

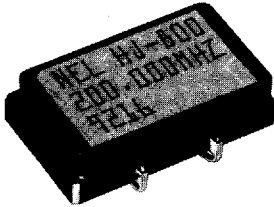
# NEL Crystal Clock Oscillators

## SURFACE MOUNT-ECL

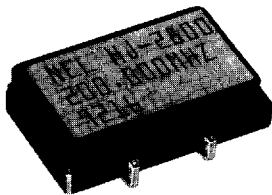
AVAILABLE FROM 65 MHZ TO 250 MHZ

### HJ-800 Series

### HJ-2800 Series (Complementary Output)



HJ-800 Series

HJ-2800 Series  
(Complementary Output)

## Description

The **HJ-800 Series** of quartz crystal clock oscillators provide MECL 10k, 10kH and 100k series compatible signals on pin 4.

The **HJ-2800 series** of quartz crystal clock oscillators provide complementary signals on pin 1. System designers may now specify space saving, cost effective true surface mount ECL oscillators up to 250 MHz to meet their timing requirement. A wide frequency range is available, from 65 MHz to 250 MHz, with user specified tolerances from  $\pm .005\%$ ,  $0^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$ .

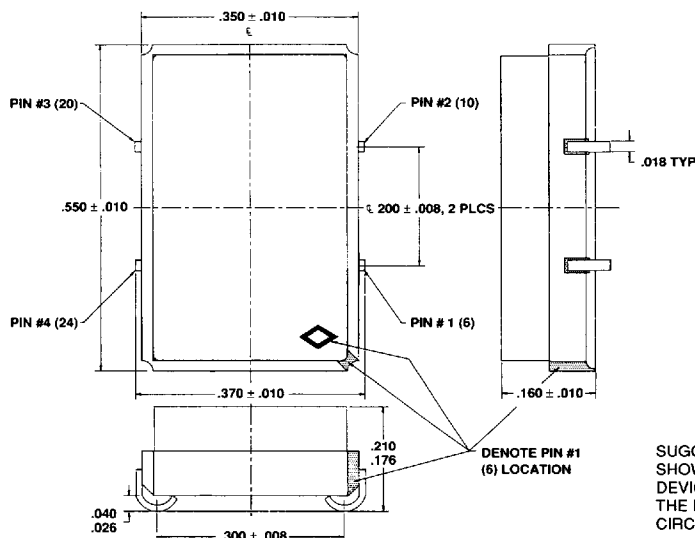
## Features

- ☐ Hermetically sealed ceramic SMD package
- ☐ J-lead termination
- ☐ .200" x .300" footprint
- ☐ Solderable at  $260^{\circ}\text{C}$  for 10 seconds
- ☐ Shock resistance to 3000 Gs

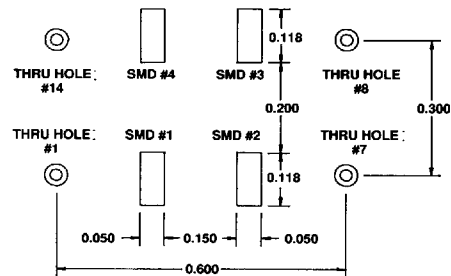
## NEL TYPE, FREQUENCY RANGE, PIN CONNECTIONS

NEL OSC. TYPE	FREQUENCY RANGE	PIN CONNECTIONS (Jedec/Crystal Industry)				SIGNAL COMPATIBILITY
		6/1	10/2	20/3	24/4	
HJ-810	65 to 250 MHz	N/C	VEE-5.2V	OUTPUT	V <sub>CC</sub> GRD	10k & 10kH
HJ-830	65 to 250 MHz	N/C	VEE-4.5V	OUTPUT	V <sub>CC</sub> GRD	100k
HJ-870	65 to 250 MHz	N/C	VEEGRD	OUTPUT	V <sub>CC</sub> +5.0V	10k & 10kH
HJ-2810	65 to 250 MHz	Comp. Out	VEE-5.2V	OUTPUT	V <sub>CC</sub> GRD	10k & 10kH
HJ-2870	65 to 250 MHz	Comp. Out	VEE GRD	OUTPUT	V <sub>CC</sub> +5.0V	10k & 10kH

