



**Champion**  
Technologies, Inc.

K1100AM™

K1145AM™

## Crystal Clock Oscillators

20 MHz to 70 MHz

TTL COMPATIBLE OUTPUT

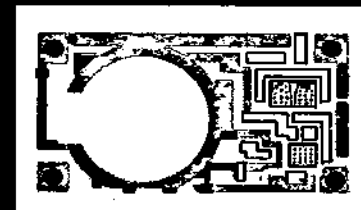
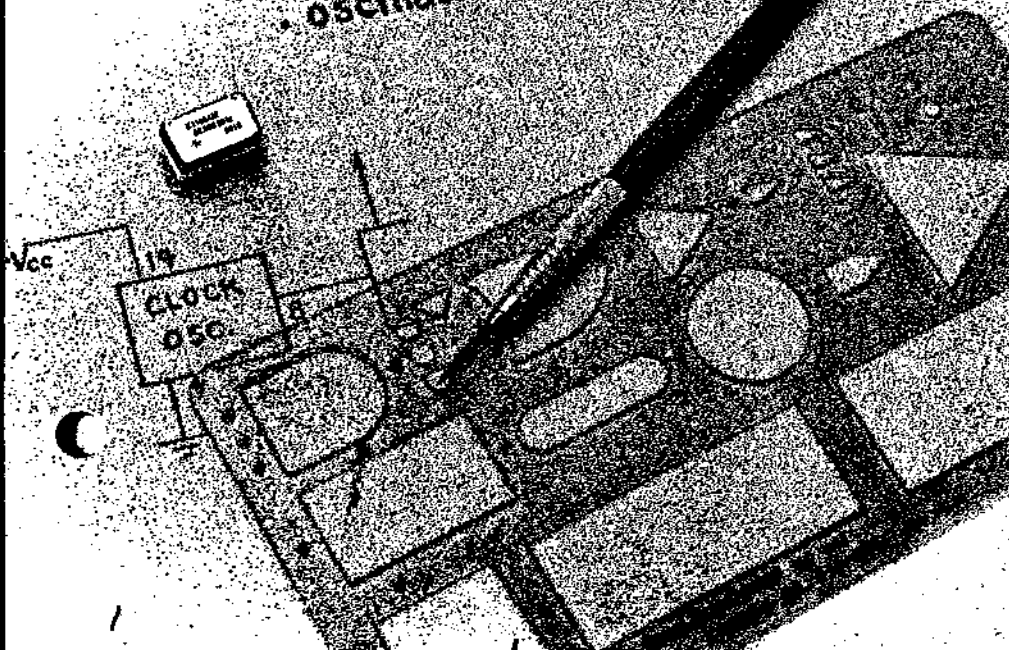
ALL METAL WELDED PACKAGE

CASE GROUND MINIMIZES E.M.I.

### THE PACKAGED CRYSTAL OSCILLATOR

saves critical board  
space and eliminates:

- matching crystals/components
- starting resistance
- spurious modes
- activity dips
- oscillator design time



## Features CHAMPION TECHNOLOGIES INC

### ■ ALL-METAL, WELDED PACKAGE

— offers full hermetic seal to provide excellent resistance to extremes of heat/humidity. With pin 7 case ground, the all-metal package also offers improved shielding to minimize RF radiation, helping to meet FCC EMI specifications. The oscillator can be soldered in standard wave-line operations without damage; insulated stand-offs permit proper de-fluxing. Can also be plugged into a DIP socket. Takes up only .820" x .520" on a circuit board, and its seated height of .270" lets you use standard logic boards with no loss of spacing.

■ **TTL COMPATIBLE**—uses standard +5V dc input, drives standard TTL logic.

■ **±0.01% FREQUENCY STABILITY (K1100AM)**—over the range of 0°C to 70°C, suitable for most applications in data communication logic timing. The K1145AM has ±0.005% stability over the same operating range. This specification is inclusive of calibration tolerance, stability vs. input voltage change, stability vs. shock and vibration.

