



**Positive ECL (PECL)
HS-A870 Series**

Rev. P

Description

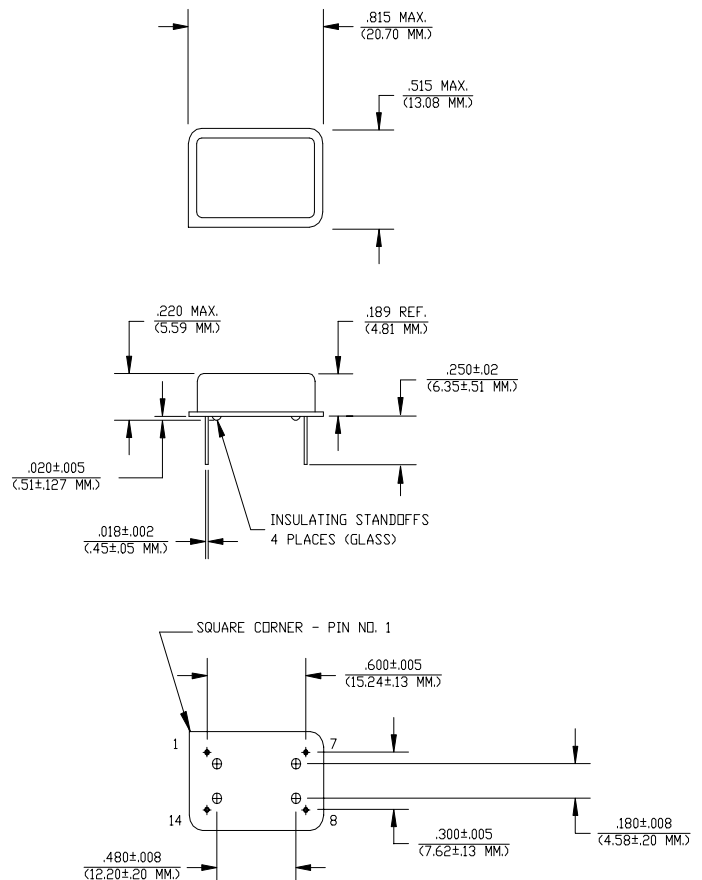
The **HS-A870 Series** of quartz crystal oscillators provide MECL 10K and 10KH series compatible signals in industry standard four-pin DIP hermetic packages.. Systems designers may now specify space-saving, cost-effective packaged PECL oscillators to meet their timing requirements.

Features

- Wide frequency range—10.0MHz to 220.0MHz
- User specified tolerance available
- Will withstand vapor phase temperatures of 253°C for 4 minutes maximum
- Space-saving alternative to discrete component oscillators
- High shock resistance, to 3000g
- 3.3 Volt operation
- All metal, resistance weld, hermetically sealed package
- Low Jitter
- MECL 10K and 10KH series compatible output on Pin 8
- High Q Crystal actively tuned oscillator circuit
- Power supply decoupling internal
- No internal PLL avoids cascading PLL problems
- High frequencies due to proprietary design
- Gold plated leads - Solder dipped leads available upon request
- RoHS Compliant, Lead Free Construction (unless solder dipped leads supplied)

Electrical Connection

Pin	Connection
1	N.C.
7	V _{EE} /Ground
8	Output
14	V _{CC}



Dimensions are in inches and (MM)

HS-A870 Series Continued
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Operating Conditions and Output Characteristics
Electrical Characteristics

Parameter	Symbol	Conditions	Min	Typical	Max
Frequency	-----	-----	15.0MHz	-----	220.0MHz
Duty Cycle	-----	@ V_{CC} -1.29V	45/55%	-----	55/45%
Logic 0 ⁽²⁾	V_{OL}	-----	V_{CC} -1.95V	-----	V_{CC} -1.60V
Logic 1 ⁽²⁾	V_{OH}	-----	V_{CC} -1.02V	-----	V_{CC} -0.74V
Rise & Fall Time	tr,tf	20-80% V_O with 50 ohm load to V_{CC} -2V	-----	1.0 ns	1.5 ns
Jitter, RMS ⁽³⁾	-----	-----	-----	-----	5 psec
Frequency Stability ⁽¹⁾	dF/F	Overall conditions including: voltage, calibration, temp., 10 yr aging, shock, vibration	-100ppm	-----	+100ppm

General Characteristics

Parameter	Symbol	Conditions	Min	Typical	Max
Supply Voltage	V_{CC}	-----	3.15V	3.3V	3.45V
Supply Current	I_{CC}	50 ohm termination To 2.00V below V_{CC}	0.0 mA	-----	80 mA
Output current	I_O	Low level Output Current	0.0 mA	-----	±50.0 mA
Operating temperature	T_A	-----	0°C	-----	70°C
Storage temperature	T_S	-----	-55°C	-----	125°C
Power Dissipation	P_D	-----	-----	-----	420 mW
Lead temperature	T_L	Soldering, 10 sec.	-----	-----	300°C
Load	-----	50 Ohm to V_{CC} -2V or Thevenin Equivalent, Bias Required	-----	-----	-----
Start-up time	t_s	-----	-----	2 ms	10 ms

Environmental and Mechanical Characteristics

Mechanical Shock	Per MIL-STD-202, Method 213, Condition E
Thermal Shock	Per MIL-STD-883, Method 1011, Condition A
Vibration	0.060" double amplitude 10 Hz to 55 Hz, 35g's 55Hz to 2000 Hz
Soldering Condition	300°C for 10 seconds
Hermetic Seal	Leak rate less than 1×10^{-8} atm.cc/sec of helium
ESD Sensitivity	Human Body Model per ON Semiconductor 10kH series ECL: 500V min.

Footnotes:

- 1) Standard frequency stability ($\pm 20, \pm 25, \pm 50$ ppm & others available)
- 2) V_{OL} , V_{OH} , referenced to ground (V_{EE}) with $V_{CC} = 3.3V$
- 3) Jitter performance is frequency dependent. Please contact factory for full characterization.
RMS jitter bandwidth of 12kHz to 20MHz.

Creating a Part Number
HS - A87X - FREQ
Package Code

 HS Leaded 4 pin (14 pin)
 SM Leaded 4 pin (14 pin) SMD
 Gull Wing

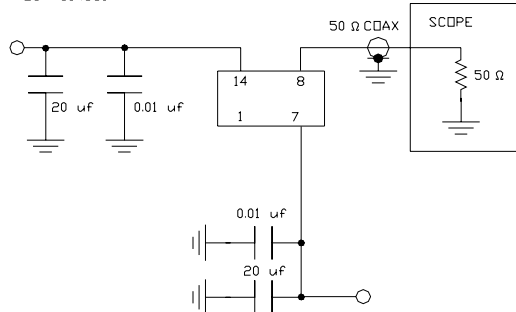
Input Voltage

 Code Specification
 A 3.3V
 5V

Tolerance/Performance

 0 ±100ppm 0-70°C
 1 ±50ppm 0-70°C
 7 ±25ppm 0-70°C
 9 Customer Specific
 A ±20ppm 0-70°C
 B ±50ppm -40 to +85°C
 C ±100ppm -40 to +85°C

TEST CIRCUIT



TEST CIRCUIT USES A SPLIT SUPPLY OF +2V AND -1.3V FOR EASE OF TESTING.


**FREQUENCY
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