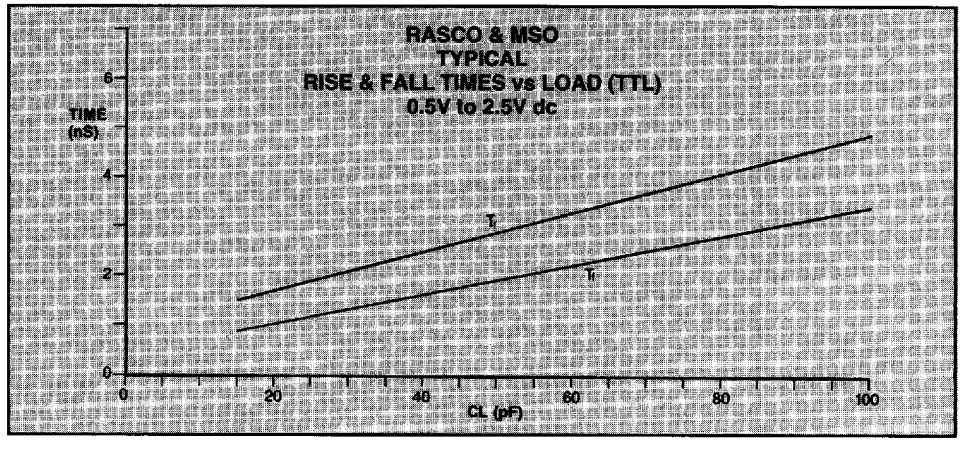
2. Enable/Disable - The Enable/Disable feature is standard and is indicated by an "E" suffix.

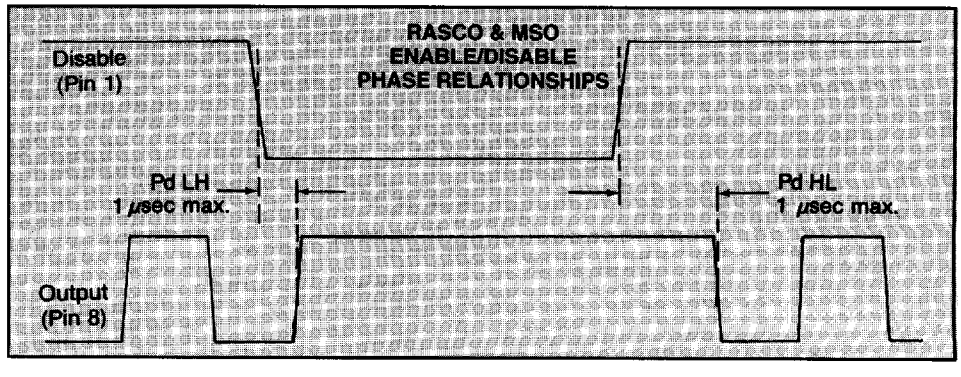


LEAD	CONNECTION
1	Enable/Disable
2	GND
3	OUTPUT
4	+V dc

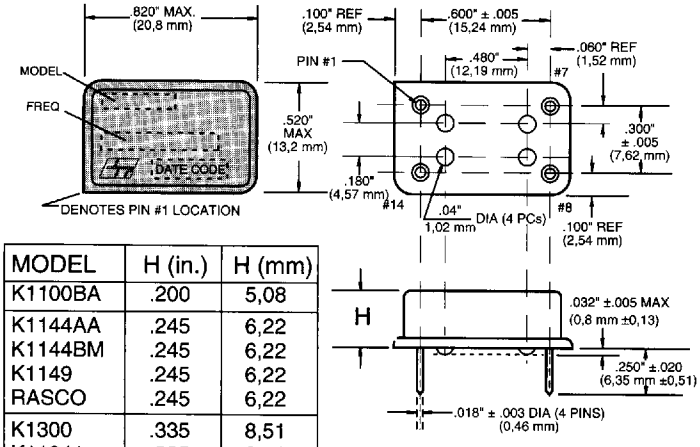








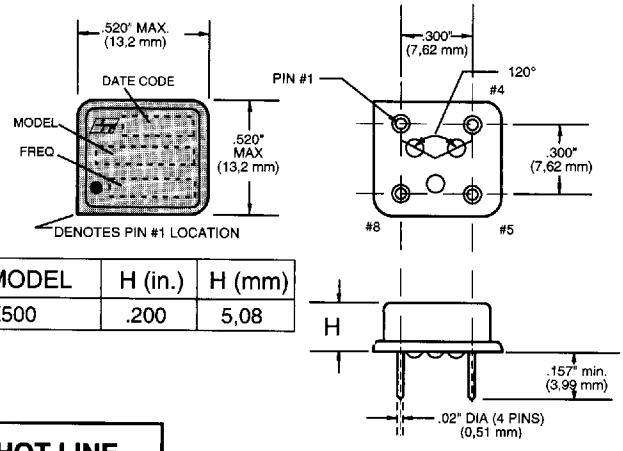
DIMENSIONAL DETAIL, FULL DIP MODELS



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

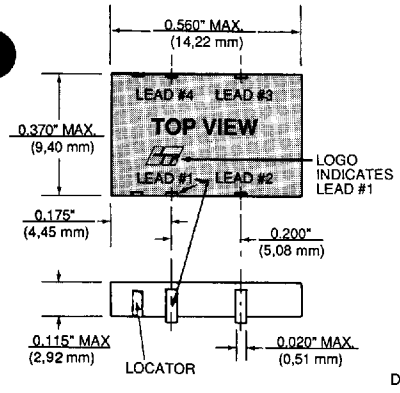
T-90-20



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

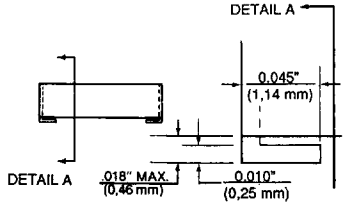
TECHNICAL HOT LINE
1-800-888-1499
Direct Line to Engineering

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.



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.

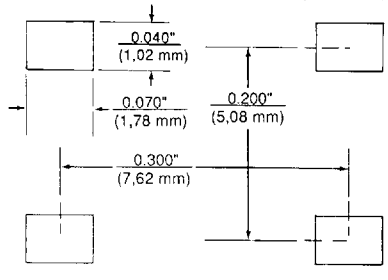
SOLDER BATH: The solder bath shall be maintained at 243°C.

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:

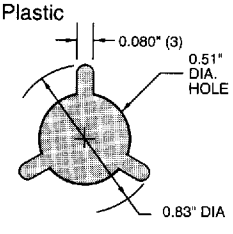
MATERIAL: Black w/clear rigid PVC, (Conductive)
LENGTH: 14.75 ±0.050 inches
END INSERTS: Soft rubber removable
QTY/TUBE: 25

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

Champion Technologies, Inc. 2553 N. Edgington St., Franklin Park, IL 60131 U.S.A. Phone: (708) 451-1000, FAX: (708) 451-7585