■ **RUGGED, RELIABLE**—maximum reliability at minimum cost results from extensive experience in quartz crystal technology and in thick film hybrid IC processing. High precision crystals and clean-room processing testify that no shortcuts are taken that might diminish reliability. Environmental testing proves the effectiveness of the rugged design for those applications in which shock and vibration are common hazards.

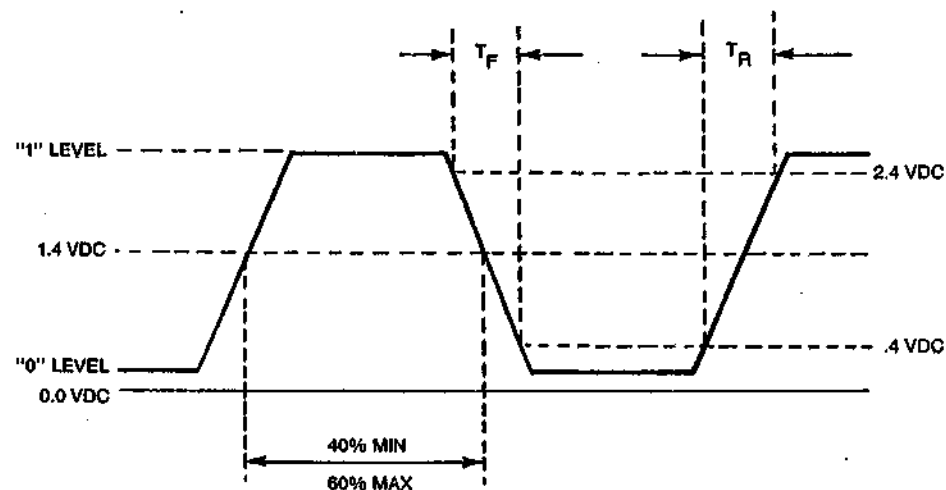
### ■ YOUR TIMING NEEDS IN ONE PACKAGE

—The oscillators use essentially the same components to generate any discrete frequency in their frequency range; only the frequency-determining elements and laser-trim settings change. The manufacturing savings inherent in this design are passed on to you, simplifying your make vs. buy decision. The single package oscillator saves you the board space required by discrete components, and eliminates production man-hours wasted analyzing oscillator circuits and matching crystal parameters to circuit components. And with a packaged oscillator, you eliminate source-hunting and source-qualifying for its components, cut down on direct labor for parts insertion, cut down on overhead costs for Receiving, Incoming Inspection, Purchasing, and Accounts Payable.

### ■ COMPLETE PROCESS CONTROL

—Uniform high quality in high volume production is made possible only by complete control of the manufacturing process, from finishing the quartz through hybrid thick film circuit processing and clean room assembly, with stringent quality control measures enforced.

■ **VOLUME PRODUCTION**—Modern automated production techniques are used to provide high volume, high quality crystal clock oscillators.



■ **FREQUENCY RANGE:** 20 MHz to 70 MHz  
 (K1145AM not available above 50 MHz)

■ **FREQUENCY STABILITY:**

K1145AM,  $\pm 0.005\%$ ; K1100AM,  $\pm 0.01\%$   
 (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: -55°C to +125°C

■ **INPUT VOLTAGE:** +5V dc  $\pm 0.5V$

■ **INPUT CURRENT:**

20.01-70.00 MHz MAX. @ 25°C MAX. OVER TEMP.  
 60mA 65mA

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

■ **TTL OUTPUT (0°C to 70°C):**

SYMMETRY: 60/40% @ 1.4V dc level\*  
 (\*1.5V level above 40 MHz)

RISE AND FALL TIMES:  
 (.4 -2.4V dc levels)  
 10 ns max.  
 20.0 MHz-31.999 MHz  
 6 ns max.  
 32.0-54.999 MHz  
 4 ns max.  
 55-70 MHz

"0" LEVEL: +0.4V max.

