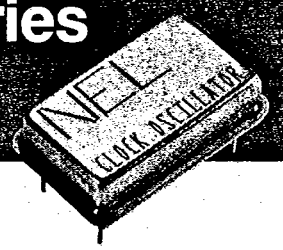
Crystal Clock Oscillators
Low Power Real-Time
HS-326/336 Series



Description

The HS-326/336 Series of quartz tuning fork clock oscillators offers a 32.768 kHz output frequency that is CMOS compatible. The HS-326 provides a ±10 ppm calibration tolerance at 25° C with ±45 ppm overall tolerance at 0° to 45° C; the HS-336 offers ±25 ppm calibration tolerance with ±60 ppm overall tolerance at 0° to 45° C. Supply current is typically 125 μA at V_{DD} = 5.0 V, decreasing rapidly to 25 μA at V_{DD} = 3.0 V.

All units are resistance welded in an all metal package, offering RFI shielding, and are designed to survive standard wave soldering operations without damage. Insulated standoffs to enhance board cleaning are standard.

Suggested Applications

HS-326/336 Series quartz tuning fork clock oscillators are designed to provide low power consumption for battery backup and precise frequency control that is unavailable with conventional 32.768 kHz tuning forks.

Features

- ☐ Real time clock output frequency
- ☐ User specified calibration and overall tolerances
- ☐ Low power consumption
- ☐ Case at electrical ground
- ☐ All metal, resistance weld, hermetically sealed package
- ☐ High shock resistance, to 3,000 G

1. Measured between V_{DD} = 10% to 90%, C_L = 15 pf.

Specifications

PARAMETER	CONDITIONS	MINIMUM	MAXIMUM
General Characteristics			
Supply voltage (V_{DD})	Supply	3.0 V	5.7 V
	Breakdown	—	120 V
Supply current (I_{DD})	V_{DD} @ 3.0 V	—	25 μA Typ.
	4.0 V	—	75 μA Typ.
	4.5 V	—	100 μA Typ.
	5.25 V	—	150 μA Typ.
	5.7 V	—	200 μA Typ.
Operating temperature (T_A)	—	0° C	70° C
Storage temperature (T_S)	—	−35° C	+85° C
Lead temperature (T_L)	Soldering, 10 s	—	300° C
Output Characteristics			
Frequency Tolerance	Calibration 25° C		
	HS-326	—	±10 ppm
	HS-336	—	±25 ppm
	Overall 0° to 45° C		
	HS-326	—	±45 ppm
	HS-336	—	±60 ppm
Symmetry	0.5 V_{DD}	40/60%	60/40%
Logic 0 (V_{OL})	Driving equiv. load	—	0.2 V
Logic 1 (V_{OH})	Driving equiv. load	V_{DD} −0.2 V	—
Logic 0 (I_{OL} sink)	Driving equiv. load	—	600 μA
Logic 1 (I_{OH} source)	Driving equiv. load	—	600 μA
Rise & fall time (t_r, t_f)[1]	V_{DD} = 3.0 V	—	750 ns
	V_{DD} = 5.0 V	—	175 ns

NEL FREQUENCY CONTROLS, INC.
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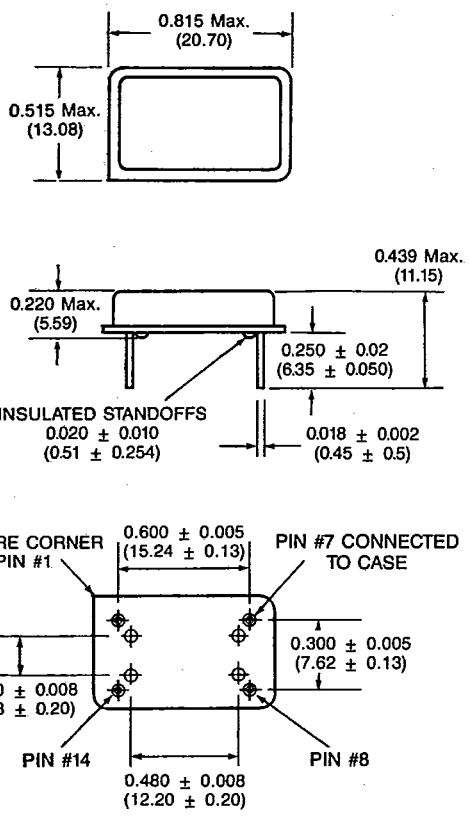
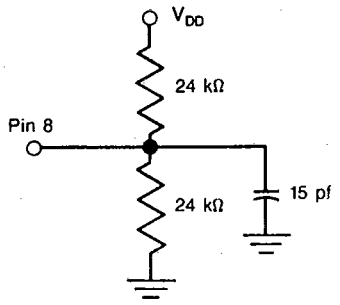


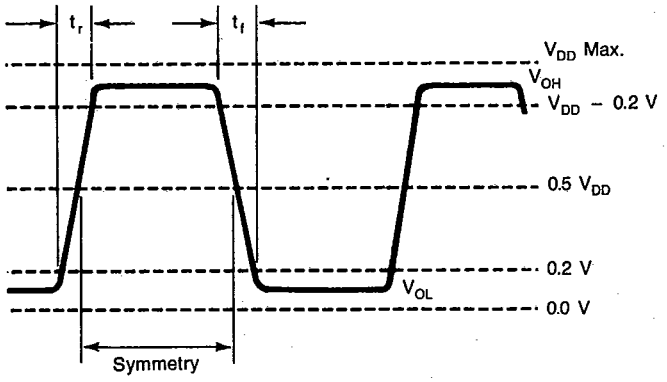
Pin	Connection
1	NC
7	gnd and case
8	Output
14	V_{DD}

Dimensions are for reference only.

Equivalent Load



Output Waveform



HS-326/336 Series

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

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