



ECL HS-2840 Series

Description

The **HS-2840 Series** of quartz crystal oscillators provide MECL 10K and 10KH series compatible signals in industry standard five-pin DIP hermetic packages. Systems designers may now specify space-saving, cost-effective packaged ECL oscillators to meet their timing requirements.

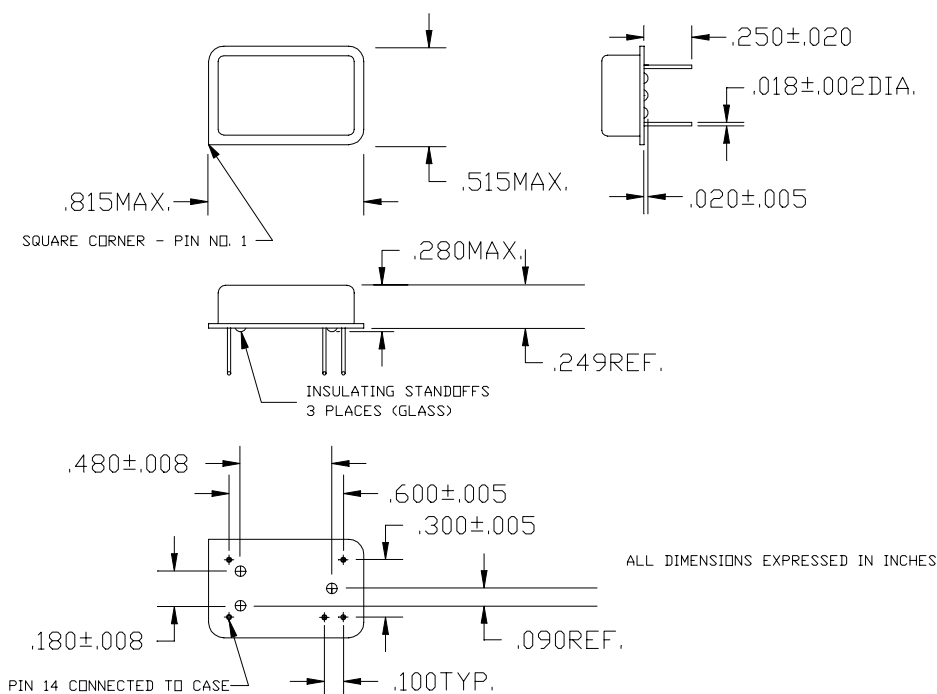
Features

- Wide frequency range—65.0MHz 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
- Metal lid electrically connected to ground to reduce EMI
- Low Jitter
- MECL 10K and 10KH series compatible output on Pin 8, complement on Pin 9
- 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

Pin Connection

1	N.C.
7	V_{EE}
8	Output
9	/Output
14	V_{CC} Ground



**FREQUENCY
CONTROLS, INC.**

HS-2840 Series Continued
ECL

Rev. P

Operating Conditions and Output Characteristics

Electrical Characteristics

Parameter	Symbol	Conditions	Min	Typical	Max
Frequency	-----	-----	65.0MHz	-----	250.0MHz
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
Tpd ⁽⁴⁾	-----	-----	-0.5 ns	-----	+0.5 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 _{EE}	-----	-5.46V	-5.2V	-4.94V
Supply Current	I _{EE}	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	-----	-----	-----	437 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.

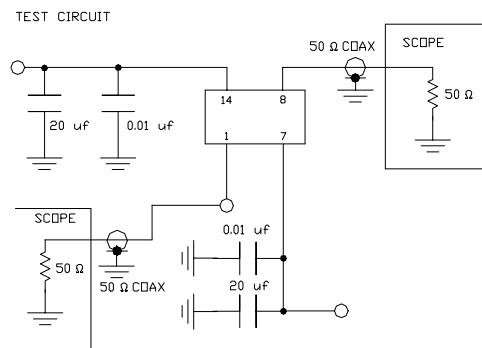
Footnotes:

- 1) Standard frequency stability ($\pm 20, \pm 25, \pm 50$ ppm & others available)
- 2) V_{OL}, V_{OH} referenced to ground (V_{CC}) with $V_{EE} = -5.2V$
- 3) Jitter performance is frequency dependent. Please contact factory for full characterization.
- 4) T_{pd} is phase shift between the falling edge of pin 8 at $V_{CC} - 1.29V$ and rising edge of pin 9 at $V_{CC} - 1.29V$.

Creating a Part Number

HS - A284X - FREQ

Package Code		Tolerance/Performance	
HS	Leaded 4 pin (14 pin)	0	±100ppm 0-70°C
SM	Leaded 4 pin (14 pin) SMD	1	±50ppm 0-70°C
	Gull Wing	7	±25ppm 0-70°C
Input Voltage		9	Customer Specific
Code	Specification	A	±20ppm 0-70°C
A	3.3V	B	±50ppm -40 to +85°C
	5V	C	±100ppm -40 to +85°C



TEST CIRCUIT USES A SPLIT SUPPLY OF +2V AND -3V FOR EASE OF TESTING.