"1" LEVEL: +2.4V min.

"0" SINK CURRENT: 20 mA min.

"1" SOURCE CURRENT: -400  $\mu A$  minimum

OUTPUT LOAD: 1 to 5 TTL gates

■ **ENVIRONMENTAL:**

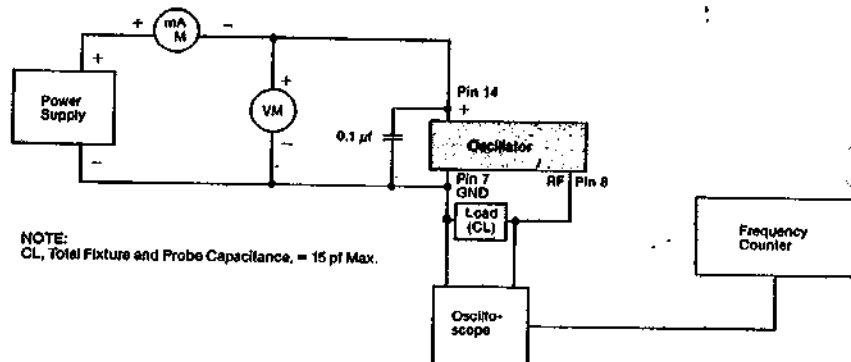
TEMPERATURE CYCLE: MIL-STD-883B Method 1010.2 Level B  
 SHOCK: 1000 G's 0.35 milliseo, 1/2 sine wave; 3 shocks each plane  
 VIBRATION: 10-55 Hz, .060" D.A., 55 Hz-2000 Hz 35 G's, Duration time-12 hours  
 HUMIDITY: 85% Relative humidity, @ +85°C, 500 hrs.  
 STEADY-STATE LIFE: MIL-STD-883B, Method 1005 1000 hrs @ 125°C, disregarding frequency shift.  
 ELECTROSTATIC DISCHARGE: MIL-STD-883B, Method 3015 Class B; >2KV  
 SENSITIVITY:

■ **MECHANICAL:**

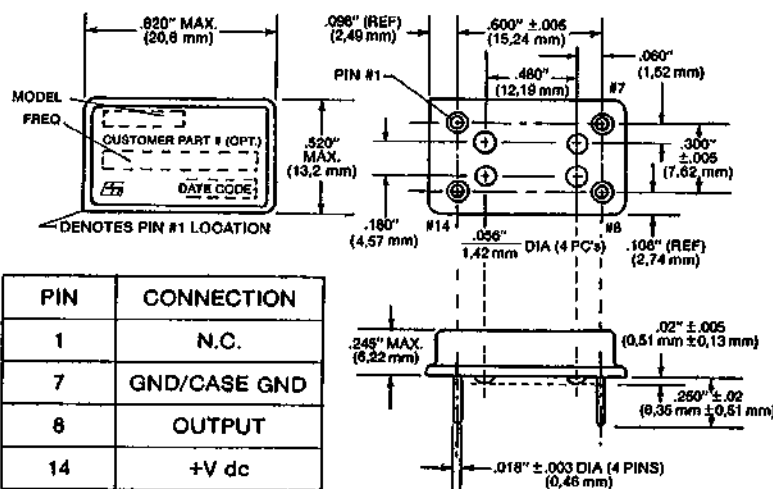
GROSS LEAK TEST: Leak test in de-ionized H<sub>2</sub>O.  
 HERMETICALLY SEALED PACKAGE: Mass spectrometer leak rate less than  $2 \times 10^{-8}$  atmos. cc/sec. of helium  
 SEAL: 20 lbs. max. force perpendicular to top and bottom  
 STRENGTH: Pins will withstand maximum bend of 90° reference to base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

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

Specifications subject to change without notice.  
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Clock Oscillator Test Circuit



## 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  $265 \pm 5^\circ C$ .  
 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.

**Champion**  
 Technologies, Inc.

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