## PACKAGE OUTLINE AND DIMENSIONS



## SUGGESTED SOLDER PAD LAYOUT



SUGGESTED PAD LAYOUT FOR THE NEL HJ SERIES OF CLOCK OSCILLATORS. ALSO SHOWN IS PLACEMENT OF THE PLATED HOLES FOR A 14 PIN COMPATIBLE THRU HOLE DEVICE. THIS IS NOT INTENDED AS A REQUIREMENT BUT AS A GUIDE TO BE MODIFIED BY THE END USER PER THEIR STANDARD SMD PC BOARD LAYOUT TECHNIQUES FOR RF CIRCUITS. GOOD HIGH FREQUENCY POWER SUPPLY DECOUPLING IS ENCOURAGED.

## Crystal Clock Oscillators



## ECL Operating Conditions and Output Characteristics

SURFACE MOUNT-ECL  
AVAILABLE FROM 65 MHZ TO 250 MHZ

## HJ-800 Series

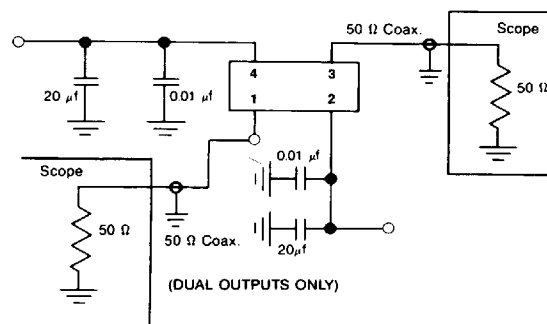
HJ-2800 Series  
(Complementary Output)

HJ-830				HJ-810, HJ-870, HJ-2810, HJ-2870	
PARAMETER	CONDITIONS	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM
<b>General Characteristics</b>					
Supply voltage (V <sub>EE</sub> )	Supply	-4.8 V	-4.2 V	-5%	+5%
	Breakdown	+0.5 V	-8.0 V	+0.5 V	-8.0 V
Supply current (I <sub>EE</sub> )	—	—	80 mA	—	80 mA
Output current (I <sub>O</sub> )	—	—	50 mA	—	50 mA
Operating temperature (T <sub>A</sub> )	Functionality only	0° C	70° C	0° C	70° C
Storage temperature (T <sub>S</sub> )	—	-55° C	+125° C	-55° C	+125° C
<b>Output Characteristics</b>					
Frequency	—	65 MHz	250 MHz	65 MHz	250 MHz
Tolerance <sup>1</sup>	User specified	±.005%	—	±.005%	—
Symmetry	@-1.33 V	40/60%	60/40%	—	—
	@-1.29 V	—	—	40/60%	60/40%
Logic 0 (V <sub>OL</sub> ) <sup>2</sup>	T <sub>A</sub> =0°-70°C	-1.81 V	-1.475 V	-1.95 V	-1.60 V
Logic 1 (V <sub>OH</sub> ) <sup>2</sup>	T <sub>A</sub> =0°-70°C	-1.165 V	-0.88 V	-1.02 V	-0.74 V
Rise & fall time (t <sub>r</sub> ,t <sub>f</sub> ) <sup>3</sup>	T <sub>A</sub> =0°-70°C	—	2.25 ns	—	2.25 ns

## Footnotes:

1. Unless specified differently by customer
2.  $V_{OL}$ ,  $V_{OH}$ , referenced to ground (assuming a negative supply)
3.  $t_r$  and  $t_f$  measured between 20% and 80% of output

Test Circuit



This information is believed to be reliable at the time of printing; no responsibility is assumed for inaccuracies. NEL Frequency Controls reserves the right to make changes at any time.

Output Waveforms

