



### ECL HS-800/810 Series

### Description

The **HS-800/810 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 ECL oscillators to meet their timing requirements.

### Features

- Wide frequency range—15.0MHz to 250.0MHz
- 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
- 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

### Electrical Connection

#### HS-800

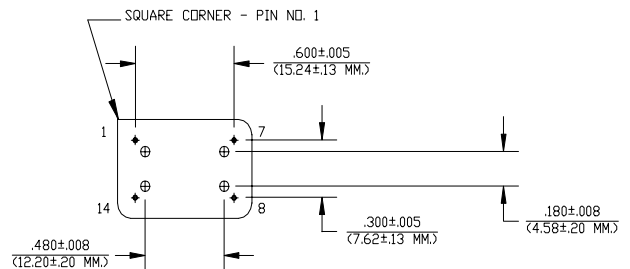
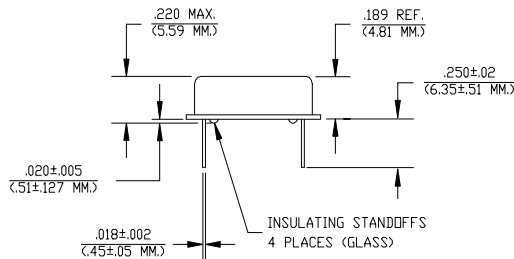
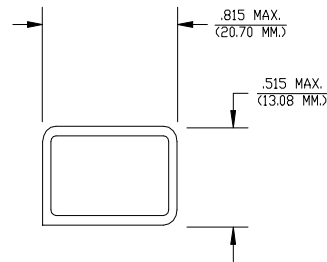
Pin Connection

- 1 N.C.
- 7  $V_{CC}$  /Ground
- 8 Output
- 14  $V_{EE}$  -5.2V

#### HS-810

Pin Connection

- 1 N.C.
- 7  $V_{EE}$  -5.2V
- 8 Output
- 14  $V_{CC}$  /Ground



Dimensions are in inches and (MM)

HS-800/810 Series Continued  
ECL

Rev. K

## Operating Conditions and Output Characteristics

### Electrical Characteristics

Parameter	Symbol	Conditions	Min	Typical	Max
Frequency	-----	-----	15.0MHz	-----	250.0MHz
Duty Cycle	-----	@ V <sub>CC</sub> -1.29V	45/55%	-----	55/45%
Logic 0 <sup>(2)</sup>	V <sub>OL</sub>	-----	V <sub>CC</sub> -1.95V	-----	V <sub>CC</sub> -1.60V
Logic 1 <sup>(2)</sup>	V <sub>OH</sub>	-----	V <sub>CC</sub> -1.02V	-----	V <sub>CC</sub> -0.74V
Rise & Fall Time	tr,tf	20-80%V <sub>O</sub> with 50 ohm load to V <sub>CC</sub> -2V	-----	1.0 ns	1.5 ns
Jitter, RMS <sup>(3)</sup>	-----	-----	-----	-----	5 psec
Frequency Stability <sup>(1)</sup>	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 <sub>EE</sub>	-----	-5.46V	-5.2V	-4.94V
Supply Current	I <sub>EE</sub>	50 ohm termination To 2.00V below V <sub>CC</sub>	0.0 mA	-----	80 mA
Output current	I <sub>O</sub>	Low level Output Current	0.0 mA	-----	±50.0 mA
Operating temperature	T <sub>A</sub>	-----	0°C	-----	70°C
Storage temperature	T <sub>S</sub>	-----	-55°C	-----	125°C
Power Dissipation	P <sub>D</sub>	-----	-----	-----	437 mW
Lead temperature	T <sub>L</sub>	Soldering, 10 sec.	-----	-----	300°C
Load	-----	50 Ohm to V <sub>CC</sub> -2V or Thevenin Equivalent, Bias Required	-----	-----	-----
Start-up time	t <sub>S</sub>	-----	-----	2 ms	10 ms

### Environmental and Mechanical Characteristics

Mechanical Shock	Per MIL-STD-202, Method 213, Condition E
Thermal Shock	Per MIL-STD-833, 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 x 10 <sup>-8</sup> atm.cc/sec of helium
ESD Sensitivity	Human Body Model per ON Semiconductor 10kH series ECL: 500V min.

#### Footnotes:

- Standard frequency stability (±20,±25,±50ppm & others available)
- V<sub>OL</sub>, V<sub>OH</sub>, referenced to ground (V<sub>CC</sub>) with V<sub>EE</sub> = -5.2V
- Jitter performance is frequency dependent. Please contact factory for full characterization.

#### Creating a Part Number

HS - A80X - FREQ

#### Package Code

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

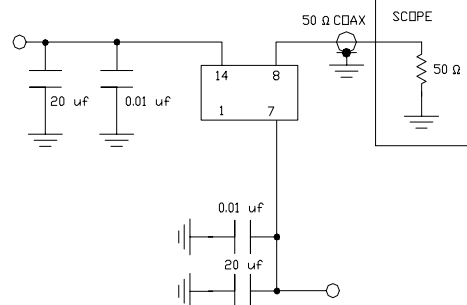
#### Input Voltage

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 -3.2V FOR EASE OF TESTING.